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Humanae AMBROSII vere hæc pictura PARÆI Effigiem sed Opus continet Ambrosiam.

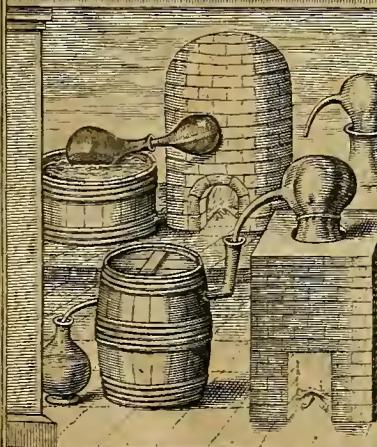
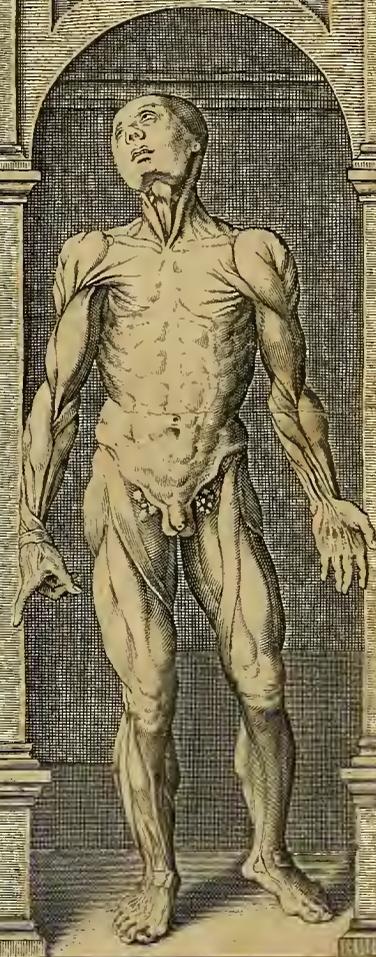
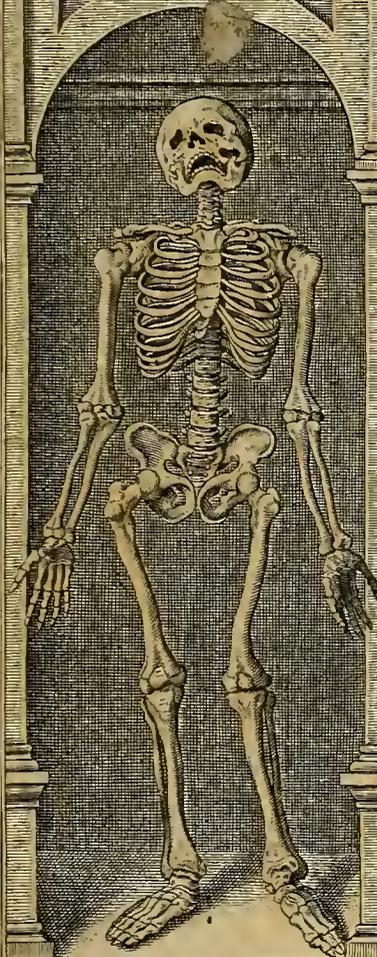
THE
 WORKES
 of that famous
 Chirurgion
 Ambrose Parey
 Translated out of
 Latine and compared
 with the French,
 by Tho: Johnson.

Whereunto are added three Tractates
 out of Adrianus Spigelius of the
 Veines, Arteries, & Nerves,
 with large Figures.

Also a Table of the Bookes and Chapters.

London.

Printed by Richard Cotes, and
 Willi: Du-gard, and are to be sold by John
 Clarke, entering into Mercers Chappell. 1649.





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T O
T H E R I G H T
H O N O U R A B L E

EDWARD LORD HERBERT OF
Cherbury and Castle Island, and one
of his Majesties most Honorable
Counsell of War.

My Lord,



Tis not the far-fetcht pedegree of noble Ancestors, nor those Honours your Lordship deservedly possesse, that make mee crave your Patronage to this my Labour; but it is that Heroick mind, enriched with the choice endowments of Nature and Art, and that earnest affection wherewith your Honour entertains all Sciences, Arts, and Artists, with that exquisite Iudgment which sees into the inner man, which embolden and incite me to sue for your Honors assistance, in protecting the fame of him, who by your many favours is made yours. I know the seeming and self-pleasing Wisdom of our times, consists much in cavilling and unjustly carping at all things that see light, and that there are many who earnestly hunt after the publike fame of Learning and Judgment, by this easily trod, and despicable path, which notwithstanding they tread with as much confidence as folly; for that oft-times which they vainly and unjustly brand with opprobrie, outlives their Fate, and flourishes when it is forgot that ever any such as they had being.

I know your Lordships disposition to be far dissenting from these men, and that you rather endeavour to build up the fame of your Learning and Judgement upon a strong laid foundation of your own, than *Herostatus* like, by pulling down any howsoever fair built fabrick of another. I heartily wish that your Honour

A

could

The Epistle Dedicatory.

could propagate this good, and that all Detractors might be turned into Actors, and then I know it would much mitigate their rigour in censuring others, when as they themselves were also exposed unto the same Hazzard,

I think it impertinent to acquaint your Honour with the Nature of the Work, my Pains in translating, or the Benefit that may ensue thereon, for that I know your Honour ignorant of nothing in this kind; neither doubt I of your favourable acceptance of the good will of him, that thinks himself much honoured by being

Yours,

THOMAS JOHNSON.

TO

To the Reader.



Have here for the publike good taken pains to subject my self to common censure, the which I doubt not but to find as various as the faces of the Censurers; but I expect no thanks, nor hunt after other praise, than that I have laboured for my Countries good, if that deserve any. I fear not Calumniation (though sure to hear of it) and therefore I will not Apologize, but inform thee of some things concerning the Author his work, and the reason that induced me to the translation thereof, with some few things besides. For the Author, who was principall Surgeon to two or three Kings of *France*, he was a man well versed in the writings of the Antient and modern Physitians, and Surgeons, as you may evidently find by sundry places alledged in his works. For his experience, or practise (the chief help to attain the highest perfection in this Art) it was wonderfull great, as you may collect by his voyages recorded in the last part of this work; as also by that which *James Guillemau*, Surgeon to the *French King*, a man both learned and judicious in his profession, avers, speaking of his own education and progresse in the Art of Surgery. I so laid (*saith he) the first foundation of this Art in the Hospitall of *Paris*, being as it were, an ample Theater of wounds and diseases of all kindes, that for two whole years, during which time I was there conversant, nothing was consulted of, nothing performed, the Physitians, and Surgeons being present, whereof I was not an Auditor or Astor. There flourished at these times, and yet doth, *Ambrose Parey*, principall Surgeon to the most Christian King, the Author of this great work, most renowned for the most gracious favour of Kings, Princes and Nobles towards him, for his Authority amongst his equals, for his Chirurgicall operations amongst all men. Therefore I earnestly endeavoured to be received into his family, as unto another *Machaon*, or *Podalirius*: once admitted, I so by all dutifullnesse and due respect acquired his favour, that he, unlesse I were present and assisting, did nothing (such is his naturall gentlenesse and curtesie to all such as are studious of the Art) at home or abroad, in the field, in the tents, or lastly in this famous City of *Paris*, about the bodies of Dukes, Noblemen, or Citizens, in whose cure, he by the ardent desire of them all, had still the prime place.

* In his Epistle prefixed before the Latin edition of this Author.

Now for this work, hear what this same man in the same place affirmeth further: I not content with these means, which may seem sufficient, and too much, as desirous to satisfie my long thirst, determined to try whether I could draw, or borrow any thing from strangers, which our men wanted, to the fuller knowledge of Surgery. To this purpose I travailed over *Germany*, and then for four years space I followed the *Spanish Army* in the Low-countries; whereas I did not only carefully cure the wounded Souldier, but also heedfully and curiously observe what way of curing the renowned *Italian*, *Germane*, and *Spanish* Surgeons observed, who together with me were imployed in the Hospitall, for the healing of the wounded and sick. I observed them all to take no other course than that which is here delivered by *Parey*. Such as did not understand *French*, got some pieces of this work for large rewards, turned into Latin, or such Languages as they understood, which they kept charily, and made great store of; and they esteemed, and admired, and embraced this work alone, above all other works of Surgery, &c. Our Author also himself, not out of a vain-glorious ostentation, but a mind conscions of the truth of his assertion, affirms thus much of this his work. I have (saith he) so certainly toucht the mark whereat I aimed, that Antiquity may seem to have nothing wherein it may exceed us, besides the glory of invention, nor posterity any thing left, but a certain small hope to add some things, as it is easie to add to former inventions. Thus much concerning our Author, and the excellency of his work.

Now come I to my translation, the which, as desiring more a publike good, than private praise, I have performed plainly and honestly, labouring to fit it to the capacity of the meanest Artift; for these are they to whom I chiefly commend this work, and from whom I expect acceptation. I being by the earnest perswasions of some of this profession, chiefly, and almost wholly perswaded and incited to take this pains, who knowing the disability of understanding this Author in Latin or *French*, in many of the weaker members of the large body of their profession, dispersed over this Kingdome, and the rest of his Majesties Dominions, whose good, and encrease in knowledge may be wisht, that so they may be the better enabled to do good to such as shall implore their aid in their profession.

To the Reader.

There are some (I know) will blame me for Englishing this work, as laying open the mysteries of a worthy Art, to the unworthy view of the vulgar. To such I could answer as *Vide Aul. Gel. l. 20 c. 4.* * *Aristotle* did to *Alexander* : but for the present I will give them these, which I think may satisfie any but the purposely malicious : the first is drawn from the goodnesse of the thing, as intended for those that want such guides to direct them in their Art ; for it is commonly granted, that, *Bonum quo communius eo melius*. Secondly, it hath been the custome of most Writers in all Ages and Countries thus to do : *Hippocrates*, *Galen*, and the other Greeks, writ in their mother tongue the mysteries of their Art : thus did *Celsus*, *Serenus*, and others in Latin : *Mesue*, *Avicen*, *Serapio*, and others, in Arabick ; as also, to go no further, our Author writ this work in his native *French*, and learned men have done the like in this, and all other Arts. And it is a great hinderance to us in these dayes, that we must be forced to learn to understand two or three tongues, before we can learn any science, whereas the Ancients learned and taught theirs in their mother tongue : so that they spent a great deal lesse time about words, and more upon the study of that Art or Science they intended to learn and follow. Thirdly, I must tell you, that, *Ex libris nemo evasit Artifex*, No man becomes a workman by book : so that unlesse they have had some insight in the Art, and be in some sort acquainted both with the tearms of Art ; as also with the knowledge and use of the instruments thereto belonging, if by reading this, or any other book of the like naaure they becomes Surgeons, I must needs liken them (as *Galen* doth another sort of men *) to Pilots by book only : to whose care, I think none of us would commit his safety at Sea, nor any if wise, will commit themselves to these at land, or Sea either, unlesse wholly destitute of other.

Gal. de simp. l. 6.
Τὸ ἴσ' ἐκ βιβλίου
Κυβερνήταις.

The other things whereof I must also give you notice, are these. The figures in the Anatomy are not the same used by my Author (whose were according to those of *Vesalius*) but according to those of *Bauline*, which were used in the work of *Dr. Crook* ; and these indeed are the better and more compleat. Also pag. 528. I thought it better to give the true figure of the Helmet floured *Aconite*, mentioned out of *Pliny*, than to reserve the fained picture of *Matthiolus*, which in our Author was encreased with the further fiction of a Helmet. I have in some few places in the margent, which you shall find marked with a star, put short annotations, for the better illustration of that which is obscure, &c. I have also in the Text to the same purpose, here and there put two or three words, contained in these limits [], which I find here and there turned into a plain Parenthesis, especially toward the latter end of the book, but the matter is not great. Further I must acquaint you that the Apologie and Voiages, being the last part of this work, and not in the Latin, but *French* editions, were translated into *English* out of *French* by *George Baker*, a Surgeon of this City, since that time, as I hear, dead beyond the Seas.

This is all, Courteous Reader, that I have thought necessary to acquaint thee withall concerning this, which I would desire thee to take with the same mind that it is presented to thee, by him that wisheth thee all happinesse.

THOMAS JOHNSON.



THE
A U T H O R S
EPISTLE DEDICATORIE

To Henry the third, the most Christian
King of France and Poland.



As (most Christian King) we see the members of mans body by a friendly consent are alwayes busied, and stand ready to perform those functions for which they are appointed by nature, for the preservation of the whole, of which they are parts; so it is convenient that we, which are, as it were, Citizens of this earthly Common-weal should be diligent in the following of that calling which (by Gods appointment) we have once taken upon us: and content with our present estate, not carried away with rashnesse and envy, desire different and divers things whereof we have no knowledg. He which doth otherwise, perverts & defiles with hated confusion the order and beauty, on which this Univerſ consists. Wherefore when I considered with my self, that I was a member of this great Mundane body, and that no altogether unprofitable; I endeavoured earnestly, that all men should be acquainted with my duty, and that it might be known how much I could profit every man. For God is my witnesse, and all good men known that I have now laboured fifty years with all care and pains in the illustration and amplification of Chirurgery; and that I have so certainly touched the mark whereat I aimed, that Antiquity may seem to have nothing wherein it may exceed us, beside the glory of invention; nor posterity any thing left but a certain small hope to add some things, as it is easie to add to former inventions. In performance whereof, I have been so prodigall of my self, my watchings, faculties and means, that I spared neither time, labour, nor cost, whereby I might satisfie and accomplish my own desires, this my great work, and the desires of the studious. Neither may we doubt but their studies would at length wax cold, if they only furnished with the Theorick and Precepts in Schools and that with much labour, should see no manfull operation, nor manifest way of performing the Art. For which cause I seeking the praise and profit of the French Nation, even with the

The Authors Epistle Dedicatory.

hinderance of my particular estate, have endeavoured to illustrate and increase Chirurgery, hitherto obscure either by the infelicity of the former ages, or the envy of the Professors; and not only with precepts and rules, but being a lover of carved works I beautified it with 300. forms, or graven figures, and apt delineations, in which whosoever shall attentively look shall find five hundred anatomical or organical figures belonging to the Art, (if they be reckoned particularly). To every of these I have given their names and shewed their use, lest they should seem to have been put in vainly for ostentation or delight. But although there be few men of this profession which can bring so much authority to their writings either with reason, or experience as I can; notwithstanding I have not been so arrogant, but intending to publish my work, I first communicated it with men the most excellent in the Art of Physick, who gave me greater encouragement to perfect and publish it, that it might be in common use: professing they wished nothing more, than that it might be turned into Latin, (so by which means it should be known to forain Nations, that there is no kind of Learning which is not delivered with great dexterity of wit in this Kingdom over which you rule. And thus much I dare boldly affirm, that there is scarce any, be he never so stately or supercilious, but that he may here find some thing which may delight him, and by which he may better his knowlrdg. Therefore I doubted not to consecrate this book unto your Majesty both as a Pattern and treasury of my labours, as well in respect of my duty, who am yours by nature and education, as that I might manifest to all, your Highnesse exceeding bounty towards me, in placing me, (having heretofore enjoyed the office of principall Chirurgion under three Kings your Majesties Predecessors) in the same dignity, and that of your own accord. And moreover I did conjecture that it would fall out, as now it doth, that this my work carried through the world by the fame of your Majesties name, should neither fear the face nor view of any, supported by the favour and Majesty of a most invincible Monarch and most excellent and renowned Prince. Neither did King Charles the ninth of happy memory, incited by the relation of the most gracious Queen his Mother, refuse to read it, being he understood it proceeded from him, who having happily passed all his time in private and publick employments, and conversed with all men of all sorts, was judged most worthy to obtain this favour, as to have the front of this work adorned and beautified with the splendor of his prefixed name. I encouraged by this hope, desired that my request should passe as by a certain continuation and succession from a most powerfull, to a most Invincible King; and do wholly consecrate these my labours taken for my Countries good unto your sacred Majesty. God grant that your Majesty may have happy successe of all your enterprises abundantly added to Nestors years.

Patis, 8. Feb. Anno Dom. 1579.

Your most Christian Majesties
faithfull Servant

Ambrose Parey.



The Preface.



Most men derive the Originall of Physick from heaven; for those who hold the best opinion of the Creation of the world, affirm, the Elements being created and separated each from other, man being not as yet made; incontinently by the divine decree, all herbes and plants with infinite variety of flowers, endued with various sents, tastes, colours, and forms, grew and sprung forth of the bowels of the Earth, enriched with so many and great vertues, that it may be thought a great offence to attribute to any other than the deity, the benefit of so great a blessing so necessary for so many uses. Neither could Mans Capacity ever have attained to the knowledg of those things without the guidance of the Divine power. For God the great Creator and fashioner of the World, when first he inspired *Adam* by the breath of his mouth into a living and breathing man, he taught him the nature, the proper operations, faculties and vertues of all things contained in the circuit of this Universe. So that if there be any who would ascribe the glory of this invention to man, he is condemned of ingratitude even by the judgment of *Pliny*. But this knowledg was not buried in oblivion with *Adam*: but by the same gift of God was given to those whom he had chosen and ordained for Physick, to put their helping hands to others that stood in need thereof. Which opinion was not only received in the common manner and by the tacite consent of all Nations, but confirmed by *Moses* in the Scripture. Which thing *Jesus* the son of *Sirach* the wisest amongst the Jews, hath confirmed saying; Honor the Physitian with the honor due unto him, for the most High hath created him because of necessity: and of the Lord cometh the gift of healing. The Lord hath created Medicins of the Earth, and he that is wise will not abhor them. Give place and honour to the Physitian, for God hath created him, let him not go from thee, for thou hast need of him. The *Gracians* who first seem more fully and with greater fame to have professed the Art of Physick, do in a manner consent with this opinion, in acknowledging *Apollo* to have been the inventer thereof, neither did they it without a reasonable cause. For whether by *Apollo* they may understand the Sun who by its gentle and vitall heat doth bring forth, temper and cherish all things; or else some

Genes. 1.
Eccles. 28. 1.

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Heros, who incited by an excellent and almost divine understanding first taught and put in practise the Medicinall vertues of Herbs; in which sense *Ovid* brings him in speaking thus :

*Herbes are of mine invention, and through all
The world, they me the first Physitian call.*

The originall of Physick arising from those beginnings shall alwayes be celebrated, as celesstiall, and was increased principally after this manner. After *Apollo*, *Æsculapius* his son instructed by his father reduced this Art being as yet rude and vulgar into a little better and more exquisite form, for which cause he was reputed worthy to be accounted as one of the Gods. At the same time flourished *Chiron* the *Centaure*, who for that he excelled in knowledg of Plants, and taught *Æsculapius* (as many report) their faculties, is thought by *Pliny* and some others to have been the inventor of Physick. *Æsculapius* had two sons, *Podalirius* and *Machaon*, who following their fathers steps and professing Physick, did principally beautifie and practise that part thereof which is called Chirurgery, and for that cause were accounted the Inventers thereof. After those *Asclepiades* left this Art much enlarged as hereditary to his posterity; by whose study and diligence, that part of the Art was invented and annexed, which by a more curious skill searcheth and cureth those diseases which lye hid within the body. *Hippocrates* the *Coan* the son of *Heracidas*, born of the noble race of *Asclepiades*. Prince of the Physitians that were before him, perfected Physick and reduced it into an Art and wrote divers Books thereof in Greek. *Galen* succeeded him six hundred years after, who was a man most famous not only for his knowledg in Physick, but also in all other sciences, who faithfully interpreting every thing that was obscure and difficult in the writings of *Hippocrates*, enlarged the science with many volumes. Thus therefore was the beginning, thus the increase and perfecting the Art of Physick, as much as can be hoped for from mans industry. Although indeed we cannot deny but that Experience hath much profited this Art, as it hath and doth many other. For as men perceived that some things were profitable, some unprofitable for this or that disease, they set it down, and so by diligent observation and marking of singularities, they established universall and certain precepts and so brought it into an Art. For so we find it recorded in ancient Histories, before the invention of Physick, that the *Babylonians* and *Assyrians* had a custom amongst them to lay their sick and diseased persons in the porches and entries of their houses, or to carry them into the streets and market places, that such as passed by and saw them, might give them counsel to take those things to cure their diseases, which they had formerly found profitable in themselves or any other in the like affects, neither might any passe by a sick man in silence.

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lence. Also *Strabo* writes that it was a custom in *Greece* that those which were sick should resort to *Æsculapius* his Temple in *Epidaurum*, that there as they slept, by their dreams they might be admonished by the God what means they should use to be cured; and when they were freed from their diseases, they writ the manner of their infirmities and the means by which they were cured in tables and fastened them to the pillars of the Temple, not only for the glory of the God, but also for the profit of such, as should afterwards be affected with the like maladies. All which tables (as fame reports) *Hippocrates* transcribed, and so from those drew the Art of Physick. Beasts also have added much to this Art. For one man was not only instructed by another, but learned also much from brute beasts, for they by the only instinct of nature have found out divers herbs, and remedies, by which they freed and preserved themselves from infirmities, which might presently be transferred to mans use. Wherefore considering that such and so many have concurred to bring this Art to perfection, who hereafter dare call in question the excellency thereof? chiefly if he respect the subject thereof, Mans body, a thing more noble than all other Mundane things, and for which the rest were created. Which thing moved *Herophilus* in times past to call Physitians *The hands of the Gods*. For as we by putting forth our hand, do help any man out of the water or mud into which he is fallen: even so we do sustain those that are thrown down from the top of health to the gates of death by violence of diseases, with happy medicins, and as it were by some speciall and divine gift deliver them out of the jaws of death. *Homer* the Prince of Greek Poets affirms that one Physitian is far more worthy than many other men. All Antiquity gave Physitians such honour, that they worshipped them with great veneration as Gods, or the sons of their Gods. For who is it which is not much delighted with the divine force of healthful medicins, with which (we see by dayly experience) Physitians, as armed with *Mercuries* rod, do bring back those languishing souls which are even entring the gates of death? Hence it cometh to passe that the divine Poets of ancient times, as *Orpheus*, and *Museus*, and *Hesiod*, and the most renowned Philosophers, *Pythagoras*, *Plato*, *Aristotle*, *Theophrastus*, *Chrysippus*, *Cato Censorius*, and *Varro*, esteemed nothing more excellent than to excell in the knowledg of Medicins, and to testifie the same by written monuments to Posterity. For what can be more noble and worthy of a generous disposition than to attain to that by the benefit of Physick, that adorned with the ornaments of dignity thou mayest have power over other men, and favoured of Princes, Kings, and Emperours, mayest appoint and prescribe to them those things which are profitable to preserve health, and cure their diseases? But if you look for benefit by sci-

ences;

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In what esteem
Physicians have
formerly been.

ences; then know that the professors hereof have beside sufficient gain, acquired much honour and many friends. *Hippocrates* coming to *Abdera* to cure *Democritus* of his madness, not only the men of the City, but also the women, children, and people of every age, sexe and rank, went forth to meet him, giving him with a common consent and loud voice the title of a *Tutelary Deity* and father of their Country. But the *Athenians*, for freeing their country from the plague, with triumphant pompe celebrated playes to his honour, and bountifully set upon his head as if he had been a King, a Crown of gold weighing a 1000. pieces of their golden coin, and erected his statue, for a perpetuall monument of his piety and learning. *Erasistratus* the Nephew of *Aristotle* by his daughter, received, freely given him by *Ptolomy* King of *Egypt*, for the cure of his son, 100. Talents of Gold. The Emperour *Augustus* honoured *Anonius Musa* with a golden statue. *Quintus Stertinius* yearly received out of the Emperours Treasury 12000. 500. pieces of gold. In the time of our Grandfathers *Petrus Aponensis* called *Conciliator* was so famous through all *Italy* for his knowledg in Physick, that he could scarce be intreated to come to any man of fashion that was sick, unless he gave him 50. crowns, for every day he was absent from home: but when hee went to cure *Honorius* the Bishop of *Rome*, he received 400. crowns for every day he was absent. Our *French* Chronicles relate in what credit & estimation *James Cotterius* the Physitian was with *Lewis* the 11. King of *France*; for they report he gave him monethly out of his Treasury 10000. crowns. Physick in times past hath been in such esteem with many famous and noble personages, that divers Kings and Princes delighted with the study thereof, and desirous to attain glory and credit thereby, called sundry herbs after their own names. For so *Gentian* took its name of *Gentius* King of *Illyria*; the herb *Lysimachia* of *Lysimachus*, the King of *Macedon*, the *Mithridaticke* herb or *Scordium*, of *Mithridates* the King of *Pontus* & *Bithinia*, *Achilla* of *Achylles*, *Centorie* of *Cbiron* the *Centaure*; *Artemisia* of *Artemisia* the Queen of *Caria*. *Attalus* King of *Pergamus*, *Salomon* of *Judea*, *Evax* of *Arabia*, and *Iuba* the King *Mauritania*, were not only inflamed with a desire of the knowledg of Plants; but either they have written books of it, or for the great commodity of posterity, invented by their skil many choise antidotes compounded of divers simples; neither the desire of learning this noble science is yet altogether extind. As may appear by that *Indian* plant *Tobacco*, called by some the noble herb, *Catherines* herb and *Medices* herb, but commonly the *Queens* herb, because *Catherine Medices* the mother of our Kings, by her singular study and industry made manifest the excellent vertue it hath in curing malign ulcers and wounds, which before was unknown to the *French*. For these worthy men understood that their glory,

thus

Names given
to Plants.

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thus fastened and ingrafted into the deep, and as it were ever living roots of plants, would never decay; but should be propagated to all posterity in many succeeding ages, growing up with their sprouting and budding shoots, stalks, flowers and fruits. Neither did these famous men whilst they adorned this part of Physick suffer the other, which treats of the dissection of mans body, be buried in oblivion, and without their knowledg; as instructed with the precepts and learning of the wisest men, how artificiall and unimitable by mortall hand this fabrick of our body is. Neither is it probable that *Apis*, *Osiris* and *Ptolomy* Kings of *Egypt*, *Solomon*, *Alexander* the great, *Mithridates*, *Attalus*, seeing they dedicated themselves wholly to the contemplation of naturall things; neglected the use of *Anatomy*, and being men most desirous to know themselves, to have been ignorant of the structure of their own bodies being the habitations of their souls immortal and made to the Image of God: seeing they observed with certain judgment the different lights of the Sun, Moon and Stars; and passed over so many lands, so many seas, so many regions, so far remote one from another, by wayes so terrible by reason of cold, uncouthness, darkness, by rocks, by fire and sword, with great labour, charge and danger of life, only that they might satisfie their minds thirsting after the knowledg of things; and to have left untouched a thing truly noble, admirable, and most worthy of knowledg, easie to be attained by any and to be acquired without any danger of life, or fortunes.

Seeing there be three parts of that Physick which at this time we professe, *Chirurgery* which by the use of the hand, *Diet* which with a convenient manner of feeding and ordering the body, and *Pharmacy* that by medicins attempt to expell diseases, and preserve health; The prime Physitians do not without reason contend w^{ch} of these may be accounted the chief. Certainly *Herophilus* had *Pharmacy* in such esteem, that he thought medicins were first mixed and administred to the sick by *Apollo* (whom Antiquity thought a great Deity.) And *Pliny* had so good an opinion of *Diet*, that he exclaims; The true remedies and Antidotes against diseases are put into the pot and eaten every day by the poor people. Verily all learned men confesse that the manner of curing which is performed by diet, is much more facile & prosperous, than that which is done by medicins; as those things which sought with much labor and cost are taken with much loathing, and taken are scarce retained, but retained they oft work with much labour and pain: Which things long ago moved *Asclepiades* to exclude the use of medicins, as hurtfull to the stomach. Yet if we will beleeve *Celsus*, neither of these parts merit the preheminnence, but both of them give place to *Chirurgery*. For seeing that fortune is very powerfull in diseases, and the same Meats and Medicins are often good and often vain,

truly

Physick is divided into three parts.

The Preface.

truly it is hard to say, whether the health is recovered by the benefit of Diet and *Pharmacy*, or by the strength of the body. Moreover in those cases, in which we most prevail with medicines, although the profit be more manifest, yet it is evident that health is often sought in vain even by these things, and often recovered without them. As it may be perceived by some troubled with sore eyes, and others with Quartain feavers, who having been long troubled by Physicians are sometimes healed without them. But the effect of Chirurgery as it is very necessary, so it is the most evident amongst all the parts of physick. For who without Chirurgery can hope to cure broken, or luxated parts, who wounds and ulcers, who the falling of the matrix, the stone in the bladder, a member infested with a Gangrene or Sphacele? Besides, this part also is the most ancient; for *Podalirius* and *Machaon* following their Generall *Agamemnon* to the *Trojane* wars, yeelded no small comfort to their fellow Souldiers. Whom notwithstanding *Homer* affirms not to have given any help in the Pestilence, nor in divers other diseases, but only were accustomed to heal wounds by instruments and medicines. And if the difficulty of learning it argue the excellency of the Art, who can doubt but Chirurgery must be the most excellent, seeing that none ought to be accounted a Chirurgeon or which can perform his duty, without the knowledg of Diet and *Pharmacy*? But both the other can perform their parts without Chirurgery if we may beleve *Galen*. But if we consider the matter more neerly according to truth; we shall understand those three parts have a certain common bond and are very near of kindred, so that the one impløres the aid of the other; neither can the Physician do any thing praise-worthy without the conspiracy and joint consent of these three; therefore in ancient times there was but one performer and user of all the three parts. But the multitude of men daily increasing, and on the contrary mans life decreasing, so that it did not seem able to suffice for to learn and exercise all the three, the workmen divided themselves. Wherefore that which happens to any man either by lot, or counsell, that let him follow, maintain and only use, as mindfull how short his life is, and how long the Art.

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of Chirurgery.



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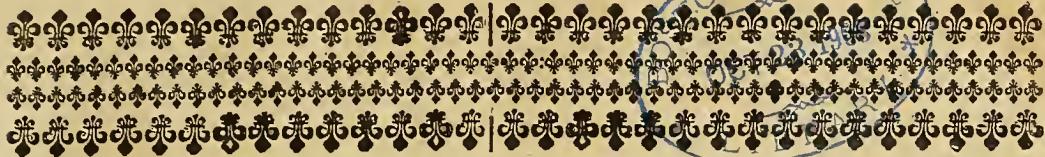
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A N
INTRODVCTION
 O R
COMPENDIOUS WAY
 T O
CHIRURGERY.

CHAP. I.

What Chirurgery is.



CHIRURGERY is an Art, which teacheth the way by reason, how by the operation of the hand we may cure, prevent, and mitigate diseases, which accidentally happen unto us. Others have thought good to describe it otherwise; as that, It is that part of Physick which undertaketh the cure of Diseases by the sole industry of the Hand: as, by cutting, burning, sawing off, uniting fractures, restoring dislocations, and performing other works, of which we shall hereafter treat. Chirurgery also is thus defined by the Author of the *Medicinall Definitions*; The quick motion of an intrepid hand

The definition of Chirurgery.

joyned with experience; or, an artificiall action by the hand used in Physick, for some convenient intent. Yet none must think to attain to any great perfection in this Art, without the help of the other two parts of Physick; I say, of Diet and Pharmacie, and the divers applications of proper Medicines, respecting the condition of the Causes, Diseases, Symptoms, and the like circumstances, which comprehended under the names of things naturall, not naturall, and besides nature, (as they commonly call them) we intend to describe in their proper place. But if any reply, that there be many which do the works of Chirurgery, without any knowledg of such like things, who notwithstanding have cured desperate Diseases with happy success: Let them take this for an answer, That such things happen rather by chance, than by the industry of the Art; and that they are not provident that commit themselves to such. Because that for some one happy chance, a thousand dangerous errors happen afterwards, as *Galen* (in divers places of his *Method*) speaks against the *Empericks*. Wherefore seeing we have set down Chirurgery to be a diligent operation of the hands, strengthened by the assistance of Diet and Pharmacy, we will now shew what, and of what nature the operations of it are.

What necessary for a Chirurgeon.

CHAP. II.

Of Chirurgicall Operations.



FIVE things are proper to the duty of a Chirurgeon; To take away that which is superfluous; to restore to their places such things as are displaced; to separate those things which are joyned together; to joyn those which are separated; and to supply the defects of nature. Thou shalt far more easily and happily attain to the knowledg of these things by long use and much exercise, than by much reading of Books, or daily hearing of Teachers. For speech, how perspicuous and elegant soever it be, cannot so vively express any thing, as that which is subjected to the faithfull eyes and hands.

The nature of a Chirurgeon.

Experience more necessary for a Chirurgeon, than Art.

Examples of taking away that which is superfluous.

We have examples of taking away that which abounds in the Amputation or cutting off a finger, if any have six on one hand, or any other monstrous member that may grow out: in the lopping off a putrefied part inwardly corrupted; in the extraction of a dead child, the secundine, mole, or such like bodies out of a womans womb: In taking down of all Tumors, as Wens, Warts, Polypus, Cancers, and fleshy excrescences of the like nature; in the pulling forth of bullets, of pieces of maile, of darts, arrows, shells, splinters, and of all kind of weapons in what part of the body soever they be. And he taketh away that which redounds, which plucks away the hairs of the ey-lids which trouble the ey by their turning in towards it: who cuts away the web, possessing all the * *Adnata*, and part of the * *Cornea*: who letteth forth suppurated matter: who taketh out stones in what part soever of the body they grow; who puls out a rotten or otherwise hurtfull rooth; or cuts a nail that runs into the flesh: who cuts away part of the *Vvula*, or hairs that grow on the ey-lids: who taketh off a Cataract; who cuts the navill or foreskin of a childe newly born; or the skinny caruncles of womens privities.

* Two tunicles of the eys.

Examples of replacing.

Examples of placing those things which are out of their naturall site, are manifest in restoring dislocated bones; in re-placing of the guts and kall fallen into the cods, or out of the navill or belly by a wound; or of the falling down of the womb, fundament, or great gut, or the eye hanging out of its circle, or proper place.

Example of separating things joined together.

But we may take examples of disjoyning those things which are continued; from the fingers growing together, either by some chance, as burning; or by the imbecillity of the forming faculty: by the disjunction of the membrane called *Hymen*, or any other troubling the neck of the womb; by dissection of the ligament of the tongue, which hinders children from sucking and speaking, and of that which hinders the *Glans* from being uncovered of the foreskin; by the division of a varicous vein, or of a half cut nerve or tendon, causing convulsion; by the division of the membrane stopping the auditory passage, the nose, mouth, or fundament, or the stubborn sticking together of the hairs of the ey-lids. Refer to this place all the works done by Causticks, the Saw, Trepan, Lancet, Cupping-glasses, Incision-knife, Leeches, either for evacuation, derivation, or revulsion sake.

Examples of uniting things disjoined.

The Chirurgeon draws together things separated, which healeth wounds by stitching them, by bolstering, binding, giving rest to, and fit placing the part: which repairs fractures; restoring luxated parts: who by binding the vessel, stayeth the violent effusion of blood: who cicatriceth cloven lips, commonly called Hare-lips: who reduceth to equality the cavities of Ulcers and Fistula's.

Examples of supplying defects.

But he repairs those things which are defective either from the infancy, or afterwards by accident, as much as Art and Nature will suffer; who sets on an ear, an ey, a nose, one or more teeth; who fills the hollownes of the palat eaten by the Pox, with a thin plate of gold or silver, or such like; who supplies the defect of the tongue in part cut off, by some new addition; who fastens to a hand, an arm, or leg with fit ligaments, workmanlike: who fits a doublet bumbasted, or made with iron plates to make the body streight; who fits a shoo too big with cork, or fastens a stocking or sock to a lame mans girdle to help his gate. We will treat more fully of all these in our following Work. But in performing those things with the hands, we cannot but cause pain: (for who can without pain cut off an arm, or leg, divide and tear asunder the neck of the bladder, restore bones put out of their places, open Ulcers, bind up wounds, and apply cauterics, and do such like?) notwithstanding the matter often comes to that pass, that unless we use a judicious hand, we must either die, or lead the remnant of our lives in perpetuall misery. Who therefore can justly abhor a Chirurgeon for this, or accuse him of cruelty? or desire they may be served, as in ancient times the Romans served *Archagatus*, who at the first made him free of the City; but presently after, because he did somewhat too cruelly burn, cut, and perform the other works of a good Chirurgeon, they drew him from his house into the *Campus Martius*, and there stoned him to death, as we read it recorded by *Sextus Cheronæus*, *Plutarch's* nephew by his Daughter. Truly it was an inhumane kind of ingratitude, so cruelly to murder a man intent to the works of so necessary an Art. But the Senate could not approve the act, wherefore to expiate the crime as well as then they could, they made his Statue in Gold, placed it in *Æsculapius* his Temple, and dedicated it to his perpetuall memory. For my part, I very well like that saying of *Celsus*: A Chirurgeon must have a strong, stable, and intrepid hand, and a mind resolute and merciles; so that to heal him he taketh in hand, he be not moved to make more haste than the thing requires; or to cut less than is needfull; but which doth all things as if he were nothing affected with their cries; not giving heed to the judgment of the vain common people, who speak ill of Chirurgeons because of their ignorance.

Archagatus the Chirurgeon.

In *præfat. lib. 7.*

The properties of a good Chirurgeon.

Why of the first qualities, two are active, and two passive.

Why the first qualities are so called.

What the second qualities are.

What Elements light, what heavy.

What the Elements of generation are.

What the Elements of mixt bodies.

and united by the power of heat, mixing the smallest particulars with the smallest, and the whole with the whole, in all parts. You may know and perceive this concretion of the four Elementary substances in one compound body, by the power of mixture, in their dissolution by burning a pile or heap of green wood: For the flame expresses the Fire; the smoke, the Air; the moisture that sweats out at the ends, the Water; and the ashes, the Earth: You may easily perceive by this example so familiar and obvious to the senses, what dissolution is, which is succeeded by the decay of the compound body; on the contrary, you may know that the coagmentation, or uniting and joyning into one of the first mixed bodies is such, that there is no part sincere or without mixture. For if the heat which is predominant in the fire, should remain in the mixture in its perfect vigor, it would consume the rest by its pernicious neighborhood; the like may be said of Coldness, Moisture, and Driness; although of these qualities, two have the title of Active, that is, Heat and Coldness, because they are the more powerfull; the other two Passive, because they may seem more dull and slow, being compared to the former. The temperaments of all sublunary bodies arise from the commixture of these substances and elementary qualities, which hath been the principall cause that moved me to treat of the Elements. But I leave the force and effects of the Elementary qualities to some higher contemplation, content to have noted this, that of these first qualities, (so called, because they are primarily and naturally in the four first bodies) others arise and proceed, which are therefore called the second qualities: as of many, these, Heaviness, Lightness, variously distributed by the four Elements, as the Heat or Coldness, Moistness or Driness have more power over them. For of the Elements, two are called light, because they naturally affect to move upwards: the other two heavie, by reason they are carryed downward by their own weight. So we think the fire the lightest, because it holds the highest place of this lower world; the Air, which is next to it in site, we account light; for the water which lies next to the Air, we judg heavie; and the earth the center of the rest we judg to be the heaviest of them all. Hereupon it is, that light bodies, and the light parts in bodies, have most of the lighter Elements; as on the contrary heavie bodies have more of the heavier. This is a brief description of the Elements of this frail world, which are only to be discerned by the understanding, to which I think good to adjoin another description of other Elements, as it were arising or flowing from the commixture of the first: For besides these, there are said to be Elements of generation, and Elements of mans body. Which as they are more corporall, so also are they more manifest to the sense. By which reason *Hippocrates* being moved, in his Book *de Natura humana*, after he had described the nature of Hot, Cold, Moist, and Dry, he comes to take notice of these by the order of composition. Wherefore the Elements of our generation, as also of all creatures which have blood, are seed and menstruous blood. But the Elements of our bodies, are the solid and similar parts arising from those Elements of generation. Of this kind are bones, membranes, ligaments, veins, arteries, and many others manifest to the eyes, which we will describe at large in our Treatise of Anatomie.

CHAP. V.

Of Temperaments.

What a Temperament is;

+ *Anima*.
What the life performs in Plants.

* *Anima*.
What in beasts. Mans soule comes from above.

The manifold division of a Temperament.

A Temperament, *ad Ponderosum*.



Temperament is defined, a proportionable mixture of hot, cold, moist, and dry; or, it is a concord of the first disagreeing faculties. That harmony springs from the mixture of the four first bodies of the world. This whether Temperament or Concord is given to Plants and brute Beasts for the beginning of their life, and so consequently for their life and form. But as Plants are inferior in order and dignity to beasts, so their * life is more base and infirm, for they have only a growing faculty, by which they may draw an Alimentary juice from the earth, as from their mothers breasts, to preserve them and their life, by which they may grow to a certain bigness; and lastly, by which they may bring forth their like for the perpetuall continuance of their kind. But the * life of beasts, have to the three former, the gift of sense annexed: by benefit whereof, as by a certain inward knowledg they shun those things that are hurtfull, and follow those which profit them; and by the power of their will, they move themselves whither they please. But the soul of man far more perfect and noble than the rest, ariseth not from that earthly mixture and temper of the Elements, but acknowledgeth and hath a far more divine off-spring; as we shall teach hereafter.

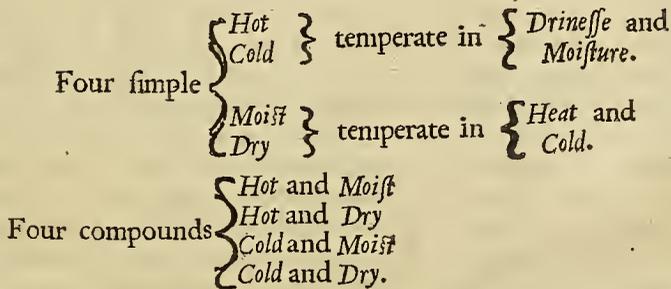
They divide a Temperament at the first division, into two kinds; as one a temperate, another an untemperate. The untemperate is of two sorts: The one wholly vicious, which hath altogether exceeded the bounds of mediocrity: The other, which hath somewhat strayed from the mediocrity of temper, but notwithstanding is yet contained within the limits of health: as that which brings no such evident harm to the actions, but that it somewhat hinders them, so that they cannot so well and perfectly perform their duties. But the vicious Temperament doth three manner of wayes corrupt the functions, either by weak-

weakening, depraving, or abolishing them. For so stupor, or astonishment, diminisheth and sloweth the quickness of motion; convulsion depraves it; the Palsie abolisheth it, and taketh it away. The temperate Temperament is also divided into two kinds; which is either to equality of weight or justice. It is called a Temperature to weight which ariseth from the equall force of exactly concurring qualities, and as placed in a perfect balance, draws down neither to this nor that part. They think the example of this Temperament: to appear in the inner skin of the fingers ends of a man tempered to Justice. For seeing the most exquisite touch resides there, they ought to be free from all excess of contrariety; for otherwise being corrupted by too much heat or cold, moisture or driness; they could give no certain judgment of the tangible qualities. For which thing nature hath excellently provided in the fabrick and coagmentation of the parts, of which the skin consists. For it is composed of hot and moist flesh, and therefore soft, and of a tendon and nerve cold and dry, and therefore hard; which are not only equally fitted and conjoynd, but wholly confused and mixed together, by which it comes, that removed from all extremes of opposition, it is placed in the midst, as a rule to judg of all the excesses that happen to the touch. So it was fit the eye, which was to be the instrument of sight; should be tintured with no certain colour, that it might be the less deceived in the judgment of colours. So it was convenient the hearing should not be troubled with any distinct sound, whereby it might more certainly judg of equall and unequal sounds, not distinguished by a ratable proportion; neither was it fit the tongue should have any certain taste, lest the access of that taste should deceive it in knowing and judging of so many different tastes. The Temperature tempered to justice, is that, which although it is a little absent from the exact and severe parity of mixed qualities, yet hath that equality which doth fully and abundantly suffice for to perform all the functions fitly and perfectly, which nature doth require, wherefore we can judg no otherwise of it than by the integrity of the Actions. For hence it took its name; for as distributive Justice equally gives to every one rewards, or punishment according to their deserts; so Nature, having regard to all the parts of the body, gives them all that temper which may suffice to perform those duties, for which they are ordained. Let us for an example consider a Bone; no man doubts, but that, like as the other similar parts of the body, proceeds from the mixture of the four Elements: but nevertheless nature weighing the use of it, and ordaining it to support the rest of the body, would have more of the terrene and dry Element infused into it, that it might be the stronger and firmer to sustain weight. But a Ligament, seeing it was made for other uses, hath less of that earthly driness than the bone, but more than the flesh, altogether fitted to its nature. So it hath seemed good to nature to endue all the parts of the body, not only with an equall portion, but also proportion of Elements and qualities; we call that a Temperament to justice: and we say, that it is in Plants, brute Beasts, and all naturall bodies, which enjoy that temper and mediocrity, which may be agreeable to their nature. Hereupon by comparison arise eight kinds of intemperate tempers: As

Ad pondus, vel ad justitiam.

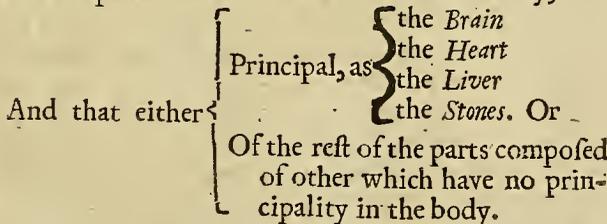
A Temperament *ad justitiam.*

The temperament of a bone.



The kinds of intemperate tempers.

But these Temperaments are either of the whole Body, or of some part thereof;



Again, such Temperaments are either healthfull, which suffice perfectly to perform their actions; or unhealthfull, which manifestly hurt them, the signes whereof may be read described by *Galen*. And you must observe that when we say the body, or any part of it is hot, we understand more hot than is fit for one of that kinde which is tempered to justice; as when we say a man hath a hot liver, we mean his liver is hotter, than a man justly tempered should have; for all other tempers, whether of the whole body, or any of the parts thereof, are to be referred to this; and in the cure of diseases we must look upon it, as the mark, and labour to preserve it by the use of convenient things, as much as lies in our power. Wherefore, because it is very necessary to know the distinction of Temperaments, I have

Lib. 2. de Tem: per. & in Arte medica.

What the temperaments of mans body are.

thought good in this place, briefly to handle the Temperaments of the parts of the body, ages, seasons of the year, humors, and medicines. Therefore the temperaments of the parts of our body are of this nature, not only by the judgment of the touch of a mans hand, which is justly tempered, (who is often deceived by flowing heat, which spread from the heart into all the body, imparts a certain kind of heat to all the parts) but also by the rule of their reason, composition and substance, as

A Bone is the most dry and cold.

A Gristle less than it.

A Ligament less than a Gristle.

A Tendon is so much dryer and colder than the membrane, by how much

it in the same temper exceeds a Vein and Artery. Then follow the harder Veins, for the softer are in a middle temper of dryness and moisture, like as the skin; although all, both soft and hard, are of a cold temper. Wherefore all these parts of their own nature are cold and without blood: although the Veins and Arteries wax hot, by reason of the heat of the blood they contain, which notwithstanding also borroweth that heat from the heart, as a part most hot, and softer than the skin; the liver next followeth the heart, in the order of the hotter parts, which is far softer than the skin it self: for if, according to Galens opinion, the heart is somewhat less hard than the skin, and that is far harder than the liver, as appears by touching them, it must necessarily follow that the liver much exceeds the skin in softness; I understand the skin simple, and separated from the flesh lying under it, to which it firmly cleaves. The flesh is more moist and hot than the skin, by reason of the blood dispersed in it. The spinall marrow is colder and moister than the skin; but the brain so much exceeds it in moisture, as it is exceeded by the fat. The lungs are not so moist as the fat; and the spleen, and kidneys are of the like nature, and nevertheless they are all moister than the skin.

Ad finem, lib. de temper.

The temperaments of ages.

According to the diversities of ages, the temperaments both of the whole body, and all its parts, undergo great mutations; for the bones are far harder in old men than in children, because our life is, as it were, a certain progress to dryness; which when it comes to the height, consequently causeth death. Wherefore in this place we must speak of the Temperaments of ages, when first we shall have defined what an age is. Therefore an age is defined, A space of life in which the constitution of the body of its self and own accord, undergoeth manifest changes. The whole course of life hath four such Ages. The first is Childhood, which extends from the birth to the eighteenth year of age, and hath a hot and moist temper, because it is next to the hot and moist beginnings of life, seed, and blood. Youth followeth this, which is prolonged from the eighteenth to the twenty fifth year, and is temperate, and in the midst of all excesses. Mans estate succeedeth youth, which they deny to extend beyond the thirty fifth year of age, in its proper temper it is hot and dry; whereby it cometh to pass that then the heat is felt more acrid and biting, which in childhood seemed milde; because the progress of the life to dryness, hath much wasted the native humidity.

What an age is.

Old-age divided into two parts.

* Three degrees of the second part of Old-age.

Then succeeds Old-age, ever divided into two parts; the first whereof extends from the thirty fifth, to the forty ninth year; those of this age are called Old-men, (**but we commonly call them middle-aged men.*) The latter is, as it were, divided by Galen into three degrees; the first whereof are those, who having their strength sound and firm, undergo civil affairs and businesses: which things those which are in the second degree of Old-age cannot do, because of the debility of their now decaying strength: but those which are in the last degree, are afflicted with most extreme weakness and misery, and are as much deprived of their senses and understanding, as of the strength of their bodies; whereof arose this Proverb, *Old men, twice children.* Those Old men of the first rank are pleasant and courteous; and those we say, are beginning to grow Old, or in their green Old-age; those of the second sort delight in nothing but the board and bed; but old decrepit men of the last order, think of nothing else, than their graves and monuments. Their firm and solid parts are of a cold and dry temperature, by reason of the decay of the radical moisture, which the inbred heat causeth in the continuance of so many years. Which thing may happen in a short space, by the vehement flame of the same naturall heat, turned by fevers into a fiery heat. But if any to prove Old men moist, will object, That they cough up, and spit much, I will answer him, as an old Doctor once said; That a pitcher filled with water, may pour forth much moisture; yet no man will deny but that such a vessel of its own terrene nature and matter is most dry; so old men may plainly be affirmed to be moist, by reason of their defect of heat, and abundance of excrements. But this description of ages is not to be taken so strictly as always to be measured by the spaces and distances of years, for there are many which by their own misdemeanor seem elder at forty, than others do at fifty.

Old men have their solid parts dry.

A comparison of the four ages to the four seasons of the year

Lastly, the famous Philosopher Pythagoras divided mans life into four ages, and by a certain proportion compared the whole course thereof to the four seasons of the year; as Childhood to the Spring, in which all things grow and sprout out, by reason of plenty and abundance of moisture. And Youth to the Summer, because of the vigor and strength which men enjoy at that age. And mans estate, or constant age, to Autumn; for that then

after

after all the dangers of the fore-passed life, the gifts of discretion and wit acquire a seasonableness or ripeness, like as the fruits of the earth enjoy at that season. And lastly, he compares Old-age to the sterile and fruitless Winter, which can ease and console its tediousness by no other means, than the use of fruits gathered and stored up before, which then are of a cold and troublesome condition. But for extreme Old-age, which extends to eighty or a hundred years, it is so cold and dry, that those which arrive at that decrepit age are troublesome, harsh, touchy, froward, crabby, and often complaining, untill at the length deprived of all their senses, tongue, feet, and understanding, they dozing, return again to childishness, as from the staff to the start. And thus much of the Temperaments of ages.

But now in like manner we will explain the Temperatures of the seasons of the year, which are four; the Spring, Summer, Autumn, Winter. The Spring continues almost from the twelfth or thirteenth day of March to the midst of May; Hippocrates seemeth to make it hot and moist; which opinion seemeth not to have sprung from the thing it self, but from an inveterate error of the ancient Philosophers, who would fit the Temperaments of the four seasons of the year, as answering in proportion to the temperatures of the four ages. For if the matter come to a just tryall, all men will say, the Spring is temperate, as that which is in the midst of the excess of heat, cold, moisture and driness; not only by comparison, because it is hotter than Summer, and colder than Winter; but because it hath that quality of its own proper nature. Wherefore it is said of Hippocrates, The Spring is most wholesome, and least deadly; if so be that it keep its native temper, from which if it decline, or succeed a former untemperate season, as Autumn or Winter, it will give occasion to many diseases described by Hippocrates; not that it breeds them, but because it brings them to fight, which before lay hid in the body. Summer is comprehended in the space of almost four months; it is of a hot and dry temper, a breeder of such diseases as proceed from choler, because that humor at this time is heaped up in many bodies by aduision of blood bred in the Spring; but all such diseases do speedily run their course. The beginning of Autumn, is from the time the Sun enters into Libra, and endures the like space of time as the Spring. But when it is dry, it hath great inequality of heat and cold, for the mornings and evenings being very cold, the noondays on the contrary are exceeding hot. Wherefore many diseases are in Autumn, and then long and deadly, especially if they incline towards Winter; because all daily and sodain changes to heat and cold are dangerous. The Winter possesses the remnant of the year, and is cold and moist, it increases naturall heat, stirs up the appetite, and augments Phlegme. It encreases heat by *Antiperistasis*; or contrariety of the encompassing air, which being then cold, prohibits the breathing out of heat: whereby it happens that the heat being driven in and hindered from dissipation, is strengthened by co-uniting its forces. But it augments Phlegme, for that men are more greedy, the Appetite being encreased by the strengthened heat: from whence proceeds much crudity, and a large store of diseases, especially Chronick or Long, which spread and encrease rather in this winter-season than in any other part of the year. To this discourse of the temper of the seasons of the years, is to be revoked the variety of tempers which happens every day, which certainly is not to be neglected, that there may be place of election, especially if nothing urge. For hither belongs that saying of Hippocrates; When in the same day it is one while hot, another cold, Autumnall diseases are to be expected. Therefore an Indication taken from hence is of great consequence to the judgment of diseases; for if it agree with the disease, the disease is made more contumacious, and difficult to cure. Whereupon the Patient and Physitian will have much trouble; but if on the contrary it reclaim and dissent, the health of the Patient is sooner to be expected. Neither is it a thing of less consequence to know the customs and habits of the places and Countreys in which we live; as also the inclination of the Heavens, and temperature of the Air; but let us leave these things to be considered by Naturall Philosophers, that we may deliver our judgment of the temperaments of *Humors*. Blood, as that which answers to the Air in proportion, is of a hot and moist nature, or rather temperate, as Galen testifies; for, saith he, it is certain and sure, that the Blood is neither hot nor moist, but temperate, as in its first composition none of the four first Qualities exceeds other by any manifest excess, as he repeats it upon the 39th Sentence. Phlegm, as that which is of a waterish nature, is cold and moist; no otherwise than Choler being of a fiery temper, is hot and dry. But Melancholy assimilated to earth, is cold and dry. This which we have spoken in generall of Phlegm and Melancholy, is not always true in every kind of the said Humors. For salt Phlegm is of a hot and dry temperature; as also all kinds of Melancholy which have arose or sprung by aduision from the native and alimentary, as we will teach in the following Chapter. Now the temperaments of Medicines have not the same form of judgment, as those things which we have before spoken of; as, not from the Elementary quality, which conquering in the contention and mixture, obtains the dominion; but plainly from the effects, which taken or applied, they imprint in a temperate body. For so we pronounce those things, hot, cold, moist, or dry, which produce the effects of Heat, Coldness, Moisture, or Dryness. But we will defer the larger explication of these things to that place, where we have peculiarly appointed

The tempers of the seasons of the year.

How the Spring is temperate.

Aphor. 9. sect. 3.

Aphor. 20. sect. 3.

Autumn unequal.

How Winter encreases the native heat.

Aphor. 4. sect. 3.

The temperaments of Humors.

Lib. de natura humana, ad sent. 36. Sect. 1.

The temperature of the Blood.

From whence we judg of the temperature of Medicines.

appointed to treat of Medicines; where we will not simply enquire whether they be hot or cold, but what degree of heat and cold, or the like other quality: in which same place we will touch the temperature and all the nature of tastes, because the certainest judgment of Medicines is drawn from their tastes. Hitherto of Temperaments; now we must speak of Humors, whose use in Physicall speculation is no less than that of Temperaments.

C H A P. VI.

Of Humors.

The knowledge of the Humor is necessary.
Lib. De natura Humana.



To know the nature of *Humors*, is a thing not only necessary for Physitians, but also for Chirurgions, because there is no disease with matter which ariseth not from some one, or the mixture of more *Humors*. Which thing *Hippocrates* understanding, writ, every Creature to be either sick or well according to the condition of the *Humors* in the body. And certainly all putrid feavers proceed from the putrefaction of *Humors*. Neither do any acknowledg any other originall or distinction of the differences of Abscesses or Tumors: neither do ulcerated, broken, or otherwise wounded members hope for the restauration of continuity, from other than from the sweet falling down of *Humors* to the wounded part. Which is the cause that often in the cure of these affects, the Physitians are necessarily busied in tempering the Blood, that is, bringing to a mediocrity the four *Humors* composing the mass of blood, if they at any time offend in quantity, or quality. For whether if any thing abound or digress from the wonted temper in any excess of heat, cold, viscosity, grossness, thinness, or any such like quality, none of the accustomed functions will be well performed. For which cause those chief helps to preserve and restore health have been divinely invented: *Phlebotomie*, or blood-letting, which amends the quantity of too much blood; and *Purging*, which corrects and draws away the vicious quality. But now let us begin to speak of the *Humors*, taking our beginning from the definition.

The helps of Health.

What an Humor is.

The manifold division of Humors.

The materiall and efficient causes of Blood

What the *Chylus* is.
* *Vena porta*.

Where the Blood is perfected.

The recepraes of Cholera and Melancholy.

Four unlike Humors in the Blood.

An Humor (is called by Physitians) what thing so ever is liquid and flowing in the body of living Creatures endued with Blood; and that is either naturall, or against nature. The naturall is so called because it is fit to defend, preserve and sustain the life of a Creature. Quite different is the nature and reason of that which is against nature. Again, the former is either Alimentary or Excrementitious: The Alimentary which is fit to nourish the body, is that Humor which is contained in the veins and arteries of a man which is temperate and perfectly well; and which is understood by the generall name of Blood, which is let out at the opening of a vein. For Blood otherwise taken, is an Humor of a certain kind, distinguished by heat and warmness from the other *Humors* comprehended together with it, in the whole mass of the blood. Which thing, that it may the better be understood, I have thought good in this place to declare the generation of Blood by the efficient and materiall causes. All things which we eat or drink, are the materials of Blood; which things drawn into the bottom of the Ventricle by its attractive force, and there detained, are turned by the force of concoction implanted in it, into a substance like to Almond-butter. Which thing, although it appear one and like it self, yet it consists of parts of a different nature, which not only the variety of meats, but one and the same meats yeelds of it self. We term this *Chylus*, (when it is perfectly concocted in the stomach.) But the* Gate-vein receives it driven from thence into the small Guts, and sucked in by the Meserick-veins, and now having gotten a little rudiment of change in the way, carries it to the Liver, where by the Blood-making faculty, which is proper and naturall to this part, it acquires the absolute and perfect form of Blood. But with that Blood, at one and the same time and action all the *Humors* are made, whether alimentary or excrementitious. Therefore the Blood, that it may perform its office, that is, the faculty of nutrition, must necessarily be purged and cleansed from the two excrementitious *Humors*: of which the bladder of Gall draws one, which we call yellow Cholera; and the Spleen the other, which we term Melancholy. These two *Humors* are naturall, but not alimentary or nourishing, but of another use in the body, as afterwards we will shew more at large. The Blood freed from these two kinds of Excrements, is sent by the veins and arteries into all parts of the body for their nourishment. Which although then it seem to be of one simple nature, yet notwithstanding it is truly such, that four different and unlike substances may be observed in it, as, Blood, properly so named, Phlegm, Cholera, and Melancholy, not only distinct in colour, but also in taste, effects, and qualities. For, as *Galen* notes in his book *de Natura humana*, Melancholy is acide or sour, Cholera bitter, Blood sweet, Phlegm unsavory. But you may know the variety of their effects, both by the different temper of the nourished parts, as also by the various condition of the diseases springing from thence. For therefore such substances ought to be tempered and mixed amongst themselves in a certain proportion, which remaining, health remains; but violated, diseases follow. For all acknowledg, that an *Oedema* is caused by Phlegmatick; a *Scirbus*, by Melancholick; an *Erysipelas*, by Choleric; and a *Phlegmone*, by pure

pure and laudable blood. *Galen* teaches by a familiar example of new wine presently taken from the *Præs*, that these 4 substances are contained in that one mass, and mixture of the blood. In which every one observes 4 distinct Essences; for the flower of the wine working up, swims at the top, the dregs fall down to the bottom, but the crude and watery moisture, mixed together with the sweet and vinous liquor, is every where diffused through the body of the wine: the flower of the wine, represents *Choler*, which bubbling up on the superficies of blood, as it concretes and grows cold, shineth with a golden colour; the dregs, *Melancholy*, which by reason of its heaviness ever sinketh downward, as it were, the mud of the blood; the crude and watery portion, *Phlegm*; for as that crude humor, except it be rebellious in quantity, or stubborn by its quality, there is hope it may be changed into wine, by the naturall heat of the wine; so *Phlegm*, which is blood half concocted, may by the force of native heat be changed into good and laudable blood. Which is the cause that nature decreed or ordained no peculiar place as to the other 2 Humors, whereby it might be severed from the blood: But the true and perfect liquor of the wine represents the pure blood, which is the more laudable and perfect portion of both the humors of the confused mass. It may easily appear by the following scheme, of what kind they all are, and also what the distinction of these four Humors may be.

A comparison of blood and new wine.

Phlegm is Blood half concocted. Why it hath no proper receptacle.

	NATURE.	CONSISTENCE.	COLOUR.	TASTE.	U S E.
Blood is	Of Nature aery, hot, and moist, or rather temperate.	Of indifferent consistence, neither too thick nor too thin.	Of Colour red, rosie, or crimson.	Of Taste sweet.	Of such use, that it chiefly serves for the nourishment of the fleshy parts, and carried by the vessels, imparts heat to the whole body.
Phlegm is	Of Nature watery, cold and moist.	Of Consistence, liquid.	Of Colour, white.	Of Taste, sweet, or rather unsavory, for we commend that water which is unsavory.	Fit to nourish the brain, and all the other cold and moist parts, to temper the heat of the blood, and by its slipperiness to help the motion of the joynts.
Choler is	Of Nature fiery, hot and dry.	Of Consistence, thin.	Of Colour yellow, or pale.	Of Taste, bitter.	It provoketh the expulsive faculty of the guts, attenuates the Phlegm cleaving to them, but the Alimentary is fit to nourish the parts of like temper with it.
Melancholy is	Of Nature earthy, cold, and dry.	Of Consistence, grosse and muddy.	Of Colour, blackish.	Of Taste, acide, sour or biting.	Stirs up the Appetite, nourishes the Spleen, and all the parts of like temper to it, as the bones.

Blood hath its nearest matter from the better portion of the *Chylus*: and being begun to be laboured in the veins, at length gets form and perfection in the Liver; but it hath its remote matter from meats of good digestion and quality, seasonably eaten after moderate exercise; but for that, one age is better than another, and one time of the year more convenient than another. For blood is made more copiously in the Spring, because that season of the year comes nearest to the temper of the blood, by reason of which the blood is rather to be thought temperate, than hot and moist; for that *Galen* makes the Spring temperate; and besides, at that time blood-letting is performed with the best success: Youth is an age very fit for the generation of blood; or by *Galen's* opinion, rather that part of life that continues from the 25, to the 35 year of our age. Those in whom this Humor hath the dominion, are beautified with a fresh and rosie colour, gentle, and well-natured, pleasant, merry, and facetious. The generation of *Phlegm*, is not by the imbecillity of heat, as some of the Ancients thought; who were perswaded that *Choler* was caused by a raging, Blood by a moderate, and *Phlegm* and *Melancholy* by a remiss heat. But that opinion is full of manifest error: for if it be true that the *Chylus* is laboured and made into blood in the same part, and by the same fire, that is, the Liver; from whence in the same moment of time should proceed that strong and weak heat, seeing the whole mass of the blood different in its four essential parts, is perfected and made at the same time, and by the same equall temper of the same part, action, and blood-making faculty; therefore from whence have

Lib. 1. de temp.

One and the same heat is the efficient cause of all humors at the same time.

have we this variety of Humors? From hence, for that those meats by which we are nourished, enjoy the like condition that our bodies do, from the four Elements, and the four first Qualities: for it is certain, and we may often observe, in what kind soever they be united or joined together, they retain a certain hot portion imitating the fire; another cold, the water; another dry, the earth; and lastly, another moist like to the air. Neither can you name any kind of nourishment, how cold soever it be, not Lettuce it self, in which there is not some fiery force of heat. Therefore it is no marvel, if one and the same heat working upon the same matter of *Chylus*, varying with so great dissimilitude of substances, do by its power produce so unlike humors, as from the hot, Cholera; from the cold, Phlegm; and of the others, such as their affinity of temper will permit.

The heat of the Sun alone doth melt wax and harden clay.

There is no cause that any one should think that variety of humors to be caused in us, rather by the diversity of the active heat, than wax and a flint plac'd at the same time, and in the same situation of climat and soil, this to melt by the heat of the Sun, and that scarce to wax warm. Therefore that diversity of effects is not to be attributed to the force of the efficient cause, that is of heat, which is one, and of one kinde in all of us; but rather to the materiall cause, seeing it is compos'd of the conflux, or meeting together of various substances, gives the heat leave to work, as it were out of its store, which may make and produce from the hotter part therof Cholera, and of the colder and more rebellious Phlegm. Yet I will not deny, but that more Phlegm, or Cholera may be bred in one and the same body, according to the quicker, or slower provocation of the heat; yet nevertheless it is not consequent, that the originall of Cholera should be from a more acide, and of Phlegm from a more dull heat in the same man. Every one of us naturally have a simple heat, and of one kind, which is the worker of divers operations, not of it self, seeing it is always the same, and like it self, but by the different fitness, pliability, or resistance of the matter on which it works. Wherefore Phlegm is generated in the same moment of time, in the fire of the same part, by the efficiency of the same heat, with the rest of the blood, of the more cold, liquid, crude, and watery portion of the *Chylus*. Whereby it comes to pass, that it shews an express figure of a certain rude or unperfect blood, for which occasion nature hath made it no peculiar receptacle, but would have it to run friendly with the blood in the same passages of the veins, that any necessity hapning by famine, or indigency, and in defect of better nourishment, it may by a perfecter elaboration quickly assume the form of blood. Cold and rude nourishment make this humor to abound principally in winter, & in those which incline to old-age, by reason of the similitude which Phlegm hath with that season and age. It makes a man drowsie, dull, fat, and swollen up, and hastneth gray-hairs. Cholera is as it were, a certain heat and fury of humors, which generated in the Liver, together with the blood is carried by the veins and arteries through the whole body. That of it which abounds, is sent, partly into the guts, and partly into the bladder of the gall, or is consumed by transpiration, or sweats; It is somewhat probable that the Arteriall blood is made more thin, hot, quick, and pallid, than the blood of the Veins, by the commixture of this Alimentary Cholera. This Humor is chiefly bred and expel'd in youth, and acrid and bitter meats give matter to it: but great labours of body and mind give the occasion. It maketh a man nimble, quick, ready for all performance, lean, and quick to anger, and also to concoct meats. The melancholick humor, or Melancholy, being the grosser portion of the blood, is partly sent from the Liver to the Spleen to nourish it, and partly carried by the vessels into the rest of the body, and spent in the nourishment of the parts endued with an earthly driness; it is made of meats of gross juice, and by the perturbations of the mind, turned to fear and sadness. It is augmented in Autumn, and in the first and crude Old-age; it makes men sad, harsh, constant, froward, envious and fearfull. All men ought to think, that such Humors are wont to move at set hours of the day, as by a certain peculiar motion or tide, Therefore the blood flows from the ninth hour of the night, to the third hour of the day; then Cholera to the ninth of the day; then Melancholy to the third of the night; the rest of the night that remains, is under the dominion of Phlegm. Manifest examples hereof appears in the French-Pox. From the elaborat and absolute mass of the blood, (as we said before) two kinds of Humors, as excrements of the second concoction, are commonly and naturally separated, the one more gross, the other more thin. This is called either absolutely Cholera, or with an adjunct, yellow Cholera. That is called Melancholy, which drawn by the Spleen in a thinner portion, and elaborate by the heat of the Arteries, which in that part are both many and large, becomes nourishment to the part; the remnant thereof is carried by the veiny Vessel into the orifice of the ventricle, whereby it may not cause but whet the appetite, and by its astringent strengthen the actions thereof. But yellow Cholera drawn into the bladder of the gall, remains there so long, till being troublesome, either in quantity or quality, it is excluded into the guts, whereby it may cast forth the excrements residing in them; the expulsive faculty being provok'd by its acrimony, and by its bitterness kills the worms that are bred there. This same Humor is accustomed to die the urine of a yellow colour. There is another serous Humor, which truly is not fit to nourish but profitable for many other things, which is not an excrement of the second, but of the first concoction. Therefore nature would that mixed with the *Chylus*, it should come to the

The divers condition of the matter alone, is the cause of variety.

The effect of Phlegm.

The effects of Cholera.

The effects of Melancholy.

What motions are in each quarter of the body.

The Melancholy Humor doth not cause, but whet the appetite.

A serous or wheyish humor

the Liver, and not be voided with the excrements, whereby it might allay the grossness of the blood, and serve it for a vehicle; for otherwise the blood could scarce pass through the capillary veins of the Liver, and passing the sinuous and gibbous parts thereof, come to the hollow vein. Part of this serous humor separated together with the blood which serves for the nourishment of the Reins, and straight carried into the bladder, is turned into that urine which we daily make; the other part therefore carryed through all the body together with the blood, performing the like duty of transportation, is excluded by sweats into which it degenerates. Besides the forenamed, the *Arabians* have mentioned four other humors, which they term Alimentary and secondary, as being the next matter of nourishment, as those four the blood contains, the remote. They have given no name to the first kind, but imagin it to be that humor, which hangs ready to fall like to little drops in the utmost orifices of the veins. They call the second kind, *Dew; being that humor, which entered already into the substance of the part, doth moisten it. The third they call by a barbarous name, *Cambium*, which already put to the part to be nourished, is there fastned. The fourth named *Gluten*, or *Glew*, is only the proper and substance-making humidity of the similar parts, not their substance. The distinction of the degrees of nutrition recited by *Galen* in his books of *Naturall faculties*, answer in proportion to this distinction of humors. The first is, that the blood flow to the part that requires nourishment; then that being there arrived, it may be agglutinated; then lastly, that having lost its former form of nourishment, it may be assimilated.

Secondary Humors.

* Ros.

Those humors are against nature, which being corrupted, infect the body and the parts in which they are contained by the contagion of their corruption, retaining the names and titles of the humors, from whose perfection and nature they have revolted, they all grow hot by putrefaction, although they were formerly by their own nature cold. And they are corrupted, either in the veins only, or within and without the veins: In the veins Blood and Melancholy; but both without and within the veins, Choler and Phlegm. When Blood is corrupted in its thinner portion, it turns into Choler, when in its thicker, into Melancholy; for the Blood becomes faulty two manner of ways, either by the corruption of its proper substance by putrefaction, or by admixtion of another substance by infection. The Melancholy humor which is corrupted in the veins, is of three sorts: The first is of a Melancholy juice putrefying, and by the force of a strange heat, turned, as it were, into ashes, by which it becomes adust, acrid and biting. The other ariseth from that Choler which resembles the yolks of eggs, which by adustion becomes leek-coloured, then æruginous, or of a blewish green, then red, and lastly black, which is the very worst kind of Melancholy, hot, malign, eating, and exulcerating, and which is never seen or voided with safety. The third comes from Phlegm putrefying in the veins, which first degenerates into salt Phlegm, but straight by the strength of extraneous heat degenerates into Melancholy.

Humors against nature.

Into what Humors the blood when it corrupts, doth degenerate. The Melancholy Humor corrupted, is of three kinds,

<p>Phlegm not naturall is bred, either</p>	<p>In the Veins, and is either</p>	<p>Acide and very crude, as which hath had none or very little impresson of heat, but that which it first had in the stomach.</p>	<p>Salt, which is bred by the sweet, putrefying and adust, or mixture of adust and salt particles.</p>	<p>Waterish, as is that thin moisture which distils from the brain by the nostrils.</p>	<p>Mucons, as when that waterish is thickned into filth by the help of some accidentall or small heat.</p>
<p>Choler not naturall is bred, either</p>	<p>In the Veins, as the * vitelline (like in consistence to the yolk of a raw egg) which the acrimony of strange heat breeds of yellow Choler, which same in diseases altogether deadly, degenerates into green, æruginous, & lastly into a blue, or colourlike that which is dried by woad.</p>	<p>* Vitellina.</p>	<p>The first is called <i>Porracea</i>, or leek-coloured, resembling the juice of a leek in greenness.</p>		
				<p>Or in the capacity of the upper belly, as the ventricle, and this is of five kinds:</p>	<p>The second <i>æruginosa</i>, or æruginous, like in colour to verdigrease.</p>
<p>The fifth very red, generated by the excess of the former, which causeth burning feavers.</p>	<p>The</p>				

The kinds of such Cholera, are often cast forth by vomit in diseases, the strength of the disease being past; being troublesome to the parts through which they are evacuated, by their bitterness, acrimony, and biting.

The signes of a Sanguine person.

I Think it manifest, because the matter and generation of flesh is principally from blood, that a man of a fleshy, dense, and solid habit of body, and full of a sweet and vaporous juice, is of a Sanguine complexion. And the same party hath a flourishing and rosie colour in his face, tempered as with an equal mixture of white and red; of white, by reason of the skin lying utmost; of red, because of the blood spread underneath the skin: for always such as the humor is, such is the colour in the face. In manners, he is courteous, gentle, easie to be spoken to, not altogether estranged from the love of women, of a lovely countenance and smooth forehead; seldom angry, but taking all things in good part; for as the inclination of humors is, so also is the disposition of manners. But blood is thought the mildest of all humors; but the strong heat of the inward parts maketh him to eat and drink freely. Their dreams are pleasant, they are troubled with diseases arising from blood, as frequent Phlegmons, and many sanguine pustles breaking through the skin, much bleeding, and menstruous fluxes. Wherefore they can well endure blood-letting, and delight in the moderate use of cold and dry things; and lastly, are offended by hot and moist things. They have a great and strong Pulse, and much urine in quantity, but milde of quality, of an indifferent colour add substance.

Such as the humor is, such is the colour.

The manners and diseases of Sanguine persons.

The signes of a Choleric person.

Choleric men are of a pale or yellowish colour, of a lean, slender and rough habit of body, with fair veins and large Arteries, and a strong and quick pulse: their skin being touched, feels hot, dry, hard, rough and harsh, with a pricking and acrid exhalation which breathes forth of their whole body. They cast forth much cholera by stool, vomit and urine. They are of a quick and nimble wit, stout, hardy and sharp vindicators of received injuries, liberall even to prodigality, and somewhat too desirous of glory. Their sleep is light, and from which they are quickly waked; their dreams are fiery, burning, quick, and full of fury; they are delighted with meats and drinks which are somewhat more cold and moist, and are subject to Tertian and burning feavers, the Phrensie, Jaundise, Inflammations, and other Choleric pustles, the Lask, Bloody flux, and bitterness of the mouth.

Choleric are nor commonly fat.

The manners and diseases of Choleric persons.

The signes of a Phlegmatick person.

Those in whom Phlegm hath the dominion, are of a whitish coloured face, and sometimes livid and swollen, with their body fat, soft, and cold to touch. They are molested with Phlegmatick diseases, as Oedematous tumors, the Dropsie, Quotidian feavers, falling away of the hairs, and catarrhes falling down upon the Lungs, and the *Astera Arteria*, or Weason: they are of a slow capacity, dull, slothfull, drowsie; they do dream of rains, snows, floods, swimming, and such like, that they often imagin themselves overwhelmed with waters; they vomit up much watery and Phlegmatick matter, or otherwise spit and evacuate it, and have a soft and moist tongue.

The manners and diseases of phlegmatick persons.

And they are troubled with a dog-like hunger, if at any time it should happen that their insipid Phlegm become acide; and they are slow of digestion, by reason of which they have great store of cold and Phlegmatick humors; which if they be carried down into the windings of the Colick-gut, they cause murmuring and noise, and sometimes the Colick.

From whence noise or rumbling in the belly proceeds.

For much wind is easily caused of such like Phlegmatick excrements wrought upon by a small and weak heat, such as Phlegmatick persons have, which by its naturall lightness is diversly carried through the turnings of the guts, and distends and swells them up, and whiles it strives for passage out, it causeth murmurings and noises in the belly, like wind breaking through narrow passages.

Signes of a Melancholick person.

The face of Melancholy persons is swart, their countenance cloudy and often cruell, their aspect is sad and froward; frequent Scirrhus, or hard swellings, tumors of the Spleen, Hemorrhoids, *Varices* (or swollen Veins) Quartain feavers, whether continuall or intermitting; Quintain, Sextain, and Septimane feavers: and to conclude, all such wandering feavers or agues set upon them. But when it happens the Melancholy humor is sharpned, either by aduotion, or commixture of Cholera, then Tetters, the black Morpew, the Cancer simple and ulcerated, the Leprous and filthy scab, sending forth certain scaly and branlike excrescences, (being vulgarly called Saint *Manis* his evil;) and the Leprosie it self invades them: They have small veins and arteries, because coldness hath dominion over them; whose property is to straiten, as the quality of heat is to dilate. But if at any time their Veins seem big, that largeness is not by reason of the laudable

Diseases familiar to Melancholy persons.

laudable blood contained in them, but from much windiness; by occasion whereof it is somewhat difficult to let them blood; not only, because that when the Vein is opened, the blood flows slowly forth, by reason of the cold flowness of the humors; but much the rather, for that the vein doth not receive the impressiō of the Lancet, sliding this way and that way, by reason of the windiness contained in it, and because that the harsh driness of the upper skin, resists the edge of the instrument. Their bodies seem cold and hard to the touch, and they are troubled with terrible dreams, for they are observed to seem to see in the night Devils, Serpents, dark dens and caves, sepulchers, dead corpses, and many other such things full of horror, by reason of a black vapor, diversly moving and disturbing the brain, which also we see happens to those, who * fear the water, by reason of the biting of a mad dog. You shall finde them froward, fraudulent, parsimonious, and covetous even to baseness, slow speakers, fearfull, sad, complainers, carefull, ingenious, lovers of solitariness, man-haters, obstinate maintainers of opinions once conceived, slow to anger, but angred not to be pacified. But when Melancholy hath exceeded natures and its own bounds, then by reason of putrefaction and inflammation all things appear full of extreme fury and madness, so that they often cast themselves headlong down from some high place, or are otherwise guilty of their own death, with fear of which notwithstanding they are terrified.

From, or by what their Veins are swollen.

Their dreams.

* *Hydrophobi.*
Their manners.

But we must note that changes of the native temperament, do often happen in the course of a mans life, so that he which a while agoe was Sanguine, may now be Cholerick, Melancholick, or Phlegmatick; not truly by the changing of the blood into such Humors, but by the mutation of Diet, and the course or vocation of life. For none of a Sanguine complexion but will prove Cholerick if he eat hot and dry meats, (as all like things are cherished and preserved by the use of their like, and contraries are destroyed by their contraries) and weary his body by violent exercises, and continuall labors; and if there be a suppression of Cholerick excrements, which before did freely flow, either by nature or art. But whosoever feeds upon Meats generating gross blood, as Beef, Venison, Hare, old Cheese, and all salt meats, he without all doubt sliding from his nature, will fall into a Melancholy temper; especially if to that manner of diet, he shall have a vocation full of cares, turmoils, miseries, strong and much study, carefull thoughts and fears; and also if he sit much, wanting exercise, for so the inward heat, as it were, defrauded of its nourishment, faints, and grows dull, whereupon gross and drossie humors abound in the body. To this also the cold and dry condition of the place in which we live, doth conduce, and the suppression of the Melancholy humor accustomed to be evacuated by the Hemorrhoids, courses, and stools.

From whence the change of the native temper.

How one may become Cholerick.

How Melancholick.

But he acquires a Phlegmatick temper, whosoever useth cold and moist nourishment; much feeding, who before the former meat is gone out of the belly, shall stuff his paunch with more, who presently aftermeat runs into violent exercises, who inhabit cold and moist places; who lead their life at ease in all idleness; and lastly, who suffer a suppression of the Phlegmatick humor accustomedly evacuated by vomit, cough, or blowing the nose, or any other way, either by nature or art. Certainly it is very convenient to know these things, that we may discern if any at the present be Phlegmatick, Melancholick, or of any other temper, whether he be such by nature, or necessity. Having declared those things which concern the nature of Temperaments, and deferred the description of the parts of the body to our Anatomy, we will begin to speak of the Faculties governing this our life, when first we shall have shewn by a practicall demonstration of examples, the use and certainty of the aforesaid rules of Temperaments.

How Phlegmatick.

CHAP. VII.

Of the Practice of the aforesaid rules of Temperaments.



That we may draw the Theorick of the Temperaments into practice, it hath seemed good for avoyding of confusion which might make this our Introduction seem obscure, if we would prosecute the differences of the Tempers of all men of all Nations, to take those limits which Nature hath placed in the world; as South, North, East, and West, and, as it were, the Center of those bounds, that the described variety of Tempers, in colour, habit, manners, studies, actions, and form of life of men that inhabit those Regions situated so far distant one from another, may be as a sure rule, by which we may certainly judg of every mans temperature in particular, as he shall appear to be nearer or further off from this or that Region. Those which inhabit the South, as the *Africans*, *Aethiopians*, *Arabians*, and *Egyptians*, are for the most part deformed, lean, duskie coloured, and pale, with black eys and great lips, curled hair, and a small and shrill voice. Those which inhabit the Northern parts, as the *Scythians*, *Muscovites*, *Polonians*, and *Germanes*, have their faces of colour white, mixed with a convenient quantity of blood, their skin soft and delicate, their hair long, hanging down

Four bounds or Regions of the world.

The forces of temperatures in particulars. The temperature of the Southern people. Of the Northern.

down and spreading abroad, and of a yellowish, or reddish colour; of stature they are commonly tall, and of a well proportioned, fat and compact habit of body, their eyes gray, their voice strong, loud and big. But those who are situated between these two former, as the *Italians* and *French*, have their faces somewhat swart, are well favoured, nimble, strong, hairy, slender, well in flesh, with their eyes resembling the colour of Goats-eyes, and often hollow eyed, having a clear, shrill and pleasing voice.

The Southern people are exceeded so much by the Northern in strength and ability of body, as they surpass them in wit and faculties of the mind. Hence is it you may read in Histories, that the *Scythians*, *Goths* and *Vandals* vexed *Africk* and *Spain* with infinite incurfions, and most large and famous Empires have been founded from the North to South; but few or none from the South to the North. Therefore the Northern people thinking all right and law to consist in Arms, did by Duell only determine all causes and controversies arising amongst the Inhabitants, as we may gather by the ancient laws, and customes of the *Lumbarbs*, *English*, *Burgonians*, *Danes* and *Germans*; and we may see in *Saxo* the *Grammarian* that such a law was once made by *Fromo* King of *Denmark*. The which custome at this day is every where in force amongst the *Muskovites*. But the Southern people have alwayes much abhorred that fashion, and have thought it more agreeable to Beasts than Men. Wherefore we never heard of any such thing used by the *Assyrians*, *Ægyptians*, *Persians* or *Jews*. But moved by the goodness of their wit, they erected Kingdoms and Empires by the onely help of Learning and hidden sciences. For seeing by nature they are Melancholik, by reason of the dryness of their temperature, they willingly addict themselves to solitariness and contemplation, being endued with a singular sharpness of wit. Wherefore the *Æthiopians*, *Egyptians*, *Africans*, *Jews*, *Phanicians*, *Persians*, *Assyrians*, and *Indians*, have invented many curious sciences, revealed the Mysteries and secrets of Nature, digested the *Mathematiques* into order, observed the motions of the heavens, and first brought in the worship and religious sacrifices of the gods: Even so far that the *Arabians* who live only by stealth, and have only a Waggon for their house, do boast that they have many things diligently and accurately observed in Astrology by their Ancestors, which every day made more accurate and copious, they, as by an hereditary right, commend to posterity, as it is recorded by *Leo* the *African*. But the Northern people, as the *Germans*, by reason of the abundance of humors and blood, by which the mind is as it were oppressed, apply themselves to works obvious to the senses, and which may be done by the hand. For their minds oppressed with the earthly mass of their bodies, are easily drawn from heaven and the contemplation of Celestiall things, to these inferior things, as to find out Mines by digging, to buy and cast metalls, to draw and hammer out works of Iron, steel and brass. In which things they have proved so excellent, that the glory of the Invention of Guns and Printing belongs to them.

The people who inhabit the middle regions between these, are neither naturally fit for the more abstruse sciences, as the Southern people are, nor for Mechanick works, as the Northern, but intermeddle with civil affairs, commerce and Merchandizing. But are endued with such strength of body as may suffice to avoid and delude the crafts and arts of the Southern Inhabitants; and with such wisdom as may be sufficient to restrain the fury and violence of the Northern. How true this is, any one may understand by the example of the *Carthaginians* and *Africans*, who when they had held *Italy* for some years by their subtle counsels, crafty sleights and devices; yet could not escape, but at the length their Arts being deluded, and they spoiled of all their fortunes, were brought in subjection to the *Romans*. The *Goths*, *Hunnies* and other Northern people have spoiled and overrun the *Romane* Empire by many incurfions and inroads, but destitute of counsell and providence, they could not keep those things which they had gotten by Armes and valour. Therefore the opinion of all Historians is agreeing in this, that good laws, the form of governing a Common-wealth, all politick ordinances, the Arts of disputing and speaking, have had their beginnings from the *Greeks*, *Romans* and *French*. And from hence in times past and at this day a greater number of Writers, Lawyers and Counsellors of State have sprung up, than in all the whole world besides. Therefore that we may attribute their gifts to each Region, we affirm that, The Southern people are born and fit for the Studies of learning, the Northern for warres, and those which be between them both for Empire and rule. The *Italian* is naturally wise, the *Spaniard* grave and constant; the *French* quick and diligent, for you would say hee runs when he goes, being compared to the slow and womanish pace of the *Spaniard*, which is the cause that *Spaniards* are delighted with *French* servants for their quick agility in dispatching business. The Eastern people are specially indued with a good, firm and well tempered wit, not keeping their counsels secret and hid. For the haste is of the nature of the Sun, and that part of the day which is next to the rising of the Sun is counted the right side and stronger; and verily in all things living the right side is alwayes the more strong and vigorous. But the Western people are more tender and effeminate, and more close in their carriage and mind,

not.

The Southern people prevail in wit, the Northern in strength.

The Southern people learned and religious.

The Northern famous Warriors, and Artificers.

The endowments of such as inhabit between them.

The Northern know how to overcome, but not how to use the victory.

The abundance of counsellors and Lawyers from France and Italy.

The manners of the Eastern people.

not easily making any one partaker of their secrets. For the West is as it were subject to the Moon, because at the change it alwayes inclines to the West, whereby it happens, that it is reputed as nocturnall, sinister and opposite to the East; and the West is less temperate and wholesome. Therefore of the winds none is more wholesome than the Eastwind which blows from the West with a most fresh and healthfull gale, yet it seldome blows, and but only at Sun-set.

The Northern people are good eaters, but much better drinkers, witty when they are a little moistened with wine, and talkers of things both to be spoken and concealed, not very constant in their promises and agreements, but principal keepers and preservers of shamefastness and chastity, far different from the inhabitants of the South, who are wonderfull sparing, sober, secret and subtle, and much addicted to all sorts of wicked Lust. Aristotle in his Problemes saith that those nations are barbarous and cruell, both which are burnt with immoderate heat, and which are oppressed with excessive cold, because a soft temper of the Heavens, softens the manners and the mind. Wherefore both, as well the Northern, as Scythians and Germans; and the Southern, as Africans, are cruell; but these have this of a certain naturall stoutness, and souldierlike boldness, and rather of anger than a willfull desire of revenge; because they cannot refrain by the power of reason the first violent motions of their anger by reason of the heat of their blood. But those of a certain inbred and inhumane pravity of manners, wilfully and willingly premeditating they perform the works of cruelty, because they are of a sad and melancholy nature. You may have an example of the Northern cruelty from the Transilvanians against their seditious Captain George, whom they gave to be torne in pieces alive and devoured by his Souldiers, (being kept fasting for three dayes before for that purpose) who was then unbowelled, and roasted, and so by them eaten up. The cruelty of Hannibal the Captain of the Carthaginians may suffice for an instance of the Southern cruelty. He left the Roman Captives wearied with burdens and the length of the way, with the soles of their feet cut off; But those he brought into his tents, joyning brethren and kinsmen together he caused to fight, neither was satisfied with blood before he brought all the victors to one man. Also we may see the cruell nature of the Southern Americans, who dip their children in the blood of their slain enemies, then suck their blood, and banquet with their broken and squeased Limbs.

And as the Inhabitants of the South are free from divers Plethorick diseases, which are caused by abundance of blood, to which the Northern people are subject, as Feavers, De-fluxions, Tumors, Madnes with laughter which causeth those which have it to leap and dance, (the people commonly tearm it *S. vitius his evill*) which admits of no remedy but Musick: so they are often molested with the Frensie invading with madnes and fury; by the heat whereof they are often so ravished and carried beside themselves that they foretell things to come; they are terrified with horrible dreams, and in their fits they speak in strange and forain tongues, but they are so subject to the scurfe and all kind of scabs and to the Leprosie as their homebred disease, that no houses are so frequently met withall by such as travell through either of the Mauritania's, as Hospitalls provided for the Lodging of Leapers.

Those who inhabit rough and Mountainous places, are more brutish, tough and able to indure labour: but such as dwell in Plains, especially if they be moorish, or fennish, are of a tender body, and sweat much with a little labour; the truth of which is confirmed by the Hollanders and Frizlanders. But if the Plain be such as is scorched by the heat of the Sun, and blown upon by much contrariety of winds, it breeds men who are turbulent, not to be tamed, desirous of sedition and novelty, stubborn, impatient of servitude, as may be perceived by the sole example of the Inhabitants of *Narbon* a province of *France*.

Those who dwell in poor and barren places are commonly more witty and diligent and most patient of labours; the truth of which the famous wits of the *Athenians*, *Ligurians* and *Romans*, and the plain country of the *Bœotians* in *Greece*, of the *Campanians* in *Italy*, and of the rest of the Inhabiters adjoining to the *Ligurian* Sea, approves.

The East wind healthfull.

The Northern people great eaters and drinkers.

Who are to be counted Barbarous. The Northern and Southern have each their Cruelties.

Valer. Max. lib. 9. cap. 7.

The diseases of the Southern people.

Mountainers.

CHAP. VIII.

Of the Faculties.



Faculty is a certain power, and efficient cause, proceeding from the temperament of the part, and the performer of some actions of the body. There are three principall Faculties governing mans body as long as it enjoyes its integrity; the Animall, Vital and Natural. The Animall is seated in the proper temperament of the Brain, from whence it is distributed by the Nerves into all parts of the body wch have sense & motion. This is of three kinds, for one is Moving, another sensitive, the third principall. The sensitive consists in the five external senses, sight, hearing, taste, smel & touch. The moving principally remains in the Muscles & nerves as the fit instruments

What a faculty is. 3. Faculties.

of voluntary motion. The Principall comprehends the Reasoning faculty, the Memory and Fantasie. *Galen* would have the common or inward sense to be comprehended within the compass of the Fantasie, although *Aristotle* distinguish between them.

The Vitall abides in the Heart, from whence heat and life is distributed by the Arteries to the whole body: this is principally hindered in the diseases of the Breast; as the Principall is, when any disease assails the Brain; the prime action of the vitall faculty is Pulsation, and that continued agitation of the Heart and Arteries, which is of threefold use to the body: for by the dilatation of the Heart and Arteries the vitall spirit is cherished by the benefit of the Air which is drawn in; by the contraction thereof the vapours of it are purged and sent forth, and the native heat of the whole body is tempered by them both.

The last is the Naturall faculty which hath chosen its principall seat in the Liver, it spreads or carries the nourishment over the whole body; but it is distinguished into 3. other faculties; The Generative, which serves for the generation and forming of the Issue in the wombe; the Growing or increasing faculty, which flourisheth from the time the Issue is formed, untill the perfect growth of the solid parts into their full dimensions of length, height and breadth. The nourishing faculty, which as servant to both the other repairs and repays the continuall efflux, and waste of the threefold substance; for Nutrition is nothing else but a replenishing, or repairing whatsoever is wasted or emptied. This nourishing faculty endures from that time the Infant is formed in the wombe untill the end of life. It is a matter of great consequence in Physick to know the 4. other faculties, which as servants attend upon the nourishing faculty; which are the Attractive, Retentive, Digestive, and Expulsive faculty. The Attractive draws that juyce which is fit to nourish the body, that I say which by application may be assimilated to the part. This is that faculty which in such as are hungry draws down the meat scarce chewed, and the drink scarce tasted, into the gnawing and empty stomach. The Retentive faculty is that which retains the nourishment once attracted untill it be fully laboured and perfectly concocted; And by that means it yeelds no small assistance to the Digestive faculty. For the naturall heat cannot perform the office of concoction, unless the meat be embraced by the part, and make some stay therein. For otherwise the meat carryed into the stomach never acquires the form of *Chylus*, unless it stay detained, in the wrinkles thereof, as in a rough passage, untill the time of *Chylification*. The Digestive faculty assimilates the nourishment, being attracted and detained, into the substance of that part whose faculty it is, by the force of the inbred heat and proper disposition or temper of the part. So the stomach plainly changes all things which are eat and drunk into *Chylus*, and the Liver turns the *Chylus* into blood. But the Bones and Nerves convert the red and liquid blood which is brought down unto them by the capillary or small veins, into a white and solid substance. Such concoction is far more laborious in a Bone and Nerve, than in the Musculous flesh, For the blood being not much different from its nature, by a light change and concretion turns into flesh. But this Concoction will never satisfie the desire of Nature and the parts, unless the nourishment purged from its excrements, put away the filth and dross, which must never enter into the substance of the part. Wherefore there do not only two sorts of excrements remain of the first and second Concoction, the one thick, the other thin, as we have said before; but also from the third Concoction which is performed in every part. The one of which we conceive only by reason, being that which vanisheth into Air by insensible transpiration. The other is known sometimes by sweats, sometimes by a thick fatty substance staining the shirt; sometimes by the generation of hairs and nails, whose matter is from fuliginous and earthly excrements of the third Concoction. Wherefore the fourth faculty was necessary which might yeeld no small help to nourishment; it is called the Expulsive, appointed to expell those superfluous excrements which by no action of heat, can obtain the form of the part. Such faculties serving for nutrition are in some parts two-fold; as some common, the benefit of which redounds to the whole body, as in the ventricle, liver and veins; Others only attending the service of those parts in which they remain, and in some parts all these 4. as well common as proper, are abiding and residing as in those parts we now mentioned: some with the 4. proper have only two common, as the Gall, Spleen, Kidnies and Bladder. Others are content only with the proper, as the similar and Musculous parts, who if they want any of these 4. faculties, their health is decayed either by want of nourishment, and ulcer, or otherwise. The like unnatural affects happen by the deficiency of just and laudable nourishment. But if it happen those faculties do rightly perform their duty, the nourishment is changed into the proper part, and is truly assimilated as by these degrees. First it must flow to the part, then be joynd to it, then agglutinated, and lastly as we have said, assimilated. Now we must speak of the Actions which arise from the faculties.

The triple use of the Pulse.

The naturall faculty is threefold.

What Nutrition is.

Four other faculties attend upon the nourishing faculty.

The necessity of the retentive faculty.

Two excrements of every concoction.

The work of the expulsive faculty.

By what degrees the nourishment is assimilated.

CHAP. IX.

Of the Actions.

AN Action or Function is an active motion proceeding from a faculty; for as the faculty depends on the Temperament, so the Action on the faculty, and the Act or work depends upon the Action by a certain order of consequence. But although that the words Action and Act or work are often confounded, yet there is this difference between them, as that the Action signifies the motion used in the performance of any thing; but the Act or work, the thing already done and performed: for example, Nutrition and the Generating of flesh are naturall Actions; but the parts nourished, and a hallow ulcer filled with flesh are the works of that motion, or action. Wherefore the Act ariseth from the Action, as the Action ariseth from the faculty, the integrity or perfection of the instruments concurring in both. For as, if the faculty be either defective, or hurt, no Action will be well performed: so unless the Instruments keep their native and due conformity (which is their perfect health, the operator of the Action proper to the instrument) none of those things, which ought to be, will be well performed. Therefore for the performance of blameless and perfect actions, it is fit a due conformity of the instrument concur with the faculty. But Actions are two fold; for they are either Naturall, or Voluntary. They are tearmed Naturall, because they are performed not by our will, but by their own accord and against our will: As are, that continuall motion of the Heart, the beating of the Arteries, the expulsion of the Excrements, and such other like which are done in us by the Law of Nature whether we will, or no. These Actions flow either from the Liver and veins, or from the Heart and Arteries. Wherefore we may comprehend them under the names of Naturall and Vitall Actions. For we must attribute his Action to each faculty, lest we may seem to constitute an idle faculty, and no way profitable for use. The unvoluntary vitall actions, are the dilatation and contraction of the Heart and Arteries, the which we comprehend under the sole name of the Pulse: by that they draw in, and by this they expell, or drive forth. The unvoluntary vitall actions be,

Generation	} which proceed from the	Generative	} facultie.
Growth and		Growing, and	
Nutrition		Nourishing	

Generation is nothing else then a certain producing or acquiring of matter, and an introducing of a substantiall form into that matter; this is performed by the assistance of two faculties; of the Altering, which doth diversly prepare and dispose the seed and menstruous blood to put on the form of a Bone, nerve, spleen, flesh and such like: of the Forming faculty, which adorns with figure, site, and composition, the matter ordered by so various a preparation.

Growth is an enlarging of the solid parts into all the dimensions, the pristine and ancient form remaining safe and sound in figure and solidity. For the perfection of every growth is judged only by the solid parts; for if the body swell into a mass of flesh, or fat, it shall not therefore be said to be grown: but then only when the solid parts do in like manner increase, especially the bones, because the growth of the whole body follows their increase, even although at the same time it wax lean and pine away.

Nutrition is a perfect assimilation of that nourishment which is digested, into the nature of the part which digests. It is performed by the assistance of 4. subsidiary or helping actions, Attractive, Retentive, Digestive, and Expulsive.

The voluntary actions which we willingly perform, are so called, because we can at our pleasure hinder, stir up, slow or quicken them. They are three in generall, the sensitive, moving, and principall Action. The sensitive * Soul comprehends all things in five senses; in Sight, Hearing, Smell, Taste and Touch. Three things must necessarily concur to the performance of them, the Organ, the Medium or mean, and the Object. The principall Organ, or Instrument, is the Animall spirit diffused by the nerves into each several part of the body, by which such actions are performed. Wherefore for the present we will use the Parts themselves for their Organs. The Mean is a Body, which carries the Object to the Instrument. The Object is a certain externall quality, which hath power by a fit Medium or Mean to stir up and alter the Organ. This will be more manifest by relating the particular functions of the senses by the necessary concurring of these three.

Sight, is an action of the seeing faculty, which is done by the Eye, fitly composed of its coats and humors, and so consequently the Organicall body of this Action. The Object is a visible quality brought to the Eye. But such an Object is twofold; for either it is absolutely visible of its self, and by its own Nature, as the Sun, the fire, the Moon and Stars: or desires as it were the help of another that it may be actually such, for so by the coming of the light colours, which were visible in power onely, being brought to the Eye, they do seem and appear such as they actually are.

What an Action is.

An action and Act are different.

Naturall actions.

What Growth is.

What Nutrition is.

Action voluntary. * Anima sensitive.

How sight is performed.

But such Objects cannot arrive at the Eye, but through a clear and illuminate *Medium*, as the Air, Water, Glasse and all sorts of Cryfall.

How hearing. The Hearing hath for its Organ the Ear and Auditory passage, which goes to the stony bone furnished with a Membrane investing it, an Auditory Nerve, and a certain inward spirit there contained. The Object is every sound arising from the smitten or broken Air, and the Collision of two bodies meeting together. The *Medium* is the encompassing Air which carries the sound to the Ear.

How smelling. Smelling (according to *Galens* opinion) is performed in the Mamillary processes produced from the proper substance of the brain, and seated in the upper part of the nose: although others had rather smelling should be made in the very foremost ventricles of the brain. This Action is weak in man in comparison of other Creatures: the Object thereof is every smell, or fœtid exhalation breathing out of bodies. The *Medium* by which the Object is carried to the noses of Men, Beasts and Birds, is the Air, but to

How the taste. Fishes the Water it self. The Action of taste is performed by the tongue being tempered well and according to nature, and furnished with a nerve spread over its upper part from the third and fourth conjugation of the brain. The Object is * Taste, of whose nature and kinds we will treat more at large in our Antidotary. The *Medium* by the which the Object is so carried to the Organ, that it may affect it, is either externall or internall: The externall is that spittle which doth as it were anoint and supple the tongue; the internall is the spongy flesh of the tongue it self, which affected with the quality of the Object doth presently so possess the nerve that is implanted in it, that the kind and quality there-

* *Sapor.*

How touching. of by the force of the spirit may be carryed into the common sense. All parts endued with a nerve enjoy the sense of touching, which is chiefly done, when a tractable quality doth penetrate even to the true and nervous skin, which lyeth under the Cuticle, or scarf-skin; we have formerly noted, that it is most exquisite in the skin which invests the ends of the fingers. The Object is every tractable quality, whether it be of the first rank of qualities, as Heat, Cold, Moisture, Dryness, or of the second, as Roughness, Smoothness, Heaviness, Lightness, Hardness, Softness, Rarity, Density, Friability, Unctuousity, Grossness, Thinness. The *Medium* by whose procurement the instrument is affected, is either the skin or the flesh interwoven with many Nerves.

Of motion. The next Action, is that Motion, which by a peculiar name we call voluntary; this is performed and accomplished by a Muscle, being the proper Instrument of voluntary Motion. Furthermore every motion of a member possessing a Muscle is made either by bending and contraction, or by extention. Although generally there be so many differences of voluntary motion, as there are kinds of site in place; therefore Motion is said to be made upward, downward, to the right hand, to the left, forward and backward; Hither are referred the many kinds of motions, which the infinite variety of Muscles produce in the body. Into this rank of Voluntary Actions, comes Respiration, or breathing, because it is done by the help of the Muscles; although it be chiefly to temper the heat of the Heart. For we can make it more quick, or slow as we please, which are the conditions of a voluntary Motion.

How respiration may be a voluntary motion.

Lastly, that we may have somewhat in which we may safely rest and defend our selves against the many questions which are commonly moved concerning this thing, we must hold, that Respiration is undergone and performed by the Animall faculty, but chiefly instituted for the vitall.

The third principall Action.

The principall Action and prime amongst the Voluntary is absolutely divided in three, Imagination, Reasoning and Memory.

Imagination is a certain expressing, and apprehension which discerns and distinguisheth between the forms and shapes of things sensible, or which are known by the senses.

Reasoning is a certain judicial estimation of conceived or apprehended forms or figures, by a mutuall collating or comparing them together.

Memory is the sure storer of all things, and as it were the Treasury which the mind often unfolds and opens, the other faculties of the mind being idle and not employed. But because all the forementioned Actions whether they be Naturall, or Animall and voluntary, are done and performed by the help and assistance of the Spirits; therefore now we must speak of the Spirits.

CHAP. X.

Of the Spirits.

What a spirit is.



The Spirit is a subtile and aery substance, raised from the purer blood that it might be a vehicle for the faculties (by whose power the whole body is governed) to all the parts, and the prime instrument for the performance of their office. For they being destitute of its sweet approach doe presently cease from action, and as dead do rest from their accustomed labours. From hence it

is that making a variety of Spirits according to the number of the faculties, they have divided them into three; as one Animall, another Vitall, another Naturall.

Spirits three-fold.

The Animall hath taken his seat in the brain; for there it is prepared and made, that from thence conveyed by the Nerves, it may impart the power of sense and motion to all the rest of the members. An argument hereof is, that in the great cold of Winter, whether by the intercepting them in their way, or by the concretion, or, as it were, freezing of those spirits the joynts grow stiff, the hands numb, and all the other parts are dull, destitute of their accustomed agility of motion, and quickness of sense. It is called Animall, not because it is the * Life, but the chief and prime instrument thereof: wherefore it hath a most subtil and aery substance; and enjoys divers names, according to the various condition of the Sensories or seats of the senses into which it enters; for that which causeth the sight, is named the Visive: you may see this by night, rubbing your eyes, as sparkling like fire. That which is conveyed to the Auditory passage, is called the Auditive or Hearing: That which is carried to the instruments of Touching, is termed the Tactive; and so of the rest.

The Animall spirit.

Why so called.
* Anima.

This Animall spirit is made and laboured in the windings and foldings of the Veins and Arteries of the brain, of an exquisit subtil portion of the vitall brought thither by the *Carotide Arterie*, or sleepy Arteries; and sometimes also of the pure air, or sweet vapour drawn in by the Nose in breathing. Hence it is, that with Ligatures we stop the passage of this spirit, from the parts we intend to cut off. An Humor which obstructs or stops its passage, doth the like in Apoplexies and Palsies, whereby it happens that the members situate under that place do languish and seem dead, sometimes destitute of motion, sometimes wanting both sense and motion.

How it is made?

The Vitall spirit is next to it in dignity and excellency, which hath its chief mansion in the left ventricle of the Heart, from whence, through the Channels of the Arteries, it flows into the whole body, to nourish the heat which resides fixed in the substance of each part, which would perish in short time, unless it should be refreshed by heat flowing thither together with the spirit. And because it is the most subtil next to the Animall, Nature (lest it should vanish away) would have it contained in the Nervous coat of an Artery, which is five times more thick than the coat of the Veins, as *Galen*, out of *Herophilus*, hath recorded.

The Vitall spirit.

It is furnished with matter from the subtil exhalation of the blood, and that air which we draw in breathing. Wherefore it doth easily and quickly perish by immoderate dissipations of the spirituous substance, and great evacuations; so it is easily corrupted by the putrefaction of Humors, or breathing in of pestilent air and filthy vapours; which thing is the cause of the so suddain death of those which are infected with the Plague. This spirit is often hindered from entering into some part, by reason of obstruction, fulness, or great inflammations; whereby it follows, that in a short space, by reason of the decay of the fixed and inbred heat, the parts do easily fall into a Gangrene, and become mortified.

What the matter of it is.

The Naturall spirit (if such there be any) hath its station in the liver and Veins. It is more gross and dull than the other, and inferior to them in the dignity of the Action, and the excellency of the use. The use thereof is to help the concoction both of the whole body, as also of each severall part, and to carry blood and heat to them.

There is some doubt of the Naturall spirit.

Besides those already mentioned, there are other Spirits fixed and implanted in the similar and prime parts of the body, which also are naturall, and Natives of the same place in which they are seated and placed. And because they are also of an aery and fiery nature, they are so joined or rather united to the Native heat, that they can no more be separated from it than flame from heat; wherefore they with these that flow to them, are the principall instruments of the Actions which are performed in each severall part; And these fixed Spirits have their nourishment and maintenance from the radicall and first-bred moisture, which is of an aery and oily substance, and is, as it were, the foundation of these Spirits, and the inbred heat. Therefore without this moisture, no man can live a moment. But also the chief Instruments of life are these Spirits, together with the Native heat. Wherefore this radicall Moisture being dissipated and wasted, (which is the seat, fodder, and nourishment of the Spirits and heat) how can they any longer subsist and remain? Therefore the consumption of the naturall heat, followeth the decay of this sweet and substance-making moisture, and consequently death, which happens by the dissipating and resolving of naturall heat.

Fixed Spirits.

The radicall Moisture.

Naturall death.

But since then these kind of Spirits with the naturall heat, is contained in the substance of each similar part of our body, (for otherwise it could not persist) it must necessarily follow, that there be as many kinds of fixed Spirits, as of similar parts. For because each part hath its proper temper and encrease, it hath also its proper Spirit, and also its own proper fixed and implanted heat, which here hath its abode, as well as its Originall. Wherefore the Spirit and heat which is seated in the bone, is different from that which is imparted into the substance of a Nerve, Vein, or such other similar part; because the temper of these parts is different, as also the mixture of the Elements from which they first arose and sprung up. Neither is this contemplation of Spirits of small account, for in these consist all the force and efficacy of our Nature.

These

The use and necessity of the Spirits.

What the remedy for the dissipation of the Spirits. What the remedy for oppression of the Spirits is.

These being by any chance dissipated or wasted, we languish; neither is any health to be hoped for, the flour of life withering and decaying by little and little. Which thing ought to make us more diligent, to defend them against the continuall efflux of the threefold substance. For if they be decayed, there is left no proper indication of curing the disease; so that we are often constrained, all other care laid aside, to betake our selves to the restoring and repairing the decayed powers. Which is done by meats of good juice, easie to be concocted and distributed; good Wines, and fragrant smels.

But sometimes these Spirits are not dissipated, but driven in and returned to their fountains, and so both oppress and are oppress; whereupon it happens we are often forced to dilate and spread them abroad by binding and rubbing the parts. Hitherto we have spoke of these things which are called Naturall, because we naturally consist of them; it remains that we now say somewhat of their Adjuncts and Associates by familiarity of Condition.

The Adjuncts and Associates to things Naturall: are,

Age: of which, by reason of the similitude of the Argument, we were constrained to speak, when we handled the Temperatures.

Sex.

Colour: of which we have already spoken.

The conformation of the *Instrumentall* parts.

Time: whose force we have also considered.

Region.

Order of *Diet*, and condition of *Life*.

CHAP. XI.

Of the Adjuncts of things Naturall.

What sex is.

The nature of women.

Of Eunuchs.

Of Hermaphrodites.

Colour the bewrayer of the Temperament.

The perfection of the organical parts, consists in four things.

SEX is no other thing than the distinction of Male and Female; in which this is most observable, that for the parts of the body, and the site of these parts, there is little difference between them; but the Female is colder than the Male. Wherefore their spermaticall parts are more cold, soft, and moist; and all their naturall actions less vigorous and more depraved.

The Nature of Eunuchs is to be referred to that of women, as who may seem to have degenerated into a womanish nature, by deficiency of heat; their smooth body, and soft and shrill voice do very much assimilate women. Notwithstanding you must consider, that there be some Manly women, which their manly voice, and chin covered with a little hairiness, do argue: and on the contrary, there are some womanizing, or womanish men, which therefore we term dainty and effeminate.

The Hermaphrodite is of a doubtful nature, and in the middle of both sexes seems to participate of both Male and Female.

The Colour which is predominant in the habit and superficies of the body, and lyes next under the skin, shews the Temperament of what kind soever it be; for as *Galen* notes in *Comment. ad Aphor. 2. sect. 1.* Such a colour appears in us, as the contained Humor hath. Wherefore if a rosie hew colour the cheeks, it is a sign the body abounds with blood, and that it is carried abroad by the plenty of Spirits. But if the skin be dyed with a yellow colour, it argues Choler is predominant; if with a whitish and pallid hue, Phlegm; with a sable and duskie, Melancholy. So the colour of the Excrements which are according to Nature, is not of the least consideration. For thus, if an Ulcer being broken send forth white matter, it argues the soundness of the part from whence it flows; but if sanious or bloody, green, blackish, or of divers colours, it shews the weakness of the solid part, which could not assimilate by concoction the colour of the excrementitious humor. The like reason is of unnaturall Tumors: For, as the colour, so the dominion of the Humor causing or accompanying the swelling commonly is.

The conformity and integrity of the Organical parts is considered by their figure, greatness, number, situation, and mutuall connexion. We consider the figure, when we say, almost all the externall parts of the body are naturally round, not only for shew, but for necessity, that being smooth and no way cornered, they should be less obnoxious to externall injuries; we speak of Greatness, when we say, some are large and thick, some lank and lean. But we consider their Number, when we observe some parts to abound, some to want, or nothing to be defective or wanting. We insinuate Site and Connexion, when we search, whether every thing be in its proper place, and whether they be decently fitted, and well joined together.

We have handled the varieties of the four seasons of the Year, when we treated of Temperaments. But the consideration of the Region (because it hath the same judgment that the Air) shall be referred to that disquisition or enquiry which we intend to make of the Air, amongst the things not naturall.

The manner of life, and order of Diet are to be diligently observed by us, because they have great power either to alter, or preserve the Temperament. But because they are of almost infinite variety, therefore they scarce seem possible to fall into Art, which may prosecute all the differences of Diet and Vocations of life. Wherefore if the Calling of Life be laborious, as that of Husbandmen, Mariners, and other such trades, it strengthens and dries the parts of the body. Although those which labour much about Waters, are most commonly troubled with cold and moist diseases, although they almost kill themselves with labour.

Diet.

Again, those which deal with Metals, as all sorts of Smiths, and those which cast and work brass, are more troubled with hot diseases, as Feavers. But if their Calling be such, as they sit much, and work all the day long sitting at home, as shoemakers; it makes the body tender, the flesh effeminate, and causeth great quantity of excrements. A life as well idle and negligent in body, as quiet in mind, in all riotousness and excesses of Diet, doth the same. For from hence the body is made subject to the Stone, Gravel, and Gout.

That calling of life which is performed with moderate labour, clothing, and diet, seems very fit and convenient to preserve the naturall temper of the body. The ingenious Chirurgeon may frame more of himself that may more particularly conduce to the examination of these things. Therefore the things naturall, and those which are near or neighbouring to them being thus briefly declared; the Order seems to require, that we make enquiry of things not Naturall.

The commodities of an indifferent Diet.

CHAP. XII.

Of things not Naturall.



He things which we must now treat of, have by the later Physitians been termed Not-naturall; because they are not of the number of those which enter into the constitution or compofure of mans body; as the Elements, Humors, and all such things which we formerly comprehended under the name of Natural: although they be such as are necessary to preserve and defend the body already made and composed. Wherefore they were called by *Galen* Preservers; because by the due use of them the body is preserved in health. Also, they may be called Doubtfull, and Neuters, for that rightly and fitly used, they keep the body healthfull, but inconsiderately, they cause diseases. Whereby it comes to pass, that they may be thought to pertain to that part of Physick which is of preserving health; not because some of these things should be absolutely and of their own nature wholsom, and others unwholsom; but only by this, that they are, or prove so by their convenient, or preposterous use. Therefore we consider the use of such like things from four conditions, Quantity, Quality, Occasion, and Manner of using: If thou shalt observe these, thou shalt attain and effect this, That those things which are of themselves, are, as it were, doubtfull, shall bring certain and undoubted health. For these four Circumstances do so far extend, that in them, as in the perfection of Art, the Rules which may be prescribed to preserve health are contained. But *Galen* in another place, hath in four words comprehended these things not Naturall; as, things Taken, Applied, Expelled, and to be Done. Things Taken, are those which are put into the body, either by the mouth, or any other way; as the air, meat and drink. Things Applied, are those which must touch the body, as the Air now mentioned, affecting the body with a diverse touch of its qualities of heat, cold, moisture, or driness. Expelled, are what things soever being unprofitable are generated in the body, and require to be expelled. To be Done, are labour, rest, sleep, watching, and the like. We may more distinctly, and by expression of proper Names, revoke all these things to six:

Why they are called things not naturall.

Galen 2. ad Glauconem.

Lib. de sanitate tuenda.

- Which are
- { Air.
 - { Meat and Drink.
 - { Labor and Rest.
 - { Sleep and Watching.
 - { Repletion and Inanition; or things to be expelled, or retained and kept.
 - { Perturbations of the Minde.

CHAP. XIII.

of the Air.

How necessary
for life the Air
is.



AIR is so necessary to life, that we cannot live a moment without it; if so be that breathing, and much more transpiration, be not to be separated from life. Wherefore it much conduceth to know, what Air is wholesom, what unwholsom, and which by contrariety of qualities fights for the Patient against the disease; or on the contrary by a similitude of qualities shall nourish the disease, that if it may seem to burden the Patient by increasing or adding to the disease, we may correct it by Art. So in curing the wounds of the head, especially in winter, we labour by all the means we may to make the air warm. For cold is hurtfull to the Brain, Bones, and the wounds of these parts; and heat is comfortable and friendly. But also the Air being drawn into the body by breathing when it is hotter than ordinary, doth with a new warmth over-heat the heart, lungs, and spirits, and weaken the strength by the dissipation of the Spirits too much attenuated; so being too cold, in like manner the strength of the faculties faints and grows dull, either by suppression of the vapors, or by the inspissation or thickning of the Spirits.

What Air is
hurtfull.

Therefore to conclude, that Air is to be esteemed healthfull, which is clear, subtil, and pure, free and open on every side, and which is far remote from all carion-like smells of dead carcasses, or the stench of any putrefying thing whatsoever: the which is far distant from standing pools, and fens, and caves, sending forth strong and ill vapors; neither too cloudy nor moist by the nearness of some river.

Such an Air, I say, if it have a vernal temper, is good against all diseases. That Air which is contrary to this, is altogether unhealthfull; as that which is putrid, shut up, and prest by the straitness of neighbouring Mountains, infected with some noisom vapor. And because I cannot prosecute all the conditions of Airs, fit for the expelling of all diseases, as which are almost infinite; it shall suffice here to have set down, what we must understand by this word *Air*.

Three things
are understood
by the name of
the Air.

Physitians commonly use to understand three things by the name of *Air*; The present state of the Air; the Region in which we live; and the season of the Year. We spoke of this last, when we treated of Temperaments. Wherefore we will now speak of the two former. The present state of the Air, one while for some small time, is like the Spring, that is, temperate; otherwhiles like the Summer, that is, hot and dry; otherwhiles like the Winter, that is, cold and moist; and sometimes like the Autumn, which is unequal; and this last constitution of the Air is the cause of many diseases. When upon the same day, it is one while hot, another cold, we must expect Autumnall diseases. These tempers and varieties of constitutions of the Air, are chiefly and principally stirred up by the winds; as which being diffused over all the Air, shew no small force by their sodain change. Wherefore we will briefly touch their natures: That which blows from the East, is called the East-wind, and is of a hot and dry nature, and therefore healthfull. But the Western-wind is cold and moist, and therefore sickly. The South-wind is hot and moist, the Author of putrefaction and putrid diseases. The North-wind is cold and dry, therefore healthy: wherefore it is thought, if it happen to blow in the Dog-days, that it makes the whole year healthfull, and purges and takes away the seeds of putrefaction, if any chance to be in the Air. But this description of the four Winds, is then only thought to be true, if we consider the Winds in their own proper nature, which they borrow from these Regions from which they first proceed. For otherwise they affect the Air quite contrary, according to the disposition of the places over which they came; as Snowie places, Seas, Lakes, Rivers, Woods, or sandy Plains, from whence they may borrow new qualities, with which they may afterwards possess the Air, and so consequently our bodies.

How the winds
acquire other
faculties, than
they naturally
have.

The Westwind
of it self un-
wholsom.

Hence it is we have noted the Western-wind unwholsom, and breeding diseases, by reason of the proper condition of the Region from whence it came; and such, that is cold and moist; the *Gascoins* find it truly to their so great harm, that it seldom blows with them, but it brings some manifest and great harm, either to their bodies, or fruits of the earth. And yet the *Greeks* and *Latins* are wont to commend it for healthfulness, more than the rest. But also the rising and setting of some more eminent stars, do often cause such cold winds, that the whole Air is cooled, or infected with some other malign quality. For vapors and exhalations are often raised by the force of the Stars, from whence winds, clouds, storms, whirlwinds, lightnings, thunders, hail, snow, rain, earthquakes, inundations, and violent raging of the sea, have their originall. The exact contemplation of which things, although it be proper to Astronomers, Cosmographers, and Geographers, yet *Hippocrates* could not omit it, but that he must speak something in his book *De Aère & Aquis*; where he touches by the way, the description of the neighbouring Regions, and such as he knew.

What force
Stars have upon
the Air.

From this force of the Air, either hurtfull, or helping in diseases, came that famous observa-

observation of *Guido of Caulis*; That wounds of the head are more difficult to cure at *Paris*, than at *Avignon*, and the plain contrary of wounds of the legs; for the air of *Paris*, compared to that of *Avignon*, is cold and moist, wherefore hurtfull and offensive to the wounds of the head. On the contrary, the same air, because it obscures the spirits, in-crassates the blood, condensates the humors, and makes them less fit for defluxions, makes the wounds of the legs more easie to be healed, by reason it hinders the course of the humors, by whose defluxion the cure is hindred. But it is manifest, that hot and dry places make a greater dissipation of the naturall heat, from whence the weakness of the powers; by which same reason, the Inhabitants of such places do not so well endure blood-letting; but more easly suffer purgations, though vehement, by reason of the contumacie of the humor, caused by driness. To conclude, the Air changes the constitutions of our bodies, either by its qualities, as if it be hotter, colder, moister, or drier; or by its matter, as if it be grosser, or more subtil than is fit, or corrupted by exhalations from the earth, or by a sodain and unaccustomed alteration, which any man may prove, who makes a sodain change out of a quiet air into a stormy and troubled with many winds. But because, next to the Air, nothing is so necessary to nourish mans body, as Meat and Drink, I will now begin to speak of them both.

How the air of *Paris* comes to be ill for wounds of the head, and good for those of the leggs.

By what means the air changes our bodies.

CHAP. XIII.

Of Meat and Drink.

That this our Treatise of meat and drink may be more brief and plain, I have thought good to part it into these heads, as to consider the goodness and illness of both of them, their quantity, quality, custom, delight, order, time, and to accommodate them all to the ages and seasons of the year. We judge of the goodness and pravity of meats and drinks, from the condition of the good or vicious humours, or juice which they beget in us. For evill juice causeth many diseases. As on the contrary, good juice drives away all diseases from the body, except the fault happen from some other occasion, as from quantity, or too much excess. Wherefore it is principally necessary, that those who will preserve their present health, and hinder the access of diseases, feed upon things of good nourishment and digestion, as are good wine, the yolks of eggs, good milk, wheaten bread well baked, the flesh of Capons, Partridge, Thrushes, Larks, Veal, Mutton, Kid, and such like other, which you may find mentioned in the Books which *Galen* writ, *De Alimentorum facultatibus*; where also he examines those which are of evill juice, by their manifest qualities, as acrimony, bitterness, saltness, acidity, harshness, and such like.

The goodness of nourishments,

But unless we use a convenient quantity and measure in our meats, howsoever laudable they be, we shall never reap these fruits of health we hoped for. For they yeeld matter of diseases, by the only excess of their quantity; but we may by this know the force of quantity on both parts, because often the poisonous quality of meats of ill nourishment doth not hurt, by reason they were not taken into the body into a great quantity. That measure of quantity is chiefly to be regarded in diseases: for as *Hippocrates* saith, If any give meat to one sick of a Fever, he gives strength to the well, and increases the disease to the sick, especially if he do not use a mean. Wherefore it is a thing of no small consequence, to know what diseases require a slender, and what a large diet; of which thing there is large relation made in the 1 *Seet.* of the Aphorisms of *Hippocrates*; where he teacheth, the sick must feed more largely in the beginnings of long diseases, whereby they may be enabled to endure the length of the disease, and last to the state thereof. But in sharp and violent diseases, which presently come to their height, we must use a slender diet; but most slender, when the disease is in the height; and besides, all our consultations in this kinde, must be referred to the strength of the Patients. But those who enjoy their perfect health, must use a quantity of meat, agreeable to their evacuation and transpiration; for men, by reason of the strength of their heat, and the more copious dissipation of the triple substance, have greater appetite than women; altogether by the same reason, that young people, and such as grow, need more frequent and plentiful nourishment, than old men; and also amongst young men of the like age, some do rightly require more copious nourishment than other some, that is, according to the quantity of their evacuations and custom. Certainly for gluttony, it is such as may be extended to all; but we all should take so much meat and drink, that our powers may be refreshed and not oppressed; for by the decree of *Hippocrates*, these be the two compendiary ways of preserving health; not to be over-filled with meat, and to be quick to work; and thus much of the quantity of meats. Neither must these who are either sound, or sick, have less regard to the qualities of their Meats; and those are either the first, as heating, cooling, moistening, drying; or the second, attenuating, in-crassating, obstructing, opening, or some other-like, working according to the condition of their nature. The manner of our diet is not only to be framed according

Their quantity

The quantity of meats must be esteemed according to the nature of the disease, and strength of the Patient.

The qualities of meat.

to these, but also to be varied; for the present state of such as be in health, requires to be preserved by the use of like things. As hot and moist nourishment is to be prescribed to children, as to those which are hot and moist: and cold and dry to old men, as to those who are cold and dry; if so be that vulgar saying be true, that, *Health delights in the use of like things*. Yet because Old-age how green and new-begun howsoever it be, is of it self, as it were, a disease, it seems to be more convenient, both to truth, and for health, that old people should eat meats contrary to their nature, that is, hot and moist, that so we may defer as much as we can, the causes of death, cold and driness, which hasten the destruction of that age. For we must resist diseases by the use of their contraries, as those things which are contrary to nature. For otherwise, as much meat as you give to the sick, you add so much strength to the disease. And the same is the cause why *Hippocrates* said, that a moist diet is convenient for all such as are sick of Feavers, because a Fever is a dry distemperature. Therefore we must diligently pry into the nature of the disease, that knowing it, we may endeavour to abate its fury by the use of contraries.

Old-age is a disease,

Aphor. 16.
sect. 1.

The force of Custom.

Aphor. 91.
sect. 2.

Aphor. 38.
sect. 2.

Accustomed meats are more gratefull, and so by that means more nourishing.

But if Custom (as they say) be another nature, the Physitian must have a great care of it, both in sound and sick. For this sometimes by little and little, and insensibly, changes our naturall temperament, and in stead thereof gives us a borrowed temper. Wherefore if any would presently or sodainly change a Custom which is sometimes ill, into a better, truly he will bring more harm than good; because all sodain changes (according to the opinion of *Hippocrates*) are dangerous. Wherefore if necessity require that we should withdraw any thing from our Custom, we must do it by little and little, that so nature may by degrees be accustomed to contraries without violence, or the disturbance of its usuall government. For that meat and drink which is somewhat worse, but more pleasant and familiar by custom, is to be preferred (in *Hippocrates* opinion) before better, but less pleasant and accustomed. Hence is it, that Country-men do very well digest Beef and Bacon, which commonly they use; but will turn into nidorous vapors, Partridge, Capons, and other meat of good nourishment, sooner than change them into good and laudable *Chylus*. The cause of which thing is not only to be attributed unto the property of their stronger, & as it were, burning heat, but much more to Custom; which by a certain kind of familiarity, causeth that meats of hard digestion, are easily turned into laudable blood. For the force of Custom is so great, that accustomed Meats are more acceptable; whereby it comes to pass, that while the stomach delights in them, it more straitly embraces them, and happily digests them, without any trouble of loathing, vomiting, or heaviness. All the contrary meet and happen in the use of Meats which are unpleasant to the taste and stomach. For the ventricle abhorring those things, makes manifest how it is troubled by its acide and nidorous belchings, loathing, nauseousness, vomit, heaviness, pain of the head, and trouble of the whole body.

Wherefore we must diligently enquire, what Meats the Patient chiefly delighted in, that by offering them, his appetite languishing by reason of some great evacuation, vomit, or the like, may be stirred up. For it will be better and more readily restored by things acceptable, though they be somewhat worse, as we noted a little before out of *Hippocrates*. By which words he plainly taught, that it is the part of a good and prudent Physitian to subscribe to, and please the palat of his Patient.

The order of eating our meats.

But seeing that order is most beautifull in all things, it is truly very necessary in eating our Meat: for how laudable soever the Meats be in their quantity and quality, howsoever familiar by use, and gratefull by custom, yet unless they be eaten in due order, they will either trouble or molest the stomach, or be ill, or slowly and difficultly concocted; wherefore we must diligently observe, what Meats must be eaten at the first, and what at the second course; for those Meats which be hard to concoct, are not to be eaten before those which are easie of digestion; neither dry and astringent things, before moistening and loosening.

We must begin our meals with moist or liquid meat.

But on the contrary, all slippery, fat, and liquid things, and which are quickly changed, ought to go before, that so the belly may be moistned; and then astringent things must follow, that the stomach, by their help, being shut and drawn together, may more straitly comprehend the Meat on every side, and better perform the Chylification by its proper heat united and joined together.

For this cause *Hippocrates*, *Lib. de victu in acutis*, commands those things to be always eaten in the morning, which are fit to loosen the belly, and in the evenings such as nourish the body. Yet notwithstanding drink ought not to precede or go before meat, but on the contrary meat must precede drink, by the order prescribed by him.

The time of eating.

Whether ought we in our eating to have less care of the time, than we have of the order; for the time of eating of such as are healthfull, ought to be certain and fixt; for at the accustomed hour, and when hunger presses, any sound man, and which is at his own disposal may eat, but exercise and accustomed labors ought to go before; for it is fit, according to the precept of *Hippocrates*, that labor precede meat, whereby the excrements of the third concoction may be evacuated; the native heat increased, and the solid parts confirmed and strengthened, which are three commodities of exercise very necessary to the

The profit of labour before meat.

the convenient taking of meat. But in sick persons we can scarce attend and give heed to these circumstances of time, and accustomed hour of feeding; for that Indication of giving meat to the sick, is the best of all, which is drawn from the motion of the disease, and the declining of the fit: for if you give meat in feavers, specially the fit then taking the Patient, you nourish not him, but the disease. For the meat then eaten, is corrupted in the stomach, and yeelds fit matter for the disease: For meat (as we noted before out of *Hippocrates*) is strength to the sound, and a disease to the sick, unless it be eaten at convenient time, and diligent care be had of the strength of the Patient, and greatness of the disease.

We must not give meat in a fit of a Feaver.

But neither is it convenient that the meat should be simple, and of one kind, but of many sorts, and of divers dishes dressed after different forms, lest nature by the continuall and hatefull feeding upon the same meat, may at the length loath it, and so neither straitly contain it, nor well digest it; or the stomach accustomed to one meat, taking any loathing thereat, may abhor all other; and as there is no desire of that we do not know, so the dejected appetite cannot be delighted and stirred up with the pleasure of any meat which can be offered. For we must not credit those superstitious or too nice Physitians, who think the digestion is hindred by the much variety of meats.

Variety of meats.

The matter is far otherwise, for by the pleasure of what things soever the stomach allured doth require, it embraces them more straitly, and concocts them more perfectly. And our nature is desirous of variety.

Why variety of meats is good.

Moreover, seeing our body is composed of a solid, moist, and airy substance, and it may happen, that by so many labors, which we are compelled to undergo and sustain in this life, one of these may suffer a greater dissipation and loss than another; therefore the stomach is necessarily compelled to seek more variety, lest any thing should be wanting to repair that which is wasted. But also the age and season of the year, yeeld Indications of feeding, for some things are convenient for a young man; some for an old; some in summer, some in winter. Wherefore we ought to know what befits each age and season. Children need hot, moist, and much nourishment, which may not only suffice to nourish, but increase the body. Wherefore they worst endure fasting, and of them, especially those who are the most lively and spiritfull. With old men it is otherwise, for because their heat is small, they need little nourishment, and are extinguished by much. Wherefore old men easily endure to fast; they ought to be nourished with hot and moist meats, by which their solid parts now growing cold and dry, may be heated and moistned, as by the sweet nourishment of such like meats. Middle-ag'd men delight in the moderate use of contraries, to temper the excess of their too acrid heat. Young people as temperate, are to be preserved by the use of like things.

Indications of feeding, taken from the age.

The manner of Diet in Winter must be hot, and inclining to driness. Wherefore then we may more plentifully use roast-meats, strong wines and spices; because in the Winter-season we are troubled with the cold and moist air, and at the same time, have much heat inwardly; for the inner parts, according to *Hippocrates*, are naturally most hot in the Winter and the Spring, but feaverish in Summer; so the heat of Summer is to be tempered by the use of cold and moist things, and much drink. In the temperate Spring all things must be moderate; but in Autumn, by little and little, we must pass from our Summer to our Winter diet.

Indication from the time of the year.

CHAP. XV.

Of Motion and Rest.

Here Physitians admonish us, that by the name of Motion, we must understand all sorts of exercises, as walking, leaping, running, riding, playing at tennis, carrying a burden, and the like. Friction or rubbing is of this kind, which in times past was in great use and esteem, neither at this day is it altogether neglected by Physitians. They mention many kinds of it, but they may be all reduced to three; as, one gentle, another hard, a third indifferent; and that of the whole body, or only of some part thereof. The Friction is called hard, which is made by the rough, or strong pressure of the hands, sponges, or a course and new linnen cloth: it draws together, condensates, binds and hardens the flesh, yet if it be often and long used, at length it rarifies, dissolves, attenuates, and diminishes the flesh, and any other substance of the body; and also it causeth revulsion, and draws the defluxion of humors from one part to another. The gentle Friction, which is performed by the light rubbing of the hand, and such like, doth the contrary; as, softens, relaxes, and makes the skin smooth and unwrinkled; yet unless it be long continued, it doth none of these worthy to be spoken of. The indifferent kinds, consisting in the mean betwixt the other two, increaseth the flesh, swells or puffs up the habit of the body, because it retains the blood and spirits which it draws; and suffers them not to be dissipated.

What motion signifies.

Three kinds of Frictions.

Hard.

Gentle.

Indifferent.

The use of
exercifes.

The benefit of exercife is great, for it increafes naturall heat, whereby better digeftion follows, and by that means nourifhment, and the expulfion of the excrements; and laftly, a quicker motion of the fpirits, to perform their offices in the body, all the ways and paffages being cleaned. Befides, it ftrengthens the refpiration, and the other aétions of the body, confirms the habit, and all the limbs of the body, by the mutuall attrition of the one with the other; whereby it comes to pafs they are not fo quickly wearied with labor. Hence we fee that Country people are not to be tired with labor.

What the fit-
teft time for
exercife.

If any will reap thefe benefits by exercife, it is neceffary that he take opportunity to begin his exercife, and that he feafonably defift from it, not exercifing himfelf violently and without difcretion; but at certain times according to reafon.

Wherefore the beft time for exercife will be before meat (that the appetite may be increafed by augmenting the naturall heat) all the excrements being evacuated, left nature being hungry and empty, do draw and infufe the ill humors contained in the guts and other parts of the body, into the whole habit, the liver, and other noble parts. Neither is it fit prefently, after meat, to run into exercife, left the crude humors and meats not well concocted, be carried into the veins. The meafure and bounds of exercife muft be, when the body appears more full, the face looks red, fweat begins to break forth, we breath more ftrongly and quick, and begin to grow weary; if any continue exercife longer, ftiffnefs and wearinefs affails his joints, and the body flowing with fweat fuffers a lofs of the fpirituouf and humid fubftance, which is not eafily repaired; by which it becomes more cold, and lean even to deformity.

The quality
of exercife.

The quality of exercife which we require, is in the midft of exercife, fo that the exercife muft be neither too flow and idle, neither too ftrong nor too weak, neither too hafty nor remifs, but which may move all the the members alike. Such exercife is very fit for found bodies. But if they be diftempered, that fort of exercife is to be made choice of, which by the quality of its excefs, may correct the diftemper of the body, and reduce it to a certain mediocrity. Wherefore fuch men as are ftuffed with cold, grofs, and vifcous humors, fhall hold that kind of exercife moft fit for them, which is more laborious, vehement, ftrong, and longer continued. Yet fo, that they do not enter into it before the firft and fecond concoction, which they may know by the yellownefs of their urine. But let fuch as abound with thin and cholerick humors, chufe gentle exercifes, and fuch as are free from contention, not expecting the finishing of the fecond concoction, for the more acride heat of the folid parts delights in fuch half concocted juices, which otherwife it would fo burn up, all the glutinous fubftance thereof being wafte, that they could not be adjoyned or faftened to the parts. For the repeating or renewing of exercife, the body fhould be fo often exercifed, as there is a defire to eat. For exercife ftirs up and revives the heat which lies buried and hid in the body: for digeftion cannot be well performed by a fluggifh heat; neither have we any benefit by the meat we eat, unlefs we ufe exercife before.

For whom
ftrong exer-
cifes are con-
venient.

* Αποθεμία.

The laft part of exercife begun and performed according to reafon, is named, * *The ordering of the body*, which is performed by an indifferent rubbing and drying of the members; that fo the fweat breaking forth, the filth of the body, and fuch excrements lying under the fkin, may be allured and drawn out; and alfo that the members may be freed from ftiffnefs and wearinefs. At this time it is commonly ufed by fuch as play at Tennis.

What difcom-
modities pro-
ceed from idle-
nefs.

But, as many and great commodities arife from exercife conveniently begun and performed, fo great harm proceeds of idlenefs; for grofs and vicious juices heaped up in the body commonly produce crudities, obftructions, ftones both in the reins and bladder, the Gout, Apoplexie, and a thoufand other difeafes.

C H A P. X V I.

Of Sleep and Watching.



That this our fpeech of Sleep and Watching, which we now intend, may be more plain, we will briefly declare, what commodity or difcommodity they bring; what time and what hour is convenient for both; what the manner of lying muft be, and the choice thereof; what the dreams in fleeping, and what pains or heavinefs and chearfulnefs after fleep may portend.

What fleep is;

Sleep is nothing elfe than the reft of the whole body, and the ceffation of the Animall faculty from fenfe and motion. Sleep is caufed, when the fubftance of the brain is poffeffed, and after fome fort overcome and dulled by a certain vaporouf, fweet and delightfome humidity; or when the fpirits almoft exhaust by performance of fome labor, cannot any longer fuftain the weight of the body, but caufe reft by a neceffary confequence, by which means nature may produce other from the meat by concoction turned into blood.

The ufe of
fleep.

Sleep fitly taken much helps the digeftion of the parts, becaufe in the time of reft, the heat being the worker of all concoction, is carried back to them, together with the fpirits

spirits. Neither doth sleep only give ease to the wearied members, but also lessens our cares, and makes us to forget our labors.

The night is a fit time to sleep and to take our rest in, as inviting sleep by its moisture, silence and darkness. For the heat and Spirits in the thick obscurity of night, are driven in and retained in the center of the body; as on the contrary by the daily, and as it were, friendly and familiar light of the Sun, they are allured and drawn forth into the superficies, and outward part of the body; from whence they leave sleeping, and begin to wake. Besides also, which makes not a little to that opportunity and benefit which we look for from sleep, the night season suffices for the work of just and perfect concoction. Which is one reason amongst many that sleep on the day time may be hurtfull. For we are wakned from our sleep by the heat and spirits, called forth to the skin either by the light, or noise on the day time, before that the concoction which was begun be finished. But that sleep cannot but be light which comes without necessity of sleeping. Wherefore the concoction being attempted, but not perfected, the stomach is filled with crudities, distended with acide or sour belchings, and the brain troubled with gross vapors and excrementitious humidities. From whence proceeds pain and heaviness of the head, and sore of cold diseases. But although sleep on the night time be wholesome, yet it is fit, that it be restrained within the limits of an indifferent time. For that which exceeds, hinders the evacuation of excrements both upwards and downwards: but in the mean time the heat which is never idle, draws from them some portion or vapor into the veins, principall parts and habit of the body, to become matter for some disease. We must measure this time, not by the space of hours, but by the finishing the work of concoction, which is performed in some sooner than in other some. Yet that which is longest is perfected and done in seven or eight hours. The ventricle subsiding and falling into its self and its proper coats, and the urine tintured yellow, gives perfect judgment thereof. For on the contrary the extension of the stomach, acide belching, pain of the head, and heaviness of the whole body, shew that the concoction is unperfect.

In sleeping we must have special care of our lying down; for first we must lye on our right side, that so the meat may fall into the bottom of our stomach, which being fleshy, and less membranous, is the hotter, and more powerfull to assimilate. Then a little after we must turn upon our left side, that so the Liver with its Lobes, as with hands may on every side embrace the ventricle, and as fire put under a kettle, hasten the concoction. Lastly, towards morning it will not be unprofitable to turn again upon our right side, that by this situation the mouth of the stomach being opened, the vapors which arise from the elixation of the *Chylus* may have freer passage. Lying upon the back is wholly to be avoided; for from hence the Reins are inflamed, the Stone is bred, Palsies, Convulsion, and all diseases which have their originall from the defluxion into the spinall marrow, and to the Nerves taking beginning from thence. To lye upon the belly is not unprofitable for such as have used to lye so, if they be not troubled with defluxions into the eys; for so the humor will more easily flow into the part affected. But thus the work of concoction is not a little furthered, because by that form of lying, not only the inward heat is contained and gathered together about the ventricle, but the encompassing warmness of the soft feathers of the bed aids and assists it.

Neither are the Dreams which we have in our sleep to be neglected, for by the diligent consideration of these, the affections and superfluous Humors which have chief power in the body are marvailously known. For those who have raging choler running up and down their bodies while they sleep, all things to them appear bright, shining, fiery, burning, full of noise and contention. Those who abound with Phlegm, dream of floods, snows, showers, and inundations and falling from high places. Those who are Melancholy dream of gapings and gulfs in the earth, thick and obscure darkness, smokes, caves, and all black and dismall things. But those whose bodies abound in blood, dream of marriages, dances, embracings of women, feasts, jests, laughter, of orchards and gardens; and to conclude, of all things pleasant and splendent.

Also we must observe how the Patient doth after sleep, whether more lively and chearfull, or more heavie: for by the opinion of *Hippocrates*,

*Cum labor a somno est, lethalem collige morbum:
Sin prosit somnus, nihil hinc lethale timendum est.*

Fit time for sleep and the nature of the night.

Sleep on the day-time.

There ought to be a moderation of our nights sleep.

How to be known.

What the form and fire of our body ought to be while we sleep.

The harm of lying on our backs.

Upon our bellies.

The consideration of dreams.

Aphor. 1. sect. 2.

Pain sleep ensuing, an ill disease doth show:
But if sleep profit bring, no harm from thence will flow.

And as sleep, so watching, if it exceed measure, is hurtfull; for it hurts the temperature of the brain, weakens the senses, wastes the spirits, breeds crudities, heaviness of the head, falling away of the flesh, and leanness over all the body; and to conclude, it makes ulcers more dry, and so consequently rebellious, difficult to heal and malign. There are many other things may be spoken of sleep and watching, but these may suffice a Chirurgeon.

C H A P. XVII.

Of Repletion, and Inanition, or Emptiness.

The kinds of Repletions, or rather of Excesses.



Here are, to be short, two sorts of Repletion, or of all excess; one is of a simple quality, without any defluxion, or society of any humor, as appears in distempers without matter: the other is of quantity and mass, the body being distended with too much meat, or too great quantity of humors; from whence proceed an infinite number of diseases. They call the Repletion of meats, satiety or fulness; and it is of two kinds: The one which is called * Repletion or Fulness to the vessels; the other * Repletion to the strength.

*Re $\left\{ \begin{array}{l} \text{ad vasa} \\ \text{pletio} \end{array} \right. \text{advires}$

We judge of satiety to the vessels, by the distention and swelling of the veins and entrails, as the stomach. We call satiety to the strength, when the body is loaded with more meats than it can well bear. But also there is a double Repletion of humors. For either it is of some one humor, or of all the humors; they call this by a peculiar name, *Plethora*. For *Galen* defines *Plethora* an equal excess of all the humors. For it at any time he define a *Plethora* to be an excess of blood only; then verily by the name of blood, he understands an equal comprehension of the four humors; as it is taught in Physick schools.

Gal. Meth. 13. cap. 6.

What *Caco-chymia*.

The Repletion which is caused by some one humor, is termed by *Galen* in the place before mentioned, *Caco-chymia*, (that is, An evil juice) whether the Repletion proceed of a Choleric, Melancholic, Phlegmatick, or serous Humor.

The kinds of evacuation.

Now Inanition, or evacuation is no other thing than the expulsion or effusion of humors which are troublesome, either in quantity or quality. Of Evacuations, some are universal, which expell superfluous humors from the whole body; such are purging, vomiting, transpiration, sweats, Phlebotomy. Some particular, which are performed only to evacuate some part, as the brain by the nose, palat, eyes, ears; the lungs by the weazon; the stomach by vomit and stool; the guts by stool; the liver and the spleen by urine and ordure. These evacuations are sometimes performed by nature, freeing it self of that which is troublesome to it; otherwhiles by the Art of the Physitian in imitation of nature.

And again, one of these is good and requisite, when only the humor which is hurtfull either in quantity or quality, is evacuated; The other not requisite, or immoderate, when the profitable Humors, together with the unprofitable, are expelled.

The commodities of moderate scratching.

But what evacuations soever these be, they are performed and done, either by the scratching and rubbing of the skin, as when a Choleric, salt, or serous Humor, or some windiness lying between the skin and the flesh, cause itching. For by scratching the skin, it gets passage out, which is manifest by the efflux of a serous matter burning, or causing scabs and ulcers, if the humor be somewhat gross, but insensible and not so manifest, if it be windiness, the skin by that rubbing being rarified, and the gross flatulency attenuated. Wherefore they do ill who hinder their Patients from scratching, unless they scratch so cruelly and hard, that there may be danger (by reason of the great heat and pain thereby caused) of some defluxion or falling down of humors into the part.

The force of vomits:

Salivation.

Or these evacuations are performed by much matter evacuated from an opened Bile, or running Ulcer, a Fistula, or such like sores. Or by sweats which are very good and healthfull, especially in sharp diseases, if they proceed from the whole body, and happen on the criticall days. By vomit, which often violently draws these humors from the whole body, even from the utmost joints, which purging medicins could not evacuate, as we may see in the Palsie, and Sciatica, or Hip-gout. By spitting, as in all who are suppurated either in the sides or lungs. By Salivation, or a Phlegmatick flux by the mouth, as in those who are troubled with the French-pox. By sneezing and blowing the nose; for by these, the brain oppress'd with moisture, disburdeneth its self, whether it be done without, or with the help of stermutatories and errhines; wherefore children, and such as have somewhat moist brains, purge themselves often this way. By hicket and belching; for by these the windiness contained in the stomach, is often expelled. By urine, for by this not only Feavers, but which is more to be admired, the French-pox hath often been terminated and cured.

The whole body is also purged by urine.

For there have been some troubled with the Pox, in whom a flux of the vicious and venenate humor could not by Unctions of quicksilver be procured, either from the mouth or belly; yet have been wonderfully freed by abundance of urine, both from danger of death and their disease. By bleeding; for nature hath often found a way for grievous diseases, especially in young bodies, by bleeding at the nose, and by their courses in women. By a flux, or lask, purgation, sweats; insensible evacuation and transpiration; for so tumors, the matter being brought to suppuration, do sometimes vanish away and are dissolved, both of their own accord, as also by dissolving or discussing medicins. We do the same by exercise, diet, hot-houses, long sleep, waking, and shedding of tears. By sucking, as with cupping-glasses, and horse-leeches, in wounds made by venomous bitings.

In all such kinds of evacuations, we must consider three things, the quantity, quality, and manner of evacuation. As for an example, when an *Empyema* is opened, the matter which runs out, ought to be answerable in proportion to the purulent matter, which was contained in the capacity of the breasts; otherwise, unless all the matter be emptied, there may happen a relapse; the matter should be white, soft, equal, and nothing stinking: Lastly, you must let it forth not all together, and at one time, but by little and little, and at severall times, otherwise not a little quantity of the Spirits and heat doth flow out together, with the unprofitable matter, and so consequently a dissolution of all the powers.

We must observe three things in every evacuation.

CHAP. XVIII.

Of the Perturbations, or Passions of the minde.

The Perturbations are commonly called the Accidents of the minde, because as bodily accidents from the body, so may these be present and absent from the mind, without the corruption of the subject. The knowledg of these must not be lightly passed over by the Chirurgeon; for they stir up great troubles in the bodies, and yeeld occasion of many and great diseases; of which things, joy, hope, and love, may give an apparent testimony. For by these motions the heat and spirits are sometimes gently, sometimes violently diffused over all the body, for the enjoying of the present, or hoped for good. For then the heart is dilated, as to embrace the thing beloved, and the face is died with a rose and lively colour. For it is likely, that the faculty it self is stirred by the object, by whose power the heart it self is moved.

Why the Passions of the minde are called Accidents. Their force.

For it is first necessary, before we be moved by any Passions, that the senses in their proper seats, in which they are seldom deceived, apprehend the objects, and straight, as messengers carry them to the common sense, which sends their conceived forms to all the faculties. And then, that each faculty, as a Judge may afresh examin the whole matter, how it is, and conceive in the presented objects some shew of good, or ill; to be desired, or shunned. For what man that was well in his wits, did ever fall into a laughter, unless he formerly knew, or saw somewhat said or done, which might yeeld occasion of laughter? Therefore Joy proceeds from the heart, for the thing causing mirth or joy, being conceived, the faculty moves the heart, which shaken and moved by the faculty which hath dominion over it, is dilated and opened, as ready to embrace the exhilarating object. But in the mean time by the force of that dilatation, it sends forth much heat, and spirits together with the blood into all the body. A great part of which comming to the face, dilates it, the forehead is smooth and plain, the eies look bright, the cheeks become red, as died with Vermillion, the lips and mouth are drawn together, and made plain and smooth; some have their cheeks dented with two little pits (which from the effects are called laughing cheeks) because of the contraction or curling, which the muscles suffer by reason of their fulness of blood and spirits, all which to be brief is nothing but to laugh.

From whence they have their force.

The reason of Joy.

Joy recreates and quickens all the faculties, stirs up the spirits, helps concoction, makes the body to be better liking, and fattens it, the heat, blood, and spirits flowing thither, and the nourishing dew or moisture, watering and refreshing all the members; from whence it is, that of all the passions of the mind, this only is profitable, so that it exceed not measure; for immoderate and unaccustomed joy carries so violently the blood and spirits from the heart, into the habit of the body, that sodain and unlookt for death ensues, by a speedy decay of the strength, the lasting fountain of the vitall humour being exhausted. Which thing principally happens to those who are less hearty, as women and old men.

The effects of Joy.

Anger causeth the same effusion of heat in us, but far speedier than joy; therefore the spirits and humors are so enflamed by it, that it often causes putrid feavers, especially if the body abound with any ill humour.

Anger.

Sorrow, or grief dries the body by a way quite contrary to that of anger, because by this the heart is so strained, the heat being almost extinct, that the accustomed generation of spirits cannot be performed; and if any be generated, they cannot freely pass into the members with the blood; wherefore the vitall faculty is weakned, the lively colour of the face withers and decays, and the body wastes away with a lingering consumption.

Sorrow.

Fear in like sort draws in and calls back the spirits, and not by little and little as in sorrow, but sodainly and violently; hereupon the face growes sodainly pale, the extreme parts cold, all the body trembles or shakes, the belly in some is loosened, the voice as it were stays in the jawes, the heart beats with a violent pulsation, because it is almost opprest by the heat, strangled by the plenty of blood, and spirits abundantly rushing thither; The hair also stands upright, because the heat and blood are retired to the inner parts, and the utmost parts are more cold and drie than stone; by reason whereof the utmost skin and the pores, in which the roots of the hairs are fastned, are drawn together.

Fear.

Hippocr. lib. 4. de Merb.

Shame. Shame is a certain affection mixed, as it were, of Anger and Fear; therefore if, in that conflict of, as it were, contending passions, Fear prevail over Anger, the face waxeth pale, (the blood flying back to the heart;) and these or these Symptomes rise, according to the vehemency of the contracted and abated heat. But if on the contrary, Anger get the dominion over Fear, the blood runs violently to the face, the eyes look red, and sometimes they even foame at the mouth.

Shamefastness. There is another kind of shame, which the *Latins* call *Verecundia* (we Shamefastness) in which there is a certain flux, and reflux of the heat, and blood, first recoiling to the heart, then presently rebounding from thence again. But that motion is so gentle, that the heart thereby suffers no oppression, nor defect of spirits; wherefore no accidents worthy to be spoken of, arise from hence: this affect is familiar to young maids and boyes, who if they blush for a fault committed unawares, or through carelesness, it is thought an argument of a vertuous and good disposition.

An agony. But an agony, which is a mixt passion of a strong fear, and vehement anger, involves the heart in the danger of both motions; wherefore by this passion, the vitall facultie is brought into very great danger. To these six Passions of the mind, all other may be revoked, as Hatred and Discord, to Anger: Mirth and Boasting, to Joy; Terrors, Frights and Swoundings, to Fear; Envy, Despair and Mourning, to Sorrow.

By these it is evident, how much the passions of the mind can prevail, to alter and overthrow the state of the body; and that by no other means, than that by the compression and dilatation of the heart, they diffuse and contract the spirits blood, and heat; from whence happens the dissipation, or oppression of the spirits.

Why the first signs of passions of the mind appear in the face.

The signes of these Symptomes quickly shew themselves in the face; the heart, by reason of the thinness of the skin in that part, as it were painting forth the notes of its affections. And certainly the face is a part so fit to disclose all the affections of the inward parts, that by it you may manifestly know an old man from a young, a woman from a man, a temperate person from an untemperate, an *Ethiopian* from an *Indian*, a *Frenchman* from a *Spaniard*, a sad man from a merry, a sound from a sick, a living from a dead. Wherefore many affirm that the manners, and those things which we keep secret and hid in our hearts, may be understood by the face and countenance.

The use of passions of the mind.

Now we have declared what commodity and discommodity may redound to the man from these forementioned passions, and have shewed that anger is profitable to none, unless by chance to some dull by reason of idleness, or oppressed with some cold, clammy and phlegmatick humor; and fear convenient for none, unless peradventure for such as are brought into manifest and extream danger of their life by some extraordinary sweat, immoderate bleeding, or the like unbridled evacuation: Wherefore it behoves a wise Chirurgeon to have a care, lest he inconsiderately put any Patient committed to his charge into any of these passions, unless there be some necessity thereof, by reason of any of the forementioned occasions.

C H A P. X I X.

Of things against Nature, and first of the Cause of a disease.

What things against nature are.

What, and how many the causes of diseases be.

The primitive cause.

Internall antecedent.

Internall conjunct.



Having intreated of things naturall, and not naturall, now it remains we speak of things (which are called) against nature, because that they are such as are apt to weaken & corrupt the state of our body. And they be three in number; The cause of a disease, a Disease, and a Symptome. The cause of a disease is an affect against nature, which causes the disease. Which is divided into Internall and Externall. The Externall, originall or primitive comes from some other place, and outwardly into the body: such be meats of ill nourishment, and such weapons as hostilely wound the body.

The Internall have their essence and seat in the body, and are subdivided into antecedent and conjunct. That is called an antecedent cause, which as yet doth not actually make a disease, but goes near to cause one; so humors copiously flowing, or ready to flow into any part, are the antecedent causes of diseases; The conjunct is that which actually causes the disease, and is so immediately joyned in affinity to the disease, that the disease being present, it is present, and being absent, it is absent.

Again, of all such causes, some are born together with us, as the over-great quantity and malign quality of both the seeds, and the menstruous blood from diseased Parents are causes of many diseases, and specially of those which are called Hereditary.

Other happen to us after we be born, by our diet and manner of life, a stroke, fall or such other like. Those which be bred with us, cannot be wholly avoided or amended, but some of the other may be avoided, as a stroke and fall; some not, as those which necessarily enter into our body, as Air, Meat, Drink, and the like.

The congenit, or inevitable cause of death.

But if any will reckon up amongst the internal, inherent, and inevitable causes, the dayly, nay hourelly dissipation of the radical moisture, which the naturall heat continually preys upon;

upon; I do not gainsay it, no more than that division of Causes celebrated and received of Philosophers, divided into Materiall, Formall, Efficient, and Finall; for such a curious contemplation belongs not to a Chirurgion, whom I only intend plainly to instruct. Wherefore that we have written may suffice him.

CHAP. XX.

Of a Disease.



Disease is an affect against Nature, principally, and by it self, hurting and depraving the action of the part in which it resides. The division of a Disease is threefold; Distemperature, ill Conformation, and the Solution of Continuity.

What a disease is, and how various.

Distemperature is a Disease of the similar parts dissenting, and changed from their proper and native temper. That digression from the native temper, happens two ways; either by a simple distemperature from the excess of one quality; and this is fourfold, Hot; Cold, Moist, and Dry; or by a compound distemperature, by the excess of two qualities, which also is fourfold; Hot and Moist, Hot and Dry; Cold and Moist, Cold and Dry. Again, every distemper is the fault of one simple and single quality, as an inflammation; or hath some vicious humors joined with it, as a Phlegmon: Again, a Distemperature is either equal, as in a *Sphacele*; or unequal, as in a *Phlegmon*, beginning or increasing.

A Distemperature.

Ill Conformity is a fault of the organicall parts, whose composition is thereby depraved. This hath four kinds; the first is, when the figure of the part is faulty, either by nature or accident, or some cavities abolished; as if a part which nature would have hollow for some certain use, do grow or close up: Or lastly, if they be rough, or smooth otherwise than they should, as if that part which should be rough, be smooth, or the contrary. Another is in the magnitude of the part increased, or diminished contrary to nature. The third is in the number of the parts increased or diminished; as if a hand have but four or else six fingers. The fourth is in the site and mutuall connexion of the parts; as if the parts which should be naturally united and continued be pluckt asunder, as happens in Luxations; or the contrary. The third generall kind of disease, is the solution of continuity, a Disease common, both to the similar and organicall parts, acquiring diversity of names, according to the variety of the parts in which it resides.

Ill Conformity.

Solution of Continuity.

CHAP. XXI.

Of a Symptome.



Do not in this place take the word Symptome in the most generall acceptation, for every change or accident which happens to man besides his own nature; but more reservedly and specially, only for that change which the disease brings, and which follows the disease, as a shadow doth the body.

What a Symptome is.

There be three kinds of a Symptome properly taken. The first is, when the action is hurt; I say hurt, because it is either abolished, weakned, or depraved; so blindness is a deprivation or abolishing of the action of seeing; dulness of sight, is a diminution or weakning thereof; and a suffusion, such as happens at the beginning of a Cataract, when they think flies, hares, and such like bodies fly to and fro before their eyes, is a depravation of the sight.

Three kinds thereof.

The second is a simple affect of the body, and a full fault of the habit thereof being changed, happening by the mutation of some qualities: such is the changing of the native colour into a red by a Phlegmon, and into a livid and black by a Gangrene; such is the filthy stench the nose affected with a *Polypus* sends forth; the bitter taste, in such as have the Jaundise; and the rough and rugged skin in them which are Leprous.

The third is the fault of the overmuch retention of excrements which should be expelled, and expulsion of such as should be retained; for the evacuation of an humor profitable both in quantity and quality, is against nature, as bleeding in a body not full of ill Humors, nor Plethorick; and also the retention of things hurtfull in substance, quantity and quality, as the Courses in women, the urine, and the stone in the bladder.

CHAP. XXII.

of Indications.

What Indication is.



He knowledg and exercise of Indications befits that Chirurgion, whom no blind rashness of fortune, but reason; no chance, but counsell directs in the undertaking and performing the works of his Art. For an Indication is a certain safe and short way, which leads the Physitian, as by the hand, to the attainment of his purposed end, of preserving the sound, or curing the sick.

See Method, Cap. 7. Lib. de opt. secta, Cap. 11.

For *Galen* doth define an Indication to be a certain insinuation of what is to be done, or a quick and judicious apprehension of that which may profit or hurt. And as Faulconers, Mariners, Plowmen, Souldiers, and all manner of Artizens, have their peculiar terms and words, which are neither known, nor used by the vulgar; so this word Indication is proper and peculiar to Physitians and Chirurgions, as a Term of Art not vulgar; by consideration of which, as by some sign, or secret token, they are admonished what is to be done to restore health, or repell an imminent danger.

The kinds of Indications.

There are three prime and principall kinds of Indications, every of which is subdivided into many other. The first is from things naturall. The second from those things which are termed not naturall. The third from those things which are contrary to nature. Things naturall shew they must be preserved by their like, and in the compass of these are contained all the Indications which are drawn from the nature of the Patient, that is, from his strength, temper, age, sex, habit, custome, diet.

Lib. 9. Method. cap. 9.

Things not naturall may be doubted as uncertain, for one while they indicate the same things with things naturall, that is, they coindicate with the strength, temper and the rest; otherwhiles they consent with things against nature, that is, they coindicate with the disease. Wherefore *Galen* when he saith, that Indications are drawn from three things; The disease, the nature of the Patient, and the encompassing air; by proposing the familiar example of the air, he would have us to understand the other things not naturall; because we may shun or imbrace them more or less as we will our selves, but we must, whether we will or no, endure the present state of the air. Therefore the air indicates something to us, or rather coindicates; for if it nourish the disease, as conspiring with it, it will indicate the same that the disease, that is, that it must be preserved in the same state.

Indications drawn from things naturall.

Things contrary to nature indicate they must be taken away by their contraries; therefore that we may more accurately and fully handle all the Indications drawn from things naturall, we must note, that some of these are concerning the strength of the Patient, by care to preserve which, we are often compelled for a time to forsake the cure of the proper disease: for so a great shaking happening at the beginning of an ague or fever, we are often forced to give sustenance to the Patient, to strengthen the powers shaken by the vehemency of the shaking, which thing notwithstanding lengthens both the generall and particular fits of the ague. Other pertain to the temper, other respect the habit, if the Patient be slender, if fat, if well flesht, if of a rare, or dense constitution of body. Other respect the condition of the part affected in substance, consistence, softness, hardness, quick or dull sense, form, figure, magnitude, site, connexion, principality, service, function and use. From all these, as from notes, the skilfull Chirurgion will draw Indications according to the time and part affected: for the same things are not fit for fore eyes, which were convenient for the ears, neither doth the phlegmon in the jaws and throat admit the same form of cure, as it doth in other parts of the body. For none can there outwardly apply repercussives, without present danger of suffocation. So there is no use of repercussives in defluxions of those parts which in site are neer the principall. Neither must thou cure a wounded Nerve and Muscle, after one manner. The temperature of a part, as Moisture, alwayes indicates its preservation, although the disease be moist, and give Indication of drying, as an ulcer. The principality of a part alwayes insinuates an Indication of astringent things, although the disease require dissolving, as an Obstruction of the Liver; for otherwise unless you mix astringent things with dissolving, you will so dissolve the strength of the part, that hereafter it cannot suffice for sanguification. If the texture of a part be rare, it shews it is less apt, or prone to obstruction; if dense, it is more obnoxious to that disease, hence it is that the Liver is oftener obstructed than the Spleen. If the part be situate more deep, or remote, it indicates the medicines must be more vigorous and liquid, that they may send their force so far. The sensibleness, or quick-sense of the part, gives Indication of milder medicines, than peradventure the signs, or notes of a great disease require. For the Physitian which applies things equally sharp to the Horny tunicle of the eye being ulcerated, and to the Leg, must need be counted either cruell, or ignorant. Each sex and Age hath its Indications, for some diseases are curable in youth, which we must not hope to cure in old age; for hoariness and great distillations in very old men, admit no digestion, as *Hippocrates* saith.

What the conditions of the parts affected do indicate.

Indications from the ages.

Atbor. 40. li. 2.

Nunquam decrepitis Branchum coquit, atque Coryzam.

The feeble Sire, for age that hardly goes,
Ne're well digests the hurtfull Rheume or pose.

Moreover according to his decree the diseases of the Reins, and whatsoever pains molest the bladder, are difficultly healed in old men; and also reason persuades that a Quartain admits no cure in Winter, and scarce a Quotidian; and ulcers in like manner are more hard to heal in Winter; that hence we may understand certain Indications to be drawn from times, and to increase the credit of the variety and certainty of Indications, some certaine time, and seasons in those times command us to make choise of medicines; for as *Hippocrates* testifies;

Aphor 6 sect. 6.

Aphor 5 sect. 4.

Ad Canis ardorem facilis purgatio non est.
In Dogdayes heat it is not good,
By purging for to cleanse the blood.

Neither shalt thou so well prescribe a slender diet in Winter, as in the Spring, for the air hath its Indications. For experience teaches us, that wounds of the head are far more difficultly and hardly cured, at *Rome, Naples, and Rochell* in *Xantoigne*. But the times of diseases yeeld the principall Indications, for some Medicines are only to be used at the beginning and end of diseases, others at the increase and vigour of the disease. Wee must not contemn those Indications which are drawn from the vocation of life, and manner of Diet; for you must otherwise deal with the painfull Husbandman (when he is your Patient) which leads his life sparingly and hardly, than with the Citizen who lives daintily and idly. To this manner of life and Diet may be referred a certain secret and occult property, by which many are not only ready to vomit at eating of some meats, but tremble over all their bodies when they hear them but spoken of. I knew a prime Nobleman of the *French Nobility*, who was so perplexed at the serving in of an Eel to the Table, at the midst of dinner and amongst his friends, that he fell into a swoond, all his powers failing him. *Galen* in his book *de Consuetudine* tells that *Arius* the *Peripatetick* died sodainly, because compelled by the advice of those Physicians he used, he drank a great draught of cold water in the intolerable heat of a Fever. For no reason, saith *Galen*, than that, because he knowing he had naturally a cold stomach from his childhood, perpetually abstained from cold water.

From our diet.

Haire arising from secret properties.

For as much as belongs to Indications taken from things against nature; the length and depth of a wound or ulcer indicates one way; the figure cornered, round, equall and smooth; unequall and rough, with a hollownes freight or winding, indicate otherwise; the site right, left, upper, lower in another manner, and otherwise the force and violence of antecedent and conjunct causes. For oftentimes the condition of the cause indicates contrary to the disease, as when abundance of cold and gross humors cause and nourish a Fever. So also a Symptome often indicates contrary to the disease, in which contradiction, that Indication must be most esteemed, which doth most urge; as for example sake, if swoounding happen in a Fever, the feverish burning shall not hinder us from giving wine to the Patient.

Indications taken from things against nature.

Wherefore these Indications are the principallest and most noble which lead us, as by the hand, to doe these things which pertain to the cure, prevention and mitigating of diseases. But if any object, that so curious a search of so many Indications is to no purpose, because there are many Chirurgeons, which setting only one before their eyes, which is drawn from the Essence of the disease, have the report and fame of skilfull Chirurgeons, in the opinion of the vulgar; But let him know that it doth not therefore follow, that this indication is sufficient for the cure of all diseases; for we do not alwayes follow that which the Essence of the disease doth indicate to be done. But chiefly then, where none of the fore-recited Indications doth resist or gainsay; you may understand this by the example of a *Plethora*, which by the Indication drawn from the Essence of the thing requires Phlebotomy; yet who is it, that will draw blood from a child of three months old? Besides, such an Indication is not artificiall but common to the Chirurgeon with the common people. For who is it that is ignorant, that contraries are the remedies of contraries? and that broken bones must be united by joyning them together? but how it must be performed and done, this is of Art and peculiar to a Chirurgeon, and not known to the vulgar. Which the Indications drawn from those fountains we pointed at before, abundantly teaches, which, as by certain limits of circumstances, encompass the Indication which is taken from the Essence of the disease, lest any should think, we must trust to that only. For there is some great and principall matter in it, but not all. For so the meanest of the common people is not ignorant, that the solution of continuity is to be cured by repairing that which is lost. But in what parts we may hope for restitution of the lost substance, and in which not, is the part of a skilfull Chirurgeon to know and pronounce. Wherefore he will not vainly bestow his labour

We do not alwayes follow the Indication which is from the disease.

In what parts we cannot hope for restoring of solution of continuity

labor to cure the nervous part of the *Diaphragma*, or Midriff being wounded, or the Heart, small Guts, Lungs, Liver, Stomach, Brain or Bladder; and that I may speak in a word, Empiricks are not much more skilfull than the common people, although they do so much extoll themselves above others by the name of experience. For although experience be another instrument to find out things with reason, yet without reason, it will never teach what the substance of the part in which the disease lies, may be; or what the action, use, site, connexion, from whence speciall and proper Indications are drawn; With which the Chirurgeon being provided and instructed shall not only know by what means to find out a remedy, but also, lest he may seem to mock any with vain promises, he shall discern what diseases are incurable, and therefore not to be medled withall.

But implicit or intricate diseases require each to be cured in their severall order, except some one of them be desperate, or so urge & press that the Physitian think it necessary after preposterous order, to begin with it, although often he be forced to make some one of these diseases incurable, or give occasion of causing some new one: into which straits we are necessarily compelled to fall, when, (for example) we determine to pull, or take away some extraneous body; for the performance whereof we are compelled to enlarge the wound. So we are forced by necessity to open the neck of the bladder, (that so we may draw forth the stone therein contained) with a wound which often degenerates into an incurable Fistula. For that disease which threatens danger of present death is of such moment, that to shun that it may be counted a small matter, and commodious for the sick to bring in other diseases, though incurable. For if a convulsion happen by pricking a Nerve, which we cannot heal by any remedies, then by cutting the Nerve asunder we end the convulsion, but deprive the part into which that Nerve did goe, of the use of some voluntary motion. So if in any great joynt there happen a Luxation with a wound, because there is danger of convulsion by trying to restore and set right the luxated part, we are forc'd for shunning thereof, to attend the wound only, and in the mean time to let alone the Luxation. Otherwise in implicit diseases if there be nothing which may urge, or call us from the ordinary cure, we must observe this order, that beginning with that affect, which hinders the cure of the principall disease, we prosecute the rest in the same and their proper order, untill all the diseases being overcome we shall restore the part affected to its integrity. Therefore let us take for an example, an ulcer in the Leg, a *Varix* (or big swollen vein) and a Phlegmonous tumor round about it; and lastly; a body wholly plethorick and filled with ill humors; order and reason require this, that using the advise of some learned Physitian we prescribe a convenient diet, and by what means we may, bring him to an equality by purging and blood-letting, and then we will scarifie in divers places the part where it is most swollen, then presently apply Leeches, that so we may free it from the burden of the conjunct matter; then use Cauteries to help the corruption of the bone, and in the mean time change the circular figure of the ulcer into an oval, or triangular; then at the length we will undertake the cutting of the *Varix*, and cure the ulcer which remains according to Art, and so at the length cicatrize it. In all this whole time the Patient shall neither walk, nor stand, nor sit, but ly quietly, having his Leg orderly and decently rowled up. But if (as it often happens) the temper of the hurt part, be different from the temper of the whole body, the manner of curing must be so tempered, that we increase the dosis of hot or cold medicines, according to the ratable proportion of the indications requiring this or that, therefore imagine the part ulcerated to be such, as that it is two degrees dryer than the just temper; but the whole body to exceed the same temper in one degree of humidity: reason and Art will require, that the medicin applyed to the ulcer be dryer by one degree than that which the part would otherwise require if it were temperate; but on the contrary let us suppose thus: the whole body to be one degree more moist then the temper requires, and the ulcerated part to be one degree dryer: truly in this case the medicine that is applyed to the ulcer by reason of the part it self, shall not be increased in dryness, but wholly composed and tempered to the Indication of the ulcer, because the force of the moisture exceeding in the like degree, doth counterpoise the superfluous degree of dryness. But it is more easie by an artificiall conjecture to determine of all such things, than by any rules or precepts.

To these so many and various Indications, I think good to add two other; the one from similitude; the other of a certain crafty devise, & as the latter Physitians term it, of a certain subtil stratagem. We draw Indication from similitude, in diseases which newly spring up and arise, as which cannot be cured by Indications drawn from their contraries, as long as their Essence is unknown and hid; wherefore they think it necessary to cure them by a way and Art like those diseases, with which they seem to have an agreeing similitude of Symptoms and Accidents; Our Ancestors did the same in curing the French Pocks, at the first beginning thereof, as long as they assimilated the cure to that of the Leprosie, by reason of that affinity, which both the diseases seem to have. But we follow crafty devices and subtil counsels, when the Essence of the disease we meet, with is wholly secret and hid, either because it is altogether of a hidden and secret nature, and which cannot be unfolded by manifest qualities, or else resides in a subject which is not sufficiently known to us, nor of a physicall contemplation, as the Mind. For then we being destitute of Indications taken

from

Experience without reason is like a blind man without a guide.

Indications in implicit diseases.

An example of Indications in implicit diseases.

What we must do when the temper of the part is different from the temper of the whole body.

An artificiall conjecture is of much force in Indications.

Indication from similitude.

Indication of a subtil device.

from the nature of the thing, are compelled to turn our cogitations to impostures and crafty counsels; and they say this Art and Craft is of chief use in Melancholy affects and fictions, which are often more monstrous and deformed than the *Chimera* so much mentioned in the fables of the Ancients; to which purpose, I will not think much to recite two Examples. A certain man troubled with a Melancholick disease, I know not by what error of opinion, had strongly perswaded himself that he was without a head; the Physicians omitted nothing, by which they might hope to take this mad opinion out of his mind. But when they had in vain tryed all medicines, at length they devised this crafty, but profitable device; they fastened and put upon his head a most heavy helmet, that so by the pain and trouble of his head nodding and drawn down by that weight, he might be admonished of his error.

Examples.

It is reported, another molested by the obscurity and darkness of the same disease, did verily beleve, that he had horns upon his head; neither could he be drawn or diverted from that absurd and monstrous opinion, untill that binding up his eyes, they miserably bruised and scratched his forehead with the bony roughness of the lower parts of an oxes horns, that so he begun to believe by the painfull drawing of the blood that ran down his face, that those bloody horns were forcibly plucked from him. Ingenious Chirurgeons in imitation of these examples may in like cases do the like. For that case requires a man of a quick apprehension and advice, who may give manifest proof of his diligence and skill by medicinall stratagems, as who forthwith can politickly devise stratagems of divers sorts.

A Physician should be of a quick apprehension.

But, now coming to the end of this our tract of Indications, we must chiefly and principally observe; That of Indications some are Indicative; which absolutely and of themselves command this to be done; other conidicative, which indicate the same with the Indicative, and joyntly shew it to be done, but in some sort secundarily and not primitively; some are repugnant, which of themselves and their own nature perswade quite contrary to that the indicative primitively did perswade us; other correpuignant, which give their voice after the same form and manner with the repugnant against the indicative, as the coindicative consent to and maintain them. Let this serve for an example of them all.

Indications indicative. Coindicative.

Repugnant. Correpuignant.

A *Plethora*, or plenitude of humors of its own nature, requires and indicates blood-letting, the Spring time perswades and coIndicates the same, but to this counsell is quite opposite and repugnant, a weak faculty, and childhood is correpuignant.

Wherefore these four must be diligently weighed and considered when we deliberate what is to be done, and we must rather follow that which the indicative, or repugnant shew and declare, as what the diseases and strength of the Patient require, than that which the coindicative, or correpuignant shall perswade, because they have a weaker and but secundary power of indicating, and not essentiall & primitive. But because the kinds of Indications are so many and divers, therefore that the knowledg of them may be more perspicuous and less confused, I have thought good to describe and distinguish them by this following scheme.

A

A Table of Indications.

From the strength and faculties of the patient. } For whose preservation, oftentimes the proper cure of the disease must be neglected; for where these fail, it is impossible the Chirurgion should perform what he desires and expects.

From the temperament, as if the Patient shall be } Sanguine, } Of preservation of which the Chirurgion must have care, and if they swerve from equality, to reduce them to that which formerly they naturally were.
 Choleric,
 Flegmatick,
 Melancholick.

From the habit of the body, as the patient shall be } Dainty and delicate,
 Slender and weak,
 Low of stature,
 Rare, or else dense and compact.

From the native condition of the parts, or affected part, in which we consider, either } The substance thereof, as for as much as it is similar, we consider whether it be hot, cold, moist, dry, or as it is organicall, and then whether it be a principall and noble part, or a subordinate and ignoble part.
 Or the sense, whether quick, or dull, by reason whereof the eye cannot endure such sharpe and acrid medicines, as simple flesh can.
 Or the form, figure, magnitude, number, site, connexion, use.

From the Age, for each age yeelds his peculiar Indications, hence you may observe most diseases to be incurable in old men, which are easily cured in young, others which in youth admit of no cure, unless by the change of age and the ensuing temperament.

From Sex, for medicines work upon women far more easily than upon men.

From the time of the year, for some meats and medicines are fit in Winter, some in Summer.

From the Region, for as there are diversities of situations and habits of places, so also there are motions of humors, and manners of diseases: hence it is that wounds on the head at Paris, and sore shins at Avignon are more difficult to be cured.

From the times of diseases, for some things in the beginning, others in the increase, state and declining of the disease, are more convenient.

From the manner of diet, for this, as the proper temper, must be preserved. Wherefore such must be fed otherwise who live daintily, than those who lead their lives sparingly and hardly. Hereunto add certain peculiar natures, which by a certain hidden property are offended at this, or that kind of meat. For there are some which not onely cannot conceit Pissan, Apples, Soles, Partridge, Water and sush like, but can scarce behold them without nauseousness.

The first is drawn from things naturall which indicate their preservation by their like; of this kind are many other which are drawn, either

An Indication is a certain plain and compendious way which leads the Chirurgion to a certain, determinate and proposed end for the cure of the present disease; of which there are three kinds.

The second is drawn from things not naturall, which one while indicate their preservation by their like, another while their change by their contraries; for so

If the Air, have as it were conspired with the disease by a certain similitude of qualities to the destruction of the Patient, it must be corrected by its contraries, according to Art. But if by the disagreement of qualities it resist the disease, it must be kept in the same temper.

The third from things contrary to nature, which shew, they must be taken away by the use of their contraries, as

The disease, the Indication being drawn from these,

The greatness The complication or commixtion with other; so

In implicit, or mixed diseases we may draw Indications from these three heads;

From that which is most urgent
 From the cause
 and
 From that, without which the disease cannot be taken away;

such are

Bitterness of pain, a defluxion into a part, a Varix, or big swollen vein, a distemperature, if they be joined with a disease.

Cause of the disease

Symptome.

which two often indicate and require medicines contrary to the disease.

CHAP. XXIII.

of certain wonderfull and extravagant ways of curing Diseases.



Monsters sometimes happen in nature, so also in diseases, and in the events and cures of diseases. I understand by monsters certain marvellous successes in diseases, or certain ways of curing them, which swerve from Art, and happen besides reason, nature, and common use.

Monstrous diseases.

Alexander ab Alexandro, and Peter Gilius tell, that in Apulia a part of Italy they have a certain kind of Spider very frequent; the natives call it *Tarantula*, Petrus Rhodius calls it *Phalangium*; The Inhabitants find these Spiders in the first heat of Summer so venenate and deadly, that whomsoever they touch with their virulent biting, he presently, without he have speedy remedy, deprived of all sense and motion falls down, or certainly if he escape the danger of death, he leads the remnant of his life in madness. Experience hath found a remedy by Musick for this so speedy and deadly a disease: Wherefore as soon as they can they fetch Fiddlers and Pipers of divers kinds, who by playing and piping may make musick; at the hearing whereof, he which was fallen down by reason of the venomous bite, rises cheerfully, and dances so long to their measures and tunes, untill by the painfull and continued shaking and agitation of the whole body, all the malignity is dissipated by transpiration and sweats.

The wonderfull force of the bite of a certain Spider.

Musick the remedy thereof.

Alexander adds, that it happened once in his sight, that the Musicians their wind and hands failing them ceased playing, and then the Dancer presently fell down as if he had been dead; but by and by the Musick beginning anew, he rose up again and continued his dancing till the perfect dissipation of the venome. And that it hath happened besides, that one not so perfectly healed, certain reliques of the disease yet remaining, when a long time after he heard by chance a noise of Musicians, he presently fell a leaping and dancing, neither could he be made to leave before he was perfectly cured.

Some affirm according to the opinion of *Asclepiades*, that such as are frantick are much helped with a sweet and muscical harmony. *Theophrastus* and *Aulus Gellius* say, that the pain of the Gout and Sciatica are taken away by Musick. And the sacred Scripture testifies, that *David* was wont by the sweet sound of the Harp to refresh and ease king *Saul* when he was miserably tormented by his evil spirit. *Herodotus* in *Clio* tells, that *Cræsus* the king of *Lydia* had a Son, which of a long time could not speak, and when he came to mans estate was accounted dumb: but when an enemy with his drawn sword invaded his father (overcome in a great fight, and the City being taken in which he was) not knowing that he was the King, the young man opened his mouth endeavouring to cry out, and with that striving and forcing of the Spirit, he broke the bonds and hinderances of his tongue, and spoke plainly and articulately, crying out to the enemy that he should not kill King *Cræsus*. So both the enemy with-held his sword, and the king had his life, and his son had his speech always after. *Plutarch* in his book, Of the benefit to be received from our enemies, tells, That a *Thessalian* called *Proteus*, had a certain inveterate and incurable Ulcer in a certain part of his body, which could not be healed, before he received a wound in a conflict in the same place, and by that means the cure being begun afresh, the wound and ulcer were both healed.

Musick gives ease to pain.

A strong perturbation of the mind helps by moving the spirits.

Quintus Fabius Maximus, as *Livie* writes, was long and very sick of a quartain Ague, neither could have wished success from medicins administered according to Art, untill skirmishing with the *Allobroges*, he shook off his old feverish heat, by a new heat and ardent desire of fighting. It was credibly reported to me of late by a Gentleman of the Lord of *Lansackes* Chamber, that there was a French Gentleman in *Polonia*, who was grievously tormented with a quartain Fever, who on a time walking upon the bank of the river *Wisell*, to take away the irksomness of his fit, was thrust in jest into the River by a friend of his that met him by chance, by which (although he could swim, as he also knew that thrust him in) he conceived so great fear, that the Quartain never troubled him after. King *Henry* the second commanded me to go from the Camp at *Amiens* to the City *Dórlan*, that I might cure those that were hurt in the conflict with the Spaniards, the Captain *S. Arbin*, although at that time he had a fit of a Quartain ague, yet would he be present at the fight, in which being shot through the side of his neck with a Bullet, he was stricken with such a terror of death, that the heat of the Fever was asswaged by the cold fear, and he afterwards lived freed from his Ague.

Chance sometimes exceeds Art.

Franciscus Valeriola the famous Physitian of *Arles*, tells, That *John Berlam* his fellow Citizen troubled with a Palsey of one side of his body for many years, his house taking fire, and the flame coming near the bed in which he lay, he stricken with a great fear, suddenly raised himself with all the force he had, and presently recovering the strength of his body, leaps out at the window from the top of the house, and was presently

Observ. 4. lib. 2.

cured of his disease, sense and motion being restored to the part, so that afterward he went upright without any sense of pain, who lay unmovable for many yeers before. He tells the like in the same place of his cousin *John Soliratus*; hee was a long time lame at *Avignon*, by reason that the Nerves of his hams were shrunk and drawn up, so that he could not go; being moved with a vehement and sodain passion of anger against one of his servants whom hee endeavoured to beat, he so stirred his body that forthwith the Nerves of his hams being distended and his knees made pliant he began to go and stand upright without any sense of pain, when he had been crooked about the space of six yeers before, and all his life after he remained sound.

Cap ult. lib. de
cur. rat per san-
guinis miss.

Galen by a
dream cures
the Sciatica.

Galen tells he was once fetched to stanch the bleeding, for one who had an Artery cut neer his Anckle, and that by his means he was cured without any danger of an *Aneurisma* (i) a relaxation of a veinous vessell; and besides by that accidentall wound he was freed from most grievous pain of his hip, with which he was tormented four yeers before: but although this easing of the pain of the Sciatica happened according to reason by the evacuation of the conjunct matter, by the artery of the anckle of the same side being opened; yet because it was not cut for this purpose, but happened only by chance, I judged it was not much dissenting from this argument.

Pliny writes that there was one named *Phalereus*, which casting up blood at his mouth, and at the length medicines nothing availing, being weary of his life, went unarmed in the front of the battell against the enemy, and there receiving a wound in his breast, shed a great quantity of blood, which gave an end to his spitting of blood, the wound being healed, and the vein which could not contain the blood being condensate.

At *Paris*, Anno 1572. in *July*, a certain Gentleman being of a modest and curteous carriage fell into a continuall Fever, and by that means became Frantick, moved with the violence of which he cast himself headlong out of a window two stories high, and fell first upon the shoulder of *Valterra* the Duke of *Alenzons* Physitian, and then upon the pavement; with which fall he cruelly bruised his ribs and hip, but was restored to his former judgment and reason. There were present with the Patient besides *Valterra*, witnesses of this accident these Physitians, *Alexis*, *Magnus*, *Duretus*, and *Martinus*. The same happened in the like disease, and by the like chance to a certain *Gascoyn* lying at the house of *Agrippa* in the *Pa-ved* street.

Othomannus Doctor of Physick of *Mompelier* and the Kings Professor, told me that a certain Carpenter at *Broquer* a village in *Switzerland*, being frantick cast himself headlong out of an high window into a river, and being taken out of the water was presently restored to his understanding.

The cause of
the last recited
cures.

But if we may convert casualties into counsel and Art, I would not cast the Patient headlong out of a window. But would rather cast them sodainly and thinking of no such thing into a great cistern filled with cold water, with their heads foremost, neither would I take them out untill they had drunk a good quantity of water, that by that sodain fall and strong fear, the matter causing the Frenzy might be carryed from above downwards, from the noble parts to the ignoble; the possibility of which is manifest by the forecited examples, as also by the example of such as bit by a mad Dog, fearing the water are often ducked into it to cure them.

CHAP. XXIV.

Of certain juggling and deceitfull wayes of Curing.

Here I determine to treat of those Impostors, who taking upon them the person of a Chirurgeon, do by any means either right or wrong, put themselves upon the works of the Art; but they principally boast themselves amongst the ignorant common sort, of setting bones which are out of joint and broken, affirming as falsely as impudently, that they have the knowledg of those things from their Ancestors; as by a certain hereditary right; which is a most ridiculous fiction; for our minds when we are born, is as a smooth table, upon which nothing is painted. Otherwise what need we take such labour and pains to acquire and exercise sciences? God hath endued all brute beasts with an inbred knowledg of certain things necessary for to preserve their life, more than man.

Sciences are
not hereditary.

But on the contrary he hath enriched him with a wit furnished with incredible celerity and judgment, by whose diligent and laborious agitation he subjects all things to his knowledg. For it is no more likely, that any man should have skill in Chirurgery because his father was a Chirurgeon, than that one who never endured sweat, dust nor Sun in the field, should know how to ride and govern a great horse, and know how to carry

carry away the credit in tilting, only because he was begot by a Gentleman and one famous in the Art of War.

There is another sort of Impostors far more pernicious and less sufferable, boldly and insolently promising to restore to their proper unity and seat, bones which are broken and out of joint, by the only murmuring of some conceited charms, so that they may but have the Patients name and his girdle. In which thing I cannot sufficiently admire the idleness of our Country-men so easily crediting so great and pernicious an error; not observing the inviolable law of the ancient Physitians, and principally of Divine *Hippocrates*, by which it is determined, that three things are necessary to the setting of bones dislocated and out of joynt; to draw the bones asunder; to hold the bone receiving, firmly immoveable with a strong and steady hand; to put the bone to be received into the cavity of the receiving. For which purpose the diligence of the Ancients hath invented so many engines, Glossocomies and Bands, lest that the hand should not be sufficient for that laborious work. What therefore is the madness of such Impostors to undertake to do that by words, which can scarce be done by the strong hands of so many Servants, and by many artificial engines?

A most impudent sort of Impostors.

Three things necessary for the cure of a Luxation.

Of late years another kind of Imposture hath sprung up in *Germany*, they beat into fine powder a stone which in their mother tongue they call *Bembruch*, and give it in drink to any who have a bone broken, or dislocated, and affirm that it is sufficient to cure them. Through the same *Germany* there wander other Impostors who bid to bring to them the Weapons with which any is hurt; they lay up in a secret place and free from noise, and put and apply medicines to it, as if they had the patient to dress, and in the mean time they suffer him to go about his business, and impudently affirm that the wound heals by little and little by reason of the medicine applyed to the weapon.

But it is not likely that a thing inanimate which is destitute of all manner of sense, should feel the effect of any medicine; and less probable by much, that the wounded party should receive any benefit from thence. Neither if any should let me see the truth of such juggling by the events themselves and my own eyes, would I therefore believe that it were done naturally and by reason, but rather by charms and Magick.

In the last assault of the Castle of *Hisdin* the Lord of *Martigues* the elder was shot through the breast with a Musket bullet. I had him in cure together with the Physitians, and Chirurgeons of the Emperour *Charles* the sixth and *Emanuel Philibert* the Duke of Savoy, who because he entirely loved the wounded prisoner, caused an assembly of Physitians and Chirurgeons to consult of the best means for his cure. They all were of one opinion, that the wound was deadly and incurable, because it passed through the midst of his lungs, and besides had cast forth a great quantity of knotted blood into the hollownes of his breast.

There was found at that time a certain *Spaniard*, a notable Knave, and one of those Impostors, who would pawn his life, that he would make him sound; wherefore this Honorable Personage being in this desperate case was committed unto his care. First of all hee bid they should give him the Patients shirt, which he tore into shreds and peeces, which presently framing into a Cross, he laid upon the wounds whispering some conceived or coined words, with a low murmure. For all other things he wished the Patient to rest content, and to use what diet he pleased, for he would do that for him, which truly he did. For he eat nothing but a few prunes, and drunk nothing but small beer, yet for all this the wounded Prince died within two days; the *Spaniard* slipt away, and so scaped hanging. And whilest I opened the body in the sight of the Physitians and Chirurgeons to embalm him, the signs and accidents of the wound did evidently and plainly appear to be as we had pronounced before.

And there be also other Jugling companions of this tribe, who promise to cure all wounds with lint, or Tents, either dry, or macerated in oyl or water, and bound to the wound, having murmured over some charm or other, who have had sometimes good success, as I can witness. But the wounds upon which tryall was made were simple ones, which only required union, or closing for to perfect the cure. So verily the bones of beasts when they be broke, grow together by the only benefit of nature. But when the affect shall be compound by diversity of Symptomies, as a wound with an ulcer, inflammation, contusion and fracture of a bone, you must hope for no other from Tents or Lints, nor charms than death. Therefore the common sort who commit themselves to these Impostors to be cured do not only injure themselves, but also hurt the Common-wealth, and the common profit of the Citizens; for whose good and justice sake a prudent Magistrate ought to deprive Impostors of all freedome in a free and Christian common-wealth.

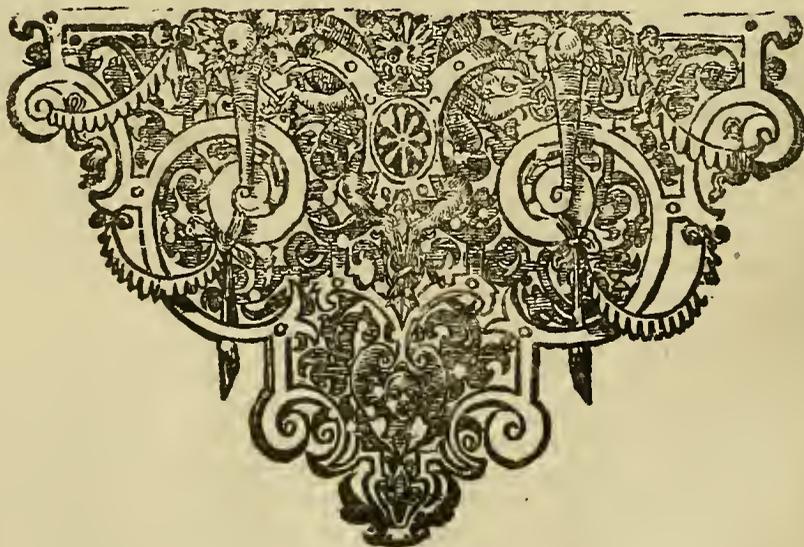
What wounds may be cured only by lint, or by tents and Water.

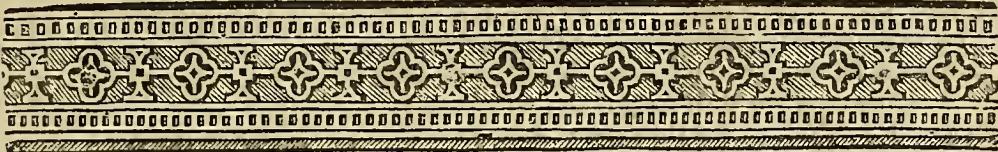
Witches, Conjurers, Diviners, Soothsayers, Magicians, and such like, boast of curing many diseases; but if they do or perform any thing in this kind, they do it all by sleights, subtilties and forbidden Arts, as Charms, Conjurations, Witcheries, Characters, Knots, Magickall Ligatures, Rings, Images, Poysons, laces tyed across, and other damnable tricks, with which they pollute, pervert and defame the prime and sacred Art of

Deut. 18.

Physick, and that with the danger of mens lives. Who certainly are to be banished by the laws of our Countrey, especially seeing it is decreed in *Moses law*, *Let none be found among you that useth witchcraft, or a regard of times, or a marker of the flying of Fowls, or a Sorcerer, or a Charmer, or that counselleth with Spirits, or a Soothsayer, or that asketh counsell at the dead; for all that do such things, are abomination to the Lord, and because of these abominations the Lord thy God doth cast them out before thee.* But the Miracles of our Lord Jesus Christ the Son of God, and of his Saints and Apostles in curing diseases beyond nature and all Art, are of another kind, which we ought to beleve so firmly and constantly, that it should be counted an impiety for a Christian to doubt of them. All holy Writings are full of these; as to give sight to the blinde, hearing to the deaf, power to go to those sick of the Palfie, to drive forth Devils, to cure the Leprosie, to give fruitfulness to women, to raise the Dead, and perform by the holy Ghost other Miracles which exceed the condition and law of Nature; whom here we earnestly intreat to free and protect us from unclean Devils, and the spirits of diabolicall deceit, and to give us the mind that we may will and be able always to aspire to Heaven, and fasten the hope, safety, and anchor of all our fortunes in God alone. *Amen.*

The End of the first Book.





The second Book,
O F
LIVING CREATURES,
And of the Excellency of
M A N.



Efore I come to speak of the Anatomy of Mans body, I have thought fit to say a little of the nature of brute Beasts. There is between Beasts a great deal of difference by nature; for of these, some are hardy and bold, others fearfull; some wilde and savage, others tame; some walking in herds, others wandring alone; some covered and defended with shels and scales, as the Crocodile, the Tortois, and many kinds of fish; others have stings and prickles.

The difference
of brute beasts.

The Horse hath his hard and strong hoofs, his crest (as being a generous beast) beset with a thick and harsh mane. The defence of the magnanimous Lion, are his teeth, his crooked paws and tail. Bulls are formidable by their horns. The Boar by his tusks standing out, as it were naturall hunting spears. The Hare being a timorous creature, is naked and unarmed; but in recompence thereof Nature hath made her nimble and swift of foot. For what the more noble and courageous beasts have in arms, is supplied in the fearfull by nimbleness and celerity. Infinite are the other endowments of brute beasts, and such as can hardly be imagined or described. For if we diligently search into their nature, we shall observe the impressions and shadows of many vertues, as of magnanimity, prudence, fortitude, clemency, and docility: for they entirely love one another, follow those things that are good, shun those that are hurtfull, and gather and lay up in store those things that are necessary for life and food. Lastly, they give undoubted presages of the weather and air. They have taught men many things, and are of a most exquisit and quick sense; of rare art in vocall musick, prudent and careful for their young, and faithfull lovers of their native soil. They are religiously observant of the rights of friendship and chastity. They have their weapons whereby they are prepared, both to invade, and to defend themselves being invaded. They submit themselves to the discipline of man, practise and imitate his speech, and mutually prattle and chant one to another. They have a kind of weal-publick amongst themselves, and know how to preserve their present welfare, and to depell the contrary, being in this their own counsellors, and not tutored by man. Yea, man is beholden to them for the knowledg of many wholsome things. The consideration of which bred so great a doubt amongst the ancient Philosophers, that it was a question amongst them, whether beasts had use of reason, or no? Therefore also the wise *Solomon* sends us for examples of parsimony and diligence unto the Ant or Pismire; and *Esaias* in exprobration of the people of Israel for their ingratitude and rebellion against God, sends them to the Ox and As; for they do not only know, but reverence their masters.

Some shadow
of vertue in
beasts.

But from whence is the knowledg of these Medicins, wherewith the Art of Physick is so richly adorned, but from brute beasts, as *Pliny* affirmeth? The infallible vertue of the herb *Diētamus*, in drawing darts out of the flesh, was taught us by the Hart, who wounded with the Huntsmans darts or arrows, by means hereof draws out the weapons which remain sticking in her. Which is likewise practised by the Goats of *Candie*, as *Aristotle* writeth. The wonderfull effect which *Celandine* hath upon the sight, was learnt by the practise of Swallows, who have been observed with it to have besmeared, and so strengthened the eys of their young. Serpents rub their ey-lids with fennell, and are thought by that means to quicken and restore the decaying sight of their eys. The Tortois doth defend and strengthen her self against the biting of Vipers, by eating of savorie. Bears by eating of Pismires, expell that poison that they have contracted by their use of

Lib. 8. cap. 27.

The craftines
of Bears.

Mandrakes. And for correction of that drouziness and sloth which growes upon them by their long sleep in their dens, they eat the hearb of *Aron* (i.) Cuckopint. But the Art they use in the enticing and catching of Pismires is very pretty, they go softly to the holes or hills of the Pismires, and there lay themselves all their length upon the ground, as if they were dead, hanging out their tongue wet with their foam, which they draw not again into their mouth, before they feel them full of Pismires, which are enticed by the sweetness of the foam: And having taken this as a purging medicine, they expell by the guts, those ill humors wherewith they were offended. We see that Dogs give themselves a vomit, by eating a kind of grasse, which is from thence called Dog-grasse. Swine, when they find themselves sick, will hunt after smalt, or river lobsters. Stockdoves, Blackbirds, and Partridges, purge themselves by Bay leaves. Pigeons, Turtles, and all sort of Pullen, disburden themselves of gross humors, by taking of Pellitory of the wall. The bird Ibis (being not much unlike the Stork) taught us the use of Clysters. For when he finds himself oppressed with a burden of hurtfull humors, he fills his bill with saltwater, and so purgeth himself by that part, by which the belly is best discharged. The invention of the way of removing the Cataract of the eye, we must yeeld unto the Goat, who by striking by chance against the thorny bushes, pulls off the Cataract which hinders the sight, and covers the ball of the eye, and so recovers his sight. The benefit of Phlebotomy, we owe unto the Hippotamus or River-horse, being a kind of horse, and the Inhabitant of the River *Nilus*; who being a great devonrer, when he finds himself surcharged with a great deal of blood, doth by rubbing his thigh against the sharp sands on the bankside, open a vein, wherby the superfluous blood is discharged, which he stoppeth likewise when it is fit, by rowling himself in the thick mud. The Tortois having chanced to eat any of the flesh of a Serpent, doth make origanum and marjoram her Antidote. The Ancients found help from brute beasts, even against the dreadful and non-sparing force of lightning; for they were of opinion that the wings of an Eagle were never struck with lightning, and therefore they put about their heads little wreaths of these feathers. They were perswaded the same thing of the Seal, or Sea-calf, and therefore were wont to encompass their bodies with his skin, as a most certain safeguard against lightening. It were a thing too long, and laborious, to speak of all those other muniments of life and health (observed here and there by *Aristotle* and *Plinie*) which we have learnt of brute beasts. I will therefore end this Chapter, after that I have first added this; That we are beholding to beasts not only for the skill of curing diseases, and of preservation of health, but for our food, our rayment, and the ornament and beautifying the bodies.

Of the Faculty of brute Beasts in presaging.

What the but-
ting of Rams
signifies.

Prefages of
rain.

The sign at sea
of a storm at
hand.

THe first knowledg and skill of Prognostication, and observation of weather by the Air, was first delivered unto us from beasts of the land and water, and from fowl. For we see in dayly observation, that it is a sign of change of weather, when Lambs and Rams do butt at one another with their horns, and playing wantonly do kick, and keep up their heels. The same is thought to be presaged when the Oxe licks himself against the hair, and on the sodain fills the Air with his lowing, and smells to the ground, and when he feeds more greedily than he used to do. But if the Pismires in great multitudes fetch their prey so hastily, that they run and tumble one upon another in their narrow paths, it is thought a sign of rain; As is also the busie working of Moals, and the Cats rubbing and stroaking of her head and neck, and above her ears, with the bottome of her feet. Also when Fishes play and leap a little above the water, it is taken for a sign of rain. But if the Dolphins do the same in the sea, and in great companies, it is thought to presage a sodain storm and tempest. Wherby the Mariners forewarned, use all care possible for the safety of themselves and their ships, and if they can cast Anchor. And it is sufficiently known what the louder croaking of Frogs than ordinary portends.

But the facultie of birds in this kind of presaging is wonderfull. If Cranes flie through the air without noise, it is a sign of fair weather, and of the contrary, if they make a great noise and flie stragglingly. As also if Sea fowl flie far from the Sea, and light on the land. The cry or screeching of Owls portends a change of the present weather, whether foul or fair. *Plutarch* saith, that the loud cawing of the Crow betokens winds and showers, as also when he flaps his side with his wings. Geese and Ducks, when they dive much, and order, and prune, and pick their feathers with their beaks, and cry to one another, foretell rain; and in like manner Swallows, when they flie so low about the water, that they wet themselves, and their Wings. And the Wren, when he is observed to sing more sweetly than usuall, and to hop up and down. And the Cock when he chants, or rather crows presently after the setting of the Sun. And Gnats, and fleas, when they bite more than ordinary. If the Hern soar aloft into the air, it betokeneth fair weather, if on the contrary he flie close by the water, rain. If Pigeons come late home to the Dove-house, it is a sign of rain. If Bats flie in the evening, they foreshew wet weather. And lastly the Crocodile layes her eggs in that place, which must be the bounds of the overflowing of the River *Nilus*; And therefore he that first meets with

The Crocodile
by laying her
eggs, shews the
bounds of the
increase of the
River *Nilus*.

with these eggs, tels the rest of the Countrey people, and shews them how high the flood will rise, and what inundation it will make upon their grounds: A thing most worthy of admiration, that in this monster there should be that strong faculty of presaging.

Of the industry of Fishes.

MAny sea-Fishes, when they feel a tempest coming, do gravell or ballast themselves; to the end they may not be tossed up and down at the pleasure of the waves. Others when the fury of the sea is at the height, hide themselves in the holes of rocks. But in that they swim against the stream, they do it for this cause and reason, that the force of the stream and the flood may not take from them, and strike off their scales, and that their gills may not fill with water which would hinder their swimming, and intercept their respiration. As by the same advice Cranes fly against the wind, whereas if they should fly down the wind, their feathers would be displaced and broken, and they would not be able to fly.

How Fishes provide for their safety against a storm.

How they swim against the stream.

Of the industry of Birds in the building of their Nests.

THe industry of Birds in the building of their nests is such, that it doth far exceed the art and skill of all Masons and Architects. From whence it is become a Proverb, *That men know, and can do all things but make Birds-nests.* They are built within with wooll and feathers, and such kind of soft things, which are as a kind of a pallet for the young ones. Swallows build their nests in a round form, that they may be the more firm, and less subject to be hurt by any thing that shall strike against them, and likewise more capacious. They choose their matter out of dirt and chaff, (interlacing it with many straws) as it were their plaster or lime. Those that build in trees, do make choice of the soundest boughs, as if they meant to have them as a sure foundation for the building which they should erect thereon. The Cock and the Hen do by turns sit over their eggs, and likewise fetch their meat, interchanging each others labor; neither do they ever forsake their young, before they are able to get their own living. I had at my house a great number of Sparrows nests in earthen pots; and when the young ones begun to wax pretty big, and to be covered with feathers, I made the whole nest be taken down and set upon the ground, that I and my friends might delight our selves in beholding the care of the old ones in the feeding of their young; for they feed them every one in order, skipping none, neither will they (to the wrong of the rest) give one two parts, although he gape, and be importunate for it; dividing most justly to every one his own share, according to the exact rule of distribution. And oftentimes for experiment, I would make triall with a strange Sparrow of the same age, laid near, or put among the rest of the young ones, whether the old ones would feed the stranger, as if it were legitimate. But this as a stranger and a bastard they would suffer to starve, skipping it when it gaped after the meat. And in like manner Lambs and young Kidds do in the fields, in the midst of a great flock, run every one to his own dam; who being most certainly able to distinguish between the legitimate and a bastard, will not suffer her self to be suckt but by her own young.

Of what things birds build their nests.

In what shape.

With what care Sparrows feed their young.

Of the industry of Spiders.

THe Spider spins her web with wonderfull artifice, hanging and fastening it to every tack or stay that is nigh, drawing of his thread, and running upwards and downwards, and every way. And although the diligence of the chamber-maid beats down and mars this pendulous and new-begun work, yet her feat and her hold, the Spider keeps still, neither is she, or will she desist from the work she hath begun, but in a very short time weaves a great deal more unto the ruins of her former work, than can be unweaved again with much labor. So that from hence all cloth and linnen Weavers, all Embroiderers and workers with the needle (you will easily think) have learnt their Arts, if either you observe the exactness of the weaving, the fineness of the thred, or the continuation and indissoluble knitting together of the whole web; for being abrupt, and troubled with no ends of threds at all, it resembles a thin membrane, anointed with a kind of glew, wherewith; when the prey is entangled, the Spider runs presently in, and, as it were, draws her nets, and infolds, and takes the captive after the manner of huntsmen. If this were not daily seen with our eyes, it would be thought fabulous.

How the Spiders weave.

How they catch their prey.

Of Bees.

ICannot pass in silence the great industry of Bees: For having established a kind of Weal-publick, they make election of a King, who is such a one, as in procerity of body, and excellency of feature exceedeth all the rest. He is remarkable by his short wings, his streight legs, his grave gate; and in stead of a Diadem or regall Crown, either he hath no sting, or else doth not use it, which is the Artillery of the rest. He never goeth unattended out of the hive, but always invironed with a Princely retinue, the rest of his train following after neither goes he at any time abroad, but upon urgent affairs which concerns

Bees choose themselves a King.

concerns the whole state. His progress is forewarned by the voice and sound of trumpets, and as it were with singing, and they all draw nigh. Every one gets as near to his person as he can, and when he is weary with flying, they all bear him up with their own bodies.

Their pitching their tents.

Their obsequies for their dead King.

Their justice.

On what place soever he alighteth, there they forthwith pitch their tents. If he chance to die, they go not abroad to feed, but stand all mourning round about the corpse; then carry him out of the hive, and (as it were) follow his hearse and bury him: and lastly, having with solemnity performed all the severall rites and obsequies, they choose themselves another King, for without a King they cannot live. He then taketh care of all things, having his eye every where, whilst that the rest intend the performance of the work. And supervising all, giveth them encouragement, and chastiseth negligence. For their time of going forth for food, they choose a clear and fair day; for they have a naturall faculty of presaging of the weather. They are such observers of justice and equity; that never, either with their sting, or by any other way, do they molest any creature, neither do they exercise and prepare their spears against any, but for the safegard of themselves and their hives.

Of the care of Bees.

Their watch.

Their divers employments.

They manage and order their affairs in this manner; in the day-time they appoint before their gates a station of watchmen and guarders. In the night they rest from their labors, so long, till that one (who is appointed to this charge) by one or two humms, as by a sound of a Trumpet, rowseth all the rest. Then come they together to observe what is the state of the weather, which if they foresee will be fair, then abroad go they into the fields and pastures. Some therefore bring into the hive little fascicles of flowers on their thighs; others water in their mouth, and others a dewie moisture gathered on their bodies. These are met by others, who receive their burdens, which they dispose in their due and proper places. Those that are sent out into the fields for food, are the youngest and the smallest; And therefore if the wind chance to rise any thing high, they expect untill it cease, and that the force and violence thereof be over. But if it continue violent, then do they ballast themselves with a little stone flying close by the ground, to prevent their being driven to and fro by the force of the wind. They are exceeding diligent in all their business, and do punish the sloth of the lazie ostentimes with death. Some of them are the builders, others polish the building, and the rest bring in their materials.

They punish sloth with banishment.

Aristomachus a diligent observer of Bees.

The building in their arched hives is with wonderfull artifice, being made with two doors, one to come in, and the other to go out at. They have all things alike, lest that the inequality, either of their food or labor, should give occasion of dissention. Their care is, that their houses may shew both state and handsomness. Idle drones, born for nothing but to eat, and consume the fruits of their labors, they chase from their hives. Those that chance to lose their stings, are utterly disabled, and in a short time their guts come out that way, and they die. They bring to their owners wonderfull increase of wax and honey.

Aristomachus the Philosopher doth boast, that for fifty eight years together, he had with great care been a nourisher of Bees, only that he might the better attain to the knowledg of their state and condition.

Of Pismires and Ants.

Lib. II. c. 30.

Wonderfull care.

Neither truly is the industry, diligence, and experience of the Pismire less worthy of admiration, than that of the Bees. Insomuch as that *Solomon* bids the sluggard to take an example of diligence from the Pismire. Truly, if experience did not witness it, it would seem incredible, that so small a creature should be able to store up such abundance of corn, to dispose and manage her affairs in that good order that we see she doth. *Pliny* saith, that they have among them the form of a well-govern'd and well-order'd Common-weal. For how pretty a sight is it to see them, when they seize upon a grain they have a mind to carry away, how they set to it, and lift it with head and shoulders. And how lest the corn which they carry to their store-house, should put forth and grow, they bite it at one end. If it be so bigg that they cannot carry it into their little hole, they divide it in the middle. If it be dampish, they lay it out to dry in the Sun and open air. When the Moon is at the full, they follow their work in the night; when she doth not shine, they take their rest, whereby they shew themselves to have some knowledg of heavenly things. *Pliny* affirmeth that they have their set Fairs and Markets, whither they come in great companies, and where they use to establish leagues of amity and friendship one with another. And when one marks them well, would he not think that they were in conference one with another, and that they did discourse among themselves of their business? Do we not see that the often trampling of their little feet doth wear a path even upon hard flint stones?

There is nothing but may be attained by diligence.

From whence we may note, what in all kind of things is the effect of assiduity. They say also that they perform the rites of buriall one unto another, after the manner of men.

What

What words shall I use (saith *Plutarch*) to express sufficiently the diligence and industry of the Pismires? There is not among all the great things in nature, a sight of greater wonder than these: For in the Pismires are seen the marks of all vertue. Their great meetings argue that they maintain a kinde of friendship.

Their alacrity in the undergoing of their labors, seems to shew their fortitude and magnanimity; and lastly, they are eminent examples of temperance, providence, and justice. Their mutuall charity appeareth in this, that if one of them that is not loaden meets another, (in one of their narrow paths) that is, he will give him the way, that he may the better go on in his intended journey. They say that the first entrance into their hole, is not straight, but full of many diverticles and crooked paths, which all end, which will bring you to three little cels; in one of which they have their conventicles; in the other, they lay up their provisions; and in the third they bury the carcases of their dead. This doth *Plutarch* speak concerning Pismires.

The forms of all vertues expressed in Pismires.

Of Silk-Worms.

With the industry of these creatures, I shall not unfitly joyn that of the Silk-worms; of whose pains and care, both in the making of their nests, and the spinning of their thred and bottoms (wherewith Kings are so magnificently adorned) Philosophers have written very strange things.

And who can chuse but wonder at those great endowments of skill and knowledg, and that exceeding industry, (the mother of so much wealth) in the little body of so small a creature? The providence therefore of God, doth not only appear in this, that he hath adorned each creature with a peculiar and proper endowment, but in this especially, that on the least creatures of all, he hath bestowed the greater portion of skill, industry, and ingenuity to supply their defect of bodily strength.

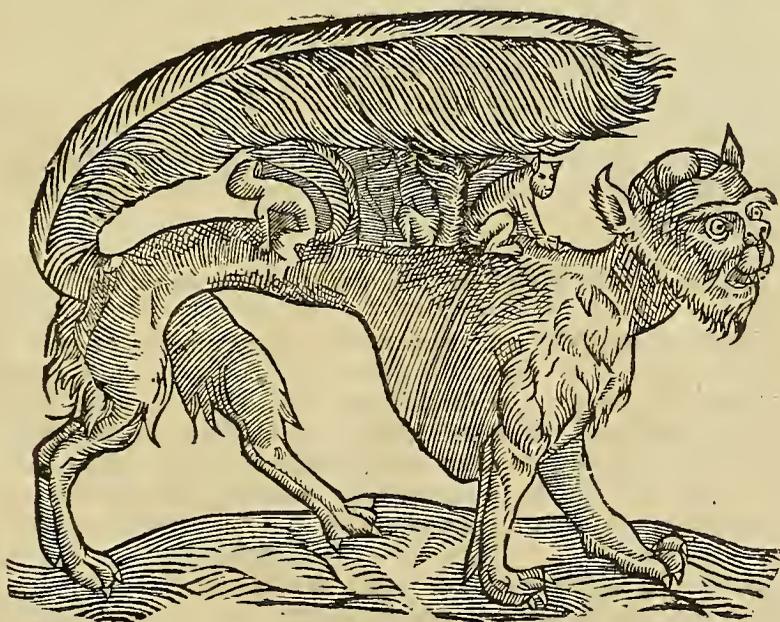
Diligence the mother of wealth.

Of the love of Beasts one towards another, and to their young.

Plutarch writeth, That all kind of creatures bear a singular love, and have a kind of care of those that are generated of them, and the industry of the Partridges this way is much commended; for during the time that their young ones are weak and unable to fly, they teach them to lye upon their backs, and to hide themselves among the clods on the ground, that so being almost of the same colour, they may not be discerned by the Faulkoner. But if notwithstanding, they see any body coming, and that he is near them, they do with a hundred dodges and stoopings of themselves, as if they were weary with flying, entice him away from their young to follow after them, and when they have their purpose, they then, as if they had recovered some fresh strength, fly quite away; who can but wonder at this both affection and subtilty?

The industry of Partridge in preserving their young.

In *Florida* part of the *West-Indies*, they have a beast, which for the variety and deformity of it I cannot pass over in silence; the natives call it *Succarath*, the Canibals, *Su-*



It keeps for the most part about the rivers, and the sea-shore, and lives by prey. When he perceiveth that he is pursued by the Huntsman, he gets his young ones upon his back, and with his tail, which is very long and broad, he covereth them, and so flying, provideth both

both for his own and their safety; neither can he be taken by any other way but by pits, which those savage men use to dig in the places near which he is to run, into which at unawares he tumbles headlong. This picture of him here, I drew out of *Thevet's Cosmographic*.

Tom. 2. lib. 23.
cap. 1.

How Hares provide for themselves and their young, for fear of hunters.

Neither are those things less wonderfull that are reported of Hares, for when they would go to their seat, they sever their young, and commit them to the trust of divers places, it may be two acres asunder one from another, lest peradventure a Huntsman, a dog, or any man should chance to come that way, and they might be in danger to be lost at once. And then after they have traced up and down, hither and thither, and every way that the dogs may not trace them, nor the huntsman prick them, they take a leap or two, and leap into their forms.

Nor inferior to this is the craft of the Hedghog, for when the Fox pursueth him, and is now at his heels, he rowls himself up in his prickles like a chestnut in the outward shell, so that every part being rounded and encompassed with these sharp and dangerous prickles, he cannot be hurt: and so saves himself by this trick. For his young he provides in this manner:

The care of the Hedghog to provide for her young.

In the time of Vintage he goes to the vines, and there with his feet he strikes off the boughs and the grapes, and then rowling his body makes them stick upon his prickles, and so doth (as it were) take his burthen upon his back, and then returns to his hole; you would think that the grapes did move of themselves; the prey he divides between himself and his young.

Of the affection of Birds, and of Dogs towards their Masters.

The piety of Storks.

The young Stork provides for the old, which is disabled by age; and if any one of their equals come to any mischance, that he is not able to fly, they will give him their assistance, and bear him on their backs and wings. And therefore this affection and piety towards the old ones, and (as it were) brotherly love towards their equals, is commended in the Stork.

The Hen in any kind of danger gathers her chickens under her wings, and (as it were) with that guard, defends them as well as she can. For their sake she exposeth her self to the cruelty of the fiercest beasts; and will fly in the eyes of a Dog, a Wolf, or a Bear, that by chance offers to meddle with her chickens.

The fidelity of Dogs.

But who is there that doth not admire the fidelity and love of dogs towards their Masters, whereby they recompence them for their keeping? A Dog will never forsake his Master, no, if he be never so hardly used. For there is no man can find a stick hard enough to drive that Dog clean away from him which hath once taken a love to him. There is no kind of creature that doth more certainly and readily remember his master; he will know the voice of all the household, and of those which frequent the house. There cannot be a trustier keeper, (as *Cicero* himself saith) than a Dog is; I speak not of their faculty of smelling, whereby they follow their Masters by the foot, and find them, neither do I speak of those infinit examples of the fidelity of Dogs, which were too long to rehearse.

Doves free from adultery.

Pigeons, as well the cock as the hen, although they are all very venerous, yet they know no adultery; yea, and the Hen will bear with the frowardness of the cock, neither will she ever leave him, but reconciling him unto her by her officious diligence, bring him to his wonted dalliance and kisses, neither is the love of either of them less towards their young.

Turtles never couple twice.

There is the like mutuall bond of love between Turtles; for if one of them die, the survivor never solicits Hymen more, neither will he ever chuse other seat than a dry withered bough.

Of the strength, piety, docility, clemency, chastity, and gratitude of Elephants.

Among the beasts of the field, there is none more vast, more strong, or more to be feared than the Elephant. His strength is sufficiently shown by those towred Castles of armed men which he carries, and fiercely rusheth with into the battail. The *Roman* souldiers, being otherwise of undaunted spirits, yet in that battail which they fought against *Pyrrhus*, being terrified with the vastness and immanity of these bodies, which they had never before seen, presently turned their backs and fled; which notwithstanding, it is a wonderfull thing what Stories naturall Philosophers tell of the vertues of the Elephant.

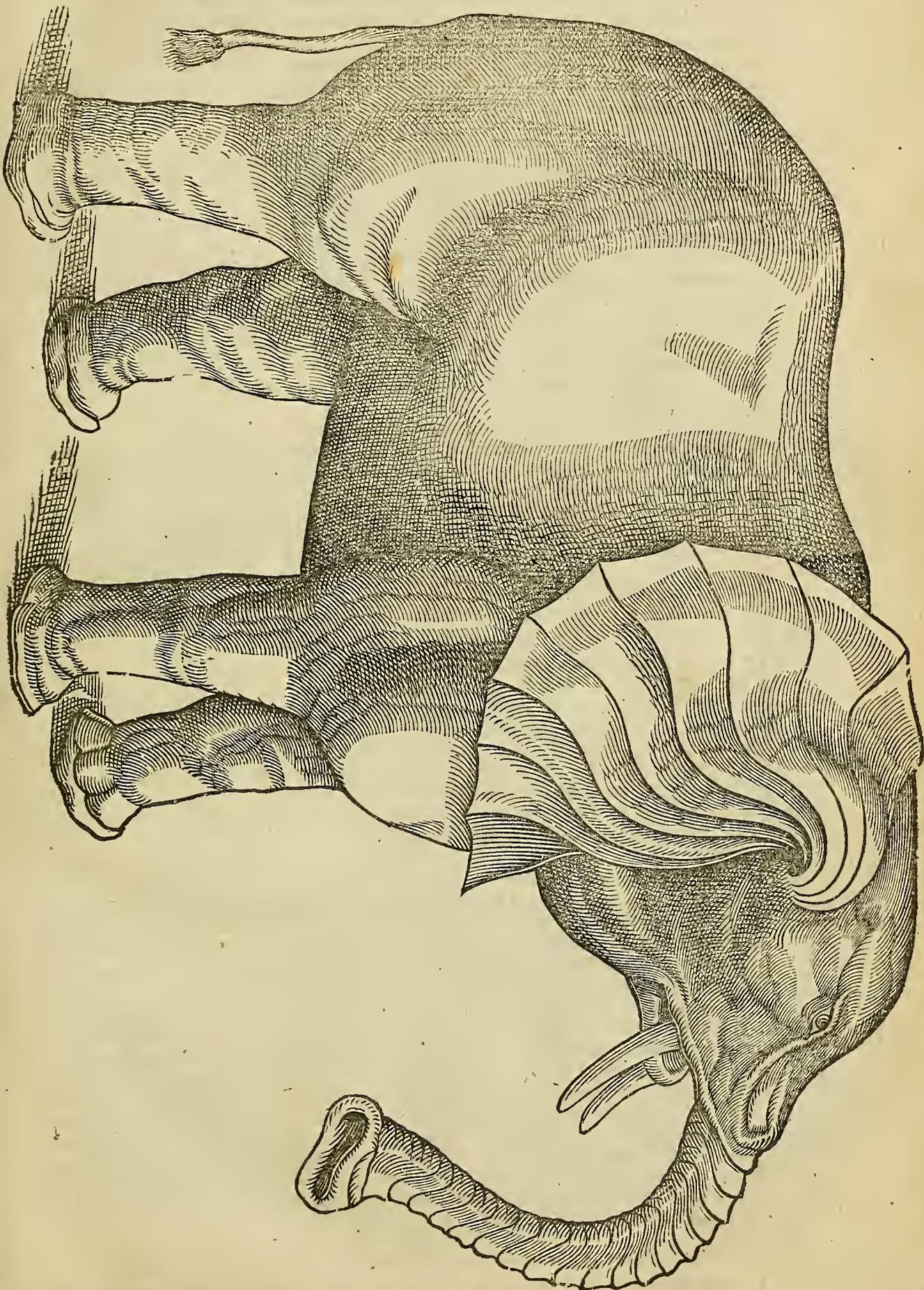
Lib. 8. cap. 1.

The religion of the Elephant.

Plinie writeth, that an Elephant cometh very near to the understanding that men have, and that he hath a rude kind of knowledg. of language; that his facility and obsequiousness is wonderfull, that his memory in the performance of his wonted duties, is no less wonderfull. And for Religion (*Plutarch* saith) that they pray unto the gods, and sprinkle and purge themselves with salt water, and that with great reverence they worship the Sun at his rising, lifting their trunks up towards heaven for want of hands. *Plinie* addeth, that they do with the like reverence worship the Moon and the Stars. For it is related in

the

the Histories of the *Arabians*, that at a new Moon the Elephants go by troops down unto the rivers, and there wash themselves with water ; and being thus purged, kneel down and worship the Moon, and then return to the woods, the eldest going first, and the other following after according to their age.



Plutarch reporteth, that it hapned once, that among the Elephants which were taught at

Rome

Plin. lib. 8.
cap. 5.

Rome against the Panegyrick shews, there was one that was something dull, and not so docile as the rest, which made him be despised by his fellows, and often beaten by his master. But that this Elephant, that he might supply by diligence what he wanted in wit, was oftentimes observed in the night, by the light of the Moon, to be practising and conning what he had learnt of his master in the day-time. For they were wont to be taught to make letters, and also to present garlands to the spectators, and other such like tricks. But they can never be brought to go aboard a ship, to be carried over the sea into any strange land, unless their master give them his word to assure them that they shall return again to their own native soil. They never hurt any one that doth not first provoke them. They never gender but in private out of sight, an argument of their modesty.

Of the Lamprey.

Lest that the heat of affection may seem to lie quenched under the waters, let us by one example, (it were an infinit thing to speak of all) see in what kind of mutuall love the creatures of the water come short of those of the land. The Lamprey of all the creatures of this kind doth worthily bear the praise for its piety towards those of whom it was generated, its affection towards those that are generated of her; for first she breeds eggs within her, which in a short time after are spawned. But she doth not as soon as her young ones are formed and procreated, bring them straight-way forth into the light after the manner of other fishes, that bring forth their young alive, but nourisheth two within her, as if she brought forth twice, and had a second brood. These she doth not put forth before they are of some bigness, then she teacheth them to swim and to play in the water, but suffers them not to go far from her; and anon gapes and receives them by her mouth into her bowels again, suffering them to inhabit there, and to feed in her belly so long as she thinks fit.

The savage or brute beasts may be made tame.

Cosmograph.
Tom. 2. lib. 19.
cap. 7.

THevet reporteth, that the Emperor of the Turks hath at *Caire* (it was once called *Memphis*) and at *Constantinople*, many savage beasts kept for his delight, as Lions, Tigers, Leopards, Antilopes, Camels, Elephants, Porcupines, and many other of this kind. These they use to lead about the City to shew. The masters of them are girt with a girdle hung about with little bells, that by noise of these bells the people may be forewarned to keep themselves from being hurt by these beasts. But in hope of reward and of gifts, they shew them to Ambassadors of strange nations, before whom they make these beasts do a thousand very delightfull tricks, and in the interim they play their countrey tunes and musick upon their pipes and other instruments, and make many sports in hope of gain.

That Fishes also may be tamed.

But it is far more wonderfull, that the creatures of the water should be made tame, and be taught by the art of man. Among which, the chiefest are held to be the Eel. The same things also are reported of the Lamprey. For we have it recorded, that *Marcus Crassus* had a Lamprey in his Fish-pool, that was so tame, and so well taught, that he could command her at his pleasure. Therefore as a domesticall and tame beast he gave her a name, by which when he called her, she would come. And when this Lamprey died, he mourned for her in black, as if she had been his daughter. Which when his colleague *Cneus Domitius* objected to him by way of reproach, he replying, told him, That he had buried three wives, and had mourned for none of all them three.

Of the Lion, the Ichneumon, and those other beasts which are not easily terrified.

The providence of the Lion in his going.

The Lion when he goes, hath his claws always clutched, and (as it were) put up in their sheaths, not only because he would leave no mark of his feet, whereby he may be traced and so taken, but because by continuall walking he should wear off, and blunt the points of his claws. Bulls when they fight charge one another with their horns, and like valiant souldiers, provoke and animate one another to the battail.

The greatest are terrified by the least.

The Ichneumon seems to imitate the most valiant souldier in his preparation and access to battail; for he bedawbs himself with mud, and doth (as it were) buckle and make tite his armor, especially when he is to encounter with the Crocodile; who although he bee a vast beast, is put to flight by this little creature. And this truly hath been observed to be by the singular providence of Nature, that the most vast creatures are terrified by the least things, and such from whence there can arise no danger; so they say the Elephant doth startle at the grunting of an Hog; and the Lion, at the crowing of a Cock; although it be reported of the Lion, that no fear can make him turn his face. These kind of fears, terrors, and affrightments, arising upon light and most ridiculous occasions, we find as well in the ancient as modern Histories of our times, to have dispersed and put to flight mighty legions of souldiers, and most potent armies.

That men were taught by Beasts to polish and to whet their weapons, and to lye in ambush.

Souldiers are carefull to keep their weapons from rust, and therefore they carry them to the Armorers to be polished. But in this care, many beasts are nothing inferior un-

to them; for Boars whet their tusks against they fight. And the Elephant knowing that one of his teeth is doubled with digging at the roots of trees to get meat, keepeth the other sharp, and touches nothing with it, preserving it for his combat with the *Rhinocerot* his



The craft of the Rhinocerot about to fight with the Elephant.

enemy; but the craft of the Rhinocerot is very remarkable, that being in continuall enmity with the Elephant, at the time when he prepares for the battail, he whets his horn against a rock, as if it were with a whetstone; nor (if he can chuse) will he strike any other part of the Elephant but the belly, because he knows that part of the Elephant is so tender, that it may be easily pierced. This beast is in length equall to the Elephant, but in height he is inferior unto him, by reason of the shortness of his feet; he is of a palish yellow colour, and full of many spots.

Of Cocks.

Cocks are Kingly and martiall Birds.

Cocks are kingly Birds, and therefore Nature hath adorned them with a comb, as with a princely Diadem; and wheresoever they come, their magnanimity and courage makes them kings. They fight with their beaks and their spurs, and with their martiall voice they fright the Lion, who is otherwise the king of beasts.

Of Conies.

Conies have taught us undermining.

Conies have taught us the art of Undermining the earth, whereby the most lofty Cities and structures reaching the very skies, are by taking away their foundation levelled with the ground.

Marcus Varro writes, that in Spain there was a town, and that no mean one, which standing on a sandie ground, was so undermined by a company of Conies, that all the houses tumbling and falling down to the ground, the inhabitants were faine to depart and seek new dwellings.

Of Wolves.

The deceits and ambushes of Wolves.

Men have learnt the arts of waging War from the Wolves, for they come out by troops, and lye in ambush near the towns which they have appointed, and then one of them runs unto the town and provokes the dogs. And making as if he run away, incites the Dogs to follow him, untill he hath gotten them unto the place where their ambush lyeth, which on a sodain appeareth, and rusheth out upon them. And so they kill and eat all, or as many of the dogs as they are able to catch.

Of the Fox.

The craft of the Fox.

In subtilty and craft the Fox exceedeth all other beasts: when in the chase the Dogs are at his heels, he berays and bepiffes his tail, and swings it in the face and eys of the Dogs that follow him, and so blinding them, in the mean time gets ground of them. To fetch the Hens down from their perch, he hath this devise, he shakes and swings his tail upwards and downwards, as if he meant to throw it at them; which they fearing tumble down, and he takes up one of them for his prey. His wariness when he passeth over a River that is frozen, is wonderfull; for he goes softly to the bank, and lays his ear to listen, if he can hear the noise of the water running under the ice. For if he can, back he goes, and will not venture to pass over. The knowledg of which thing he could never meerly by his subtilty and craft attain unto, but that of necessity he must have some faculty of reasoning joined with it; which by discourse, and by proving one thing by another, arrives at this Conclusion: whatsoever is liquid and maketh a noise, is in motion; whatsoever liquid is in motion, is not concrete and frozen; that which is not concrete and frozen, is liquid; whatsoever is liquid, will not bear a heavier body; whatsoever will not bear a heavier body, cannot with safety be adventured on; and therefore back again must I go, and not pass over this River.

The Fox seems to reason with himself.

His Soriter.

Of Swine.

Swine, if in the woods, they hear any one of the same herd with them crying out, they straight make a stand; and marshalling their forces, haste all, as if they had been warned by the found of a martiall trumpet, to the assistance of their fellows.

Of the fishes Scarus and Anthia.

The love of Fishes one to another.

Plutarch reports of the *Scari*, that when one of them chances to swallow a hook, and be taken, the rest of the same kind come to his rescue, and shearing the Line with their teeth, set him at liberty. But the readines of the *Anthia* to the mutuall assistance of one another, is yet more manifest; for by casting the Line upon which the hook hangeth on their back, with the sharpness of their fins they cut it asunder, and so set free themselves and their captived fellows.

Of the Pilot-fish.

There is great kindness between the Pilot-fish and the Whale; For although in bulk of body the Whale so far exceed him, yet he leads the Whale, and goes always before him

him as his Pilot, to keep him from running himself into any straight or muddy place, whence he might not easily get out. And therefore the Whale always follows him, and very willingly suffers himself to be led by him, it being for his own good. And in like manner he gets into the Whales mouth, and there lodging himself, sleeps when he sleeps, and leaves him not either by day or night.

The Whales
pilot or guide.

Of Cranes.

CRanes when they are to take a long journey into some Countrey cross the seas, put their company in so good order, that no Captain can put his souldiers in better. For before they stir out of any place, they have (as it were) their trumpets to call them together, and encourage them to fly. They come together, and then fly up on high, that they may see afar off, choosing a Captain whom they are to follow. They have their Serjeants to take care of their ranks, and keep their nightly watches by turns. *Plutarch* tells us that the Crane, which is appointed to stand Sentinell for all the rest, holds a stone in her foot, to the end, that if she chance to give way to nature and sleep, she may be waked by the noise of the falling stone. The leader lifting up his head, and stretching out his long neck, looks about him far and wide, and gives warning to the rest, of any danger that may befall them. The strongest lead the way, that they may the better with the flapping of their wings break the force of the air, and this they do by turns. And that they may the easilier prevail against the force and opposition of the winds, they dispose their company into a wedg in the form of the Greek letter Δ or a triangle; and being skilfull in the stars, they foresee when tempests are coming, and fly down to the ground to keep themselves from the injury of the approaching storm.

Cranes order
themselves in
ranks.

The sentinell
Crane.

Of Geese.

THe Geese of *Sicilie* do with great wariness take care, that by their keeking and their noise, they do not expose themselves to the rapacity of Birds of prey: for *Plutarch* saith, that when they are to fly over the hill *Taurus*, for fear of the Eagles that are there, they hold stones in their mouths to keep themselves from gagling, untill that they come unto a place where they may be secure.

The care of the
Geese that their
gagling do
them no harm.

Of Dragons.

Neither are the Dragons less crafty; for thus do they overcome those vast and otherwise invincible beasts the Elephants. They lye in ambush, and sodainly set upon the Elephants where they fear no such matter, and involve their legs with the twines of their tail, in such sort, that they are not able to go forward; and stop their nostrils with their heads, so that they cannot fetch their breath, they pull out their eys, and wheresoever they find the skin most tender, there they bite and suck the blood untill they make them fall down dead. *Pliny* saith, that there are Dragons found in *Aethiopia* of ten Cubits long, but that in *India* there are Dragons of an hundred foot long, that fly so high, that they fetch Birds, and take their prey even from the midst of the clouds.

The craft of
Dragons fight-
ing against the
Elephant.

Lib 8. cap. 11.
& 12.

Of the Fish called the Fisherman.

This fish is called the Fisherman, because he hunts and takes other Fishes, which he doth almost by the same cunning which the Cuttell uses; for he hath hanging at his throat a certain bag, like the Wattels of a Turkey-cock. This when he listeth he casteth out, and layeth before the little Fishes for a bait, and then by little and little draws it up again, untill he catch for food the little Fishes seiing upon it as a prey.

The craft of the
Fisherman fish
in taking her
prey.

Of the Cuttell Fish.

Vnderfull is the craft of the Cuttell-fishes, for they carry a bladder at their neck full of a black juice or ink, which they pour forth as soon as they feel themselves taken; that so they may blind the eys of the Fishermen, as *Plutarch* saith, and as *Aristotle* witnesseth, they with their long fangs do not only hunt and take little Fishes, but oftentimes also Mulletts.

The craft of
the Cuttell to
save her self.
Lib. 9. de Hist.
animal. cap. 37.

Of the arms or weapons of brute Beasts.

Brute beasts are naturally so furnished with arms, that they have no need to get, make or borrow in any other place.

And some of them nevertheless are so furnished with such arms, that they captivate those which hold them prisoners; an example of this is the *Torpedo*, which doth not only hurt by touch, but also by the net being between, he breaths such a quality from him, as stupifies the hands of the Fishermen, so that they are forced to let go their nets, and so let him go; moreover if it touch a ship it makes it stay. *Thevet* writes, that the *Persian* bay towards *Arabia*, nourishes a fish equal in length and thickness to a Carp, on every

Cosinogr. 10m. 1.
lib. 10. cap. 17

side encompassed with sharp and strong pricks, like our Porcupine, with which he fights against all kinds of fish. If a man chance but to be lightly hurt either with these or his teeth, he will die within 24 hours.

Of the fish *Utelif*.

HE saith moreover, That as he was carryed by force of tempest through the Atlantick Ocean, he saw this fish, having (as it were) a Saw in his forehead of three foot long, and four fingers broad, armed on each side with sharp spikes; they call it *Utelif* in their Country speech.

Of the fish *Caspilly*.

THere is another fish to be seen in the Arabian-gulf, which the Arabians call *Caspilly*, it's two foot long, and as many broad, it hath a skin not much unlike a Dogfish, but armed with spikes, one whereof he carries in his forehead a foot and half broad, in sharpness and force of cutting not much short of a graver or chissell: with this weapon, when she is oppressed with hunger, she assails the first fish she meets, neither doth she give over, before she carry her as a prey whither she please, as *Thevet* saith he hath seen.

*Tom. 1. lib. 5.
cap. 2.*

Of Crabs.

CRabs and Lobsters, though in the quantity of their body they be but small, yet they use their forked claws before, not only in feeding but also in defending themselves and assailing others.

Of the docility of Beasts, and first of the Dog.

BEasts are apt to learn those things which men desire, whereby they shew themselves not wholly void of reason. For Dogs, Apes, and Horses learn to creep through the Juglers hoops, and rise on their hinder feet, as though they would dance. *Plutarch* tells, that a Jugler had a Dog which would represent many things upon the stage besitting the occasion and argument of the Play; amongst the rest, he exceeded all admiration in that, that taking a sopotifick medicin, he excellently feigned himself dead; for first, as taken with a giddiness in his head he begun to tremble, then presently fell down, and lying on the ground, as it were contracted his dying members, and lastly, as if truly dead he wax'd stiff; and moreover suffered himself diversly to be fitted according to divers parts of the Theater, the fable so requiring. But when he, by those things that were said and done, knew it was time to rise, he first begun to move his legs by little and little, as if he had been wakened from a sound sleep; then presently with his head a little lifted up, he looked this way and that way, to the great admiration of all the beholders; and finally rise up and went familiarly and chearfully to him he should; the which sight the Emperor *Vespasian* (who was then present in *Marcellus* his Theater) never saw any which more delighted him.

The wonder-
full docility of
Dogs.

A spectacle full
of admiration
and truth.

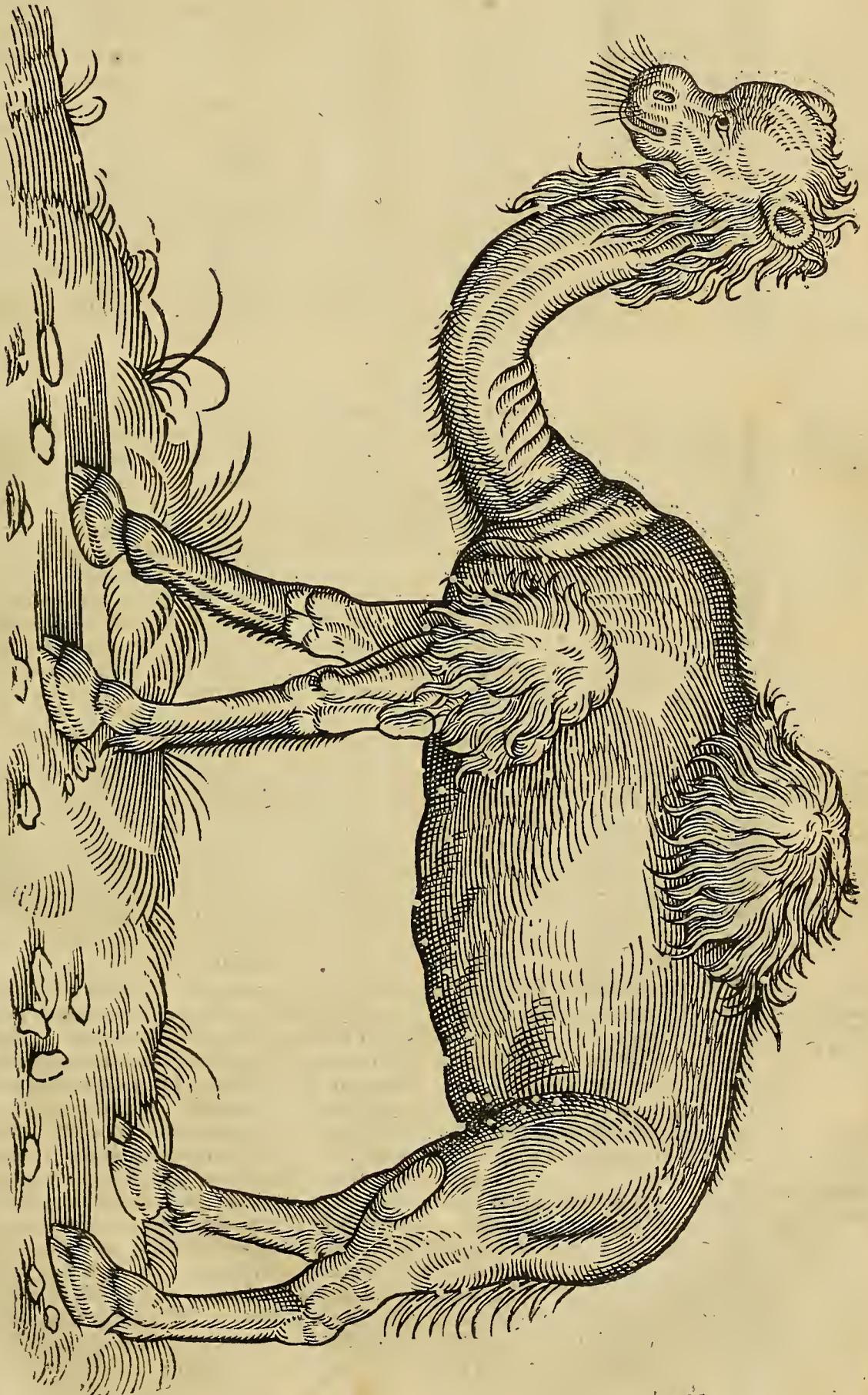
Of the Ape.

AN Ape is a ridiculous Creature, and which makes men much sport in imitating their actions. There hath been seen an Ape which would pipe and sing, and besides dance and write, and endeavour to perform many other things proper to men. I remember I saw in the Duke of *Somes* house a great and curst Ape, who because he much troubled many, had his hands cut off, who suffering himself to be cured, when the wound was cicatrized, he grew more milde and docile. Wherefore cloathed in a green coat, and girt over his loius with a girdle, he carried hanging thereat a case of spectacles, a pair of knives, and a child's handkerchief. He was committed to the charge of the Master-cook to teach, because he had taken up his lodging in the Chimney-corner, he was taught many tricks and feats. If at any time he swerved from his doctrine and precepts, in a trice the whip was upon his back and loins, and much was abated of his daily allowance; for as *Persius* saith, The belly is the Master of Arts, and sharpener of wit. By these means he profited so in a short time, that he much exceeded all the Apes of his time in the glory of his wit; and there was none counted more skilfull in leaping and dancing to the pipe, running up a pole, and nimbly leaping through his Masters legs. To conclude, he performed all the actions of a strong Ape, and very reverently carried up dishes with the waiters and serving-men, and made clean the dishes and platters by licking, and did much other drudgery, so that he was commonly called, Master *John Do-all*. At dinner and supper sitting in a chair, he said grace, and cast his eyes up towards heaven, and rouled them this way and that way, and smote his breast with the stumps of his hands with much lamentation, and imitated prayer by the gnashing or beating together of his teeth. He would turn up his tail to any that offended him, (for his coat scarce covered half his buttocks lest he should have filed it) he made much other pastime, always going upright by reason of the cutting away of his hands, unless at any time through weariness he were forced to sit on his buttocks.

*Gal. lib. 1. de
usu partium.*

Of the Camels.

The *Camell* is a very domesticall and gentle beast, and which is easily tamed and taught all kind of obedience and service; although some of them are cruel, wilde and



trouble-

Camels both tame and wilde.

The easie and not chargeable keeping of Camels.

Camels know when they have a sufficient load.

Camels both to carry burdens, and to ride upon.

A mighty troop of Camels.

The diligence of Falconers in training up their Hawks.

The fight of the Hern and Falcon.

To sing like a Nightingale.

The voice to beasts is of the same use, as speech is to men.

We are as ill as deaf, when we hear an unknown language.

troublesome by biting and striking such as they meet, no less than untamed horses. There is no need to house them in the night, for they may be left in the plain fields in the open and free air, feeding upon the grais and trees and cropping the tops of the thistles, neither in the morning do they any whit the worse undergoe or carry their burdens. They are not put to carry burdens before they be four year old. The *Arabians* geld them young, that they may enjoy their labour the longer, neither being gelt do they rage for love or desire of Vnery. At the putting in of the Spring they endure hunger and thirst for eight dayes; they are so dutifull, that at the beck of the Turkish slaves, or but touched on the neck with a twig, they presently kneel on the ground to take up their burden, neither do they lift themselves up before that they find they have a sufficient load laid upon them. Those that have but one bunch upon their back are of *Africk*; but such as have two bunches are of *Asia*, or *Scythia*. Those kind of Camels that are the bigger are used to carry packs, but the lesser are used to ride upon, as our horses are. They love nothing so well as beans, and yet they live content with four handfuls of beans for a day. The greatest wealth of the *Arabians* consists in Camels, and so they estimate their riches, not by the quantity of silver, or gold, but by the number of Camels. The *Turkish* Emperour (*Thevet* being the reporter) made a Captain over the herds of his Camels, giving him a great troop of *African* and *Christian* slaves, that they might be the better looked unto. I have heard it reported (saith *Thevet*) by certain *Arabian*, *African* and *Jewish* Merchants who were present, at that time when *Sultan Selim* the first of that name, besieged *Caire* in *Ægypt*, (which in former times was called *Memphis*) that there then was in that Emperours army sixty thousand Camels, besides a mighty company of Mules.

Of ravenous Birds.

But let us take a view of Falconers teaching ravenous Birds, how with swift wings carried aloft into the air, they may seize upon other Birds, and cast them down dead to the ground; in performance whereof, they often too freely soare up to the clouds, so that they carry themselves out of the Falconers sight, with a desire to sun themselves, neglecting in the mean time their designed prey.

The Hern when she sees her self kept under and below the Falcon carried up by his strong wings with a marvailous swiftness, with her beak, which is long and sharp, hid under her wings, and turned upwards, she receives the Falcon blinded with the heat of sight and desire of prey, carelessly flying down and rushing upon him; so that he often strikes him through the gorge, so that oft times they both fall down dead to the ground. But if the Falcon without harm escape the deceits by art, and the happy turning of his body, and the Hern be not cast down, the Faulconer calling her back with never so loud a voice, yet by setting up her Feathers she dares her to the pretended fight.

That Birds have taught us muscalle tunes.

The Nightingales are sweet and excellent singers, tuning their notes with infinite quaverings, and diversities of sounds, so prettily and sweetly, that humane industry can scarce equal the sweetness thereof, by so many muscalle instruments; so that we say, he sings like a Nightingale, who varies his voice with much variety. In which thing Birds much excell men, because they have that admirable sweetness of singing from nature it self without any labor of learning; which men can scarce attain to in any school of musick, by having their ears a thousand times pluckt by the hand of a curst master.

That Beasts know one anothers voice.

Beasts know one another by their voice, so that they may seem to talk and to laugh together, whilst flattering with their ears, they pluck in their noses with a pleasant aspect of their eyes; and as speech is given to men, so Birds have their naturall voice, which is of the same use to them, as speech is to us. For all Birds of the same species, as men of the same countrey, chant and chirp to one another, when men understand not the speech of other men, unless of the same Nation. Wherefore the *Scythian* tongue is no more profitable to one living in *Egypt*, than if he were dumb; nor the *Egyptians* understand it no more than if they were deaf. Wherefore an *Egyptian* is dumb and deaf to a *Scythian*. This those which travail well understand how many dangers, how many troubles they undergo, because they cannot expresse their minds, and require things necessary for life. Wherefore to the assistance of this unprofitable tongue, we are compelled to call the rest of the members, and to abuse the gestures of the head, eyes, hands, and feet. Truly the condition of brute beasts is not so miserable, seeing that all of the same kind wheresoever they be, may answer each other with a known voice. Truly if any should hear a *German*, *Briton*, *Spaniard*, *Englishman*, *Polonian*, and *Greek*, speaking amongst themselves in their native tongues, not understanding any of them, he could scarce discern, and certainly judg, whether he heard the voice of men or of beasts.

That Birds may counterfeit Mans voice.

Linets, Larks, Pies, Rooks, Daws, Crows, Scares, and other such like Birds, speak, sing, whistle, and imitate the voices of men, and other creatures. In this Parrats excell all other, being wondrous skilfull imitators of mens voices, and very merry, but specially when they have drunk a little wine.

Parrats are wonderful imitators of mans voice.

Plutarch reports that there was a Barber at *Rome*, who kept a Pie in his shop, which spoke exceeding well, and that of her own accord, none teaching her, when she first heard men talking together; she imitated the voice or cry of all beasts shee heard, as also the sound of Drums, and the sound of Pipes, and Trumpets: to conclude, there was nothing which she did not indeavour to imitate. There have been Crows that have spoken and articulately sung songs and Psalmes, and that of some length. To which purpose the History of *Macrobius* is notable; for he tels that there was one amongst those, who went forth for luck sake to meet with *Augustus Caesar*, returning from the war against *Antonius*, who carried a Crow, which he had taught plainly to pronounce this salutation, *Salve Caesar Imperator Augustissime*, that is, *God save thee, O most sacred Emperor Caesar*. *Caesar* taken with the novelty of this spectacle, bought this obsequious bird with a thousand peeces of silver. *Pliny* and *Valerius* have reckoned up amongst prodigies, Oxen and Asses that have spoken. I omit infinit other things recorded by the ancients, *Plato*, *Aristotle*, *Pliny*, *Plutarch*, and other Philosophers of great credit, of the docility of beasts, and their admirable felicity of understanding. Which things, if untrue, these learned men would never have recorded in writing, lest so they might brand with vanity, (then which nothing is more base) the rest of their writings to posterity in all ensuing ages.

A talking Pie.

Lib. 2. Saturn. cap. 4.

Of the Sympathy and Antipathy of Living Creatures amongst themselves.

Having briefly described the understanding of brute beasts, it seems not impertinent to set down some things more worthy of knowledg, happening unto them by reason of Sympathy and Antipathy; that is, mutuall agreement and disagreement, which happens not only to them living, but also dead, by a certain hidden property, through occasion whereof some desire, other shun, and others prosecute one another even to death. In testimony whereof; The Lyon the King of Beasts excelling all other in courage and magnanimity, fears the Cock, for he is not only terrified by his presence, but also by his crowing being absent. So an Elephant fears a Hog; but he is so afraid of Mice and Rats, that he will not touch the meat that is given him, if he smell that it hath been defiled with such creatures. There is deadly hatred between the Elephant and Rhinocerot; yet when the Elephant is furious and angry, he becomes quiet and calm at the sight of a Ram. A Horse is so afraid of a Camel, that he cannot indure his sight. The Dog hates the Wolf, the Hart flies the Dog. The Snake flies from and fears a naked man, and followes him being clothed. There is deadly hatred between the Aspis and Ichneumon, for he when he hath rowled himself in the clay, dries himself in the Sun, and so being covered over (by doing thus divers times) as it were with shells, or armour, he enters into combat, stretching out his tail, and presenting his back, untill he get opportunity to choak his adversary, by leaping and fastening on her jaws, by which stratagem he also kills the Crocodile. The green Lizard is a capitall enemy to the Serpent, but most friendly to man, as *Erasmus* witnesseth by many Histories concerning that matter, in his Dialogue of Sympathy and Antipathy. There is a great deal of hatred between a Man and a Wolf, which is most manifest by this, that if the Wolves first see a man, his voice is taken away, and his intended cry hindered. If the Weasell intend to set upon the Aspis that most venomous Serpent, shee arms her self by eating Rue, as a most certain Antidote. The Ape fears the Torpedo, as *Erasmus* manifests by a pleasant history in the forementioned Dialogue; where also he prettily shews the deadly hatred between the serpent called Areus and the toad. The like hate is between the Owl and Crows, so that the Owl dares not go out, fly abroad, or seek her food unless by night. The water or River fowl are afraid of the Falcon; that if they but hear her bells, they had rather be killed with staves and stones, than take wing to flie into the air. So the Lark yelds herself to be taken by a man, lest shee fall into the talons of the Hobby. The Castrill, or Merlin is naturally a terror to Hauks, so that they both shun his voice and presence.

The Lion fears a cock.

A horse fears a Camell.

What fowl fear the Falcon.

The Kites are all at perpetual enmity with the Crows, wherefore the Crow alwayes gets away the Kites provision. All kind of Pullen fear the Fox. The Chicken fears neither a Horse, or an Elephant; but scarce hatched, it presently runs away at the voice or sight of a Kite, and hides it self under the hens wings. The Lambe and Kid flie from the Wolf when they first see him, neither doth death give an end to that hatred, but it supervives their funerall. An Experiment whereof (they say) is, that if one Drum be headed with Wolves skins and another with Sheeps, and beaten up together, you shall scarce hear the sound of the Drum covered with sheeps skins. And besides, if you string one Harp with strings made of sheeps guts, and another with strings of Wolves guts, you cannot bring

The enmity between the Kites and Crows. The discord between the Lamb and Wolf is not ended by death.

it to pass, by any art, to make them agree and go in one tune. It is reported from the experiments of many men, that if a Wolves head be hanged up on high in the place where Sheep are, that they will not touch the grafs how good and fresh toever it be, nor rest quiet in any place, but tumultuously run up and down, untill all such kind of terror be taken away. The hate betwixt Mice and Weasels appears by this, that if you mix never so little of the brains of a Weasell in the rennet, with which you cruddle you Cheese, the Mice will never gnaw or touch that cheese. The Linner doth so hate the bird *Florus*, that both their bloods put into one vessel cannot be mixed together. A Wolves head hung up in a dove-house, drives away Poll-Cats and Weasels. The Panther and Hyana burn with so great hatred, that if both their skins be laid one against the other, the Panthers will shed the hair, the hairs of the Hyæna remaining entire and not moved; which thing, they say, happens to the feathers of other birds if any one chance to tie them up in a bundle with the Eagles. Let these suffice for some few examples of many, of the Antipathy amongst beasts. But of the Sympathy and consent of beasts amongst themselves, I think needless to write any thing, being it is sufficiently known to all, that one Jay associates another, and the cruel Bears agree amongst themselves; and beasts of the same species do wonderfully consent one with another.

That Man excels all beasts.

I Now think it fit to assay to write of that excellency of man over beasts, which I have so long intended. Neither would I that Epicures and other too much naturall and material Philosphers, so take those things I have written of the endowments of beasts, as though we should think, there were no difference between man and beast. I had no such meaning, no such intention; but only that man should not become too stately, or too ingrate in less acknowledging God to be the Author of so many benefits with which he abounds. For whatsoever we have largely spoken of beasts, yet there is no comparison between beasts and man, for there is too great a difference between them. For mans mind is adorned with religion, justice, prudence, magnanimity, faith, piety, modesty, clemency, fortitude, and other vertues as lights, which shine much more bright in man than in beasts. For they are sometimes all in some one man, each whereof are thought great in beasts. For seeing that man is made to the Image of God, it cannot be, how much soever he defile himself with the pollution of vices, that he can so obscure that inbred light, but that alwaies some beam of the divine wisdom will be inherent & shine in him. But although by collation to some beasts, he may seem a defective and weak Creature; yet no fortitude nor strength of beasts can be so great as to equal the fortitude of man. For God hath ingraven in man the character of his divine vertue, by the assistance whereof, he might have all beasts under and obedient to him. And though by that we have formerly said, beasts may seem to have a certain shadow of reason, yet that small light is not fit for many and divers uses, but there is only given them so much providence, as should be sufficient for them and the preservation of their bodies. But men have reason given them to crop or gather the fruits of eternall life, (as *Lactantius* saith) whereby it comes to pass, that man only, amongst so many creatures, hath sense and understanding of divine things. Which *Cicero* thought to be known by that, because man only had a certain knowledg of God in his mind. Wherefore he was enriched by God with reason, speech and hands as helps for the performance of all his actions; moreover by his singular and almost divine wit he easily excels all brute beasts. For first, reason being his guide, he invented things necessary for life, fitly imposed names on the things invented besitting their natures, framed letters and Characters, invented all liberall Arts and handy-crafts, and found means to measure the Land and Sea. He hath observed and drawn into an Art the spaces of the Celestiall Globe, the distinctions of the Stars, the changes and orders of dayes and nights, of times and seasons, the rising and setting of Stars, and their power and effects over these lower bodies. Lastly, he records in writing to perpetuall memory that which concerns his own nature, or the nature of other things, the precepts and ordinances of life and manners: by which singular gift, we can now confer with *Socrates*, *Plato*, *Aristotle*, and other Philosphers of ancient times, as if they were living.

What benefit man hath by reason of his native nakedness and ignorance.

BUT as Mans body is by nature naked and unarmed, so is his mind like a smooth table in which nothing is painted, nothing graven; but for help of his nakedness he hath hands, and for supply of his ignorance, reason and speech. And by these three being as it were the ministers of infinite variety of things, he clothes and defends his body with all things needfull: and enriches his mind with the knowledg of Arts and Sciences. Now if he had certain weapons born with him, he should use them only; if he should be born skilfull in any Art, he would meddle with none else. Therefore because it was more expedient to use all sorts of weapons with the hand, and be skilfull in all Arts; therefore he must be born wanting and ignorant of all. *Aristotle* very wittily called the hand the instrument of instruments: in imitation of which speech, one may rightly affirm, that reason is the

Art

How to make
cheese that
Mice will not
gnaw.

Mans bears
Gods image.

Man hath given
names to
things.

*Gal. cap. 4. lib.
1. de su parti-
um.*

As the hand is
the instrument
of instruments
so reason is
the art of arts.

Art of Arts: for as the hand in worth exceeds the other instruments, because it can make, handle and fit them for use; so reason and speech, though names of no Art, yet comprehend and encrease all Arts. Therefore man seeing he hath his mind instructed by Art, that is, by reason; it is fit he should have his body defended with a weapon, or instrument, that is, the hand, which in agility and excellency should excell all other instruments. For so Man hath of his hands in stead of all weapons, which he may use in war and peace as the instruments of all Arts; he wants not the Bulls horns, the Boars tuskes, the horses hoofts, nor to conclude, any arms of any other Beast. For by the benefit of his hands he can handle other arms far more profitable and safe; as a Lance, Sword, Spear, halberd; but man also can use at some distance the bow, sling and handgun, when the horn and the hoof cannot be used but neer at hand. But some may say; A Lyon exceeds a man in swiftness of foot; what then? is man therefore inferiour to him? no, for by the means of his hands and the guidance of his reason he bridling and riding upon a horse, out runs the Lyon, and being victor follows him to and again as he himself pleases, or vanquished flies away, and from the horses back as from a tower wounds the Lyon with what weapons he pleases. To conclude, man is abundantly provided with means, to defend himself from the violence of all other beasts. For this purpose he doth not only harness himself as with brazen wals, but also makes ditches and Bulwarkes, he makes by the ministry of his hands all kind of weapons, weaves himself garments, casts into the water and draws forth nets to catch fish; and to conclude, he performs all things to his own contentment, and having that priviledge granted him by God, he rules over all the earth; all things which lye hid in the bowels of the earth, which go, or creep upon the earth, which swim in the Sea, and flie through the air, or are any where shut up in the compass of the skie, are in mans dominion.

Man under God is the king and Emperour of the world.

How wonderfull God hath shewed himself in making man.

Gods Deity and providence hath principally shewed it self in the creation of man; neither his so admired light hath so shone in the production of other creatures, seeing that God would have them to live and have their being, only for mans sake, that they might serve him. Therefore man is, if we diligently consider all his endowments, a certain pattern and rule of the divine majesty and (if I may so say) Artifice. For being made to Gods image, he is as it were his coin, exceeding the capacity of all humane understanding. Which seemed a just reason to the ancient Philosophers, that he should be called *Microcosmos*, or a little world, because the particles of all things contained in the compass of heaven and earth, are contained in his mind and body, that in the mean time I may in silence pass over his soul more great and noble than the whole world.

Man is the end of all mundane things.

Man a little world, yea almost a great world.

Why Nature hath not given Man the faculty of presaging.

This seems the reason, that men by the instinct of nature do not foresee the future seasons & dispositions of the heaven & air; because, seeing they have received certain sparks of prudence from God, by whose care and guidance they are led to the knowledge of things by no deceitfull but certain judgment, being not obnoxious to the conditions and changes of times and seasons, as beasts are. Wherefore knowing all these airy changes to be placed under them, that is to say, their minds, according as occasion serves, and their minds desire, they give themselves to mirth when the air is wet, stormy and dark, and on the contrary, in a clear and fair season, to a sincere and grave meditation of things sublime and full of doubt. But beasts accommodating themselves to that disposition of the air which is present and at hand, are lively, or sad, not from any judgment as men, but according to the temper and complexion of their bodies following the inclinations of the air, and of the humors one while diffused, another while contracted. Neither ought we to blame man, because he can imitate the voice of beasts, but rather much commend him, that he can infinitely wrest and vary one thing, that is, his voice; for men can bark like Foxes and dogs; grunt like hogs; whet and grind their teeth like boars; roare like Lyons; bellow like bulls; neigh like horses; knock their teeth like Apes; howl like Wolves; bray like Asses; bleat like Goats and Sheep; mourn like Bears, Pigeons, and Turtles; keeke and gaggle like geese; hiss like Serpents; cry like Storks; caw like a Crow, and crow like Cock; clock like hens; chatter as Swallows and Pies; sing like Nightingales; croak like Frogs; imitate the singing of Wasps, and Humming of Bees; mew like Cats. The singing of Birds scarce seems to merit the name of Musick, compared to the harmony of men fitted and tuned with infinit variety of voices. For with this they possess the ears of Kings and Princes; provoke and temper their wrath, and carry mens minds beyond themselves, and transforme them into what habits they please. But if those cruell beasts have any humanity, they owe it all to man. For he tames Lyons, Elephants, Bears, Tigers, Leopards, Panthers, and such other like.

Man is not obnoxious to the air and fairs.

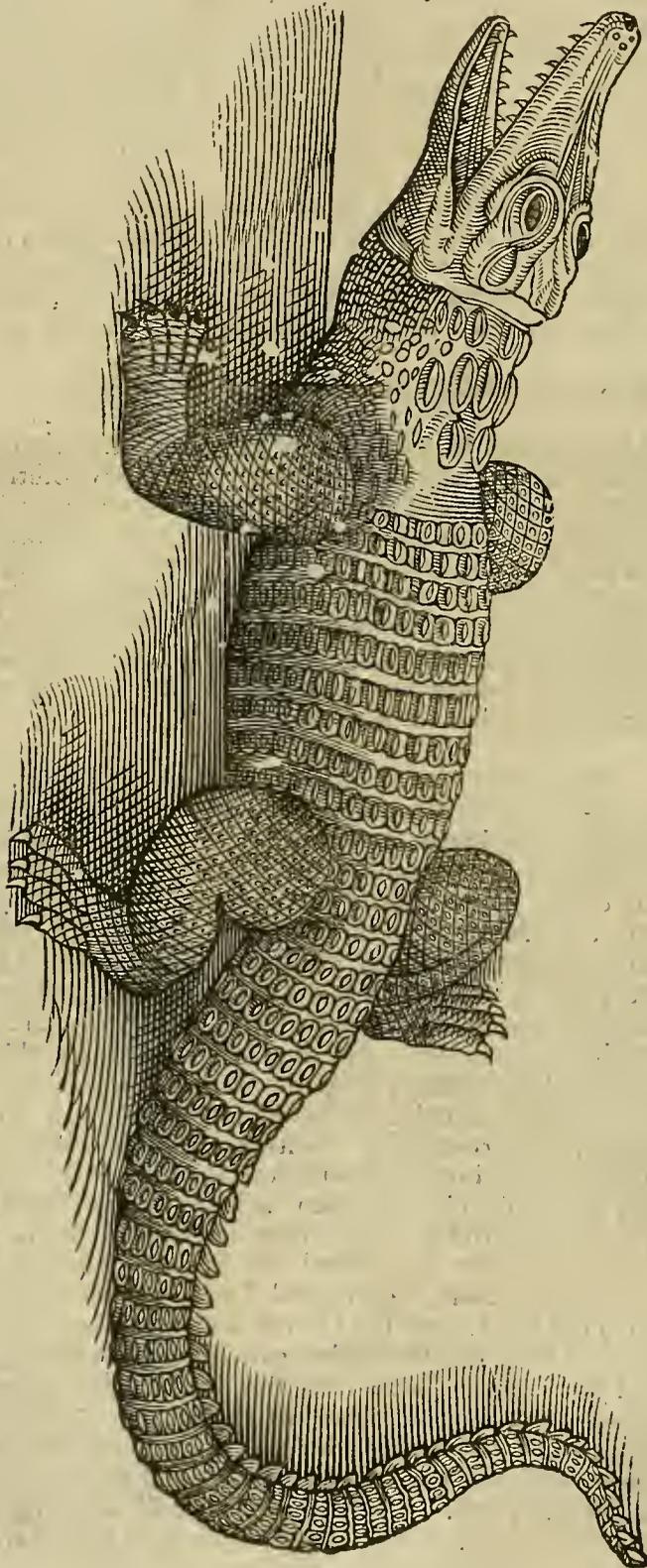
One man will counterfeit the voices of infinite varieties of beasts.

The power of Musick.

Of the Crocodile.

A tame Crocodile.

Plutarch reports of the Crocodile (whose figure is delineated) that being tamed, and taught by man, he doth not only hear mans voice, and answers to his call, but suffers himself to be handled, and opening his throat, lets his teeth be scratched and wiped with a towell. How small a part of Physick is that, which beasts are taught by nature? Certainly nothing in comparison of man, who by the study and practise of a few years can learn at his fingers ends all the parts of Physick: and practise them not only for his own, but also for the common good of all men. But why cannot beasts attain unto the know-



ledg of Physick so well as men? I think, because so great an Art as Physick is, cannot be attained unto by the dull capacities of Beasts.

But

But for that I have written of the Religion of Elephants, if I must speak according to the truth of the matter, we cannot say they worship God, or have any sense of the divine Majesty. For how can they have any knowledge of sublime things or of God, seeing they wholly following their food, know not how to meditate on celestial things? Now for that they behold and turn themselves to the Moon by night, and to the Sun in the morning, they do not that as worshipping, or for that they conceive any excellency or divinity in the Sun; but because nature so requiring and leading them, they feel their bodies to rejoice in that light, and their entralls and humors to move and stir them to it. Therefore when we attributed religion to Elephants, we said it rather popularly, than truly, and more that we might exhort men to the worship of God, than that we thought Elephants had any knowledg of divine worship implanted in their minds.

In what sense we said Elephants had religion.

That man may attain unto the knowledg of all voices and tongues.

THe docility of mans wit is so great, and facility of the body obeying that divine gift of wit such, that he is not only able to learn to understand and speak the tongues of divers nations differing in so many peculiar languages; and not only to imitate and counterfeit the voices of all beasts though so much different from man, which many flattering and juggling companions, followers of other mens tables, will do; but also may be able to know and understand both what they pretend and signifie. In confirmation of which thing they cite the Philosopher *Apollonius* most famous in this kind of study and knowledg. He walking on a time amongst a company of his friends through the field, and seeing a Sparrow come flying and chirping much to divers other Sparrows sitting upon a tree, is reported to have said to those which were with him: That bird which came flying hither, told the other in her language, that an Ass laded with corn was fallen down at the City gate, and had shed the wheat upon the ground. Wherefore *Apollonius* and all his friends which minds were with him went thither to see whether it were so, and found that it was so, as he had told them, and observed that the Sparrows moved thereto by the coming of the other, were eating up the grains of Corn shed on the ground.

Man not only the imitator, but the interpreter of the voices of beasts and birds.

But for Crows and Pies artificially taught to counterfeit mens voyces, it is too small a thing, that for that cause they should contend with men. For they have quickly babled all they have learnt with longer cost and labour, tediously singing still the same song, and whatsoever they prate they do it without sense, understanding or any reason for what they say. But man alwayes contemplating somewhat more high, still thinks of greater things than these present, and never rests. But burning with an infinite and endless desire of knowledg, he doth not only covet to know these things which appertain to food and cloathing, but by casting up his eyes towards heaven, and by the light of his mind, he learns and understands things divine. Which is so certain an argument of the celestiall originall of our soul, that he which considers those things can no wayes doubt, but that we have our minds seasoned, by the universall divine understanding. But now it is time for us to set thait upon the description of the body, the habitation and fit instrument of al the functions of divne mind.

The unquerable desire of learning in man.

The End of the second Book.

The third Book,

TREATING

Of the Anatomy of *MANS* BODY.



Following the custom and the manner of such as before me have written of Anatomy, will first, (that I may make the minds of the Readers more attentive and desirous of these studies) declare how necessary it is, and also how profitable, and then shew the order to be observed in it, before I come to the particular description of mans body.

Furthermore how Anatomy may be defined, and the manner of the definition of the parts. For the first, the knowledg of Anatomy seems in my judgment very necessary to those that desire to excell, or attain to perfection of Physick; that is, whereby they may be able to preserve the present health of the body, and the parts thereof, and drive away diseases. For how can either Physitian or Chirurgion preserve health by the use of the like things, which consists in the temperament, conformation, and naturall union of the parts; or expell the disease which hurts those three, by the like use of their contraries, unless he shall know the nature and composure of the body, and understand as by the rule of this knowledg, how much it swerves from the nature thereof? Wherefore it is excellently said of *Hippocrates*; that the Physitian called to cure the sick Patient, ought diligently to consider, whether those things that are in him, or appear to be in him, be like or unlike, that is, whether the Patient be like himself and his own nature in all his parts and functions, temperature, composure and union; that he may preserve those which are yet contained in the bounds of nature, and restore those that are gone astray. Which thing *Galen* hath also confirmed, specially where he saith, he must well know the nature and structure or composure of the bones, who takes upon him to restore them broken or dislocated to themselves and their proper seats or places. Moreover seeing that healing doth not only consist in the knowledg of the disease, but as well in prescribing fit medicines and like application of them to the body and the parts thereof, all which by their naturall dissimilitude, do require unlike medicines, according to *Galen*'s opinion:

I prethe tell mee, who can perform this, which is ignorant of the description of the whole and the parts thereof, taught by Anatomy? We may say the like of the Apothecary, who ignorant of the situation of the parts in the body cannot apply Emplaisters, Ointments, Cataplasms, Fomentations, Epithemes, bags to the fit places, as to the futures of the skull, to the Heart, Liver, Stomach, Spleen, Reins, Wombe or Bladder. For example, let us imagine the Liver to be troubled with a hot distemperature, but on the contrary, the stomach with a cold (which commonly happens, seeing the Liver hotter than it ought to be, sends up many vapours to the head, from whence cold humors fall into the stomach) if hot things to be applied to the stomach by the Physitians prescription, be by the Apothecary making no difference, applied both to the stomach and neighboring Liver (which may chance if he be ignorant that the stomach bends somewhat to the left side under the breast-blade; but the liver so takes up the right side of the body that with a great part thereof, it covers almost all the stomach) will not he much offend by increasing the hot distemper of the liver, and not thereby giving ease, or help to the disease? Shall not by this his ignorance, the Patient be frustrated of his desire, the Physitian of his intent, and the medicine of its effect? By these examples I think it most manifest, that the Anatomical knowledg of the parts of the body is exceeding necessary to all Physitians, Chirurgions, and Apothecaries, who will practise Physick with any praise to the glory of God, and the benefit and good of man, for whose sake we have writ these things, and illustrated them by figures, subjecting the parts to the eye, and fitly put them in their proper places.

But Anatomy is commodious four manner of wayes; the first is, because thus we are led to the knowledg of God the Creator, as by the effect to the cause; for as we read in *St. Paul*, The invisible things of God are made manifest by the visible. The second is, that by means hereof we know the nature of mans body, and the parts thereof, whereby we may more easily and certainly judg and determine of sickness and health. The third is, that by the knowledg of the body and its parts, and together therewith its affections and diseases, we may prognosticate what is to come, and foretell the events of diseases. Lastly, the fourth is, that considering the nature of the diseased part, we may fitly prescribe medicines, and apply them in their due places.

Now we must declare in what order Anatomy may be fitly delivered; but first we must observe there is a threefold Method; The first is called of Composition, being very commodious for the teaching of Arts, which *Aristotle* hath used in his Works of Logick, and naturall Philosophy, the order and beginning taken from the least and most simple to the more compound. The second of Division, fit for the inventing or finding out of sciences. *Galen* hath followed this order in his Books of Anatomical Administrations, and

The necessity of the knowledg of Anatomy.

Initio lib. de Offic. medici.

Lib. de ossibus.

I. de loc. affe. et in lib. 3. Meth.

Why when the liver is hot the stomach is commonly cold.

The Knowledg of Anatomy, is commodious four manner of wayes.

There is a threefold method.

and of the use of the parts. The third of Definition, which sheweth the nature and essence of things, as appears by *Galen* in his Book *De Arte Parva*. And because this order doth also prosecute the divisions, therefore it is commonly accustomed to be comprehended in the compass of the second. Therefore I will follow this in my Anatomical Treatise, dividing mans body into its parts, which I will not only subject to the eye in the way of knowing them, but also to the mind in the faithfull understanding them. For I will adjoyn those things that are delivered of them by *Galen* in his Book of Anatomy. Administrations, with those which he hath taught in his Books of the use of the parts. For there he fitly laies the parts of mans body before our eyes, to the sense. But here he teaches to know them, not to see them; for he shews why, and for what use they are made. Having briefly handled these things, we must declare what Anatomy is; that as *Cicero* saith out of *Plato's Phædro*, it may be understood of what we dispute. And because we attain that by definition (which is a short and plain speech, consisting of the *Genus* and difference of the things defined, being the essential parts, by which the nature and essence of the thing, is briefly and plainly explained) first we define Anatomy, then presently explain the particular parts of the definition.

The Authors intent.

Wherefore Anatomy, (if you have regard to the name) is a perfect and absolute division, or artificial resolution of mans body into its parts, as well generall as particular, as well compound as simple. Neither may this definition seem illegitimate, specially amongst Physicians and Chirurgeons. For seeing they are Artizans humiliated to the sense, they may use the proper and common qualities of things for their essential differences and forms. As on the contrary, Philosophers may refuse all definitions as spurious, which consist not of the next *Genus* and the most proper, and essential differences. But seeing that, through the imbecillity of our understanding, such differences are unknown to us, in their places we are compelled in defining things, to draw into one many common and proper accidents, to finish that definition which we intend, which for that cause we may more truly call a description, because for the matter and essential form of the thing, it presents us only the matter adorned with certain accidents. This appears by the former definition, in which *Division* and *Resolution* stand for the *Genus*, because they may be parted into divers others, as it were into *species*. That which is added over and besides, stands in place of the difference, because they separate and make different the thing it self from all other rash and unartificial dissections. We must know an artificial division, is no other than a separation of one part from another, without the hurt of the other, observing the proper circumscription of each of them; which if they perish or be defaced by the division, it cannot be said to be artificial; and thus much may suffice for the parts of the definition in generall.

What Anatomy is.

How a definition differs from a description.

For as much as belongs to the explication of each word; we said of *Mans body*, because as much as lies in us, we take care of, preserve the health, and depell the diseases thereof, by which it may appear that mans body is the subject of Physick, not as it is mans, or consists of matter and form, but as it is partaker of health and sickness.

The subject of Physick.

We understand nothing else by a part, according to *Galen*, than some certain body, which is not wholly disjoined, nor wholly united with other bodies of their kinds; but so that, according to his opinion, the whole being composed therewith, with which in some sort it is united, and in some kind separated from the same, by their proper circumscription. Furthermore by the *parts in generall*, I understand the head, breast, belly, and their adjuncts. By the particular parts of those, I understand, the simple parts, as the similar, which are nine in number, as a gristle, bone, ligament, membrane, tendon, nerve, vein, arterie, musculous flesh; some add fibers, fat, marrow, the nails and hairs; other omit them as excrements; but we must note that such parts are called simple, rather in the judgment of the sense, than of reason. For if any will more diligently consider their nature, they find shall none absolutely simple, because they are nourished, have life and sense, either manifest or obscure, which happens not without a nerve, vein, and artery.

Gal. lib. I. de usu part. lib. I. Met.

The similar parts are nine.

But if any shall object, that no nerve is communicated to any bone, except the teeth; I will answer, that nevertheless the bones have sense by the nervous fibers, which are communicated to them by the *Periosteum*, as by whose mediation the *Periosteum* is connext to the bones, as we see it happens to these membranes, which involve the bowels. And the bones, by this benefit of the animall sense expell the noxious and excrementitious humors from themselves into the spaces between them and the *Periosteum*, which as indued with a more quick sense, admonisheth us, according to its office and duty, of that danger which is ready to seise upon the bones, unless it be prevented. Wherefore we will conclude according to the truth of the thing, that there is no part in our body simple, but only some are so named and thought, according to the sense; although also otherwise some may be truly named simple, as according to the peculiar and proper flesh of each of their kinds. Those parts are called compound which are made or composed by the mediation, or immediately of these simple, which they term otherwise organically, or instrumentally; as an arm, leg, hand, foot, and others of this kind.

How the bones come to feel.

The compound, or organical parts.

And here we must observe, that the parts are called simple and similar, because they cannot be divided into any particles but of the same kind; but the compound are called

Four particles
to be observed
in each organ-
icall part.

dissimilar from the quite contrary reason. They are called instrumentall and organically, because they can perform such actions of themselves, as serve for the preservation of themselves and the whole; as the eye of it self, without the assistance of any other part, seeth, and by this faculty defends the whole body, as also it self. Wherefore it is called an instrument or organ, but not any part of it, as the coats, which cannot of it self perform that act. Whereby we must understand, that in each instrumentall part we must diligently observe four proper parts. One by which the action is properly performed, as the Crystalline humor in the eye; another without which the action cannot be performed, as the nerve and the other humors of the eye. The third, whereby the action is better and more conveniently done, as the tunicles and muscles. The fourth, by which the action is preserved, as the eye-lids and circle of the eye. The same may be said of the hand, which is the proper instrument of holding; for it performs this action, first, by the muscle, as the principall part; Secondly, by the ligament, as a part without which such action cannot be performed; Thirdly, by the bones and nails, because by the benefit of these parts, the action is more happily performed; Fourthly, by the veins, arteries and skin, for that by their benefit and use, the rest, and so consequently the action it self is preserved.

Four sorts of
instrumentall
part.s.

But we must consider, that the instrumentall parts have a fourfold order. They are said to be of the first order, which are first and immediately composed of the simple, as only the authors of some one action, of which kinds are the muscles and vessels. They are of a second which consist of these first simple, and others besides, as the fingers. They are counted of the third rank, which are composed of parts of the second order and some besides, as the hand taken in generall. The fourth order is the most composed, as the whole body, the organ and instrument of the soul. But you must observe, that when we say the muscles and vessels are simple parts, we refer you to the sense and sight, and to the understanding, comparatively to the parts which are more compound; but if any consider their essence and constitution, he shall understand they are truly compound, as we said before. Now it remains, that we understand, that in each part, whether simple or compound, nine things are to be considered, as substance, quantity or magnitude, figure, composition, number, connexion, (by which name, we also understand the originall and insertion) temperature, action, and use; that by the consideration of these things, every one may exercise the art of Physick, in preserving health, curing diseases, or foreseeing their events and ends.

Nine things to
be considered in
each part.

Why the three
principall
parts are so
called.

But also we must note, that of the organically parts, there be three, by whose power the body is governed; which for that cause they call regent and principall, because they govern all the rest; they are the liver, heart, and brain. But they are called principall, not only, because they are necessary for life, (for the stomach, wind-pipe, lungs, reins, bladder, and such like parts perhaps are equally as necessary for life) but because from each of these three, some force, power, and faculty, or also matter necessary for the whole body, flow over all the body, when no such thing proceeds from the rest of the parts. For from the liver a matter fit for nourishment, is distributed by the veins through all the body; from the heart the vitall force diffused by the arteries, imparts life to the whole body; from the brain by the nerves a power or faculty is carried through all the parts of the body, which gives them sense and motion.

Lib. de Arte me-
dica.

Galen would have the Testicles to be of this kind, not for the necessity of the individual, or peculiar body, but for the preservation of the *Species* or kind. And moreover in his book *de Semine* comparing the Testicles with the Heart, hee makes them the more noble by this reason, that by how much it is better to live well and happily, than simply and absolutely to live, by so much the testicles are more excellent than the heart, because with them we may live well & pleasantly, but with this simply live, as we see by the example of Eunuches, and such as are gelt, by which the Testicles seem rightly to be accounted amongst the principall parts; for nature seeing it desired, that this its work should be immortal, for the attaining of that immortality which it intends, frames those parts, like as prudent founders of a City, who do not only procure to furnish their City with many Inhabitants, so long as they are in building it, but also that it may remain in the same state and condition for ever, or at least for many ages. And yet notwithstanding of so many cities built in the first memory of man, there remains none, whose fame and state, together with the builders name, is not decayed and perished. But this humane work of nature, stands yet secure for this many thousand of years, and shall endure hereafter, because it hath found a way, by which every one may substitute another in his place before he depart. Hence it is that all creatures have members fit for generation, and pleasures inserted in those members, by which they might be inticed to mutuall embraces and copulations. But the mind, which hath dominion over those members hath an incredible desire of propagating the issue, by which also brute beasts inticed, desire to propagate their kinds for ever. For seeing that nature understands all these her works considered particularly by themselves, are frail and mortall, it hath done what it could to recompence that fatall necessity of dying, by a perpetuall succession of individualls.

The use and
function of
the parts ser-
ving for gene-
ration.

Hitherto we may seem to have abundantly shewed what necessity of knowledg in Anatomy belongs to all Artizans in Physick, and also what order is to be observed in the same.

same. And lastly, how it is defined, and the reason of the parts of the definition. Wherefore it remains that we prosecute what we have taken in hand: which is, that we shew and declare how to know all and every the parts of mans body, how many, and what they be, and to understand wherefore they be. For although the true knowledg of Anatomy may be perfected by the sight of the ey, and touching and handling each part with the hand; yet nevertheless the labor of describing Anatomy is not unprofitable. For by reading, such as have often exercised themselves in the dissecting of mens bodies, may refresh and help their memories, and such as have not, may make plain and easie the way to the understanding of dissections.

C H A P. I.

The division or partition of mans Body.

BY reason the partition of Mans body can hardly be understood, if the distinction of the proper faculties of the soul be not understood, for whose cause the body enjoys that form (which we see) and division into divers instruments; Therefore I thought good in few words to touch that distinction of the faculties of the soul, for the better understanding of the partition of the body which we intend. Wherefore the soul, the perfection of the body, and beginning of all its functions, is commonly distinguished, and that in the first and generall division, into three faculties, which are the Animall, Vitall, and Naturall. But the Animall is divided into the principall, sensitive, and motive; Again the Principall is distinguished into the imaginative, reasonable, and memorative: And the Sensitive into seeing, hearing, smelling, tasting, and touching: But the Motive into progressive and apprehensive. And the Vitall is divided into the dilative and contractive faculty of the heart and arteries, which we know or understand by the pulsfick faculty. But the Naturall is parted into the nutritive, auctive, and generative faculties; which three perform their parts by the help and ministry of five other faculties, which are, the attractive, retentive, concoctive, assimilative, and expulsive.

After the self-same manner, the organ or instrument of the soul, to wit, Mans body, at the first division is distinguished into three parts, which from their office they call Animall, Vitall, and Naturall. These again, according to the subdivision of the subalternall faculties, are divided particularly into other parts; so that any one may know the organ of each faculty, by the property of the function. For while other Anatomists divide mans body into four universall and chief parts, they distinguish from the three first, those which they call the Extremities; neither do they teach to what rank of the three prime parts each extremity should be reduced. From whence many difficulties happen in reading the writings of Anatomists; for shunning whereof, we will prosecute, as we have said, that distinction of mans body, which we have touched before.

Wherefore, as we said before, mans body is divided into three principall and generall parts, Animall, Vitall, and Naturall. By the Animall parts, we understand not only the parts pertaining to the head, which are bounded with the crown of the head, the collar-bones, and the first *Vertebra* of the breast, but also the extremities, because they are organs and instruments of the motive faculty; *Hippocrates* seems to have confirmed the same, where he writes; Those who have a thick and great head, have also great bones, nerves, and limbs. And in another place he saith, those who have great heads, and when they stoop shew a long neck, such have all their parts large, but chiefly the Animall. Not for that *Hippocrates* would therefore have the head the beginning and cause of the magnitude and greatness of the bones and the rest of the members; but that he might shew the equality and private care or government of nature, being most just and exact in the fabrick of mans body, as if she hath well framed the head, it should not be unlike that she idly or carelessly neglected the other parts which are less seen. I thought good to dilate this passage, lest any might abuse that authority of *Hippocrates*, and gather from thence, that not only the bones, membranes, ligaments, grilles, and all the other animall parts, but also the veins and arteries depend on the head as the originall. But if any observe this our distinction of the parts of the body, he will understand we have a far other meaning.

By the Vitall parts, we understand only the heart, arteries, lungs, winde-pipe, and other particles annexed to these. But by the Naturall, we would have all those parts understood which are contained in the whole compass of the *Peritoneum* or Rim of the body, and the processes of the *Erythroides*, the second coat of the Testicles. For as much as belongs to all the other parts, which we call containing; they must be reckoned in the number of the Animall, which notwithstanding, we must thus divide into principall, sensitive, and motive; and again, each of these in the manner following. For first, the principall is divided into the imaginative, which is the first and upper part of the brain, with its two ventricles and other annexed particles; into the reasoning, which is a part of the brain, lying under the former, and (as it were) the top thereof with its third ventricle; into the memorative, which is the *cerebellum* or afterbrain, with a ventricle hollowed in its substance. Secondly, the Sensitive is parted into the visive, which is in the eyes; the auditive, in

What the soul is, and with how many faculties it is endued.

All the parts of mans body are distinguished into three.

What parts are here called Animall.

Lib. 6 Epidem.

What parts are called Vitall.

The division of the animall parts.

the ears; the smelling, in the nose; the tasting, in the tongue and palate; the tactile, or touching which is in the body, but most exquisite in the skin which invests the palms of the hands. Thirdly, the motive is divided into the progressive, which intimates the legs, and the comprehensive, which intimates the hands. Lastly, into simply motive, which are three parts, called bellies, for the greatest part terminating and containing; for the vitall, the instrument of the faculty of the heart, and dilatation of the arteries, are the direct or streight fibers, but of the constrictive the transverse; but the three kinds of fibers together, of the pulfick; or if you please you may divide them into parts serving for respiration, as are the lungs, and weazon, and parts serving for vitall motion, as are the heart and arteries, furnished with these fibers, which we formerly mentioned. The division of the naturall parts remains, which is into the nourishing, auctive and generative, which again are distributed into attractive, universall, and particular; retentive, concoctive, distributive, assimilative, and expulsive. The attractive, as the gullet and upper orifice of the ventricle; the retentive, as the *Pylorus* or lower passage of the stomach; the concoctive, as the body of the ventricle, or its inner coat; the distributive, as the three small guts; the expulsive, as the three great guts; we may say the same of the liver, for that draws by the mesaraick and gate veins, retains by the narrow orifices of the veins dispersed through the substance thereof; it concocts by its proper flesh; distributes by the hollow vein, expels by the spleen, bladder of the gall and kidnies. We also see the parts in the testicles divided into as many functions; for they draw by the preparing vessels; retain by the various crooked passages; in the same vessels they concoct the seed by the power of their proper substance and faculty; they distribute by the ejaculatory, at the glandules called *Prostate*, and the horns of the wombe, supplying the place of prostates; Lastly, they expell or cast forth by the prostates, horns, and adjoining parts. For as much as belongs to the particular attraction, retention, concoction, distribution, assimilation of each part, that depends of the particular temper, and as they term it, occult property of each similar and simple part. Neither do these particular actions differ from the universall, but that the generall are performed by the assistance of the three sorts of fibers, but the special by the severall occult property of their flesh, arising from their temperature, which we may call a specifick property. Now in the composition of mans body, nature principally aims at three things. The first is, to create parts necessary for life, as are the heart, brain, and liver. The second, to bring forth other for the better & more commodious living, as the eyes, nose, ears, arms and hands. The third is, for the propagation and renewing the *species* or kind, as the privie parts, testicles, and wombe. And this is my opinion, of the true distinction of mans body, furnished with so many parts, for the performance of so many faculties; which you, if you please, may approve of and follow. If not, you may follow the common and vulgar, which is, into three bellies, or capacities, the upper, middle, lower, (that is, the head, brest and lower belly) and the limbs or joints. In which by the head we do not understand all the Animall parts, but only those which are from the crown of the head to the first *vertebra* of the neck, or to the first of the back, if according to the opinion of *Galen*, *Lib. de ossibus*, where he makes mention of *Enarthrosis* and *Arthrodia*, we reckon the neck amongst the parts of the head. By the brest, whatsoever is contained from the collar bones to the ends of the true and bastard, or short ribs, and the midriffe. By the lower belly, the rest of the trunck of the body, from the ends of the ribs to the share-bones; by the limbs, we understand the arms and legs. We will follow this division in this our Anatomical discourse, because we cannot follow the former in dissecting the parts of mans body, by reason the Animall parts are mutually mixed with the vitall and naturall, and first of the lower belly.

The division of the vitall parts.

The division of the naturall parts.

The vulgar division of mans body.

Why the belly is not bony.

Nature would not have this lower belly bony, because the ventricle might be more easily dilated by meat and drink, children might grow the better, and the body be more flexible. It is convenient we begin our Anatomical administration from this, because it is more subject to putrefaction than the rest, both by reason of its cold and moist temperature, as also by reason of the feculent excrements therein contained. Yet before we go any further, if the Anatomical administration must be performed in publick, the body being first handsomely placed, and all the instruments necessary for dissection made ready, the belly must be divided into its parts, of which some contain, and other some are contained.

The division of the lower belly.

They are called containing, which make all that capacity which is terminated by the *Peritoneum* or Rim of the belly. The upper part whereof is bounded by *Galen* within the compass of the direct muscles, and by a generall name is called *Epigastrium*, or the upper part of the lower belly. That again is divided into three parts, that is, into that which is above the navil, and which carries the name of the whole, into that which is about the navil, and is called the umbilicall or middle part; and lastly, into that which is below the navill, called the *Hypogastrium*, or the lower part of the lower belly.

The *Hypochondria*.

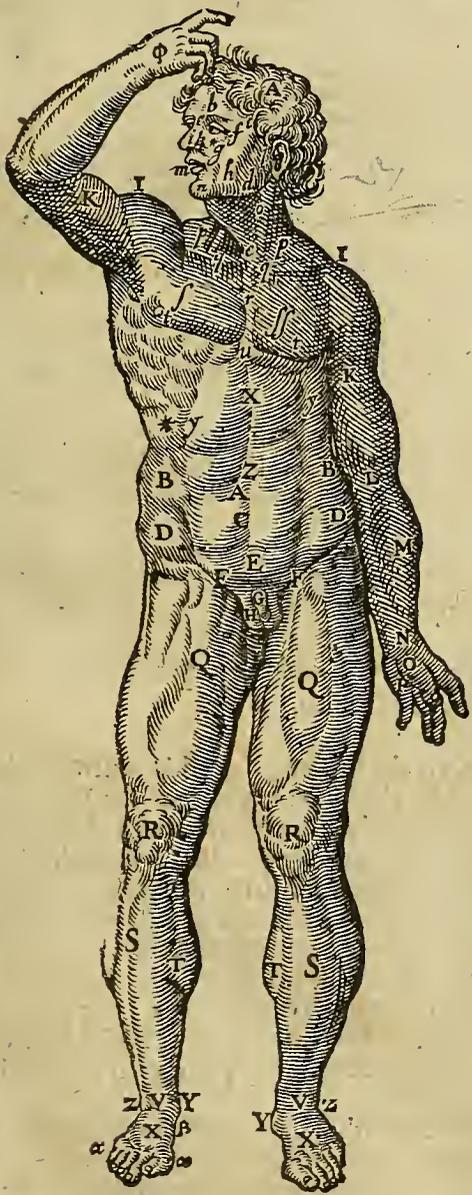
In every of which three parts there be two laterall, or side parts to be considered, as in the *Epigastrium*, the right and left *Hypochondria*, which are bounded above and below, in the compass of the midriffe, and the short ribs. In the umbilicall the two *Lumbares* (some call them *Laterales*) which on both sides from the lowest parts of the brest, are drawn to the flanks or hanch-bones; in the *Hypogastrium*, the two *Ilia*, or flanks, bounded with

with the hanch and share-bones. Neither am I ignorant, the *Ilia*, or flanks, which the Greeks call *καυός* signifie all the empty parts, from the ends of the ribs, even to the hanch-bones, whereupon they also call them *Κεῖρα*, as if you should say empty spaces, because they are not encompassed with any bone. Yet I thought good that this doctrine of dividing the belly should be more distinct, to call the parts which are on each side the navell *Lumbares*, and those on the lower part of the lower belly *Ilia*, flanks. But we must observe that the Ancients have been so diligent in deciphering the containing parts, that as exactly as might be, they designed the bowells contained in the belly, which being divers lie in sundry places; for the greater portion of the liver lies under the right *Hypochondrium*; under the left almost all the ventricule and spleen. Under the *Epigastrium* the lower orifice of the ventricule, and the smaller portion of the liver; In the *Lumbares*, or sides, in the right and upper part the right kidney, in the lower part towards the flank, the blind gut; in the middle part thereof the colick and empty guts. In the upper part of the left side lies the left Kidney, in the middle part, the rest of the empty and colick guts. Under the region of the navell, lies the girdle or upper part of the kall, the colick gut thrusting it self also through that way. Under the *Ilia*, or flanks, the right and left, lie the greater part of the guttleon, the horns of the women big with child, and the spermatick vessels in men and women. Under the *Hypogastrium* in the lower part lies the right, or strait gut, the bladder, womb, and the rest of the kal.

If we know, and well understand these things, we shall more easily discern the parts affected by the place of the pain, and cure it by fit application of remedies, without the hurting of any part. The distinction of such places, and the parts in those places, as seeming most profitable, I have thought good to illustrate by the placing these two following figures, in which thou hast deciphered, not only the foresaid parts, containing, and contained, but also of the whole body, and many other things which may seem to conduce to the knowldge of the mentioned parts. The Figures are these.

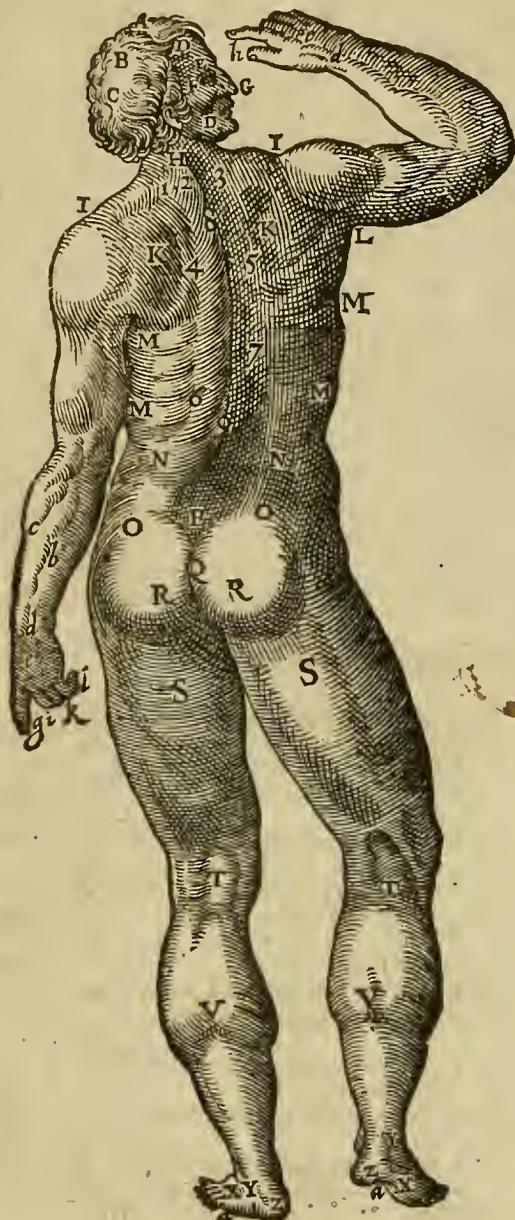
A most certain note of the part affected by the place where the pain is.

The Figure shewing the foreparts of the body.



- A The hairy Scalp, cald *τὸ χῶτος*.
- b the forehead cald *Φρὸν μέτωπον*.
- c the temples cald *tempora, μετέωπος*.
- From b to d The compass of the face.
- e The greater or inward corner of the eyes, cald *Canthus internus*.
- f The lesser or externall angle of the eye, cald *Canthus externus*.
- * The lower eyebrow which is immovable, *Palpebra*.
- g The cheek-bal cald *μαλα, μῆλα*.
- b The cheek-puf cald *bucca, γυζ*.
- i The ridg of the nose cald *Nasus externus, εἶν*.
- k The nothriils cald *nares, μύκητες*.
- l The outward ear, *auris externa*.
- m The mouth made of the two lips, *Os*.
- n The chin called *mentum, γένειον*.
- o The n.ck, *collum, ἀνυχὴν* and *τραχήλον*.
- From o to e the pillar of the neck, *vinculus* and *ἄλμη*.
- pp The hollow of the neck, called *juguli, σφαγάτι*.
- qq The pael bones, *claves, κλῆῖδες*.
- r The chest, *pectus, στήθον*.
- f The right brest.
- ff The left brest: to this Region we apply cordiall *Epithemation* moist and dry.
- ii The nipples of the brests, *papille, θηλάδν*.
- u The trench of the heart which the Ancient called *καρδία*. The Latines *scrobiculus Cordis*. This part is anointed for the mouth of the stomach
- From u. to e the lower belly, *γαστήρ*.
- X The *Epigastrium* or upper part of the lower belly.
- yy The *Hypochondria* or *Pracordia*.
- * The outward Liver-remedies are applied to this place.
- z The region of the navill, called *umbilicalis*, or the middle part of the lower belly.
- BB. The side *Latera, πλευράς*. and in our Author *Lumbi seu Lumbaris regio*.
- C. *Hypogastrium*; the water-course, *Aquaticulus*, the lower part of the lower belly, *ἠέσων*.
- DD. The flanks called *Ilia*, and *κνεσῶνες*.
- E. The Groin called *pubes* or *πέπτεν, κείεις, κείβη*.
- FF. The Leske cald *inguen* where those tumors are cald *Bubones*.
- G. The yard with the fore-skin; *penis cum praputio*.
- H. The stones or testicles, with the cod or *scrotum*.
- II. The shoulders, *lumeri, ἐπιωμίδες*.
- KK. The arms *Brachia, βραχίονα*.
- L. The bowt of the arm, called *Gibber, ἄγκυον*.
- M. The outside of the lower part of the arm called *cubitus, κῦβιτος*.
- N. The wrist called *Brachiale, κῆρκος*.
- O. The after wrist *postbrachiale, μετὰ βραχίονον*.
- P. The Palm called *Palma* or *vola manus, βέναρ*.
- φ The back of the hand, *Dorsum manus, ὄμη, δέναρ*.
- QQ. The fore and middle part of the thigh, where we apply cupping-glasses to bring down womens courses *μηρῶν*.
- RR. The knee, *genu, γένυ*.
- SS. The leg, *tibia, κνήμη*.
- TT. The calf of the leg, *surus, γαστρονήμων*.
- VV. The instep, *plantis*.
- XX. The top of the foot, *Dorsum pedis, ἠέσων, ποδός*.
- YY. The inner Anckles, *σφυρῶν*.
- ZZ. The outward anckles, *αα* the toes of the feet, *β* the place under the inward ankle, where the vein called *Saphena* is opened.

The figure of the back-parts of a Man.



- A. The forepart of the head, *σινειριον, βρεγματις*.
 B the top or crown of the head, *veritex, κορυφη*.
 C. the hinder-part of the head, *occiput, κοτις και ινιδν*.
 From D. to D. the face, *facies, ωρειστοπον*.
 * E. the eyebrows, *supercilia, οφρυς*.
 F. the upper eyelid, *ελεφαρον*.
 G. the tip of the nose, called *globulus nasi*.
 H. the back-part of the neck, called *cervix, αυχην*, and the nape or nape of the neck. There is a hollowness at the top of this *cervix*, where we apply Seaton's.
 I. the back part of the shoulder top, called *axilla, ωμυ*.
 KK. the shoulder blades, *scapula, ωμοπλατα*.
 1, 2, 3. On this place we set Cupping-glasses.
 4, 5, 6, 7. the back, *dorsum, νωτον*.
 8, 9. the ridge, *spina dors. ραχις*.
 L. the armpit, *ala, μαχαλη*.
 * The elbow, *gibber brachii*.
 M M M M. the sides, *latera*.
 NN. the loins, *lumbi*, or the region of the kidneys, *δσφρες*.
 OO. the place of the hips, *coxendices*, where we apply remedies for the Sciatica.
 P. the place of the Holy bone, or *Os sacrum*, where we apply remedies in the diseases of the right gut.
 Q. the place of the rump or *Coccyx*.
 RR. the buttocks, *nates, γλανδες*.
 SS. the back parts of the thigh, *femora*.
 TT. the ham, *poples, ιχνη*.
 VV. the calf of the leg, *sura*.
 XX. the foot, or *parvus pes, ποδς*.
 YY. the utter ankle, *malleolus externus*.
 ZZ. the heel, *calc, or calcaneus, περνα*.
 a a. the sole of the foot, *planta pedis, κοϊλον τε ποδς*.
 b. the inside of the lower part of the arm, called *ulna, ωλενη*.
 c. the ou side of the same, *cubium, πυχς*.
 d d. the wrist, *carpus*.
 e e. the back-part of the hand, *dorsum manus*, g. the forefinger, *index, ρειχαι*. h. the thumb, *pollex, αντιχειρ*.
 i. the middle finger, *medius, μεσθ*.
 k. the ring finger, *annularis, medicus, ιατρικος*.
 l. the little finger, *auricularis, minimus, ωπιτης*.

C H A P. II.

Of the containing parts of the Epigastrium, and the preparation to Anatomical administration.

The containing parts of the lower belly.



The containing parts of the *Epigastrium*, are the *Epidermis*, or thin outward skin; the true skin; the fleshy or fatty Pannicle; the eight muscles of the *Epigastrium*, with their common coat; the Rim of the belly; the five vertebra's of the loins; all the holy-bone; the hanch-bone; share-bone; the white line and midriff. Of these parts, some are common to the whole body, as the three first; the other proper to the parts contained in the *Epigastrium* taken in generall. Which that you may see in their order, first you must cut round about the navell, to the upper superficies of the muscles, that so we may keep it, till such time, as occasion shall offer it self, to shew the umbilicall vessels lying in that place, which are one vein, two arteries, and the *Utrachus* (if it be there.) Which being done, you must draw a streight line from the chest, over the brest-blade, even to the share-bone, which may divide the common-containing parts, even to the white line.

Then presently it will be convenient to draw two other lines across or overthwart, of the like depth on each hand, from the circumference of the navell, even to the sides, that so on each part we may draw the skin more commodiously from the parts lying under it; the sight of which otherwise it would hinder. These things being done, the skin must be

be divided from the parts lying under it from the designed circumference left about the navell. We must teach how the skin is twofold, the true and false, and render a reason of the name, which we will every where do, as far as the thing will suffer, and it shall lye in our power. And in doing or examining these things, it will be convenient diligently to enquire into the nine things mentioned in the Preface. We will begin with the Skin, because that part is first obvious to our senses.

C H A P. III.

Of the utmost Skin or Cuticle.

The skin being the first part, and spread over all the body, is twofold, that is, the true and bastard skin: The true is called by the Greeks, *Derma*, which may almost every where be pulled from the parts lying under it, which it invests; except in the face, ears, the palms of the hands, soles of the feet, fingers, and privities, where it sticks so close that it cannot be separated.

The skin twofold
From what parts the skin cannot be separated.

The bastard (which first of all we will declare, because it first presents it self to our sight) is by the Greeks called *Epidermis*, because it covers the true skin, they term it commonly the Cuticle. The substance of it is excrementitious, and (as it were) a certain dry flouring, or production of the true skin. That it draws not its substance from the seed is apparent by this, that as it is easily lost, so it is easily repaired, which happens not in parts truly spermaticall. This utmost thin skin, or Cuticle, may two manner of ways be made apparent by it self, and separated from the other, as by burning with fire, or ardent heat of the Sun, (in some delicate bodies, and such as are not accustomed to be conversant in Sunshine.) The quantity in thickness is very small, but the extent is most large, because it covers all the skin; the figure of it is round, and long, like those parts which it invests. The composition of it is obscure; yet because this Cuticle is the excrement of the true skin; we say it hath its matter from the excrementitious superfluity of the nerves, veins, arteries, and substance of the true skin.

The matter of the Cuticle.

The quantity.

The figure.
The composition.

The number.

The temperature.

It is in number one, like as the true skin which it outwardly covers, that it might be a *medium* between the object and fixed faculty of touching, diffused over all the true skin, which every where lies under it. For the temperature, by the common consent of Physicians, it is in the midst of all excess; for that seeing it is the *medium* between the object and faculty, if it should be hotter, colder, moister, or drier, it would deceive the faculty by exhibiting all objects, not as they are of themselves, but as it should be; no otherwise than as to such as look through red or green spectacles, all things appear red or green. Wherefore for this reason it was convenient the Cuticle should be void of all sense. It hath no action in the body; but it hath use, for it preserves and beautifies the true skin; for it seems to be given by the singular indulgence of nature, to be a muniment and ornament to the true skin. This providence of Nature, the industry of some Artizans (or rather Curtizans) doth imitate; who for to seem more beautifull, do smooth and polish it. By this you may understand, that not all the parts of the body have action, yet have they their use, because, according to *Aristotles* opinion, Nature hath made nothing in vain. Also you must note that this thin skin or Cuticle being lost, may every where be regenerated, unless in the place which is covered with a scar. For here the true skin being deficient, both the matter and former faculty of the Cuticle is wanting.

The use.

Why the Cuticle cannot be restored in scars.

C H A P. IIII.

Of the true Skin.

The true skin called by the Greeks *Derma*, is of a spermatick substance, wherefore being once lost, it cannot be restored as formerly it was. For in place thereof comes a scar, which is nothing else but flesh dried beyond measure. It is of sufficient thickness, as appears by the separating from the flesh.

The substance.
Magnitude.

But for the extent thereof, it encompasses the whole body, if you except the eyes, ears, nose, privities, fundament, mouth, the ends of the fingers where the nails grow, that is, all the parts by which any excrements are evacuated. The figure of it is like the Cuticle, round and long, with its productions, with which it covers the extremities of the parts.

Figure.

It is composed of nerves, veins, arteries, and of a proper flesh and substance of its kind, which we have said to be spermaticall, which ariseth from the process of the secundine, which lead the spermatick vessels even to the navell; in which place each of them into the parts appointed by nature, send forth such vessels as are spread abroad and diffused from the generation of the skin. Which also the similitude of them both, that is, the skin and

Composition.

- and membrane *Chorion* do argue. For as the *Chorion* is double, without sense, encompassing the whole infant, lightly fastened to the first coat, which is called *Amnios*; so the skin is double, and of it self insensible, (for otherwise the nerves were added in vain from the parts lying under it) ingirting the whole body, lightly cleaving to the fleshy Pannicle. But if any object, That the Cuticle is no part of the true skin, seeing it is wholly different from it, and easily to be separated from it, and wholly void of sense: I will answer, these arguments do not prevail. For that the true skin is more crasis, thick, sensible, vivid, and fleshy, is not of it self, being rather by the assistance and admixture of the parts, which derived from the three principall it receives into its proper substance; which happens not in the Cuticle. Neither if it should happen, would it be better for it, but verily exceeding ill for us, because so our life should lye fit and open to receive a thousand externall injuries, which encompass us on every side, as the violent and contrary access of the four first qualities.
- The number.** There is only one skin, as that which should cover but one body, the which it every where doth, except in those places I formerly mentioned. It hath connexion with the parts lying under it by the nerves, veins, and arteries, with those subjacent parts put forth into the skin investing them, that there may be a certain communion of all the parts of the body amongst themselves.
- Connexion.**
- Temperature.** It is cold and dry in its proper temper, in respect of its proper flesh and substance, for it is a spermaticall part. Yet if any consider the sinews, veins, arteries, and fleshy threds which are mixed in its body, it will seem temperate, and placed (as it were) in the midst of contrary qualities, as which hath grown up from the like portion of hot, cold, moist, and dry bodies. The use of the skin is to keep safe and sound the continuity of the whole body, and all the parts thereof, from the violent assault of all externall dangers; for which cause it is every where indued with sense, in some parts more exact, in others more dull, according to the dignity and necessity of the parts which it ingirts, that they might all be admonished of their safety and preservation. Lastly, it is penetrated with many pores, as breathing-places, as we may see by the flowing out of sweat, that so the arteries in their *diastole* might draw the encompassing air into the body, for the tempering and nourishing of the fixed inbred heat, and in the *lystole* expell the fuliginous excrement, which in Winter suppress by the cold air encompassing us, makes the skin black and rough. We have an argument and example of breathing through these, by drawing the air in by transpiration, in women troubled with the mother, who without respiration live only for some pretty space by transpiration.
- Use.**
- The reason why the skin is blacker and rougher in Winter.**

C H A P. V.

Of the fleshy Pannicle.

- What a membrane is.** fter the true skin, follows the membrane, which Anatomists call the fleshy Pannicle, whose nature that we may more easily prosecute and declare, we must first shew what a Membrane is, and how many ways the word is taken. Then wherefore it hath the name of the fleshy Pannicle. A membrane therefore is a simple part, broad and thin, yet strong and dense, white and nervous, and the which may easily without any great danger be extended and contracted. Sometimes it is called a coat, which is, when it covers and defends some part. This is called the fleshy Pannicle; because in some parts it degenerates into flesh, and becomes musculous, as in a man from the collar-bones, to the hair of the head, in which part it is therefore called the broad muscle, whereas in other places it is a simple membrane, here and there intangled with the fat lying under it, from whence it may seem to take or borrow the name of the fatty Pannicle. But in beasts (whence it took that name, because in those a fleshy substance maketh a great part of this Pannicle) it appears manifestly fleshy and musculous over all the body, as you may see in Horses and Oxen; that by that means being moveable, they may drive and shake off their flies, and other troublesome things, by their shaking and contracting their backs. These things considered, we say the fleshy Pannicle in its proper body, is of a nervous or membranous substance, as that which hath its originall from the coat *Amnios*, (which is next to the infant) dilated near to the navell, and stretched forth for the generation of this Pannicle; in which thing I think good to note, that as the membranes *Chorion* and *Amnios* mutually interwoven with small nervous fibers, encompass and invest the child as long as it is contained in the womb; so the skin and fleshy Pannicle, knit together by such like bands, engirt the whole body.
- Why it is sometimes called a coat, sometimes the fleshy and fatty Pannicle.**
- Why beasts have this Pannicle wholly fleshy or musculous.**
- The substance.** Therefore the fleshy Pannicle is equal in magnitude and like in figure to the true skin, but that it lyes under it, and is contained in it, in some places mixt with the fat, in others increased by the flesh interwoven with it, and in other some is only a simple membrane.
- The magnitude and figure.**
- Number.**
- Composure.** The composition of it is such, as the sight of it presents to our eye, that is, of veins, arte-

arteries, nerves, and the proper flesh, some whites mixed and interlaced with fat, and sometimes with musculous flesh. It is but one, by reason of the use we shall presently shew; it is situated between the skin and fat, or common coat of the muscles, annexed to these and the other parts lying under it, by the veins, nerves and arteries ascending from these inward parts, and implanting themselves into the substance thereof; and then into the true skin.

The temperature thereof is diverse, according to the variety of the parts interwoven with it. The use of it is, to lead, direct, and strengthen in their passage, the vessels which are disseminated into the true skin, and the whole superficies of the body. But in beasts it hath another commodity, that is, it gives a shaking or trembling motion to their skin and back, for that cause we formerly touched.

The temperature.
The use.

CHAP. VI.

Of the Fat.



The Fat coming near the condition of an excrement, rather than of a part (as we said, when we treated of the similar parts) is of an oily substance, bred of the aery and vaporous portion of the blood, which sweating through the pores of the coats, or mouths of the vessels, becomes concrete about the membranes, and nerves, and cold bodies, and turns into fat by the coldness of the place. Whereby we may know, that cold, or a more remits heat, is the efficient cause of fat, which is manifest by contemplation not only of creatures of divers kinds, but also by those of the same species and sex, if so be that the one be colder than the other.

By which we may understand that the fat is the more or less in quantity, according to the different temper of the whole body, and of its particular parts; for its composition, it consists of that portion of the blood which we formerly mentioned, intermixt with certain membranes, nervous fibers, veins and arteries. The greatest part of it lyes between the fleshy Pannicle, and the common coat of the Muscles. * Otherwise it is diffused over all the body, in some places more, in some less, yet it is always about the nervous bodies, to which it delights to cleave. Most Anatomists enquire whether the fat lye above or beneath the fleshy Pannicle. But we think this question is both impertinent and idle; being we often see the fat to be on both sides. *a* It is of a middle temper between heat and cold, being it ariseth of the more aery portion of the blood; although it may seem cold in respect of the efficient cause, that is, of cold by which it concretes. For the rest, moisture is predominant in the fat. *b* The use thereof is, to moisten the parts which may become dry by long fasting, vehement exercise, or immoderate heat; and besides to give heat, or keep the parts warm. Although it do this last rather by accident, than of its own nature, as heated by exercise, or by some such other chance; it heats the adjacent parts, or may therefore be thought to heat them, because it hinders the dissipation of the native and internall heat; like as cold heats in winter, whereby the bellies are at that time the hotter. I know some learned Physicians of our time stiffly maintained, that the fat was hot, neither did they acknowledg any other efficient cause thereof, than temperate heat and not cold. But I think it best to leave the more subtil agitation of these questions to naturall Philosophers. But we must note, *c* that at the joints which are more usually moved, there is another sort of Fat, far more solid and hard, than that which we formerly mentioned; often found mixed with a viscid and tough humor like the whites of Eggs, that so it might be sufficient for a longer time to moisten these parts, subject to be hurt by dryness, and make them slippery, and so fitter for motion, in imitation whereof they usually grease hard bodies, which must be in frequent motion, as Coach-wheels and axletrees. And there is another kind of fat, which is called *Sevum*, seam, in one thing differing from the ordinary fat, that is much dryer; the moister and softer portion of the fat being dissipated by the raging heat of the place. For it is found principally about the nūdriff, where there are many windings of arteries and veins; and it is also about the reins, loins, and basis of the heart. The Fat is wasted by long fasting; is dryed and hardened by vehement exercise and immoderate heat. Hence it is that it is much more compact in the palms of the hands, and soles of the feet, about the eyes and heart, so that it resembles the flesh in density and hardness; because by the continuall motion and strong heat of these parts, the thinner portion being dissipated and diffused, the more gross and terrestriall remain.

The Fat is rather an excrement than a part. The substance.

The efficient causa of Fat.

The quantity.

The composition.

The fire.

I was present at the opening of a body. Feb. 1630. in which the fat in the lower part of the lower belly was in thickness above 8 inches, upon the breast between 4 and 5 inches: which I thought good to remember in this place both for the rarity of the thing, as also because it was increased by reports, and the place mistaken, some saying the *Omentum* or Call was so thick, which was false, for it did not much exceed the quantity of that part, in other fat men.

a The temper.
b The use.
c The solid fat, or seam.

In what parts, and for what cause the fat is more deafe.

C H A P. VII.

Of the common coat of the Muscles.

The substance.	<p>NExt under the Fat, appears a certain coat, spread over all the Muscles, and called the common coat of the Muscles, it is of a nervous substance, as all other membranes are. The quantity and breadth thereof is bounded by the quantity of the Muscles which it involves, and fits it self to, as that which encompasses the Muscles of the <i>Epigastrium</i>, is of equal largeness with the same Muscles. The figure of it is round: it is composed of veins, nerves, arteries, and its peculiar flesh consisting of three sorts of fibers; the beginning of it is from the <i>Periostium</i>, in that part where the bones give ligaments to the Muscles; or according to the opinion of others, of the nervous and ligamentous fibers of the Muscles, which rising up and diffused over the fleshy superficies thereof, are united for the generation of this coat. But this membrane arising from the <i>Periostium</i> (as every membrane which is below the head takes it originall from the <i>Periostium</i> either primarily, by the interposition of no Medium, or secondarily) is stretched over the Muscles by their tendons. But if any object, That this membrane pluck'd from the belly of the Muscle, may seem to end in a ligament. I will answer, that it is the condition of every nervous part, so to binde or fasten it self to another part of his own kinde as to a stay, so that it can scarce be pluck'd from thence. We see the proof hereof, in the <i>Peritonæum</i> or Rim in the <i>Epigastrium</i> or lower part of the lower belly. That which covers the Muscles of the <i>Epigastrium</i> is but one, unless you had rather part it in two, the right and the left distinguished by the interposition of the <i>Linea Alba</i>, or white Line. It is situate betwixt the Fat and Muscles; for it is fastened above and below to these parts with fibers, which in smalness and fitness exceed the Spiders web. But by its vessels, it participates with the three principall parts, and is of a cold and dry temper. The use of it is, to contain the Muscles in their naturall union, and to keep them as much as in it lyes, from putrefaction, which may happen to them from <i>pus</i> or matter, which is often cast forth of the similar parts into the empty spaces and distances of the Muscles. Wherefore going about to separate the Fat of the <i>Epigastrium</i> (where thou must begin the dissection of mans body) you must have a care that you hurt it not with your knife, but that, before you touch the Muscles, see you artificially take it away, that you may the more easily separate the Muscles lying under it, distinguished by a manifest space at the white Line, which is made by the meeting together of the proper coats of all those Muscles.</p>
The quantity.	
The composition.	
The Originall.	
The number.	
The site.	
The use.	
What the white line is.	

C H A P. VIII.

What a Muscle is, and how many differences there be thereof.

What a Muscle is.	<p>AMuscle is the instrument of voluntary motion; and simple voluntary motion is performed six manner of ways, upwards, downwards, forwards, backwards, to the right hand and to the left; but the compound one way, which is circularly, the which is performed by the continuall succession of the motion of the Muscles ingirting the part. Such a motion Falconers use when they stretch forth their hand and lure their Hawk. We have some parts, which have motion without a Muscle, but that motion is not voluntary; such parts be the heart, stomach, guts, both the bladders, (that is, that of the gall and that of the urine) and divers other which have the motions of attraction, expulsion and retention, by the means of the three sorts of fibers; for they draw by the right, expell by the transverse, and retain by the oblique. The differences of Muscles which are many and diverse, are taken from their substance, originall, insertion into the part which they move, form or figure, holes or openings, magnitude, colour, site, kinde of fibers, their conjugation or connexion, heads, bellies, tendons, opposition in action and office. Some in substance are nervous, venous, arterious, because they have manifest nerves, veins, and arteries, as the Midriff, the Intercofall or Epigastrick Muscles, and many more, and that for their difference from other Muscles, into which neither nerve, nor vein, or arteries are manifestly inserted, although secretly they admit them all for sense and motion, life and nourishment; such are the Muscles of the wrist, the wormy Muscles of the hands and feet; for if there be any nerves observed in them, they are very small. Some had rather make the difference of Muscles thus, that some of them are fleshy, some nervous, others membranous. From their Originall, some arise from the bones, as these which move the hands, arms, and legs; others from gristles, as the Muscles of the throat; others from membranes which invest the tendons, as the wormy Muscles of the hands and feet; others from ligaments, as the Extenders of the fingers; others from other Muscles, as the two lower Muscles of the yard which proceed from the Sphincter Muscle of the fundament. Others have no originall, as the membrane which we call the fleshy Pannicle assumes flesh</p>
How the circular motion is performed.	
From whence the differences of Muscles are drawn.	
Differences of Muscles from their substance	
Differences of Muscles from their originall.	

in certain places, and degenerates into a Muscle; such are the *Cremaster* or hanging Muscles of the testicles, the large Muscles of the face, and if you please the Midriff, as that which is composed of two coats, the one encompassing the ribs and the *Peritonæum*, hath flesh in the midst between the two membranes. And moreover some Muscles have their originall from one only bone, as these which bend and extend the Cubit; others arise of many bones, as the oblique descending, the Dorsall and many Muscles of the neck, which arise together from many spondyls and sides of spondyls. There be others, according to the opinion of some men, both from the bones and gristles of the *Pubis* at the right or direct Muscles of the *Epigastrium*, yet by their favor I think otherwise. Because by the Anatomical and received axiome, A muscle is there thought to take his beginning, from whence he receives a nerve; but these Muscles take a nerve from the intercostall muscles, wherefore their originall ought to be referred to the sides of the breast-blades, as shall be shewed in due place. From their insertion arise these differences, some are inserted into a bone, as those which move the head, arms and legs; others into a gristle, as those of the Throtle; eyelids, nose, and the oblique ascendent muscles of the *Epigastrium*; some into a bone and gristle both, as the right muscles of the *Epigastrium* and the Midriff; some into the skin, as the muscles of the lips; others into the Coats, as the muscles of the eyes; others into Ligaments, as the muscles of the yard. But these differences following may be drawn both from their insertion and originall. For some muscles arising from many parts, are inserted into some one part, as divers of these which move the arm and the shoulder, which arising from many spondyls, are inserted into the bone of the shoulder, and the shoulder-blade. Others arise from one part, and insert themselves into more, as those which arise from the bottom of the shoulder-blades, are extended and inserted into some eight or nine of the upper ribs, to help respiration; and the benders and extenders of the fingers and toes: Others arising from many bones, are inserted into as many, as some of those which serve for respiration, to wit those which we call the hinder Saw-muscles and the *Semispinatus*, which sends a tendon into all the ribs. Others have their originall from many bones, and end in gristles of the seven ribs, as those two which lye under the *Sternum*. Moreover also these differences of muscles may be drawn from the originall and insertion, that some proceed from bones, and are inserted into the next bone, to help and strengthen the motion thereof, as the three muscles of the Hip: Others arise from an upper bone and are not inserted into the next, but into some other, as the long muscles. Some are named from the part they move, as the temporall muscles, because they move the temples; others from their office, as the grinding muscles, because they move the skin as a mill, to grinde asunder the meal. From their form or figure, because some are like Mice, other like Lizards which have their legs cut off, for that they imitate in their belly, body or tendon, the belly or tail of such creatures, and from whence the names of *Musculus* and *Lacertus* are derived. Such are those which bend the wrist, and which are fastned to the bone of the Leg, and which extend the foot; others are triangular, as that which lifts up the arm, called *Epomis* or *Deltoides*, and that which draws the arm to the breast, called the Pectorall muscle. Others quadrangular, as the Rhomboides, or Lozenge-muscle of the shoulder-blade, and the two hindersom-muscles serving for respiration, and two of the wrists which turn down the hand; others consist of more than four angles, as the oblique descending, and that muscle which joins it self to it from the shoulder-blade; others are round and broad, as the Midriff; others circular, as the Sphincter-muscle of the fundament and bladder; others are of a pyramidicall figure, as the seventh muscle of the ey, which compasses the optick nerve in beasts but not in men. Others have a semicircular form, as that which shuts up the ey, seated at the lesser corner thereof; others resemble a Monks cowl, or hood, as the *Trapezius* of the shoulder-blade. Besides others at their first originall are narrow, but broad at their insertion, as the Saw-muscle of the shoulder, and the transverse of the *Epigastrium*; others are quite contrary, as the three muscles of the Hip; others keep an equal breadth or bigness in all places, as the intercostall muscles and these of the wrist; others are long and slender, as the long muscle of the thigh; others are long and broad, as the oblique descending muscles of the *Epigastrium*; others are directly contrary, as the Intercostall, which are very narrow. From their perforations, for some are perforated, as the Midriff which hath three holes, as also the oblique and transverse of the *Epigastrium*, that so they may give passage forth to the preparing spermatick vessels, and to the ejaculatory vessels, the Coat *Erythroides* associating and strengthening them; others are not perforated. From their magnitude, for some are most large, as the two muscles of the Hip; others very small, as the eight small muscles of the neck, and the proper muscles of the Throtle, and the wormy muscles. Others are of an indifferent magnitude. From their colour, for some are white and red, as the Temporall muscles, which have tendons coming from the midst of their belly; others are livid, as the three greater muscles of the calf of the leg, which colour they have by the admixtion of the white, or tendinous nerve coat with the red flesh, for this coat by its thickness darkning the colour of the flesh, so that it cannot shew its redness and fresh colour, makes it seem of that livid colour. From their situation, for some are superficially, as those which appear under the skin and fat; others deep in and hid, as the smooth and four twin muscles; some are stretched

Where a Muscle hath its originall.

Differences of muscles from their insertion;

Differences of Muscles taken from their figure.

Differences from their perforations;

From their magnitude.

From their colour.

From their site.

stretched out, and (as it were) spread over in a straight and plain passage, as the muscles of the thigh which move the leg, except the Ham-muscle; others oblique, as those of the *Epigastrium*; othersome transverse, as the transverse of the *Epigastrium*; where you must observe, that although all the fibers of the muscles are direct, yet we call them oblique and transverse, by comparing them to the right muscles, as which by the concurrence of the fibers make a straight or acute angle.

From their
Fibers.

From the sorts of fibers; for some have one kinde of fiber; yet the greatest part enjoy two sorts running so up and down, that they either are crossed like the letter X, as happens in the pectorall and grinding muscles; or else do not concur, as in the Trapezii. Others have three sorts of fibers, as the broad muscle of the face.

From their
connexion.

From their coherence and connexion, or their texture of nervous fibers; for some have fibers somewhat more distant and remote immediately at their original, than in other places, as you may see in the muscles of the buttocks: Others in their midst and belly, which by reason thereof in such muscles is more big or tumid, their head and tail being slender, as happens in most of the muscles of the arm and leg, in which the dense mats of flesh interwoven with fibers, disjoins the fibers in so great a distance; in othersome the fibers are more distant in the tail, as in the greater Saw-muscle arising from the bottom of the shoulder-blade; in others they are equally distant through the whole muscle, as in the muscles of the wrist and between the ribs.

From their
head.

From their head; for in some it is fleshy, interwoven with few fibers, as in the muscles of the buttocks; in others it is wholly nervous, as in the most-broad-muscle common to the arm and shoulder-blade, and in the three muscles of the thigh proceeding from the tuberosity of the huckle-bone; in some it is nervous and fleshy, as in the internall and externall muscle of the arm. Besides, some have one head, others two, as the bender of the elbow, and the externall of the leg; others three, as the Threeheaded muscle of the thigh. But we must note that the word Nerve or Sinew is here taken in a large signification, for a ligament, nerve and tendon, as *Galen* saith, (*Lib. de Ossibus*) and moreover we must observe, that the head of a muscle is one while above, another while below, otherwhiles in the midst, as in the Midriff, as you may know by the insertion of the Nerve, because it enters the muscle by its head.

From their
belly.

From their belly also, there be some differences of muscles taken; for some have their belly immediately at their beginning, as the muscles of the buttocks; others at their insertion, as the Midriff; others just at their head, as those which put forth the Calf of the leg; in others it is somewhat further off, as in those which draw back the arm, and which bend the leg; in others, the belly extends even from the head to the tail, as in the intercostall muscles, and these of the wrist; in others it is produced even to their insertion, as in those of the palms of the hands and soles of the feet; some have a double belly distinguished by a nervous substance; as those which open the mouth, and those which arise from the root of the lower process of the shoulder-blade.

From their
Tendons.

Moreover the differences of muscles are drawn also from the Tendons, for some have none, at least which are manifest, as the muscles of the lips and the sphincter-muscles, the intercostall and those of the wrist; others have them in part, and want them in part, as the Midriff; for the Midriff wants a Tendon at the ends of the shorter ribs, but hath two at the first *Vertebra* of the Loins in which it is terminated: Others have a Tendon indeed. But some of these move with the bone, some not, as the muscles of the eyes; and besides, some of these have broad and membranous tendons, as the muscles of the eyes and *Epigastrium*, except the right muscles: In others they are thick and round, as in the benders of the fingers; in others they are less round, but more broad than thick, such is the Tendon arising from the twin muscles and *Soleus* of the leg; others have short Tendons, as the muscles which turn down the hand; othersome long, as those of the palms of the hands, and soles of the feet; besides others produce Tendons from the end of their belly, which Tendons are manifest; others from the midst, as the Temporall muscles.

From their
action.

From their
function.

Besides also, others diffuse many Tendons from their belly, as in the hands the benders of the fingers, and the extenders of the feet. Othersome put forth but one, which sometimes is divided into many, as those which bend the third articulation of the foot; otherwhile many muscles by their meeting together make one Tendon, as the three muscles of the Calf of the leg, and those which bend the cubit and leg. All Tendons have their original, when the nerves and ligaments dispersed through the fleshy substance of a muscle, are by little and little drawn and meet together, untill at last carried to the joint, they are there fastned for the fit bending and extension thereof. From the contrariety of their Actions, for some parts have contrary muscles, benders and extenders; other parts have none, for the Cods and fundament have only lifters up. From their function, for some are made for direct motions, as those which extend the fingers and toes; others for oblique, as the Supinators of the hand, and the Pronators; others perform both, as the pectorall muscle, which moves the Arm obliquely upward and downward, as the upper and lower fibers are contracted; and also outright, if all the fibers be contracted together, which also happens to the *Deltoides* and *Trapezius*. I have thought it good to handle particularly

larly these differences of muscles, because that by understanding them the prognostick will be more certain; and also the application of remedies to each part; and if any occasion be either to make incision, or suture, we may be more certain whether the part affected be more or less nervous.

CHAP. I X.

Of the parts of a Muscle.

Having declared the nature and differences of a Muscle, we must note that some of the parts thereof are compound or universall, others simple or particular. The compound are the head, belly, and tail. The simple are ligaments, a nerve, flesh, a vein, artery and coat. For the compound parts, by the head, we understand the beginning and originall of a muscle, which is one while ligamentous and nervous, otherwhiles also fleshy. By the belly, that portion which is absolutely fleshy; But by the tail we understand a Tendon consisting partly of a nerve, partly of a ligament promiscuously coming forth from the belly of the muscle. For as much as belongs to the simple, which are six in number, three are called proper, and three common. The proper are a Ligament from a bone, a nerve proceeding from the Brain or spinall marrow, and flesh compact by the concretion of blood. The common are, a vein from the Liver or trunk arising from thence; an artery proceeding from the Heart, a Coat produced by the nervous and ligamentous fibers spreading over the superficies of the muscle. But for the simple use of all such parts, the nerve is (as it were) the principall part of a Muscle, which gives it sense and motion, the ligament gives strength, the flesh contains the nervous and ligamentous fibers of the Muscle, and strengthens it, filling up all the void spaces, and also it preserves the native humidity of these parts, and cherisheth the heat implanted in them; and to conclude, defends it from all externall injuries; for like a fan it opposeth it self against the heat of the Sun; and is as a garment against the cold; and is as a cushion in all falls and bruises; and as a buckler or defence against wounding weapons. The vein nourishes the muscle, the artery gives it life, the coat preserves the harmony of all the parts thereof, lest they should be any ways disjointed or corrupted by purulent abscesses breaking into the empty or void spaces of the Muscles, as we see it hapneth in a Gangrene, where the corruption hath invaded this membrane, by the breathing out of the more acrid matter or filth.

The compound and simple parts of a muscle.

What use each simple particle hath in a muscle.

CHAP. X.

A more particular inquisition into each part of a muscle.

Having gone thus far, it remains, that we more particularly inquire into each part of a muscle, that (if it be possible) nothing may be wanting to this discourse. Wherefore a Ligament properly so called, is a simple part of mans body, next of a bone and gristle, the most terrestriall, dry, hard, cold, white, taking its originall immediatly, or by the interposition of some Medium from the Bones or Gristles (from whence also the Muscles have their beginning) whereby it comes to pass, that a ligament is void of sense, unless it receive a nerve from some other place; (for so the ligaments which compose and strengthen the tongue and yard, are partakers of sense, and it inserts it self into the bone and gristle, that so it may bind them together, and strengthen and beautifie the whole joint or connexion; (for these three be the principall uses of a ligament) then diffusing it self into the membranes and muscles to strengthen those parts. A Nerve, to speak properly, is also a simple part of our body, bred and nourished by a gross and phlegmatick humor, such as the brain, the originall of all the nerves, and also the Spinall marrow endued with the faculty of feeling, and oftentimes also of moving. For there be divers parts of the body which have nerves, yet are destitute of all voluntary motion, having the sense only of feeling, as the membranes, veins, arteries, guts, and all the entrails. A nerve is covered with a double cover from the two membranes of the brain, and besides also with a third proceeding from the ligaments which fasten the hinder part of the head to the *Vertebra's*, or else from the *Pericranium*. We understand no other things by the fibers of a Nerve, or of a Ligament, than long and slender threds, white, solid, cold, strong, more or less, according to the quantity of the substance, which is partly nervous and sensible, partly ligamentous and insensible. You must imagine the same of the fleshy fibers in their kinde; but of these threds some are streight for attraction; others oblique, for retention of that which is convenient for the creature; and lastly, some transverse, for expulsion of that which is unprofitable. But when these transverse threds are extended in length, they are lessened in bredth; but when they are directly contracted, they are shortned in length. But when they are extended all together as it were with an unanimous consent, the whole member

The nature of a Ligament.

The threefold use of a Ligament. What a nerve is.

What we mean by the nervous and ligamentous fibers.

By what power
the similar
parts, princi-
pally draw
or tract.
What and of
how many
sorts the flesh
is.

is wrinkled as contracted into it self, as on the contrary it is extended when they are relaxed. Some of these are bestowed upon the animall parts, to perform voluntary motions; others upon the vitall to perform the agitation of the heart and arteries; others upon the naturall for attraction, retention, and expulsion. Yet we must observe, that the attraction of no similar part is performed by the help of the foresaid fibers or threds, but rather by the heat implanted in them, or by the shunning of emptiness, or the familiarity of the substance. The flesh also is a simple and soft part, composed of the purer portion of the blood insinuating it self into the spaces between the fibers, so to invest them for the uses formerly mentioned. This is (as it were) a certain wall and bulwark against the injuries of heat and cold, against all falls and bruises, as it were a certain soft pillow or cushion yielding to any violent impression. There be three sorts of flesh; one more ruddy, as the muscularous flesh of perfect creatures, and such as have blood; for the flesh of all tender and young things having blood, as Calves, and also of all sorts of fish, is whitish, by reason of the too much humidity of the blood. The second kinde is more pallid, even in perfect creatures having blood, such is the flesh of the heart, stomach, weasond, guts, bladder, womb. The third is belonging to the entrails, or the proper substance of each entrail, as that which remains of the Liver (the veins, arteries and coat being taken away) of the bladder of the gall, brain, kidneys, milt: Some add a fourth sort of flesh which is spongy, and that they say is proper to the tongue alone.

What a vein is.

A Vein is the vessel, pipe, or channel of the blood, or bloody matter; it hath a spermatick substance, consists of one coat composed of 3 sorts of fibers.

What an artery is.

An Artery is also the receptacle of blood, but that spirituouse and yellowish, consisting in like manner of a spermatick substance; But it hath two coats with three sorts of fibers, the utmost whereof is most thin, consisting of right fibers, and some oblique: But the inner is five times more thick and dense than the utmost, interwoven with transverse fibers; and it doth not only contain blood and spirit, but also a serous humor, which we may believe because there be two emulgent Arteries as well as veins.

Why an artery
is more thick
and dense than
a vein.

But the inner coat of an Artery is therefore more thick, because it may contain blood which is more hot, subtil, and spirituouse; for the spirit, seeing it is naturally more thin and light, and in perpetuall motion, would quickly fly away, unless it were held in a stronger hold. There is other reason for a Vein, as that which contains blood gross, ponderous, and slow of motion. Wherefore if it had acquired a dense and gross coat, it could scarce be distributed to the neighbouring parts: God the maker of the Universe, foreseeing this, made the coats of the vessels contrary to the consistence of the bodies contained in them. The *Anastomosis* of the Veins and Arteries, that is to say, the application of the mouths of the one to the other, is very remarkable, by benefit of which they mutually communicate and draw the matters contained in them, and so also transfuse them by insensible passages, although that *anastomosis* is apparent in the Vein and Artery that meet together at the joint and bending of the arm, which I have sometimes shewed in the Physick schools, at such time as I there dissected Anatomies.

The mutuall
Anastomosis of
the veins and
arteries.
Where it is
manifest.

From whence
a muscle hath
its beginning
or head.

But the action or function of a Muscle is either to move or confirm the part according to our will, into which it is implanted; which it doth when it draws it self towards its originall, that is to say, its head. But we define the head by the insertion of the nerve, which we understand by the manner of the working of the Muscle.

CHAP. XI.

Of the muscles of the Epigastrium, or lower Belly.

Now seeing that we have taught what a Muscle is, and what the differences thereof are, and what simple and compound parts it hath, and what the use, action, and manner of action in each part is; it remains that we come to the particular explication of each Muscle, beginning with those of the lower belly, as those which we first meet withall in dissection.

Eight muscles
of the Epiga-
strium.

These are 8 in number, four oblique, two on each side, two right or direct, one on the right, another on the left side; and in like manner two transverse. All these are alike in force, magnitude and action, so mutually composed, that the oblique descendant of one side, is conjoined with the other oblique descendant on the other side, and so of the rest.

The oblique
descendant.
Their sub-
stance.
Their greatnes
and figure.

We may add to this number the two little Supplying or Assisting muscles, which are of a *Pyramidall* form, and arise from the Share-bone, above the insertion of the right muscles; Of the oblique Muscles of each side the one ascends, the other descends, whereupon it comes to pass, that they are called the Oblique descendant and ascendant Muscles. Those oblique which we first meet with, are the descendant, whose substance is partly sanguine, partly spermatick; for they are fleshy, nervous, ligamentous, veinous, arterious, and membranous. Yet the fleshy portion is predominant in them, out of which respect *Hippocrates* is wont to express the muscles by the name of fleshes; their greatnes is indifferent be-

between the large and the small muscles; their figure is three square. They are composed of the forementioned parts, they are two in number; their site is oblique, taking their beginning from the touching of the great saw-muscle, and from the sixth and seventh true ribs, or rather from the spaces between the six lower ribs, and rather on the forepart of the muscles, than of the ribs themselves, from whence shunning the *Vertebra's* of the Loins, the fleshy parts of them are terminated in the externall and upper eminency of the Haunch-bone, and the membranous end in the lower eminency of the Share-bone and the White-line. Yet *Columbus* dissenting from this common description of the oblique Muscles, thinks that they are only terminated in the White-line, and not in the Share-bone. For (saith he) wherefore should they be inserted into the Share-bone which is not moved? But because it would be an infinit labor and trouble to set down at large the severall opinions of all Authors of Anatomy; I have thought it sufficient for me to touch them lightly by the way. Their connexion is with the oblique ascendant lying under them, and with the direct or right. Their temperament is twofold, the one hot and moist, by reason of the belly and the fleshy portion of them; the other cold and dry, in respect of their ligamentous and tendinous portion. Their action is to draw the parts into which they are inserted towards their originall, or else to unite them firmly. Yet each of these privately and properly draws the hip in an oblique manner towards the *Cartilago Scutiformis* or breast-blade. Then follow the oblique ascendant, who have the same substance, quantity, figure, composition, number and temper the descendant have. They are situate between the descendant and transverse with whom they have connexion, especially by the vessels which are brought from the parts beneath. All the fleshy parts arise from the rackbones of the Haunch to the ends of the bastard ribs, which they seem to admit above and below, being fleshy even to the fourth, and then becoming membranous, they take their way to the White-line, with a double *aponeurosis*, which passes through the right Muscles above and below, as we may plainly see from the navell downwards. In their fleshy part they draw their original from the spine of the Haunch-bones a little lower than the descendent end in their fleshy part. But for their membranous parts, they arise before from the sharebone, but behinde from the spondyls of the Holy-bone, and *Vertebra's* of the Loins obliquely ascending upwards to the White-line, into which they are terminated by an *aponeurosis* or membranous tendon (which seems to penetrate the right Muscle upwards and downwards, especially under the navell) but by their fleshy part at the ends of all the bastard ribs, which they seem to receive above and below. And because these muscles are terminated in the White-line, they have also another use, yet such as is common to all the muscles of the *Epigastrum*, that is, to press down the Guts. Their action is (if they perform it together) to draw down the chest, and dilate the breast; but if their actions be separate, they draw the chest to the hip with an oblique motion. After these follow the right muscles, so called because they descend according to the length of the body, and because they have right or streight fibers.

We will say nothing (to shun prolixity, which in all other places we will avoid) of their substance and other conditions, which they have common with the fore-mentioned Muscles. They are situate in the eminentest or extuberating region of the belly, bounding the *Epigastrum* taken in generall, (or the superficial belly) they are divided by the manifest intercourse of the White-line, even to the Navell, in which place they seem to be united even to the place of their insertion. They draw their originall not from the Share-bone, as some would have it, but according to the insertion of their nerves from the sides of the *Cartilago scutiformis*, and the ends of the sixth, seventh and eighth ribs; but they end in the Share-bone, where they make a common Tendon sufficiently strong and short. *Sylvius*, *Vesalius*, and *Columbus* think they arise from the Share-bone, because they cannot be inserted into that bone, because it is unmovable. You may perceive in these Muscles certain nervous and transverse interfections, oftentimes three in number for the strength of these Muscles, (of which *Galen* makes no mention, although they may be seen in Apes.) And also in the inner side of these muscles you may see four veins, and as many arteries, of which some creep upwards, others run downwards. The upper, called the Mamillary, descend from the Axillary by the side and lower parts of the *Sternum*, the slenderer portions thereof being distributed by the way to the *Mediastinum*, and about the fourth and fifth rib to the Dugs, from whence they take their name.

That which remains breaking out by the sides of the Breast-blade, inserts it self into those muscles, creeping along, even almost to the navell; in which place they are manifestly united (that is, the veins with the veins, and arteries with the arteries) with the Epigastrick, which ascend from the upper part of the Iliacks on each side under the said muscles, untill they meet with these four mamillary vessels. That you may finde this concourse of the veins and arteries about the navell, you must follow both the upper and the lower somewhat deep into the flesh, pressing the blood on both sides from above downwards, and from below upward, untill you shall finde the exosculation of these vessels, which will appear by this, That the blood will flow from this into that, and from that into this; otherwise you can scarce perceive it, by reason of the smalness of such vessels which want blood.

Their composition and site,

Their connexion.
Their temperament.
Their action.

The oblique ascendant.
Their site and connexion.

Their action.

The right muscles of the *Epigastrum*.

Their site.

Originall.

The meeting together of the Epigastrick and mamillary veins and arteries.

But that by the benefit of such concurrence of the vessels, the matters may be communicated and transported both from the womb to the dugs, and again from the dugs to the womb, appears in Nurses who want their courses, when the milk comes into their dugs; and on the contrary lose their milk when their courses flow plentifully. Otherwise to what purpose should there be such concurrence between the vessels of the paps and womb? for there are veins and arteries diffused to the sides of the womb from the root of the Epigastricks; for indeed the Epigastricks which in their ascent meet with the mamillary, go not to the womb, though they be next to them, and arise from the same trunk with the Hypogastrick vein of the womb. The action of these Muscles is, to move or draw near together the parts of the Hypogastrium to the *præcordia* or Hypochondries. Their use, in *Columbus* opinion, is, to draw the breast downwards so to dilate it. At the ends of these, nature hath produced two other small Muscles from the upper part of the Share-bone, of a triangular figure, for the safety of the thick and common tendon of the right Muscles; whereupon they are called *Succenturiati*, or assisters. The first figure of the Lower belly.

Their action.

Their use.

A B C D. The upper, lower and laterall parts of the *Peritonæum*.

E E. The white Line from the gristle of the Breast-bone, called the Breast-blade, to the commissure or meeting of the Sharebones.

F. The Gristle of the Breast-bone, *Carilago ensiformis*, or the Breast-blade.

G. The Navell, which all the Muscles being taken away, must be kept for the demonstration of the Umbilicall Vessels.

H H. The productions of the *Peritonæum*, which contain the seminary Vessels on either side.

** The hole which giveth way to the seminary Vessels of men.

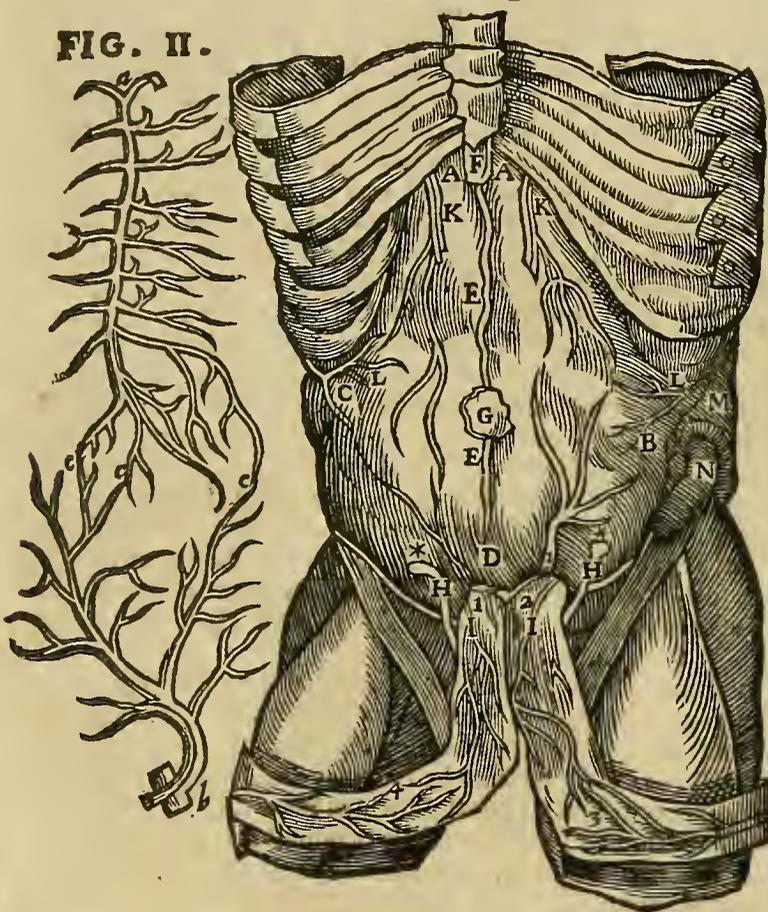
II. A vein and an artery from the *Epigastrick*, which being carried upward under the right Muscles, do here hang down, and are distributed into the lower part of the *Abdomen*.

K K. A Vein and an artery, from the internall Mammary proceeding from under the Bone of the Breast, are carried downward through the right muscles, & are disseminated into the upper part of the *Abdomen*.

1, 2 the place wherein the right muscles arise, which being here cut off, do hang down, that their Vessels may the better be seen. **3, 4.** The *Anastomasis* or inoculation of the foresaid Vessels, making the consent of the *Abdomen* and the Nose, and of the Womb with the Breasts, **N.** The place of the Haunch-bone bared, to which the Oblique and the Transverse muscles do grow.

FIG. I

FIG. II.



as some think. **LL.** Branches of Veins running into the sides of the *Peritonæum*. bone bared, to which the Oblique and the Transverse muscles do grow.

The Pyramidal or assisting Muscles.

The transverse muscles of the *Epigastrium*. Their figure and site.

Their action. The common use and action of the eight muscles of the *Epigastrium*.

Some (moved with I know not what reason) would have these two small Muscles to help the erection of the yard. *Columbus* thinks they should not be separated from the right, and that they only are the fleshy beginnings of the right. But on the contrary, *Fallopis* manifestly proves them different and separate from the right, and shews their use. The Transverse remain to be spoken of, so called by reason of their fibers, which make right angles with the fibers of the right Muscles. They have a quadrangular figure situate upon the greatest part of the *Peritonæum*, to which they stick so close that they scarce can be separated. They take their originall from the production of the loins, the eminency of the Haunch-bone, the transverse productions of the *vertebra's* of the loins, and the ends of the bastard-ribs; contrary to the opinion of many, whom the insertion of the nerve convinces, but they end in the White-line, as all the rest do.

Their action is to press the guts, especially for the expulsion of excrements.

But all the eight recited Muscles, besides their proper use, have another common, that is, they stand for a defence or bulwark for all the parts lying under them, and serve for the expulsion both of the excrements, infant, and vapors, and also for the strengthening of

of the voice, as experience shews in those who sound Trumpets and Cornets.

Therefore these muscles do equally on every side press the Belly; but the Midriff, the intercostall muscles assisting it, doth drive from above downwards, from which conspiring contention follows the excretion of the excrements by the fundament; but unless the Midriff should assist, these muscles would press the excrements no more downwards, than upward to the mouth.

Although to this excretion of the excrements, it is not sufficient that the Epigastrick, Midriff, and intercostall muscles press the belly, but the muscles of the throat must be also shut. For the mouth being open, the excrements never go well forth; because the vapors that pass out of the mouth, which being restrained and driven to the Midriff, by stretching it powerfully thrusts down the excrement. Wherefore Apothecaries when they give glysters, bid the Patient to open his mouth, that the glyster may easly go up, which otherwise would scarcely go up, the mouth being shut, because so we should have no place empty in us, into which the glyster might be admitted.

Of the White-line, and Peritoneum or Rim of the belly.

The White-line is nothing else, than the bound and extremities of the muscles of the *Epigastrium*, distinguishing the belly in the midst into two parts, the right and left. It is called white, both of its own colour, and also for that no fleshy part lyes under it, or is placed above it. It is broader above the navell, but narrower below, because the right muscles do there grow into one. Now we must treat of the Coat or membrane, *Peritoneum* or *Rim* of the belly; it is so called, because it is stretched over all the lower belly; and particularly over all the parts contained in the ventricle, to which also it freely lends a common coat. It hath a spermatick substance, as all other membranes have; the quantity of it in thickness is very small, (for it is almost as thin as a Spiders web) yet differing in divers places in men and women; for men have it more thick and strong above the navell, that so it may contain the extension of the stomach, often stretched beyond measure with meat and drink. On the contrary women have it so thick and strong below their navell, that it seems double, that so they may more easily endure the distention of their womb, caused by the childe contained in it. But above the navell, men and women have the *Peritoneum* of an equal strength, for the self-same reason. The longitude and latitude of it is known by the circumscription of the belly.

The figure is round and somewhat long; it puts forth some productions, like finger-stalls, both for the leading and strengthening the spermatick vessels, and the Cremaster muscles of the Testicles, and besides it the ejaculatory vessels, as also to impart a coat to the Testicles and all the naturall parts.

It is composed of slender, membranous and nervous fibers, certain small branches of veins and arteries concurring with them, which it receives for life and nourishment from the adherent parts.

This membrane is one in number, and besides every where one and equal, although *Galen* would have it perforated in that place where the spermatick vessels descend to the Testicles; But in truth we must not think that a hole, but rather a production, as we said before,

The later Anatomists have observed, the Coat *Peritoneum* is doubled below the Navel, and that by the spaces of these reduplications the umbilicall arteries ascend to the Navell.

It is situate near the naturall parts, and compasses them about, and joined by the coat, which it gives them, as also on the sides, it is joined to the *vertebra's* of the loins, from whose ligaments (or rather *Periosteum*) it takes the originall: On the lower part, it cleaves to the share-bone, and on the upper to the Midriff, whose lower part it wholly invests; on the fore or outer part it sticks so close to the transverse muscles, that it cannot be pluckt from them but by force, by reason of the complication and adhesion of the fibers thereof with the fibers of the proper membrane of these muscles, which membrane in *Galen's* opinion proceeds from this *Peritoneum*, that so it is no marvail that we may more easily break than separate these two coats. It is of temperature cold and dry, as all other membranes are.

It hath many uses; the first whereof is, to invest and cover all the parts of the lower belly, specially the Kall, lest it should be squeezed by great compressures and violent attempts into the empty spaces of the muscles, as it sometimes happens in the wounds of the *Epigastrium*, unless the lips of the ulcer be very well united; for then appears a tumor about the wound by the Guts and Kall thrusting without the *Peritoneum* into those spaces of the muscles; from whence proceeds cruel pain.

Another use is to further the casting forth of the excrements by pressing the ventricle and guts on the fore side, as the Midriff doth above, as one should do it by both their hands joined together.

The third use is, it prohibits the repletion of the parts with flatulency after the expulsion of the excrements, by straitning and pressing them down.

The fourth and last is, that it contains all the parts in their seat, and binds them to the back-bone, principally that they should not fly out of their places by violent motions, as leaping and falling from on high.

Why when the mouth is open the excrements go more slowly forth.

What the White-line is.

What the *Peritoneum* is.

The substance, and quantity.

The figure.

The composition.

The number. Lib. de sem.

The site and connexion.

Lib. 6. Meth.

Use.

Lastly, we must know, that the Rim is of that nature, that it will easily dilate it self, as we see in Dropsies, in women with childe, and in tumors against nature.

CHAP. VIII.

Of the Epiploon, Omentum, or Zirbus, that is, the Kall.

The substance,
magnitude,
figure.

The compo-
sure.

The con-
nexion.

Lib. Anatom.
administ.

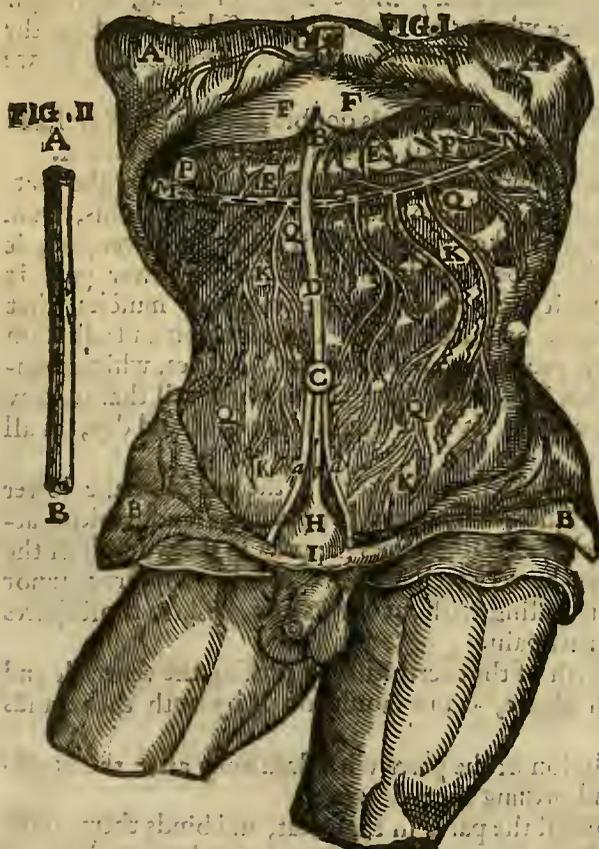
The temper.
The use two-
fold.

Lib. 4. de usu
parium.

A cause of
frustrating
conception.

After the containing parts, follow the contained, the first of which is the *Epiploon*, (or *Kall*) so called, because it (as it were) swims upon all the guts. The substance of it is fatty and spermatick; the quantity of it for thickness is diverse, in divers men according to their temperament. The latitude of it is described by the quantity of the guts. It is in figure like a purse, because it is double. It is composed of veins, arteries, fat and a membrane, which sliding down from the gibbous part of the ventricle, and the flat part of the gut *Duodenum* and spleen over the Guts, is turned back from the lower belly to the top of the Colon. It is one as we said covering the Guts. It hath its chief connexion with the first *Vertebra's* of the Loins, from which place in beasts it seems to take a coat, as in men from the hollow part of the Spleen, and gibbous of the ventricle, and depressed part of the *Duodenum*, from whence doubled it is terminated in the fore and higher part of the Colick-gut. Which moved *Galen* to write, that the upper part of the membrane of the *Kall* was annexed to the ventricle; but the lower, to the laxer part of the Colick-gut. From the vessels of which parts it borrows his, as also the nerves, if it have any. The temper of it in lean bodies is cold and dry, because their *Kall* is without fat; but in fat bodies it is cold and moist by reason of the fat. The use of it is two-fold: The first is to heat and moisten the Guts, and help their concoction, although it do it by accident, as that which through the density of the fat hinders the cold air from piercing in, and also forbids the dissipation of the internall heat. Another use is, that in want of nourishment in times of great famine, for sometimes it cherishes, and (as it were) by its dew preserves the innate heat, both of the ventricle and neighbouring parts, as it is written by *Galen*. Moreover we must observe, that in a rupture or relaxation of the *Peritoneum*, the *Kall* falls down into the *scrotum*, from whence comes that rupture we call *Epiplocele*. But in women that are somewhat more fat, it thrusts it self between the bladder and the heck of the womb, and by its compression hinders; that the seed comes not with full force into the womb, and so frustrates the conception. Besides, when by a wound or some other chance, any part of it be defective, then that part of the belly which answers to it, will afterwards remain cold and raw, by reason of the forementioned causes.

The second figure of the lower belly.



A, B, B. The inner part of the *Peritoneum* cut into four parts, and so turned backward.

B. The upper *B* sheweth the implantation of the Umbilicall vein into the Liver.

C. The Navel separated from the *Peritoneum*. From *D* to the upper *B* the Umbilicall veins.

E, E. The forepart of the stomach blown up, neither covered by the Liver nor *Kall*.

F, F, A part of the *Gibbous* side of the Liver.

G. Vessels disseminated through the *Peritoneum*. * The Breast blade.

H. The bottom of the Bladder of urine.

I. The connexion of the *Peritoneum* to the bottom of the Bladder.

K, K, K, K. The *Kall* covering the Guts.

M, N. Vessels and sinews embracing the bottom of the stomach.

O. The meeting of the Vessels of both sides; so that *M, N,* and *O,* shew the seam which *Aristotle* mentions, 3 *Hist.* & 4 *de part. Anim.* where he saith, That the *Kall* arises and proceeds from the midst of the belly.

P, P. Branches of Vessels running along the bottom of the stomach.

Q, Q, Q, Q. Certain branches of the Vessels distributed to the upper membrane of the *Omentum*, as I compassed with fat.

a, a. The two Umbilicall arteries going down by the sides of the bladder to a branch of the great artery.

b. The Ligament of the Bladder which is shewed for the *Urabys*.

C H A P. XIII.

Of the Ventricle or Stomach.

NOW we must speak of the Stomach, the receptacle of the food necessary for the whole body, the seat of appetite, by reason of the Nerves dispersed into its upper orifice, and so into its whole substance. The substance thereof is rather spermatick than sanguine, because that for one fleshy membrane, it hath two nervous; The quantity or magnitude of the ventricle is divers, according to the various magnitude of bodies, and gluttony of men. The figure of it is round and somewhat long, like a Bagpipe. The stomach is composed of two proper coats, and one common from the *Peritoneum*, together with veins, sinews, and arteries; the innermost of its proper coats is membranous woven with right fibers, for the attraction of meats, it is extended and propagated even to the mouth thereof, whereby it comes to pass that the affections of one part may easily be communicated to the other by sympathy, or consent. This coat hath its originall from the membranes of the brain which accompany the nerves descending from the third and fourth conjugation to the mouth thereof. And in like sort from other productions descending by the passages of the head, from whence also another reason may be drawn from that, which they commonly bring from the nerves of the sixth conjugation; why in wounds of the head, the stomach doth so soon suffer by consent with the brain. The exterior or outer is more fleshy and thick, woven with oblique fibers, to retain and expell. It draws its originall from the *Pericranium*, which as soon as it comes to the gullet, takes unto it certain fleshy fibers. There be nerves sent into the stomach from the sixth conjugation of the brain, as it shall be shewed in its proper place. Veins and arteries are spread into it from the *Gastrica*, the *Gastrepiploides*, the *Coronaria* and splenick, from the second, third, and fourth distribution of the *Vena porta*, or gate-vein; and the third of the descendent artery to the naturall parts, as soon as it passes forth of the midriffe.

It is one in number. The greater part of it is situated on the left side between the spleen, the hollowness of the liver, and the guts, that assisted by the heat of such neighbouring parts, it may more cheerfully perform the concoction of the meat. Neither am I ignorant that *Galen* hath written, that a great part of the stomach lies on the left side. But inspection it self, and reason makes me derogate from *Galen's* authority, for because there is more empty space on the left side, by reason the spleen is less than the liver, it was fit it should lie more on the left side. The more proper connexion of it is with the gullet and guts, by its two orifices; with the brain by its nerves; with the liver and spleen by its veins; with the heart by its arteries; and with all the naturall parts by its common membrane.

The temper of the ventricle in men of good habit, is temperate, because it is almost composed of the equall mixture of sanguine and spermatick parts; or according to *Galen's* opinion, it is cold of its self, and by the parts composing it; and hot by the vicinity of the bowels. But in some it is hotter, in others colder, according to the divers temper and complexion of divers bodies. That stomach is to be thought well tempered, that powerfully draws down the meat and drink, and embraces and retains them so drawn, untill by concoction and elixation, they shall be turned into a juice like cream (which the Greeks call *Chylos*;) and lastly, which doth strongly send from it, and repell the excrements of this first concoction.

The stomach is known to be hotter by this, that it better concocts and digests coarse and hard meats, as beef, hard eggs, and the like, than soft meats easie of digestion, which it corrupts and turns into belchings. For so a young chickin, is sooner burnt than well roasted at a great fire. The stomach which is colder, desires much meat, but is slow in concocting them, especially if they be cold and hard of digestion; which for that cause quickly turn sowre. The action of a well conditioned stomach is twofold, one common, another proper. The common is to attenuate, mixe and digest the meats taken in at the mouth, for the nutrition of it self and the whole body, after the liver hath performed its duty, which before it be done, the ventricle only enjoys the sweet pleasure of the *Chylus*; and comforts its self against the impurity of the adjacent parts, whereof it is called the work-house of concoction. Its first action is to attract, retain, and assimilate to it self that which is convenient; but to expell whatsoever shall be contrary, either in quantity, or quality, or in the whole substance.

It hath two orifices, one above, which they commonly call the stomach and heart, the other lower, which is called the *Pylorus*, or lower mouth of the stomach. The upper bends to the left side near the back bone; it is far more large and capacious than the lower, that so it may more commodiously receive meats half chewed, hard and gross, which Gluttons cast down with great greediness; it hath an exquisite sense of feeling, because it is the seat of the appetite, by reason of the nerves incompassing this orifice, with their mutuall imbracings; whereby it happens that the ventricle in that part is endued with a quick sense, that perceiving the want and emptiness of meat, it may stir up the creature to seek food. For albeit

What the ventricle is
The substance
The magnitude
The figure
The composition

The cause of the consent of the mouth and stomach.

The number.

Lib. 4. de usu partium.

The connexion.

The temper.;
Lib. 9. Meth.

Notes of a hot stomach.

The action twofold.

The two orifices of the stomach.

nature hath bestowed four faculties on other parts, yet they are not sensible of their wants, but are only nourished by the continuall sucking of the veins, as plants by juice drawn from the earth.

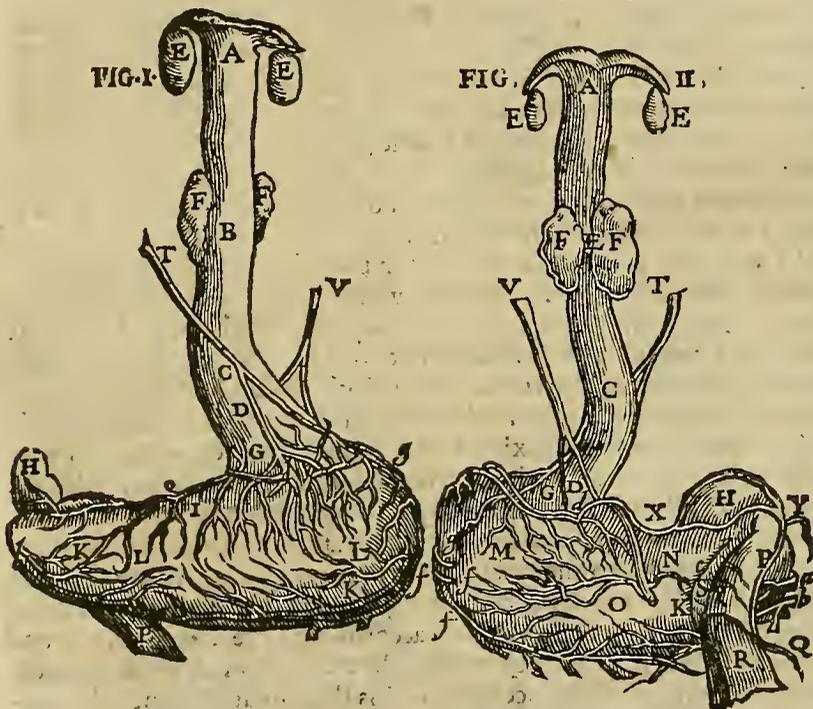
The site.

The glandulous ring of the *Pylorus*.

The falling down of the stomach.

This orifice is seated at the fifth *Vertebra* of the chest, upon which they say it almost rests. Yet I had rather say that it lies upon the twelfth *Vertebra* of the chest, and the first of the loins; for in this place the gullet perforates the midriff, and makes this upper orifice: The lower orifice bends rather to the right side of the body, under the cavity of the liver. It is far straiter than the upper, lest any thing should pass away before it be well attenuated and concocted; and it doth that by the help or assistance of, as it were, a certain ring, like to the sphincter muscle of the fundament, which some have thought a glandule made by the transposition of the inner and fleshy membrane of the ventricle into that, which is the outer of the guts. I know *Columbus* laughs at this glandulous ring, but any one that looks more attentively shall perceive that the *Pylorus* is glandulous. The stomach in its lower and inner side, hath many folds and wrinkles, which serve to hold and contain the meats, untill they be perfectly concocted. In the ventricle we observe parts gibbous and hollow; the hollow is next to the liver and midriff; the gibbous is towards the guts. Now we must note, that the ventricle when it is much resolved or loosed, may slide down even to the navill near the bladder, the which we have observed in some bodies dissected after their death.

The third and fourth figure.



The first figure shews the fore-side of the stomach and gullet.

- A. sheweth the orifice of the gullet cut from the throat.
- B. the straight and direct course of the gullet from A. to B.
- C. how the gullet above the first rack bone of the chest; from B. to C. inclineth to the right hand.
- D. his inclination to the left hand, from C. to D.
- EE. the two glandules called the Almonds, set close to the gullet in the end of the throat,

called also *Paristmia*, *Antiadēs*, *Tonsillæ* and *Salviares glandulæ*. FF. Another glandulous body in the midst of the gullet, about the fifth rack bone, from which place the gullet gives place to the great arterie, somewhat declining to the right side: *Vesalius*, *Lib. 5. Cap. 3.* and *Columbus Cap. ult. lib. 9.* write, that those Glandules are filled with a certain moisture, with which the gullet is moistened, that the meats may slide down more easily into the stomach, as through a slippery passage. No otherwise than the *Glandulæ prostate*, filled with a kind of gross and oily moisture, smooth the passage of the urine, that so it may flow through it, with a more free and less troubled course. G. the connexion of the gullet with the stomach, where the upper orifice of the stomach is fashioned. H. the lower orifice of the stomach called *Pylorus*. I. K. the upper part of the stomach at I. the lower at K. LL. the fore-side of the stomach. P. the gut called *Duodenum*. T. V. the right and left nerves of the sixth pair encompassing about the gullet and the uppermost left orifice of the stomach.

The second Figure sheweth the back parts of the Ventricle and Gullet.

A. EE. FF. G. H. P. TV. shew the like parts as in the former. From C. to D. the inclination of the stomach to the left hand. M. N. O. the backside of the stomach. M. sheweth the prominence of the left side. N. of the right. O. sheweth the dock or impression, where it resteth upon the rack bones. Q. R. the passage of the bladder of the gall into the *Duodenum* at R. S, a glandulous body growing under the *Duodenum*, bearing up the vessels X. Y. a nerve on the left side creeping up to the top of the stomach, and so running out to the liver.

C H A P. XV.

of the Guts.

The Guts the instruments of distribution and expulsion, are of the same substance and composition with the stomach, but that the site of the coats of the stomach is contrary to those of the guts. For that which is the innermost coat of the stomach is the outermost of the guts, and so on the contrary. The figure of the guts is round, hollow and capacious, some more, some less, according to the divers bigness.

But for the quantity of the guts, some are small, some great, more or less, according to the variety of bodies. But they are six in number: for there be three small; the *Duodenum*, the *Jejunum*, or empty gut, and the *Ileon*. Three great, the Blind, the Colick, and the Right gut. All which have had their names for the following reasons; the first, because it is extended the length of twelve fingers, like another stomach, without any turning, or winding; of which greatness it is found in great bodied men, such as were more frequently to be met withall in *Galen's* time, than in this time of ours, in which this gut is found no longer than seven, eight, or nine fingers at the most. The cause of this length is, that there may be a free passage to the Gate-vein, coming out of the liver, as also to the artery and nerve which run into it. For seeing that this gut may sometimes rise to the top of the liver, it would possess the space under the bladder of the gall (with which it is often tinctured) if it had any revolutions that way, which is the passage for such like vessels. Others give another reason of this figure, which is, that there should be nothing to hinder the easie and fit distribution of the perfectly concocted *Chylus* to the liver.

The second is called *Jejunum*, or the empty gut, not because it is absolutely so, but because it contains little in comparison of the other. There is a triple cause of this emptiness, the first the multitude of the meseraick veins and arteries which are about it, whereupon there is a greater and quicker distribution of the *Chylus*. The second is the vicinity or neighborhood of the liver strongly drawing the *Chylus* contained in it; the third is the flowing down of the chollerick humor from the bladder of the Gall into it, which ever and anon by its acrimony cleanses away the filth, and by continuall flowing solicits it to expulsion. The third is called *Ileon* because it lies between the *Ilia* or flanks; it differs nothing from the rest in substance and magnitude, but in this one thing, that there is more matter contained in it than in the rest, by reason of the paucity of the vessels terminated in it, that it is no marvell that there can be no exact demonstration made of them. The fourth is called *Cecum* or the blind, because it hath but one passage to send out and receive in the matter. This gut hath a long and strait production, which according to the opinion of some (though altogether erroneous) often falls down into the *Scrotum* in the rupture, or relaxation of the Rim of the Belly; for that production in the lower belly strongly sticks to the *Peritonæum* or Rim, which hinders such falling down. But *Galen* seems by such a blind gut to have meant this long and narrow production, and certainly so thinks the common sort of Anatomists, but here *Vesalius* justly reprehended *Galen*. Wherefore *Sylvius* that he might free *Galen* of this fault, would have us by the blind gut to understand the beginning of the colick gut. The fifth is called *Colon* (or colick gut) because it is greater and more capacious than the rest. The sixth and last, the Right gut, by reason of the rightness or straightness of the passage. This, in beasts especially, hath a certain fatness in it to make the passage slippery, and lest the gut should be exulcerated in the passage, by the sharpness of hard and acrid excrements.

The site of these guts is thus: The *Duodenum* upon the backbone bends to the right hand; the *Jejunum* possesses a great part of the upper umbilicall region, diffuses it self into both sides with windings, like to these of the gut *Ileum*, even to the flanks. The gut *Ileon* is situate at the lower part of the umbilicall region, going with many turnings and windings, even to the hollownes of the holy-bone above the bladder and side parts of the *Hypogastrium*, they call the flanks.

The Blind bends to the right hand, a little below the kidney, above the first and fourth *Vertebra* of the loins. The *Colon* or Colick gut is crooked and bent, in the form of a *Scythian* bow, filling all the space from the blind gut, below the right kidney even to the hollownes of the liver, and then it goes by the gibbous part of the stomach above the small guts, even to the hollownes of the Spleen; from whence sliding under the left kidney, with some turnings, it is terminated upon the *Vertebra's* of the loins.

By all which turnings and windings of the colick gut, it is easie to distinguish the pain of the stone of the kidneys, which remain fixt in one certain place, from the colick wandring through these crooked passages we mentioned. The right gut tends with an oblique site towards the left hand, upon the holy bone even to the very fundament. They have all one and a common connexion; for they are all mutually joined together by their coats, because there is but one way from the gullet even to the fundament, but they are joined to the principall parts by their nerves, veins, and arteries.

But a more proper connexion is that, where the *Duodenum* on the upper part of it, is joined

Their substance.

Figure.

Their number
The *Duodenum*.

The *Jejunum*.

Ileon.

Cecum.

Colon,
Rectum.

Their site.

The distinction
on between
the colick and
the stone in the
kidneys.
Their connexion.

ed with the *Pylorus*; but on the lower part to the *Jejunum*, and the parts lying under it, by the coat of the *Peritonæum*. The *Jejunum*, or empty gut, is joyned to the *Duodenum* and *Ileon*. The *Ileon* with the empty and blind guts. The blind with the *Ileon* and *Colon*, and with the right side of the backbone where it is tied more straitly. The *Colon* with the blind and right guts, and in his middle part, with the kidneys and gibbous part of the stomach; whereby it comes to pass, that being distended with wind in the colick, it overturns and presses the stomach, and so causes vomiting.

Why vomiting happens in the colick.

The *Sphincter* muscles of the fundament.

Gal. lib. 5. de usu partium. cap. 14.

Lastly, the right gut is annexed with the colick gut and fundament. At the end whereof there is a muscle fattened, of figure round and circular, called the *Sphincter*, arising from the lower *Vertebra's* of the holy bone and rump, by the benefit of which as of a dore or gate, the excrements are restrained at our wil, lest man born for all honest actions, without all shame, in every time and place, should be forced every where to ease his belly. For such as have lost the benefit of this muscle by the palsy, have their excrements go from them against their wills. There is a body situate at the end of the right gut, of a middle substance between the skin and flesh, as it were arising from the mixture of them both, like the extremities of the lips, of the same use with the *Sphincter*, but that it is not altogether so powerfull. But there are also certain veins situate about it called the *Hæmorrhoidall*, of which we will speak in their place.

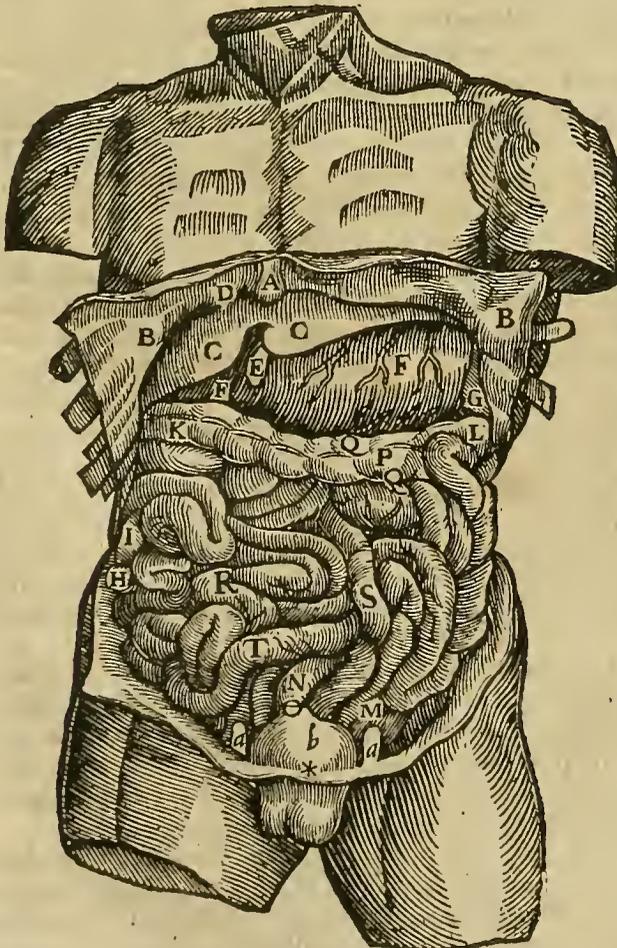
Besides there are two other muscles that descend to the end of this gut, being broad and membranous on each side, one arising from the side and inner parts of the share and hip-bones, which inserted above the *Sphincter* pull up the fundament falling down, wherefore they are called *Levatores Ani*, or the lifters up of the fundament. Wherefore when as either they are too weak, or resolved, or the fundament oppressed with the weight of flegmatick, salt, choleric and sharp humors, the gut is scarce restored into its place, that there is need of the help of the fingers for that purpose.

Levatores Ani.

The action of the guts.

The guts follow the temper of the stomach. Their action is the distributing the *Chylus* by the meseraick veins (which of duty belongs to the three small guts) and the receiving the excrements of the *Chylus*, and retention of them, till a fit time of expulsion, which belongs to the third quarter. Besides, these small guts finish up the work of concoction, begun in the stomach, although they be not altogether made for that use. But nature is often accustomed to abuse the parts of the body for some better use.

The fifth figure of the lower belly.



- A. The breast blade, *Cartilago, Ensiformis*.
- BB. The Rim, with the midriffe and broken ribs bent outwards.
- CC. the gibbous part of the liver.
- D. a ligament tying the liver to the midriffe.
- E. part of the umbilicall vein.
- FF. the stomach filld full of meat.
- G. a part of the spleen.
- H. the blind gut of the late writers, for the Ancients took the top of the *colon* for it.
- I. the beginning of the great or thick guts.
- I. and so to K. sheweth the passages of the colick gut from the right kidney to the liver. And so the colick and the stone on this side are in one place, and therefore hardly distinguished.
- K. to L. the same colick gut lyeth under the whole bottome of the stomach, which is the reason that those which are troubled with the colick cast so much.
- L. to M. The passage of the *Colon* from the spleen to the share bone, by the left kidney, a way, which maketh the pain of the stone and the Colick on the left side very

hard to distinguish. N. The *Colon* ending in the right gut. O. The beginning of the right gut unto the bladder. P. Q. The funken or fallen side of the *Colon* at P. and his Chambers or Cels at Q. R. S. T. The lesser guts especially lying under the Navel. a. a. The two umbilicall arteries. b. The bottome of the bladder. * The connexion of the bladder and the *Peritonæum*.

But we must note, that for the compofure of the guts, they have only tranfverfe fibers, for expulfions fake, unlefs that at the beginning of the *Colon*, and the end of the right gut, you may fee certain right fibers added to the tranfverfe to ftrengthen them, left thefe guts fhould chance to be broken and torn by the paffage of hard excrements, and the laborious endeavour of expulfion (fpecially in brute beafts.)

Their fibers.

But if any afke, how they have retention, being they want oblique fibers; he may know that the *feces* are retained in the right gut, by the force of the *Sphincter* mufcle, but oft times in the blind, by their hardnefs and abundance, whereby they flick in the paffage; but in the reft, by reason of their conformation into many windings and turnings. The length of the guts, is feven times more than the length of the whole body; to this length they have windings, left the nourifhment fhould quickly fide away, and left men fhould be withdrawn by gluttony from action and contemplation. For fo we fee it comes to pafs in moft beafts, which have one Gut, ftreched ftreight out from the ftomach to the fundament; as in the *Lynx* and fuch other beafts of infatiable gluttony, alwayes, like plants, regarding their food.

How the guts become fit to retain.

Their length.

CHAP. XVI.

Of the Mefentery.

After the Guts follows the Mefentery, being partly of a fatty and partly of a spermatick fubftance. The greatnefs of it is apparent enough, although in fome it be bigger, and in fome leffer according to the greatnefs of the body. It is of a round figure and not very thick. It is compofed of a double coat arifing from the beginning and root of the *peritoneum*. In the midft thereof it admits nerves from the *Coffall* of the fixt conjugation, veins from the *Vena Porta* or Gate vein; Arteries from the defcendent artery, over and befides a great quantity of fat and many glandulous bodies, to prop up the divifion of the veffels fpred over it, as alfo to moiften their fubftance. It is in number one, fituat in the middle of the guts, from whence it took its name. Yet fome divide it into two parts, to wit, into the *Meferium*, that is, the portion interwoven with the fmall guts, and into the *Mefocolon* which is joynd with the Great. It hath connexion by its veffels, with the principall parts, by its whole fubftance with the guts, and in fome fort with the kidneys, from whofe region it feems to take its coats.

The fubftance; Magnitude.

Figure. Compofure.

Number. The connexion.

It is of a cold and moift temper, if you have refpect to his fatty fubftance; but if to the reft of the parts, cold and dry.

The temper.

The action and ufe of it is, to bind and hold together the guts, each in his place, left they fhould rafhly be folded together, and by the Meferaick veins (which they term the hands of the Liver) carry the *Chylus* to the liver.

The action and ufe.

In which you muft note, that all the Meferaick Veins come from the liver, as we understand by the diffection of bodies; although fome have affirmed, that there be fome veins ferving for the nourifhment of the guts, no wayes appertaining to the Liver, but which end in certain Glandulous bodies, difperfed through the Mefentery, of whofe ufe we will treat hereafter.

All the mēseraick veins come from the liver.

CHAP. XVII.

Of the Glandules in generall, and of the Pancreas, or sweets-bread.

A glandule is a fimple part of the body, fometimes of a fpongy and foft fubftance, fometimes of a denfe and hard. Of the foft Glandules are the *Tonfille*, or Almonds, like in fubftance to blanched Almonds; the *Thymus*, *Pancreas*, *Testicles*, *Proftate*. But the denfe and hard are the *Parotides* and other like. The Glandules differ amongft themfelves, in quantity and figure, for fome are greater than other fome, and fome are round and others plain, as the *Thymus* and *Pancreas*.

Subftance of the glandules.

Quantity and figure.

Others are compounded of veins, nerves, arteries, and their proper flefh, as the Almonds of the ears, the milky glandules in the breasts and the testicles. Others want nerves, at leaft which may be feen, as the *Parotides*, the axillary, or thofe under the armholes and others. The number of glandules is uncertain, by reason of the infinite multitude and variety of sporting nature. You fhall find them alwayes in thefe places, where the great divifions of veffels are made; as in the middle ventricle of the brain, in the upper part of the *Chest*, in the *Mefentery* and other like places.

Composition.

Number.

Although otherfome be feated in fuch places, as nature thinks needfull to generate and caft forth of them a profitable humor to the creature; as the almonds at the root of the tongue, the kernels in the dugs, the spermatick veffels in the *scrotum* and at the fides of the wombe; or where nature hath decreed to make emunctories for the principall parts,

Connexion. as behind the ears, under the armholes, and in the groins. The connexion of glandules is not only with the vessels of the parts concurring to their composition, but also with those, whose division they keep and preserve. They are of a cold temper, wherefore Physitians say the blood *recrudescere* (i) to become raw again in the duges, when it takes upon it the form of milk. But of these some have action, as the almonds, which pour our spatle usefull for the whole mouth, the duges milk, the Testicles seed; others, use only, as those which are made to preserve, underprop and fill up the divisions of the vessels. Besides this we have spoken of glandules in generall, we must know that the *Pancreas* is a glandulous and flesh-like body, as that which hath every where the shape and resemblance of flesh. It is situate at the flat end of the liver, under the *Duodenum* with which it hath great connexion, and under the gate-vein, to serve as a bulwarke, both to it and the divisions thereof, whilst it fills up the empty spaces between the vessels themselves, and so hinders, that they be not pluckt asunder, nor hurt by any violent motion, as a fall or the like.

C H A P. XVIII.

Of the Liver.



Having gone thus far, order of dissection now requires, that we should treat of the distribution of the gate-vein; but because it cannot well be understood unless all the nature of the liver from whence it arises, be well known, therefore putting it off to a more fit place, we will now speak of the Liver. Wherefore the Liver (according to *Galens* opinion, *lib. de form. fetus*) is the first of all the parts of the body, which is finished in conformation, it is the shop and Author of the blood, and the originall of the veins; the substance of it, is like the concrete mud of the blood, the quantity of it is divers, not only in bodies of different, but also of the same species; as in men amongst themselves, of whom one will be gluttonous and fearfull, another bold, and temperate, or sober; for he shall have a greater liver than this, because it must conceive and concoct a greater quantity of *Chylus*: yet the liver is great in all men, because they have need of a great quantity of blood for the repairing of so many spirits and the substantifick moisture, which are resolved and dissipated in every moment by action and contemplation. But there may be a twofold reason given, why such as are fearfull have a larger liver. The first is, because in those the vitall faculty (in which the heat of courage and anger resides) which is in the heart, is weak; and therefore the defect of it must be supplied by the strength of the naturall faculty. For thus nature is accustomed to recompence that which is wanting in one part, by the increase and accession of another. The other reason is, because cold men have a great appetite; for by *Galens* opinion *In arte parva*, coldness increases the appetite; by which it comes to pass that they have a greater quantity of *Chylus*, by which plenty the liver is nourished and grows larger. Some beasts, as Dogs, and swine, have the liver divided into five or more Lobes, but a man hath but one Lobe, or two, or three at the most; and these not so much distinguished, as which cherish the upper and hollow region of the ventricle, with embracing to help forward the work of concoction. Therefore the liver is almost content with one Lobe, although it is alwayes rent with a small division, that the umbilicall vein piercing into the roots and substance of it, may have a free passage; but also oftentimes there is as it were a certain small lobe of the liver, laid under that umbilicall vein, as a cushion.

The figure. The figure of the liver is gibbous; rising up and smooth towards the Midriffe; towards the stomach is the *sinuous* or hollow side of it somewhat unequall, and rough by reason of the distance of the Lobes, the original of the hollow vein, and the site of the bladder of the Gall.

The composition. The composition of the liver is of veins, nerves, arteries, the coat and proper substance thereof which we call the gross and concrete blood, or *Parenchima*. Veins and arteeies come to it from the navill; but nerves immediately from these which are diffused over the stomach according to *Hippocrates*; yet they penetrate not very deep into its substance, for it seems not to stand in need of such exact sense, but they are distributed upon the coat and surface thereof, because this part made for distribution over the whole body, keeps to it self no acrid or malign humor; for the perception of which it should need a nerve, although the coat investing it, sends many nervous fibers into its substance, as is apparent by the taking away of the coat from a boiled liver; we must think the same of the other entrails. The coat of the liver is from the *Peritoneum*, waxing small from the umbilicall vein, when it divides it self for the generation of the gate and hollow veins, as is observed by *Galen*, *Lib. de format. Fetus*. The liver is only one; situate in the greater part on the right side, but with the lesser part on the left, quite contrary to the stomach. Its chief connexion is with the stomach and guts, by the veins and membranes of the *Peritoneum*; by the hollow vein and artery, with the heart; by the nerve with the brain, and by the same ligatures with all the parts of the whole body. It is of a hot and moist temper, and such as have it more hot, have large veins and hot blood; but such as have it cold, have small veins, and a discoloured

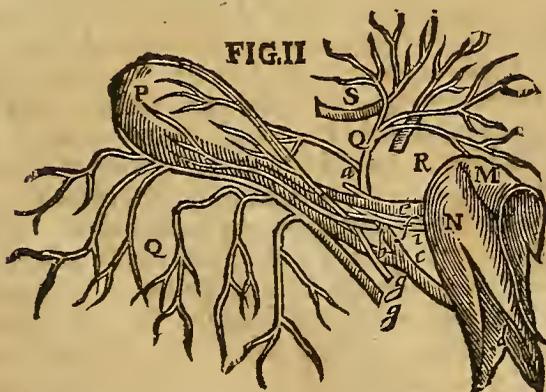
shew. The action of the Liver is the conversion of *Chylus* into the blood, the work of the second concoction. For although the *Chylus* entering into the meseraick veins, receive some resemblance of blood, yet it acquires not the form and perfection of blood, before it be elaborate, and fully concoct in the liver. It is bound and tyed with three strong ligaments, two on the sides in the midst of the bastard ribs, to bear up its sides, and the third more high and strong, descending from the breast-blade, to sustain its proper part, which with its weight would press the lower orifice of the stomach, and so cause a falling or drawing down of the sternon and collar bone. And thus much may suffice for its proper ligaments, for we before mentioned its common; the veins, arteries, nerves, and coat of the *Peritoneum*, by which it is knit to the loins and other naturall parts. But we must note, that besides these three proper ligaments, the liver is also bound with others to the bastard ribs; as *Sylvius* observes in his Anatomical observations, and *Hollerius* in his Practise, *Cap. de pluritide*.

CHAP. XIX.

Of the bladder of the Gall.

Now we must come to the bladder of the Gall, which is of a nervous substance, and of the bigness of a small pear; it is of figure round, with the bottom more large, but the sides and mouth more narrow and strait. It is composed of a double coat, one proper, consisting of three sorts of fibers, the other from the *peritoneum*. It hath a vein from the *Porta* or gate-vein, and an artery from that which is diffused into the liver, and a nerve from the sixth conjugation. It is but one and that hid on the right side under the greater lobe of the liver, it is knit with the touching of its own body, and of the passages and channels made for the performance of its actions with the liver, and in like manner with the *Duodenum*, and not seldome with the stomach also, by another passage; and to conclude to all the parts by its veins, nerves, arteries, and common coat. It is of a cold temper, as every nervous part is. The action of it is to separate from the liver the cholerick humor, and that excrementitious, but yet naturall by the help of the right fibers, for the purifying of the blood, and by the oblique fibers, so long to keep it being drawn, untill it begin to become troublesome in quantity, or quality, or its whole substance, and then by the transverse fibers, to put it down into the *Duodenum* to provoke the expulsive faculty of the guts. I know *Fallopian* denies the texture of so many fibers, to be the minister of such action to the gall. But *Vesalius* seems sufficiently to have answered him. The bladder of the gall hath divers channells, for coming with a narrow neck, even to the beginning of the Gate-vein, it is divided into two passages, the one whereof suffering no division is carryed into the *Duodenum*, unless that in some it send another branch into the bottome of the stomach, as is observed by *Galen*; which men have a miserable and wretched life, being subject to cholerick vomitings, especially when their stomachs are empty, with great pains of their stomach and head, as is also observed by *Galen*, *Cap. 74. Artis Med.* The other coming out of the body of the liver divides it self into two or three passages, again entering the substance of the liver, is divided with infinite branches, accompanying so many branches of the Gate-vein through the substance of the liver, that so the blood unless it be most elaborate and pure, may not rise into the hollow vein, all which things Dissection doth manifestly teach.

The sixth Figure of the bladder of the Gall.



inserted. c. the passage of the Gall into the *Duodenum*. d. the *Duodenum* opened, to manifest the insertion of the *porus biliaris*. e. an artery going to the hollow part of the liver, and the bladder of the gall. f. a small nerve belonging to the liver and the bladder of gall, from the rib branch of the sixth pair. g. the cistick twins from the gate-veins.

The action.

The ligaments.

The substance; greatness, and figure thereof. The composition, Number and connexion,

Temper. Actions.

The channells of the gall.

Lib. 2. de temper.

CHAP. XX.

Of the Spleen or Milt.

The substance.	 <p>Ut because we cannot well shew the distribution of the gate-vein, unless the Spleen be first taken away, and removed from its seat: therefore before we go any further, I have thought good to treat of the Spleen. Therefore the Spleen is of a soft, rare, and spongy substance (whereby it might more easily receive and drink up the dregs of the blood from the liver) and of a flesh more black than the liver. For it resembles the colour of its muddy blood, from which it is generated. It is of an indifferent greatness; but bigger in some, than in other some, according to the diverse temper and complexion of men. It hath as it were a triangular figure, gibbous on that part, it sticks to the ribs and midriff, but hollow on that part next the stomach. It is composed of a coat, the proper flesh; a vein, artery, and nerve. The membrane comes from the <i>Peritonæum</i>, the proper flesh from the <i>faces</i> or dregs of blood, or rather of the naturall melancholy humour, with which it is nourished. The fourth branch of the <i>vena porta</i>, or gate vein, lends it a vein; the first branch of the great descendent artery presently, after the first entrance without the Midriff, lends it an artery. But it receives a nerve, from the left costall, from the sixth conjugation on the inner part, by the roots of the ribs; and we may manifestly see this nerve, not only dispersing it self through the coat of the liver, but also penetrating with its vessels the proper flesh thereof, after the self same manner, as we see it is in the heart and lungs. It is one in number, situate on the left side, between the stomach and the bastard ribs, or rather the midriff which descends to their roots. For it oft times cleaves to the midriff, on its gibbous part, by a coat from the <i>Peritonæum</i>, as also on the hollow part to the stomach, both by certain veins which send it into the ventricle, as also by the kall. It hath connexion, either primarily, or secondarily, with all the parts of the body, by these its vessels.</p> <p>It is of a cold and drie temper; the action and use of it is to separate the melancholick humor, which being feculent and drossie, may be attenuated by the force of many arteries dispersed through its substance. For by their continuall motion, and native heat, which they carry in full force with them from the heart, that gross blood puts off its grossness, which the Spleen sends away by passages fit for that purpose, retaining the subtler portion for its nourishment. The passages by which it purges it self from the grossness of the melancholy blood, are a vein ascending from it into the stomach to stir up the appetite by its sourness, and strengthen the substance thereof by its astringent; and also another vein, which sometimes from the Spleen branch, sometimes from the Gate-vein, plainly under its orifice, descends to the fundament, there to make the Hæmorrhoidall veins.</p>
Magnitude. Figure.	
Composition.	
Number and Site.	
Connexion.	
Temper and use.	

CHAP. XXI.

Of the Vena Porta, and Gate-vein, and the distribution thereof.

The substance and figure. Composition. Number and Site.	 <p>He gate-vein, as also all the other veins, is of a spermatick substance, of a manifest largeness, of a round and hollow figure, like to a pipe or quill. It is composed of its proper coat, and one common from the <i>Peritonæum</i>. It is only one, and that situate in the firmous or hollow part of the liver, from whence it breaks forth (or rather out of the umbilicall vein) into the midst of all the guts, with which it hath connexion, as also with the stomach, spleen, <i>sphincter</i> of the fundament and <i>Peritonæum</i>, by the coat which it receives from thence. It is of a cold and dry temper. The Action of it is, to suck the <i>Chylus</i> out of the ventricle and guts, and so to take and carry it to the Liver, untill it may carry back the same turned into blood for the nutriment of the stomach, spleen and guts. This gate-vein coming out of the firmous part of the Liver, is divided into six branches, that is, four simple, and two compound, again divided into many other branches. The first of the simple ascends from the forepart of the trunk to the bladder of the Gall by the passage of the <i>Choler</i> (and are marked with <i>g. g.</i>) with a like artery for life and nourishment, and this distribution is knowne by the name of <i>Cysticæ gemellæ</i> or Cystick twins. The second is called the <i>Gastrica</i> or stomach vein, arising in like manner from the forepart of the trunk, is carried to the <i>Pylorus</i> and the firmous or back part of the stomach next to it.</p> <p>The third is called <i>Gastrepiplois</i>, the stomach and kall vein, which coming from the right side of the gate-vein goes to the gibbous part of the stomach next to the <i>Pylorus</i> and the right side of the kall.</p> <p>The fourth going forth from behind and on the right hand of the gate-vein, ascends above the root of the <i>Meseraick</i> branch even to the beginning of the gut <i>Jejunum</i>, along the gut <i>Duodenum</i>, from whence it is called <i>Intestinalis</i>, or the gut vein. And these are</p>
Temper and Action.	
Division thereof into 6 branches, of which 4 simple.	
1 <i>Cysticæ gemellæ</i>	
2 <i>Gastrica</i>	
3 <i>Gastrepiplois</i>	
4 <i>Intestinalis</i>	

are the foure simple branches. Now we will speak of the compound.

The first is the spleenick, which is divided after the following manner. For in its first beginning and upper part, it sends forth the *Coronalis*, or crowne vein of the stomach, which by the back part of the stomach ascends into the upper and hollow part thereof; to which place, as soon as it arrives, it is divided again into two branches, the one whereof climbs up even to its higher orifice, the other descends downe to the lower, sending forth by the way other branches to the fore and back parts of the stomach. These engirt and on every side incompass the body of the ventricle, for which cause they are named the crown veins.

I have sometime observed this coming forth of the trunk, a little above the orifice of the spleenick branch. But this same spleenick branch on its lower part, produces the branch of the Hæmorrhoidall veins, which descending to the fundament above the left side of the loines, diffuses a good portion thereof into the least part of the colick gut, and the right gut, at the end whereof it is often seen to be divided into five Hæmorrhoidall veins, sometimes more, sometimes less.

Silvius writes that the Hæmorrhoidall branch descends from the mesenterick, and truly we have sometimes observed it to have been so. Yet it is more sutable to reason, that it should descend from the spleenick, not only for that we have seen with our eyes that it is so, but also because it is appointed by nature for the evacuation of the excrementitious melancholick humor. But this same spleenick branch out of the middle almost of its upper part produces the third branch going to the gibbous part of the stomach, and the kall; they terme it the greater, middle and left *Gastrepiplois*. But on the lower part towards the spleen it produces the simple *Epiplois*, or kall-vein, which it diffuses through the left side of the kall. Moreover from its upper part, which touches the liver, it sends forth a short branch called *vas breve*, or *venosum*, to the upper orifice of the ventricle for stirring up the appetite.

We have oftentimes, and almost alwayes observed, that this venie vessell, which *Galen* calls *vas breve*, comes from the very body of the spleen, and is terminated in the midst of the stomach on the left side, but never pierces both the coats thereof. Wherefore it is somewhat difficult to find, how the melancholy juyce can that way be powred, or sent into the capacite of the stomach. Now the spleenick branch, when it hath produced out of it those five fore-mentioned branches, is wasted and dispersed into the substance and body of the spleen.

Then follows another compound branch of the *vena porta*, called the mesenterick, which is divided into three parts; the first and least whereof goes to the blind gut and to the right and middle part of the colick-gut, divided into an infinite multitude of other branches. The second and middle is wasted in the *Ileon*; as the third and greater in the *Iejunum* or empty gut. It is called Mesenterick because it is diffused over all the Mesentery; as the spleenick is in the spleen. And thus much we have to say of the division of the gate vein, the which if at any time thou shalt find to be otherwise, than I have set downe, you must not wonder at it; for you shall scarce find it the same in two bodies, by reason of the infinite varietie of particular bodies, which (as the Philosophers say) have each their owne, or peculiar gifts. Our judgment is the same of other divisions of the vessels. Yet we have set down that which we have most frequently observed.

To compound.

¹
Ramus splenicus sending forth.

¹
Coronalis.

²
Hæmorrhoidalis interna.

³
Gastrepiplois major sinistra.

⁴
Epiplois simplex.

⁵
Vas breve seu venosum.

Lib. 4. de usie partium.

²
Ramus mesentericus devided into three parts.

CHAP. XXII.

Of the originall of the Artery, and the division of the branch, descending to the naturall parts.



Hose things being thus finished and considered, the guts should be pulled away; but seeing that if we should do so, we should disturb and lose the division of the artery descending to the naturall parts; therefore I have thought it better to handle the division thereof, before the guts be pluckt away. Therefore we must suppose, according to *Galens* opinion, that as all the veins come from the liver, so all arteries proceed from the heart. This presently at the beginning is divided into two branches, the greater whereof descends downwards to the naturall parts upon the spine of the back, taking its beginning at the fifth *vertebra* thereof, from whence it goes into the following arteries. The first called the intercostall, runs amongst the intercostall muscles, and the distances of the ribs, and spinall marrow, through the perforations of the nerves on the right and left hand from the fifth true, even to the last of the bastard ribs.

This in going this progress makes 7. little branchings, distributed after the forementioned manner, and going forth of the trunk of the descendent over against each of the intercostall Muscles.

The second being parted into two goes on each side to the Midriffe, whence it may be called, or expressed by the name of the *Diaphragmatica* or *Phrenica*, (i) the midriffe artery. The third being of a large proportion, arising from the upper part of the arterie presently after it hath passed the midriffe, is divided into two notable branches, whereof one goes to the stomach, spleen, kall, to the hollow part of the liver and the gall; the other is sent forth to the

The originall of arteries. The division of the great descendent artery, is into these.

¹
Arteria intercostalis.

²
Phrenica.

³
Galiaca.

mesentery and guts after the same manner, as we said of the meseraick veins, wherefore it is called the *Celiacæ*, or stomach artery. But we must note, all their mouths penetrate even to the innermost coat of the guts, that by that means they may the better and more easily attract the *Chylus* contained in them.

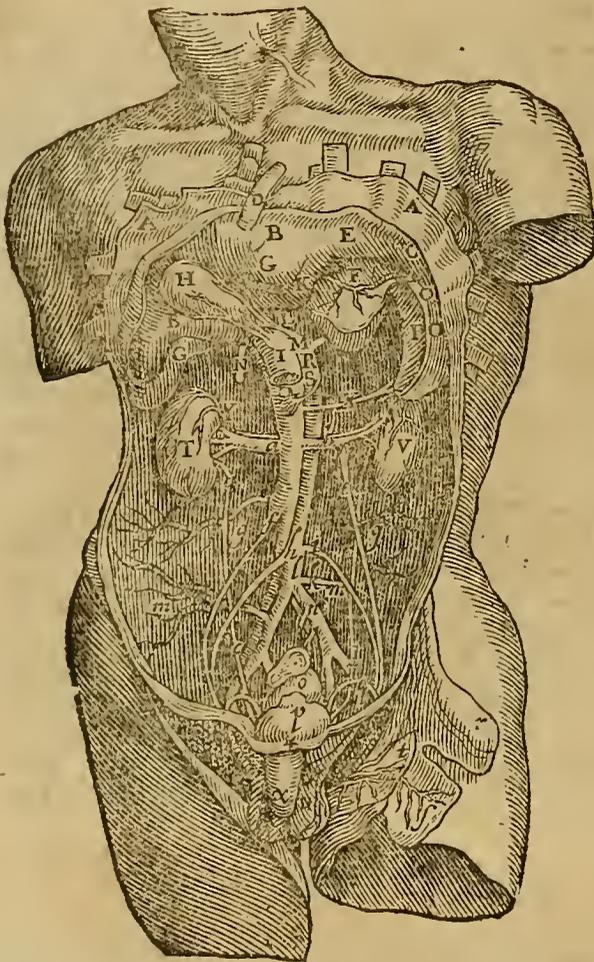
The fourth is carried to the reins, where it is named the Reinall or Emulgent, because it sucks fit matter from the whole mass of blood.

4.
Emulgent.

5.
Spermatica.

The fifth is sent to the testicles with the preparing Spermatick veins, whence also it is named the Spermatick Artery, which arises on the right side, from the very trunk of the descending Artery; that it may associate the spermatick vein of the same side, they run one above another, beneath the hollow vein, wherefore we must have a great care whilst we labour to lay it open, that we do not hurt and break it.

The seventh figure of the lower Belly.



- A, A, The midriff turned back with the ribs and the *peritonæum*.
 BB, The cave or hollow part of the liver, for the liver is lifted up that the hollow part of it may be better seen.
 C, The least ligament of the liver.
 D, The Umbilicall vein.
 E, The hollowness in the liver, which giveth way to the stomach.
 F, The left orifice of the stomach.
 G G, Certain knubs, or knots, and impressions in the hollow part of the liver.
 H, The bladder of gall.
 I, The Gate-vein, cut off, and branches which go to the bladder of gall.
 K, A nerve of the liver coming from the stomachicall nerve.
 L, An Artery common to the liver and bladder of gall.
 M, A Nerve common also to them both, coming from the right *costall* Nerve of the ribs.
 N, the passage of the Gall to the Guts cut off.
 O O, The hollow of the fore parts of the Spleen.
 P, The line where the vessels of the Spleen are implanted. Q, The trunk of the hollow vein. R, The trunk of the great Artery. S, The *Celiacall* Artery cut off. T, V, The Kidneys yet

wrapped in their membrane. X, Y, The fatty veins called *venæ adiposæ*. a, b, The Emulgent veins with the Arteries under them. c, d, d, The Ureter from either kidney to the bladder. e, f, The spermatick veins to the testicles, the right from the hollow vein, the left from the Emulgent. g, g, Veins coming from the spermatick to the *peritonæum*. h, i, the spermatick Arteries. k, The lower mesentericall Artery. l, The ascending of the great Artery above the hollow vein, and the division of it, and the hollow vein into two trunks. m, the Arteries of the loins called *lumbaris*. n, The holy Artery called *Sacra*. o, A part of the right gut. p, The bladder of Urine. * The connexion of the bladder with the *peritonæum*. q, A part of the vessels which lead the seed from the Testicles, is here reflected. r, s, the *scrotum*, or cod, that is, the skin that invests the yard and testicles. t, The fleshy pannicle or membrane which is under the cod. u, The coat which is proper to the testicles with his vessels. x, A part of the yard excoriated or flayed, and hanging down.

Hæmorrhoidalis
 seu mesenterica
 inferior.

The sixth going from the fore and upper part of this descending arterie, descends with the Hæmorrhoidall veins to the fundament; presently from his beginning, sending forth certain branches alongst the colick gut, which by *Anastomosis* are united with other branches of the *Celiacall* Arteries; for whosoever shall look more attentively, he shall often observe that veins are so united amongst themselves, and also Arteries, and sometimes also the veins with the Arteries. For an *anastomosis* is a communion and communicating of the vessels amongst themselves, by the application of their mouths, that so by mutuall supplies they may ease each others defects. But they call this the lower meseraick Artery.

7.
Lumbaris.

The seventh proceeding from the trunk with so many branches as there be *Verrebra's*

in the loines, goes to the loines and the parts belonging to them, that is, the spinall marrow of that part, and other parts encompassing these *Vertebra's*, whereupon it is stiled the *Lumbaris* or Loine Artery.

The eight maketh the Iliack arteries, untill such time as it departs from the *Peritonæum* *Iliaca* where the Crurall Arteries take their originall. This Iliack Artery sends many divarications towards the Holy bone where it takes its beginning, and to the places lying neer the Holy bone, which because they run the same course as the Iliack veins, for brevities sake, we will let pass further mention of them, till we come to treat of the Iliack veins.

C H A P. XXIII.

Of the distribution of the Nerves to the naturall parts.

TR remains, that before the bowels be taken away, we shew the nerves sent to the entrails and naturall parts, that as wise and provident men we may seem to have omitted nothing. First we must know that these nerves are of the sixt conjugation, which descend as well to the stomach all alongst the Gullet and the sides thereof, as those at the roots of the ribs on both sides within. But when they are passed through the Midriffe, those which are distributed amongst the naturall parts follow the turnings of the veins and arteries, but specially of the arteries. Wherefore if you have a mind to follow this distribution of the nerves, you must chiefly look for it in those places, in which the artery is distributed amongst the Guts above the loins.

The originall of the nerves which are carryed to the naturall parts.

These nerves are but small, because the parts serving for nutrition, needed none but little nerves, for the performance of the third duty of the nerves, which is in the discerning & knowing of what is troublesome to them. For unlesse they had this sense, there is nothing would hinder, but these bowels necessary for life, being possessed with some hurtfull thing, the creature should presently fall down dead; but we have this benefit by this sense, that as soon as any thing troubles and vellicates the bowels, we being admonished thereof may look for help in time.

Their magnitude and use.

And besides if they were destitute of this sense, they might be gnawn, ulcerated and putrefied by the raging acrimony of the excrements falling into and staying in them; but now (by means hereof) as soon as they find themselves pricked, or pluckt, presently by the expulsive faculty they endeavour to expell that which is troublesome, and so free themselves of present and future dangers.

C H A P. XXIII.

The manner of taking out the Guts.

WHEN the Guts are to be taken out, you must begin with the right Gut. And you must divide it, being first straitly tyed in two different places, at a just distance about four fingers from the end, with a sharp knife between the two ligatures. Then you must shew its proper coats, and fibers, and that common one which it hath from the *Peritonæum*. This being done, you must in like manner bind the trunk of the gate veine as neer the originall as you can; that so all his branches being in like manner tyed there may be no feare of effusion of blood: you must doe the like with the *Cœliack* Artery at the left Kidney, and in the lower *Mesenterick*, which descends to the right Gut with the *Hæmorrhoidall* veins. This being done, pull away the guts even to the *Duodenum*, which being in like manner tyed in two places, which ought to be below the insertion of the *Porus Cholagogus* or passage of the Gall, that you may shew the oblique insertion thereof into that gut, for the obliquity of its insertion is worth observation, as that which is the cause that the Gall cannot flow back into its bladder, by the compression of this Gut from below upwards. Then all these windings of the Guts may be taken away from the body.

CHAP. XXV.

The Originall and distribution of the descendent Hollow veine.

BECAUSE the rest of the naturall parts, do almost all depend upon the descendent Hollow vein, therefore before we goe any further, we will shew its originall and distribution. We said before that all veins proceeded from the Liver, but yet in divers places. For the gate vein goes out of the hollow part, and the hollow vein out of the Gibbous part of the liver, which going forth like the body of a tree, is divided into two great branches, the lesser of which goes to the vital & animal parts,

The originall of the hollow veine. It is divided into two trunkes.

The division
of the greater
branch of the
hollow vein.

1.
Adiposa.

2.
Emulgent.

3.
Spermatica.

4.
Lumbaris.

5.
Iliacæ which
are divided
into.

1.
Musculosæ.

2.
Sacræ.

3.
Hypogastrica,
which produce
the *Hæmor-*
rhoidales ex-
ternæ.

4.
Epigastricæ.

5.
Pudendæ.

and the extremities of these parts, as we shall shew in their place. The greater descending from the back part of the Liver above the *Vertebra's* of the loins to the parts beneath, goes in the manner following. The first division thereof is to the membranes of the reins, which come from the *Peritonæum*. Wherefore there it produces the *Venæ adiposæ*, or fatty veins, so called, because they bring forth a great quantity of fat in those places; Of these fatty veins, there is a diverse original, for the right doth oftentimes arise from the right emulgent, because it is higher; but the less comes from the very trunk of the hollow vein because the Emulgent on that side is lower, and you shall scarce see it happen otherwise.

The second being the Kidney or Emulgent veins, go to the Reins, which at their entrance, or a little before, is divided into two branches, like as the Artery is, the one higher, the other lower, and these again into many other through the substance of the Kidneys, as you may learn better by ocular inspection, than by book. They are thick and broad, that the serous humor may without impediment have freer passage. Their original is different, for the right Emulgent oftentimes comes forth of the hollow vein somewhat higher than the left; that seeing their office and duty is to purge the mass of blood from the cholerick and serous humor, that if any part thereof slide by the one, it may not so scape, but fall as it were into the other. Which certainly would not have happened if they had been placed the one just opposite to the other. For the serous or wheyish humor would have stayed as equally ballanced or poised, by reason of the contrariety of the action and traction, or drawing thereof. But we must remember that in dissecting of bodies, I have oft-times found in such as have been troubled with the stone, seven Emulgent veins and so many arteries; four from the left side coming from divers places, of which the last came from the Iliack; three from the right hand likewise in divers places.

The third division is called the Spermatick or seed vein, it goes to the Testicles; the original thereof is thus, that the right arises on the forepart of the trunk of the hollow vein; but the left most commonly from the Emulgent. Besides you shall sometimes find that these have companions with them, to the right Emulgent; but to the left, another from the hollow vein, in some but on one side, in others on both. But also I have sometimes observed the left emulgent to proceed from the spermatick or seed vein.

The fourth because it goes to the loins is called *Lumbaris*; which in his original and insertion is wholly like the Artery of the loins. But there are 4 *Lumbares* or Loin-veins on each side, that is, one in each of the 4 spaces of the 5 *Vertebra's* of the loins.

The fifth division makes the *Iliacæ*, untill passing through the *Peritonæum*, they take the names of Crurall veins; These are first divided into the musculous, so called, because they goe to the oblique ascendent and transverse muscles, and to the *Peritonæum*. Sometimes they have their original from the end of the Trunk. And then the same *Iliacæ*, are divided into the *Sacræ*, or Holy; which goe to the spinall marrow of the Holy-bone, through those holes, by which the nerves generated of this marrow, have their passage.

Thirdly, the *Iliacæ* are divided into the *Hypogastricæ*, so called, because they were distributed to all the parts of the *Hypogastrium*, or lower part of the lower belly, as to the right Gut, the muscles thereof, the musculous skin, (in which place they often make the external *Hæmorrhoidall*, ordained for the purging of such blood as offends in quantity, as those other, [that is, the inward *Hæmorrhoidall*] which descends to the right Gut from the Gate-vein by the spleenick branch, serves for cleansing of that which offends in quality,) to the bladder and the neck thereof, even to the end of the yard, to the womb and even to the neck of the wombe and utmost parts of the privities, from whence it is likely the courses break forth in woemen with child and Virgins. But this same vein also sends a portion also without the *Epigastrium* by that perforation which is common to the share and haunch bones, which strengthened by meeting of the other internal Crurall vein descends even to the Ham, but in the mean time by the way it is communicated to the muscles of the thigh called *Obturatores* and other parts within. Fourthly, the *Iliacæ* produce the *Epigastricæ* which on both sides from below ascend according to the length of the right muscles, spreading also by the way some branches to the oblique and transverse muscles and also to the *Peritonæum*. Fifthly, these produce *Iliacæ* the *Pudendæ* or veins of the privities, because they go in woemen to their privities, and into men to the Cods, where they enter that fleshy coat filled with veins, and go to the skin of the yard, they take their beginning under the *Hypogastricæ*.

CHAP. XXVI.

Of the Kidneys or Reins.

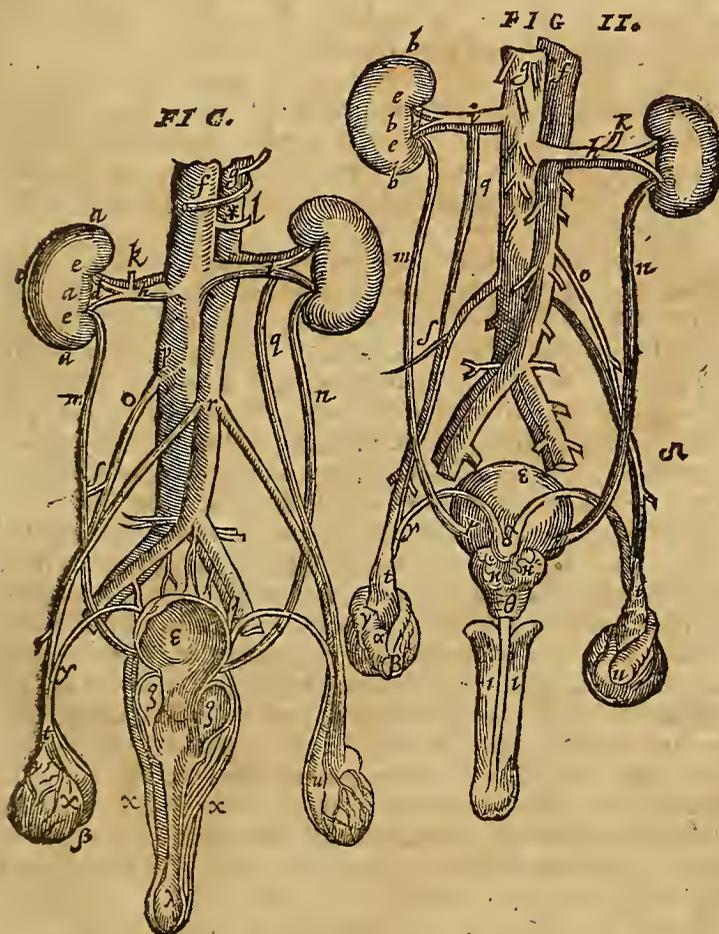
Now follow the Kidneys, which that they may be more easily seen, (after that you have diligently observed their situation) you shall dispoil of their fat, if they have any about them, as also of the membrane they have from the *Peritonæum*. First, you shall shew all their conditions, beginning at their substance.

The substance of the Kidneys is fleshy, dense and solid, lest they should be hurt by the sharpness of the urine. Their magnitude is large enough, as you may see. Their figure is somewhat long and round almost resembling a semicircle, and they are lightly flatted above and below. They are partly hollow and partly gibbous; the hollow lies next the hollow vein, and on this side they receive the Emulgent veins and Arteries, and send forth the Ureters, their gibbous part lies towards the loins. They are composed of a coat coming from the *Peritonæum*, their own peculiar flesh, with the effusion of blood about the proper vessels, (as happens also in other entrails) generates a small nerve, which springing from the *Costall* of the sixth conjugation is diffused to each Kidney on his side into the coat of the kidney it self, although others think it always accompanies the vein and artery.

Their substance.
Magnitude:
Figure.

Composition.

The ninth and tenth figure of the vessels of seed and urine.



The first figure sheweth the fore-side, the second the hinder-side.

- a. a. a. 1. The forepart of the right kidney.
 b. b. b. 2. The back part of the left kidney.
 e. 1. the outside.
 d. d. 1, 2. The inner-side.
 e. e. 1, 2. The two cavities whereinto the emulgent vessels are inserted.
 f. f. 1, 2. The trunk of the hollow vein.
 g. g. 1, 2. The trunk of the great artery.
 h. i. 1, 2. The emulgent vein and artery.
 k. k. 1, 2. The right fatty vein.
 l. 1. The left fatty vein.
 *. 1. The Coeliacall artery.
 m. n. 1, 2. The ureters.
 o. p. q. 1, 2. The right spermatick veine which ariseth neer p. the left neer q.
 r. i. The place where the Arteries of the seed arise.
 s. 1, 2. Small branches distributed from the spermaticall veins to the *Peritonæum*.

t. 1, 2. The spiry varicous body, called *Varicosum Vas pyramidale*. u. 1, 2. The *Parastate*, or. *Epididymis*. x. 1. The testicle yet covered with its coat. y. 1, 2. The place where the leading vessell called *vas deferens*, doth arise. z. 1, 2. The descent of the same leading vessell. β. 1, 2. The revolution of the same leading vessell. γ. 1, 2. The passage of the same vessell, reflected like a recurrent nerve. δ. 2. The meeting of the same leading vessells. ε. 1, 2. The bladder of urine, the first figure sheweth it open, the second sheweth the back parts. ζ. 1. The small bladder of the seed opened. η. η. 2. The Glandules called *Glandulæ Prostatæ*. θ. 1. The Sphincter muscle of the bladder. ι. 1, 2. The two bodies which make the substance of the yard. κ. κ. 1. The vessels which go unto the yard and neck of the bladder. λ. 1. The passage which is common to the urine and seed, cut open. μ. 2. The implantation of the ureters into the bladder.

But *Fallopins* that most diligent Author of Anatomy hath observed, that this nerve is not only oftentimes divaricated into the coat of the kidneys, but also pierces into their substance.

Number.	<p>stance. They are two in number, that if the one of them should by chance be hurt, the other might supply those necessities of nature, for which the Kidneys are made. They lye upon the loyns at the sides of the great vessels, on which they depend by their proper veins and arteries; and they stick to them, as it were by a certain second coat, lest that they might be shaken by any violent motions. Wherefore we may say that the Kidneys have two coats, one proper adhering to their substance, the other as it were coming from the <i>Peritonæum</i> on that part they stick to it. The right Kidney is almost alwayes the higher, for those reasons I gave, speaking of the originall of the Emulgent vessels. <i>Columbus</i> seems to thinke the contrary, but such like controversies may be quickly decided by the Eye. They have connexion with the Principall vessels by the veins, nerves and arteries, by the coats with the loyns & the other parts of the lower belly, but especially with the bladder by the ureters. They are of a hot and moist temper, as all fleshy parts are. Their action is to cleanse the Masse of the blood from the greater part of the serous and cholerick humor. I said the greater part, because it is needfull that some portion thereof should go with the alimentary blood to the solid parts, to serve in stead of a vehicle, lest otherwise it should be too thick.</p> <p>Besides you must note that in each Kidney there is a cavity bounded by a certain membrane, incompassed by the division of the Emulgent veins and arteries, through which the urine is strained partly by the expulsive faculty of the Kidneys, partly by the attractive of the ureters, which run through the substance of the Kidneys on the hollow side, no otherwise than the <i>Porus chologogus</i> through the body of the Liver.</p>
Site.	
Connexion.	
Temper. Action.	
Their strainer.	

CHAP. XXVII.

Of the spermatick Vessels.

Now we should have spoken of the ureters, because as we said before, they are passages derived from the Kidneys to carry the urine to the bladder. But because they cannot be distinguished and shewed unlesse by the corrupting and vitiating the site of the spermatick vessels; therefore I have thought it better to pais to the explication of all the spermatick parts.

And first of all you must gently separate them, (that so the declaration of them may be more easie and manifest) and that from the coat which comes from the *peritonæum*, and the fat which invests them even to the share-bone, having diligently considered their site before you separate them. Then you shall teach that the substance of these vessels, is like to that of the veins and arteries. Their quantity is small in thicknes, but of an indifferent length by reason of the distance of their originall from the Testicles. They are longer in men than in women, because these have their Testicles hanging without their belly, but women have them lying hid within their belly. Their figure and composure is wholly like the figure and composition of the veines and arteries, except in this one thing, that from that place where they goe forth of the great capacity of the *Peritonæum*, they are turned into many intricate windings, like crooked swollen veins, even to the Testicles. That the spermatick matter in that one tract, which yet is no other than blood, may be prepared to concoction, or rather be turned into seed in these vessels, by the irradiation of the faculty of the Testicles. These vessels are six in number, foure preparing, and two ejaculatory, of which we will speak hereafter. Therefore on each side there be two preparing vessels, that is, a vein and an artery, arising as we told you when we spoke of the distribution of the hallow vein. They are inserted into the Testicles through that coate which some call *Epididymis*, others *Dartion*. Their site is oblique above the loyns & flanks, whilest they run downe between the ends of the share and haunch bone, they are knit to the parts lying under them, both by certaine fibers which they send from them, as also by the membrane they have from the *Peritonæum*. They have like temperature as the veines and Arteries have. Their action is to carry blood to the Testicles, for generating of seed.

Their substance.
Quantity.

Figure and composure.

Number.

Site.

CHAP. XXVIII.

Of the Testicles, or Stones.

The Testicles are of a Glandulous, white, soft and loose substance, that so they may the more easily receive the spermatick matter: their magnitude and figure equall, and resemble a small pullets Egge somewhat flatted; their composure is of veins, arteries, coats and their proper flesh. Their veins and arteries proceed from the spermatick vessels, their nerves from the sixth conjugation, by the roots of the ribs and out of the holy bone. They are wrapped in foure coats, two whereof are common, and two proper. The common are the *Scrotum* or skin of the Cods, proceeding from the true skin; and the fleshy coat, which consists of the fleshy Pannicle in that place receiving a great number of vessels, through which occasion it is so called. The proper coats are first the *Erythroris* arising from the process of the *Peritonæum*, going into the *Scrotum* together

Their substance.

Magnitude and figure.
Composition.

The coat *Erythroris*.

gether with the spermatick vessels which it involves and covers; this appears red both by reason of the vessels as also of the Cremaster muscles of the Testicles; Then the *Epididymis* or *Dartos* which takes its originall of the membrane of the spermatick preparing vessels. The flesh of the Testicles is as it were a certaine effusion of matter about the vessels, as we said of other entrails. But you must observe that the *Erythrois* encompasses the whole stone, except its head, in which place it sticks to the *Epididymis*, which is continued through the whole substance of the Testicle. This *Epididymis* or *Dartos* was therefore put about the stones, because the Testicles of themselves, are loose, spongius, cavernous and soft, so that they cannot safely be joined to the spermatick vessels, which are hard and strong. Wherefore Nature that it might join extreams by a fit *Medium* or mean, formed this coat *Epididymis*. This is scarce apparent in women by reason of its smallness. The two forementioned common coats, adhere or stick together by their vessels not only amongst themselves, but also with the *Erythrois*. You must besides observe the Cremaster muscles are of the said substance with other muscles, small and thin, of an oblique and broad figure, arising from the membrane of the *Peritonæum*, which (as we said before) assumes flesh from the flanks. Their composition is like that of other muscles. They are two, on each side one. They are situate from the ends of the flanks, even to the stones. They have connexion with the process of the *Peritonæum* and Testicles. Their temper is like that of other muscles. Their action is to hang and draw up the Testicles towards the belly, whence they are called hanging muscles. The Testicles are most commonly two in number; on each side one, sometimes there be three, sometimes one alone, as it happens also in the Kidnies; for some have but one Kidney. They lie hid in the *Scrotum* at the very roots of the share-bone, connexed to the principall parts of their vessels, with the neck of the bladder and yard; but by their coats they adhere to the parts from whence they have them. They are of a cold and moist temper, because they are glandulous; although they may be hot by accident, by reason of the multitude of the vessels flowing thither. Those whose testicles are more hot are prompt to venery, and have their privities and the adjacent parts very hairy, and besides their testicles are very large and compact. Those on the contrary that have them cold are slow to venery, neither do they beget many children, and those they get are rather female than male, their privities have little hair upon them, and their testicles are small, soft and flat.

The action of the testicles is to generate seed, to corroborate all the parts of the body, and by a certain manly irradiation to breed or encrease a true masculine courage. This you may know by Eunuchs or such as are *Gelt*, who are of a womanish nature, and are oftentimes more tender and weak than women. As *Hippocrates* teaches, by example of the *Scythians*; *lib. de Aere, locis & aquis*.

CHAP. XXIX.

Of the varicous bodies or *Parastatæ*, and of the ejaculatory vessels, and the glandulous or Prostates,

The varicous *Parastatæ* are nervous and white bodies, like as the nerves wound and close woven amongst themselves, they are stretched even from the top to the bottom of the testicles, from whence presently by their departure they produce the *Vasa ejaculatoria*, or leading vessels. But unless we doe very well distinguish their names, they shall scarce shun confusion. For that which I call *Parastatæ*; that is, as it were the head of the testicle, being as it were like another stone, is called *Epididymis* by *Galen. lib. 1. de semine*. But I by the example and authority of many Anatomists, understand by the *Epididymis* the proper coat of the testicles, of which thing I thought good by the way to admonish you of. Their Action is by their crooked passages to hinder the seed from departing out of the preparing into the leading vessels before it shall bee most perfectly laboured and concocted in these vessels by the power and force of the testicles. For in the first windings, the blood looks pure; but in the last it is not so red, but somewhat whitish. For Nature commonly doth thus delay the matter in its passage either by straitness, or obliquity, which it desires to make more perfect and elaborate by any new concoction; this we may learn by the foldings of the *Rete mirabile*, the windings of the Guts, the wrinkles in the bottome of the stomach, the straitness of the *Pylorus*, the capillary veins dispersed through the body of the Liver, certainly nature hath intended some such thing in the making of the spermatick vessels. Their quantity is visible, and figure round, tending somewhat to sharpness. They are composed of veins, nerves, and arteries, which they enjoy from the vessels of the testicles, from the *Epididymis*, or the coat, from the *Peritonæum* and their proper substance. Their temper is cold and dry. They bee two in number, one to each testicle. But these varicous bodies are called *Parastatæ*, *Assistens*, because they superficially assist, and are knit to the testicles according to their length, or long wayes. Out of the *Parastatæ* proceed the *Vasa ejaculatoria*, or leading vessels, being of the same substance as their Progenitors; that is, solid, white and as it were nervous. Their quantity is indifferent, their figure round, and hollow, that the seed may have a free passage through them, yet they seem not to bee perforated by any manifest passage, unless

The *Epididymis*, or *Dartos*.

The Cremaster muscles.

Temper.

Action.

Their substance.

Here the author speaks otherwise then *Galen*. Action.

Their quantity, figure, and composition.

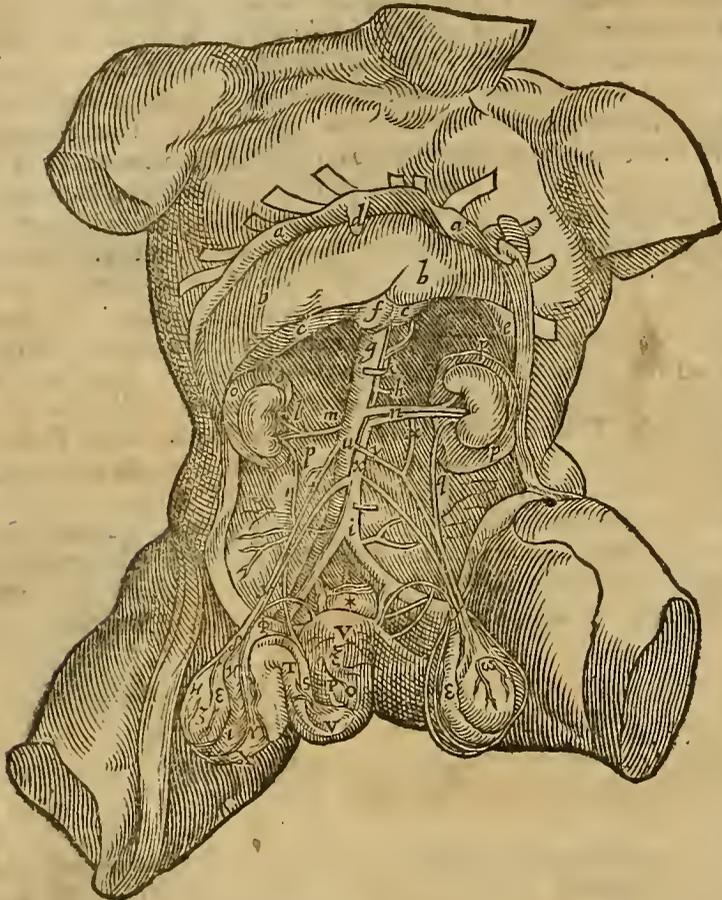
Their temper and number.

Vasa ejaculatoria, the ejaculatory or leading vessels.

unless by chance in such as have had a long *Conorrhœa*. They have like temper as the *Parastates*, between which and the *Prostates* they are seated, immediately knit with them both; as both in the coat and the other vessels with the parts from whence they take them.

But we must note, that such like vessels coming out of the *parastates* ascend from the bottom of the stones even to the top, in which place meeting with the preparing vessels, they rise into the belly by the same passages, and bind themselves together by nervous fibers, even to the inner capacity of the belly; from whence turning back, they forsake the preparing, that so they may run to the bottom of the share-bone, into the midst of two glandulous bodies which they call *prostates* situate at the neck of the bladder, that there meeting together they may grow into one passage.

The tenth figure, wherein those things shewed in the former figure, are more exactly set forth.



- aa, A part of the Midriff and of the *Peritonæum* with the ribs broken.
 bb, cc. The Convex or gibbous part of the Liver marked with bb. the hollow or concavous part with cc.
 de, The right and left ligaments of the Liver.
 f, The trunk of the gate vein.
 g, The trunk of the hollow vein.
 h, l, The fatty veins both left and right.
 i, The ascent of the great artery of above the hollow vein, and the division thereof.
 k, The *Celiacall* artery.
 m, n, The emulgent vessels.
 oo, pp, The fat tunicles or coats torn from both the kidneys.
 qq, The ureters that go unto the bladder.
 r, u, The right spermaticall vein which ariseth near to u. x, y, The

double originall of the left spermaticall vein. x. from the emulgent. y, from the hollow vein. w. The originall of the spermaticall arteries. β, Certain branches from the spermaticall arteries which run unto the *Peritonæum*. γ, The passage of the spermaticall vessels through the productions of the *Peritonæum*, which must be observed by such as use to cut for the Rupture. δ, The spiry bodden bodies entrance into the testicle, it is called *Corpus varicosum pyramidale*. ε, The *Parastata*. ζ, The stone or testicle covered with his inmost coat. η, The descent of the leading vessell called *Vas deferens*. V γ, The Bladder. * The right gut. ξ, The glandules called *prostate* into which the leading vessels are inserted. ρ, The muscle of the bladder. στν, Two bodies of the yard, σ, and τ, and υ, his vessels. φχ, The coat of the Testicle. ↓α, The muscle of the Testicle ↓, hit vessels ω.

For thus of three passages, that is, of the 2 leading vessels, and 1 passage of the bladder, there is one common, one in men for the casting forth of seed and urine. A Caruncle rising like a crest at the beginning of the neck of the bladder argues this uniting of the passages; which receiving this same passage which is sufficiently large, is oft-times taken by such as are ignorant in Anatomy for an unnatural Caruncle, then especially when it is swollen through any occasion. These leading vessels are two in number, on each side one. Their action is to convey the seed made by the testicles to the Prostate, & so to the neck of the bladder, so to be cast forth at the common passage. But if any ask whether that common passage made by the two leading vessels between the two glandulous bodies be obvious to sense or no: We answer, it is not manifest, though reason compell us to confess that that way is perforated by reason of the spermatick, gross and viscous matter carryed that way. But peradventure the reason why that passage cannot be seen is, because in a dead carcass all small passages are closed and hid, the heat and spirits being gone, and the great appear much less, by

Their number
and action.

by reason all the perforations fade, and fall into themselves. Yet certainly these passages must needs be very strait, even in a living man, seeing that in a dead they will not admit the point of a needle. Wherefore we need not fear, lest in searching, whilst we thrust the *Catheter* into the bladder, it penetrate into the common passage of the leading vessels which runs within the Caruncle, unless peradventure by some chance, as a *Gonorrhœa*, or some great *Phlegmon*, it be much dilated besides nature. For I have sometimes seen such passages so open, that they would receive the head of a Spathern; which thing should admonish us, that in searching we take great care, that we do not rashly hurt this Caruncle, for being somewhat rashly handled with a *Catheter* it casts forth blood, especially if it be inflamed. But also the concourse of the spirits flowing with great violence together with the seed, much helps forward such ejaculation thereof performed through these strait passages by the power of the imaginative faculty in the Act of generation.

After the leading vessels follow the *Prostata*, being glandulous bodies of the same substance and temper that other Glandules are. Their quantity is large enough, their figure round, & somewhat long, sending forth on each side a soft production of an indifferent length. They are composed of veins, nerves, arteries, a coat (which they have from the neighbouring parts) and lastly their proper flesh, which they have from their first conformation. They are two in number, situate at the root of the neck of the bladder, somewhat straitly bound or tyed to the same, to the leading vessels, and the parts annexed to them. But alwayes observe; that every part which enjoyes nourishment, life and sense, either first or last hath connexion with the principall parts of the body, by the intercourse of the vessels which they receive from thence.

The use of the Prostates is, to receive in their proper body the seed laboured in the testicles, and to contain it there, untill it be troublesome either in quantity or quality, or both. Besides they contain a certain oily and viscid humor in their glandulous body, that continually distilling into the passage of the urine, it may preserve it from the acrimony & sharpness thereof. But we have observed also on each side other Glandules, which *Rondeletius* calls *Appendices glandulosæ*, Glandulous dependences to arise from these prostates, in which also there is seed reserved.

This Caruncle must be observed and distinguished from a *Hyper-sarcosis* or fleshy excrecence.

The *Prostata* Their quantity and figure.

Number and site.

An anatomical axiome.

Their use.

Round in mesothod, med. ad morbor.

CHAP. XXX.

Of the Ureters.

Now it seems fit to speak of the *Ureters*, bladder and parts belonging to the bladder. Therefore the Ureters are of a spermatick, white, dense and solid substance, of an indifferent bignes in length and thicknes. Their figure is round and hollow. They are composed of two coats, one proper, consisting of right and transverse fibers, which comes from the emulgent veins and arteries; the other common, from the *Peritonæum*; besides they have veins, nerves and arteries from the neighbouring parts.

The substance, magnitude, figure and compoſure of the Ureters.

They be two in number, on each side one; they are situate between the Kidneys (out of whose hollow part they proceed) and the bladder. But the manner how the Ureters insert or enter themselves into the bladder, and the *Porus Chologogus* into the *Duodenum*, exceeds admiration; for the ureters are not directly but obliquely implanted near the orifice of the bladder, and penetrate into the inner space thereof; for within they doe as it were divide the membrane or membranous coat of the body of the bladder, and insinuate themselves into that, as though it were double. But this is opened at the entrance of the urine, but shut at other times, the cover as it were falling upon it, so that the humor which is fallen into the capacity of the bladder cannot be forced or driven back, no not so much as the aire blown into it can come this way out, as we see in swines bladders blown up and filled with aire.

Number and site.

For we see it is the Aire contained in these which fills them thus, neither can it be pressed forth but with extraordinary force.

For as this skin or coat turned in by the force of the humor gives way, so it being pressed out by the body contained within, thrusts its whole body into the passage as a stopple; like to this is the insertion of the *Porus Chologogus* into the Guts.

The ureters have connexion with the above mentioned parts, with the muscles of the loins; upon which they run from the Kidneys to the bladder.

Connexions

Wherefore nothing hinders, but that the stone sliding through the ureters into the bladder, may stupefie the thigh as much as it did when it was in the Kidney. They are of a cold and dry temper.

Their use is, to serve as passages, or channels for carrying the urine into the bladder.

Temper and use.

CHAP. XXXI.

Of the Bladder.

The bladder is of the same substance that the ureters, that is, nervous, that so it may be the more easily dilated.

The substance

It is of a large proportion, in some bigger, in some lesse, according to the difference of age, and habit of body. It is of a round figure and as it were Pyramidall.

Figure.

Composition.

It is composed of the two coats, one proper, which is very thick and strong, composed of the three sorts of fibers, that is, in the inner side of the direct; without of the transverse; and in the midst of the oblique. The other common Coat coming from the *Peritonæum* hath veins and arteries on each side one, from the *Hypogastrick* vessels above the holy-bone, also it hath nerves on each side from the sixth conjugation mixt with the nerves of the holy-bone.

For these nerves descend from the brain even to the end of the holy-bone.

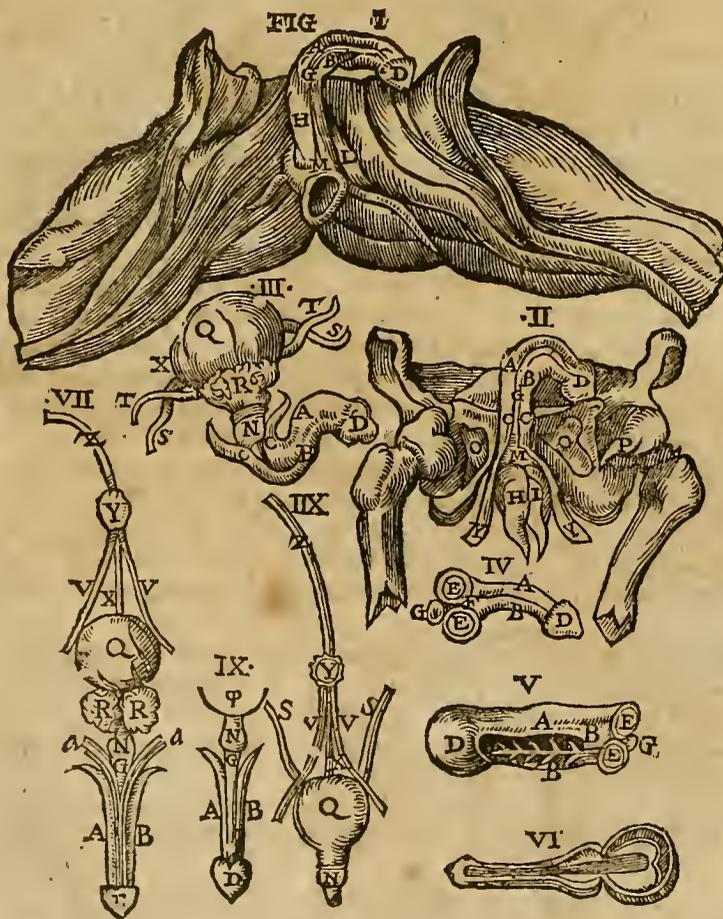
It is but one and that situate in men in the lower belly upon the right gut and below the share-bone, but in women between the womb and that bone, to which it cleaves with its membranous ligaments, as it doth to the yard by its neck, and to the right gut by its common coat and proper vessels. It is of a cold and dry temper.

Temper, use or action.

The use and action thereof is by the fibers continually to draw the urine, and contain it as long as need requires, and then to expell it by the neck, partly by compression either of it self, or rather to the muscles of the *Epigastrium* and midriff, because this motion, seeing it is voluntary cannot be performed unless by a muscle which the bladder wants; partly by the dilatation and relaxation of the Sphincter muscle composed of transverse fibers, like the sphincter of the fundament, after the same manner to shut up the orifice of the bladder, that the urine flow not out against our will. But the bladder as it fills is dilated, but as it is emptyed, it is contracted like a purse. You may easily observe this Muscle in a Sow's bladder, it is stretched from the orifice of the bladder and beginning of the urinary passage even to the privities even in women; but in men it is terminated in the *Peritonæum* as soon as it hath left the right Gut. Besides, this muscle is thus far stretched forth, that the urine by its compression should be wholly pressed out of the bladder, which by too long stay would by its acrimony do some harm. This is the common opinion of Anatomists concerning the Sphincter of the bladder, which nevertheless *Fallopious* allows not of. For (saith he) if this muscle should be situate beneath the glandulous bodies, the seed in copulation could never be cast forth without some small quantity of urine. Wherefore he thinks that this muscle is situate above the *Prostata*, and that it is nothing else but the beginning of the neck of the bladder, which becomes more fleshy whilst it is woven with transverse fibers.

Their Sphincter of the bladder.

The eleventh figure of the Bladder and Yard.



AB, 1, 2, 3, 4, 5, 7, 9, the two bodies which make the yard.

CC, 2, 3, the place where these two bodies do first arise.

D, 1, 2, 3, 4, 5, 7, 9, the nut of the yard called *glans penis*.

EE, 4, 5, the fungous and red substance of the bodies of the yard.

F, 4, 5, the mutuall connexion of the bodies of the yard, and the nervous outward substance of the same, compassing round about the former fungous substance.

G, 1, 2, 3, 4, 5, 7, 9, the passage of the Urine, or common pipe running under the yard all along his length.

H, I, 1, 2, the first pair of Muscles of the yard, which in the first figure do yet grow to it, but in the second they hang from their originall.

K, L, 1, 2, the second pair of

Muscles of the yard, in the first figure growing, in the second hanging from their insertion. M, 1, 2, the Sphincter of the right gut. N, 3, 7, 8, 9, the round sphincter Muscle of the bladder. OO, a Membrane which is over the holes of the share-bone. P, 2, a round Ligament from the meeting of the share-bones on the head of the thigh. Q, 3, 7, 8, the body of the bladder. RR, 3, 7, the *Prostata*, which into seed when it is perfectly laboured, is led. SS, 3, 8, Portions of the ureters. TT*, 3, Portions of the vessels, which lead down the seed. VV, 7, 8, the umbilicall arteries. X, 7, 8, the ligament of the bladder cald *Urachus*. Y, 7, 8 the navil or *umbilicus*. Z, 7, 8, the umbilicall vein. aa, 7, the vein and artery of the yard. b, 5, the artery distributed through the body of the yard.

For

For the neck of the bladder it differs nothing in substance, compofure, number, and temper from the bladder, but only in quantity, which is neither fo large, nor round in figure, but fomewhat long together with the yard representing the fhape of the letter S. It is placed in men at the end of the right Gut and *Perineum*, rifing upwards even to the roots of the yard, and with it bending it felf downwards; in women it is fhort, broad, and ftreight, ending at the orifice of the neck of the womb between the nervous bodies of the *Nymphæ*.

The neck of the bladder.

In men it hath connexion with the bladder, the ejaculatory veffels, the right gut and yard, but in women only with the neck of the wombe and privities. The ufe of it is in men to caft forth feed and urine, in women only urine. But we muft note that the fhare bones muft be divided and pulled afunder, in that part where they are joynd, that fo you may the more exactly obferve the fituation of thefe parts. Befides you muft note that by the *Perineum* we underftand nothing elfe, in men and women, then that fpace which is from the fundament to the privities, in which the feam is called *Taurus*.

The connexion and ufe thereof.

CHAP. XXXII.

Of the Yard.

Now follows the declaration of the Privy parts of men and women, and firft we will treat of mens. The yard is of a ligamentous fubftance, becaufe it hath its originall from bones, it is of an indifferent magnitude in all dimensions, yet in fome bigger, in fome lefs; the figure of it is round, but yet fomewhat flatted above and beneath.

The fubftance, quantity and figure of the yard.

It is compofed of a double coat, nerves, veins, arteries, two ligaments, the paffage of the urine, and four mufcles. It hath its coats both from the true fkin, as alfo from the flefhy pannicle, but the veins and Arteries from thefe of the lower part of the lower belly which run on the lower part of the Holy-bone into the yard, as the feminary veffels run on the upper part.

Compofure.

The ligaments of the yard proceed on both fides from the fides and lower commiffure of the fhare-bones; wherefore the yard is immediately at his root furnifhed with a double ligament, but thefe two prefently run into one fpongy one. The paffage of the urine fittuate in the lower part of the yard comes from the neck of the bladder between the two ligaments.

The ligaments.

For the four mufcles, the two fide ones compofing or making a great part of the yard, proceed from the inward extuberancy of the Hip-bone, and prefently they are dilated from their originall; and then grow lefs again. The two other lower arife from the mufcles of the fundament and accompany the urinary paffage the length of the *perineum* untill they enter the yard; but thefe two mufcles cleave fo clofe together, that they may feem one having a triangular form.

The mufcles.

The action of thefe four mufcles in the act of generation is, they open and dilate this common paffage of urine and feed, that the feed may be forcibly or violently caft into the field of nature; and befides they then keep the yard fo fuffe, that it cannot bend to either fide.

Their Action.

The yard is in number one, and fittuate upon the lower parts of the fhare-bone, that it might be more fuffe in erection. It hath connexion with the fhare-bone and neighbouring parts; by the particles of which it is compofed. It is of a cold and dry temper. The action of it is to caft the feed into the womb, for prefervation of mankind.

The head of it begins where the tendons end, this head from the figure thereof is called *Glans* and *Balanus*; that is, the Nut, and the fkin which covers that head is called *Preputium*; that is, the foreskin. The flefh of this *Glandule* is of a middle nature between the glandulous flefh and true fkin. But you muft note that the Ligaments of the yard are fpongy contrary to the condition of others, and filled with grofs and black blood. But all thefe ftirred up by the delight of defired pleafure, and provoked with a venereall fire, fwell up and erect the yard.

The Nut.

The *Preputium*, or foreskin.

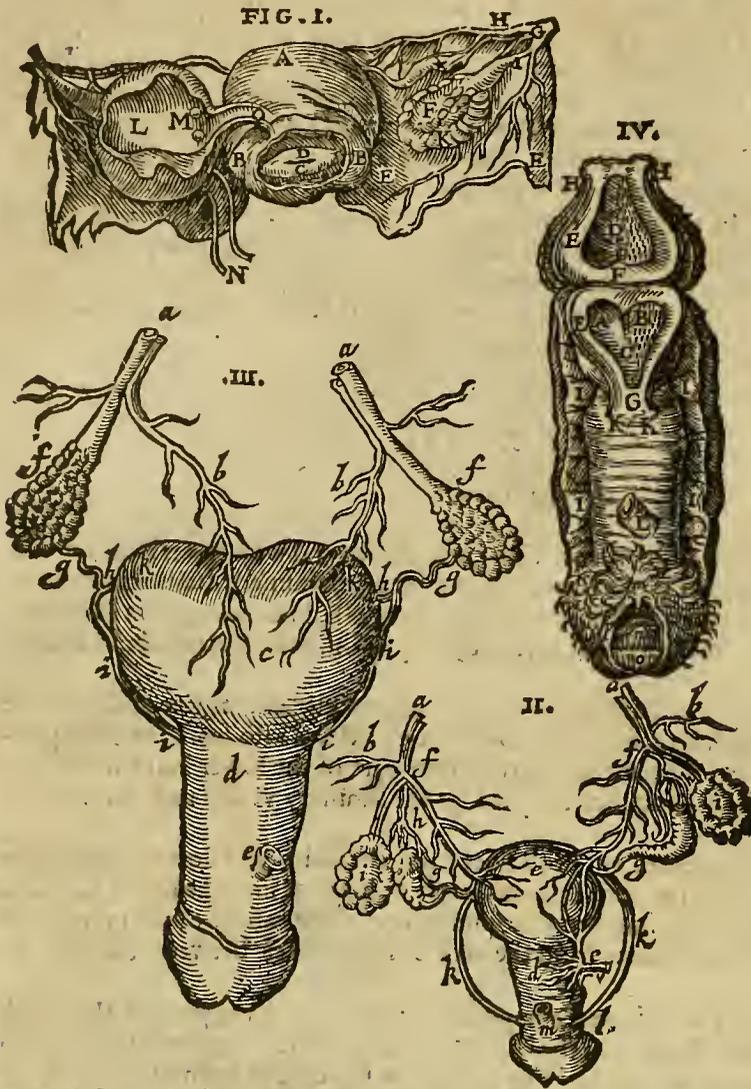
CHAP. XXXIII.

Of the Spermatick veffels and tefticles in women.

Now we fhould treat of the Privy parts in women, but becaufe they depend upon the neck and proper body of the womb, we will firft fpeak of the womb, having firft declared what difference there is between the Spermatick veffels and tefticles of men and women. Wherefore we muft know that the Spermatick veffels in women do nothing differ from thofe in men in fubftance, figure, compofure, number, connexion, temper, originall and ufe; but only in magnitude and diftribution, for women have them more large and fhort.

In what the Spermatick veffels in women differ from thofe in men.

The twelfth Figure, of the Womb.



- A. The bottome of the womb laid open without any membrane.
- BB. the neck of the womb turned upward.
- CD. a part of the bottome of the womb like the nut of the yard, swelling into the upper part of the neck of the womb, in the middle whereof the orifice appeareth.
- EE. a membrane knitting the womb to the *Peritoneum*, & holding together the vessels thereof.
- F. the left testicle.
- G. the spermaticall vein and artery.
- Ha part of the spermaticall vessels reaching unto the bottome of the womb.
- I. one part of the vessels coming to the testicles * a vessell leading the seed unto the womb.
- K. the coat of the testicle with the implication of the vessels. L. the cavity of the bladder opened. M. the insertion of the Ureters into the bladder. N. the Ureters cut from the kidneys. O. the insertion of the neck of the bladder into the lap or privity.

The second Figure.

aa. The spermaticall vein and artery. bb. branches distributed to the *Peritoneum* from the spermaticall vessels. c. the bottome of the womb. d. the neck of the womb. e. certain vessels running through the inside of the womb, and the neck thereof. ff. vessels reaching to the bottome of the womb produced from the spermaticall vessel. gg. the leading vessell of the seed called *Tuba*, the Trumpet. hh. a branch of the spermaticall vessel compassing the Trumpet. ii. the testicles. kk. the lower ligaments of the womb, which some call the *Cremasters* or hanging muscles of the womb. l. the lap or privity into which the *Cremasters* do end. m. a portion of the neck of the bladder.

The third Figure.

aa. The spermaticall vessels. bb. a branch from these spermaticall vessels to the bottome of the womb. cc. the body or bottome of the womb. d. the neck of the same. e. the neck of the bladder ending into the neck of the womb. ff. the testicles. gg. the leading vessels, commonly though not so well called the ejaculatory vessels. hh. the division of these vessels, one of them determining into the horns at double kk. ii. the other branch ending in the neck, by which women with child avoid their seed. kk. the horns of the womb.

The fourth Figure.

AB. The bosome of the bottome of the womb, at whose sides are the horns. CD. a line like a future or seam, a little distinguishing that bosome. EE. the substance of the bottome of the womb, or the thickness of his inner coat. F. a protuberation or swelling of the womb in the middle of the bosom. G. the orifice of the bottome of the womb. HH. the coat or second cover of the bottome of the womb, coming from the *Peritoneum*. IIII. a portion of the membranes which tie the womb. KK. the beginning of the neck of the womb. L. the neck of the bladder inserted into the neck of the womb. m. the *Clitoris* in the top of the privity. n. the inequality of the privity where the *hymen* is placed. o. the hole or passage of the privity in the cleft. p. the skinny caruncle of the privity.

Why womans spermatick vessels they are larger, but shorter then mens.

It was fit they should be more large, because they should not only convey the matter fit for generation of young and nourishment of the testicles, but also sufficient for the nourishment of the womb and child; but shorter, because they end at the testicles and womb within the belly in women. Where you must note that the preparing spermatick vessels,

fels, little before they come to the Testicles are divided into two unequal branches, of which the lesser bended, after the same manner as we said in men, goes into the head of the testicle, through which it sends a slender branch into the coats of the testicles for life and nourishment, and not only into the coats but also into leading vessels. But the bigger branch descends on each side by the upper part of the wombe between the proper coat and the common, from the *Peritonæum* where it is divided into divers branches. By this difference of the spermatick vessels you may easily understand why women cast forth less seed than men.

For their Testicles, they differ little from mens but in quantity; For they are lesser and in figure more hollow and flat, by reason of their defective heat which could not elevate or lift them up to their just magnitude. Their composure is more simple; for they want the *scrotum* or cod, the fleshy coat, and also according to the opinion of some the *Erythroides*; but in place thereof they have another from the *Peritonæum* which covers the proper coat, that is, the *Epididymis*, or *Dartos*. *Silvius* writes that womens Testicles want the *Erythroides*; yet it is certain that besides their peculiar coat *Dartos*, they have another from the *peritonæum*, which is the *Erythroides*, or as *Fallopian* calls it the *Elythroides*, that is as much as the *vaginalis* or sheath: But I think that this hath sprung from the mis-understanding th at place in *Galen* where he writes, that womens testicles want the *Epididymis*. For we must not understand that to be spoken of the coat, but of the varicous parastrats (as I formerly said). They differ nothing in number, but in site; for in men they hang without the belly at the share bone above the *Peritonæum*; women have them lying hid in their belly, neer the bottome at the sides of the wombe, but yet so as they touch not the body of the wombe.

But these testicles are tyed to the womb both by a coat from the *Peritonæum*, as also by the leading vessels descending to the horns of the wombe, but to the rest of the body by the vessels and the nerves arising from the holy bone and Costall nerves. They are of a colder Temper than mens. The ejaculatory, or leading vessels in women differ thus from mens, they are large at the beginning, and of a veiny consistence, or substance, so that you can scarce discern them from the coat *Peritonæum*, then presently they become nervous, and waxe so slender, that they may seem broken or torn, though it be not so; but when they come nearer to the horns of the wombe, they are again dilated; in their other conditions, they agree with mens, but that they are altogether more slender and short. They have a round figure, but more intricate windings than mens; I beleeve, that these windings might supply the defect of the varicous Parastrats. They are seated between the testicles and wombe, for they proceed out of the head of the testicle, then presently armed with a coat from the *Peritonæum*, they are implanted into the wombe by its horns.

In what their testicles differ from mens.

Lib. 14. de uss part.

Site.

Connexion.

Temper. Their ejaculatory vessels.

Why they have more intricate windings. Their site.

C H A P. XXXIII.

Of the Wombe.



The Wombe is a part proper only to women, given by nature in stead of the *Scrotum*, as the neck thereof, and the annexed parts in stead of the yard; so that if any more exactly consider the parts of generation in women and men, he shall find that they differ not much in number, but only in situation and use. For that which man hath apparent without, that women have hid within, both by the singular providence of nature, as also by the defect of heat in women, which could not drive and thrust forth those parts, as in men. The womb is of a nervous and membranous substance, that it may be more easily dilated and contracted, as need shall require.

The magnitude thereof is divers, according to the diversity of age, the use of venery, the flowing of their courses, and the time of conception. The wombe is but small in one of unripe age, having not used venery, nor which is mensfrous; therefore the quantity cannot be rightly defined.

The figure of the wombe is absolutely like that of the bladder, if you consider it without the productions, which *Herophilus* called horns, by reason of the similitude they have with the horns of Oxen at their first coming forth. It consists of simple and compound parts. The simple are the veins, arteries, nerves, and coats. The veins and arteries are four in number, two from the preparing spermatick vessels, the two other ascend thither from the *Hypogastrick*, after this manner.

First, these vessels before they ascend on each side to the wombe, divide themselves into two branches, from which other some go to the lower part of the wombe, other some to the neck thereof, by which the mensfrous blood, if it abound from the conception, may be purged.

Nerves come on both sides to the wombe, both from the sixth conjugation, descending by the length of the back bone, as also from the holy bone, which presently united and joynted together, ascend and are distributed through the wombe, like the veins and arteries.

The utmost or common coat of the wombe, proceeds from the *Peritonæum*, on that part

Where in the privy parts, in women differ from those in men.

The substance and magnitude of the wombe.

Figure. The substance of the wombe. Composure. The veins and Arteries.

Nerves.

The Coats.

part it touches the holy bone; but the proper it hath from the first conformation, which is composed of the three sorts of fibers, of the right on the inside of the attraction of both seeds; the transverse without to expell, if occasion be; the oblique in the midst for the due retention thereof.

No cels in the wombe.

The wombe admits no division, unless into the right and left side, by an obscure line or seam, such as we see in the *scrotum*, but scarce so manifest; neither must we after the manner of the ancients, imagine any other cels in the wombe. For by the law of nature, a woman at one birth can have no more than two. An argument hereof is, they have no more than two dug. If any chance to bring forth more, it is besides nature, and somewhat monstrous, because nature hath made no provision of nourishment for them.

The site.

Nature hath placed the wombe at the bottome of the belly, because that place seems most fit to receive seed, to carry and bring forth the young. It is placed between the bladder and right gut, and is bound to these parts much more straitly by the neck, than by the body thereof; but also besides it is tyed with two most strong ligaments on the sides, and upper parts of the sharebone, on which it seems to hang; but by its common coat from the *Peritonæum*, chiefly thick in that place, it is tied to the hollow bone, and the bones of the hanch and loins.

The temper and action.

By reason of this strait connexion, a woman with child feeling the painfull drawings back, and as it were convulsions of those ligaments, knows her self with child. It is of a cold and moist temper, rather by accident, than of it self. The action thereof is to contain both the seeds, and to cherish, preserve, and nourish it, so contained, untill the time appointed by nature; and also besides, to receive, and evacuate the menstrous blood. The compound parts of the wombe are, the proper body and neck thereof. That body is extended in women big with child, even to the navell, in some higher, in some lower.

The Cotyledons.

In the inner side the *Cotyledones* come into our consideration, which are nothing else than the orifices and mouths of the veins, ending in that place. They scarce appear in women, unless presently after child-bearing, or their menstruall purgation; but they are apparent in sheep, Goats, and Kine, at all times like wheat corns, unless when they are with young, for then they are of the bigness of hassell nuts: but then also they swell up in women, and are like a rude peece of flesh of a finger and a half thick; which begirt all the naturall parts of the infant shut up in the wombe; out of which respect this shapeles flesh, according to the opinion of some, is reckoned amongst the number of coats investing the infant, and called *Chorion*, because, as in beasts, the *Chorion* is interwoven with veins, and arteries, whence the umbilicall vessels proceed; so in women this fleshy lump is woven with veins, and arteries, whence such vessels have their originall. Which thing, how true and agreeable to reason it is, let other men judg.

Columbus justly reproved.

There is one thing whereof I would admonish thee, that as the growth of the *Cotyledones* in beasts are not called by the name of *Chorion*, but are only said to be the dependents thereof, so in women such swollen *Cotyledones* merit not the name of *Chorion*; but rather of the dependences thereof.

The orifice of the wombe. The proper orifice of the wombe is not alwayes exactly shut in women with child. The neck of the wombe.

This body ends in a certain straitness which is met withall, in following it towards the privities, in women which have borne no children, or have remained barren some certain time; for in such as are lately delivered, you can see nothing but a cavity and no straitness at all. This straitness we call the proper orifice of the wombe, which is most exactly shut after conception, especially untill the membrane, or coats encompassing the child be finished, and strong enough to contain the seed, that it flow not forth, nor be corrupted by entrance of the air; for it is opened to send forth the seed, and in some the courses and serous humors, which are heaped up in the wombe in the time of their being with child.

From this orifice the neck of the wombe taking its originall, is extended even to the privities. It is of a musculous substance, composed of soft flesh, because it might be extended and contracted, wrinkled, and stretched forth, and unfolded, and wrested, and shaken at the coming forth of the child, and after be restored to its former soundness and integrity. In process of age it grows harder, both by use of venery, and also by reason of age, by which the whole body in all parts thereof becomes dry and hard. But in growing, and in young women, it is more tractable and flexible for the necessity of nature.

Its magnitude. Composition.

The magnitude is sufficiently large in all dimensions, though divers, by reason of the infinite variety of bodies. The figure is long, round, and hollow. The composition is the same with the wombe, but it receives not so many vessels as the wombe; for it hath none but those which are sent from the *Hypogastrick* veins, by the branches ascending to the wombe. This neck on the inside is wrinkled with many crests, like the upper part of a dogs mouth, so in copulation to cause greater pleasure by that inequality, and also to shorten the act.

Number and site.

It is only one, and that situate between the neck of the bladder and the right gut, to which it closely sticketh, as to the wombe by the proper orifice thereof, and to the privities by its own orifice; but by the vessels to all the parts from whence they are sent.

Temper.

It is of a cold and dry temper, and the way to admit the seed into the wombe, to exclude the infant out of the wombe, as also the menstruall evacuation. But it is worth obser-

vation,

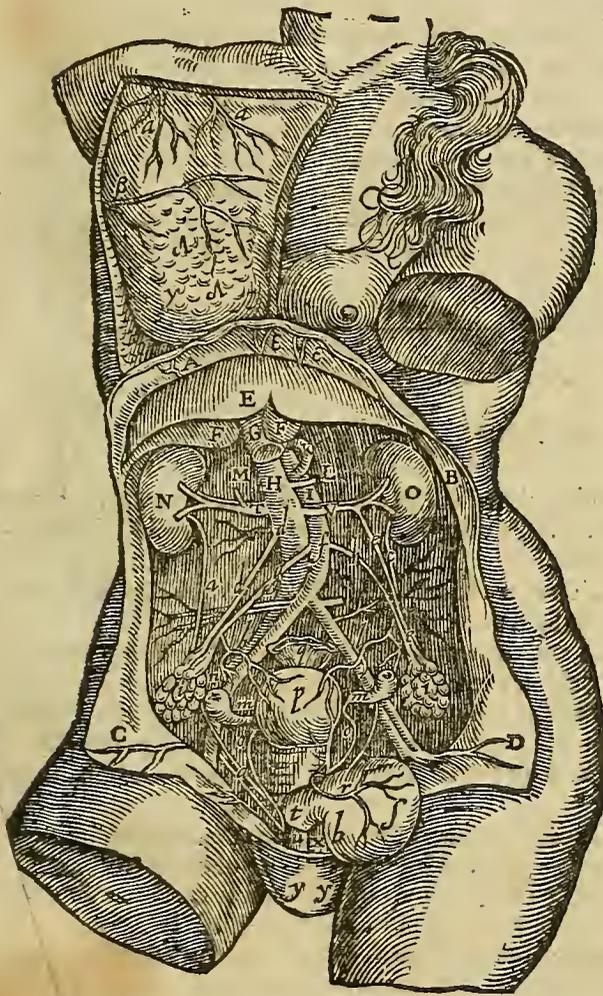
vation, that in all this passage there is no such membrane found, as that they called *Hymen*, which they feigned to be broken at the first coition. Yet notwithstanding *Columbus*, *Fallopianus*, *Wierus*, and many other learned men of our time think otherwise, and say, that in Virgins a little above the passage of the urine, may be found and seen such a nervous membrane, placed overthwart as it were in the middle way of this neck, and perforated for the passages of the courses. But you may find this false by experience; it is likely the ancients fell into this error through this occasion, because that in some a good quantity of blood breaks forth of these places at the first copulation.

But it is more probable, that this happens by the violent attrition of certain vessels lying in the inward superficies of the neck of the wombe, not being able to endure without breaking so great extension as that nervous neck undergoes at the first coition. For a maid which is marriageable, and hath her genitall parts proportionable in quantity and bigness to a mans; shall find no such effusion of blood, as we shall shew more at large in our Book of Generation.

No Hymen.

From whence the blood proceeds that breaks forth in some virgins at the first coition.

The thirteenth Figure, shewing the parts of women different from these in men.



A.B.C.D. The *Peritoneum* reflected or turned backward, above and below.

E.F. the gibbous part of the liver E, the cave or hollow part F.

G. the trunk of the gate-vein.

H. the hollow vein.

I. the great artery.

K. the roots of the *Cœlicall* artery which accompanieth the gate-vein.

L.M. the fatty vein going to the coat of the kidneys.

N. O. the fore-part of both the kidneys.

T. V. the emulgent veins and arteries.

aa. the right ureter at the lowest cut from a part which neer to b, flicketh yet to the bladder, because the bottome of the bladder is drawn to the left side.

c. the left ureter inserted into the bladder neer to r.

dd. the spermatick vein which goeth to the left testicle marked with i.

ee. the spermatick vein which goeth to the left testicle with i, also. f.

the trunk of the great artery from whence the spermatick arteries do proceed. gh. the spermatick arteries.

ii. the two testicles. ll, a branch which from the spermatick vessels reacheth unto the bottome of the

wombe. mm. the leading vessel of the seed which *Fallopianus* calleth the *tuba* or trumpet, because it is crooked and reflected. n. a branch of the spermatick vessel, compassing the leading vessel. oo. a vessel like a worm which passeth to the wombe, some call it *Cremaster*. p. the bottome of the wombe called *fundus uteri*. q. a part of the right gut. r. s. the bottome of the bladder where the left ureter, and a vein led from the neck of the wombe neer unto. t. the neck of the bladder. u. the same inserted into the privity or lap. x. a part of the neck of the wombe above the privity. yy. certain skinny Caruncles of the privities, in the middle which is the slit, and on both sides appear little hillocks.

The Figures belonging to the Dugs and Breasts.

aa. The veins of the Dugs which come from those, which descending from the top of the shoulder, are refered to the skin. b. the veins of the dugs derived from those which through the arm-hole are led into the hand. c. the body of the Dug or Breast. dd. the kernels and fat between the. ee. the vessels of the dugs descending from the lower part of the neck called *jugulum*, unto the breast bone.

This neck ends at the privities, where its proper orifice is, which privy parts we must treat of, as being the productions and *appendices* of this neck. This *Pudendum*, or privy, is of a middle substance, between the flesh and a nerve; the magnitude is sufficiently large, the figure, round, hollow, long. It is composed of veins, arteries, nerves, descending to the neck of the wombe, and a double coat proceeding from the true skin and fleshy pannicle; both these coats are firmly united by the flesh coming between them; whereupon it is said, that this part consists of a musculous coat. It is one in number, situate above the *Peritonæum*. It hath connexion with the fundament, the neck of the wombe and bladder by both their peculiar orifices.

It hath a middle temper, between hot, and cold, moist and dry. It hath the same use as a mans *Præputium* or fore-skin, that is, that together with the *Nympha* it may hinder the entrance of the air, by which the wombe may be in danger to take cold. The lips of the privities called by the Greeks *πρωτόθωρα*, by the Latines *Ale*, contain all that region which is invested with hairs; and because we have said in mention of these *Nymphae*, you must know that they are as it were productions of the musculous skin, which descend on both sides, from the upper part of the share-bone downwards; even to the orifice of the neck of the bladder, oft times growing to so great a bigness, that they will stand out like a mans yard. Wherefore in some they must be cut off in their young years, yet with a great deal of caution, lest if they be cut too rashly, so great an effusion of blood may follow, that it may cause, either death to the woman, or barreness of the wombe by reason of the refrigeration by the too great effusion of blood. The latter Anatomists, as *Columbus* and *Fallopis*, besides these parts, have made mention of another particle, which stands forth in the upper part of the privities, and also of the urinary passage, which joyns together those wings we formerly mentioned. *Columbus* calls it *Tentigo*, *Fallopis*, *Cleitoris*, whence proceeds that infamous word *Cleitorizein*, (which signifies impudently to handle that part.) But because it is an obscene part, let those which desire to know more of it, read the Authors which I cited.

C H A P. XXXV.

Of the Coats containing the Infant in the wombe, and of the Navell.

THe membranes or coats containing the Infant in the wombe of the mother, are of a spermatick and nervous substance, having their matter from the seed of the mother. But they are nervous that so they may be the more easily extended, as it shall be necessary for the child. They are of good length and breadth, especially near the time of deliverance, they are round in figure like the wombe.

Their composition is of veins, arteries, and their proper substance. The veins, and arteries, are distributed to them (whether obscurely or manifestly, more or fewer) from the wombe by the *Cotyledones*, which have the same office, as long as the child is contained in the wombe, as the nipples or paps of the nurses after it is born. For thus the wombe brings the *Cotyledones*, or veins, degenerating into them through the coats like certain paps to the infant shut up in them.

These coats are three in number according to *Galen*; one called the *Chorion*, Secundine, after birth; the other *Allantoides*; the third *Amnios*. I find this number of coats in beasts, but not in women, unless peradventure any will reckon up in the number of the coats, the *Cotyledones* swollen up, and grown into a fleshy mass, which many skilfull in Anatomy do write, which opinion notwithstanding we cannot receive as true. I could never in any I see find the *Allantoides* in women with child, neither in the infant born in the sixth, seventh, eighth, or in the full time, being the ninth month, although I have sought it with all possible diligence, the Midwives being set apart, which might have violated some of the coats.

But thus I went about this business, I divided the dead body of the mother crosswise upon the region of the wombe, and taking away all impediments which might either hinder, or obscure our diligence, with as much dexterity as was possible, we did not only draw away that receptacle or den of the Infant, from the inward surface of the wombe, which it stuck by the *Cotyledones*, but we also took away the first membrane which we call *Chorion*, from that which lies next under it, called *Amnios*, without any rending or tearing for thus we poured forth no moisture, whereby it might be said, that any coat made for the containing of that humor, was rent or torn. And then we diligently looked, having many witnesses and spectators present, if in any place there did appear any distinction of these three membranes, the *Allantoides* and *Amnios*, for the separating the contained humors, and for other uses which they mention.

But when we could perceive no such thing, we took the *Amnios* filled with moisture on the upper side, and having opened it, two servants so holding the partition, that no moisture might flow out of it into the circumference of the *Chorion* or wombe, then presently

Ale.
πρωτόθωρα.

Cleitoris, tentigo.

Their substance, magnitude, figure, and composition.

The number.

with sponges we drew out by little and little all the humidity contained in it, the infant yet contained in it, which was fit to come forth, that so the coat *Amnios* being freed of this moisture, we might see whether there were any other humor contained in any other coat besides. But having done this with singular diligence and fidelity, we could see no other humor, nor no other separation of the membranes besides.

So that, from that time I have confidently held this opinion, that the infant in the womb, is only wrapped in two coats, the *Chorion* and *Amnios*. But yet not satisfied by this experience, that I might yet be more certain concerning this *Allantoides*, having passed through the two former coats, I came to the infant, and I put a quill into its bladder, and blew it up as forcibly as I could, so to try, if by that blowing I might force the air into that coat which we questioned, as some have written. But neither thus could I drive any air from hence, through the navell into the controverted coat, but rather I found it to fly out of the bladder by the privities. Wherefore I am certainly persuaded that there is no *Allantoides*. Moreover I could never finde nor see in the navell that passage called the *Uraachus*, which they affirm to be the beginning and originall of the coat *Allantoides*. But if it be ganted, that there is no such coat as the *Allantoides*, what discommodity wil arise hereof? specially seeing the sweat and urine of the infant may easily, and without any discommodity be received, collected, and contained in the same coat, by reason of the small difference which is between them. But if any object, That the urine by its sharpness and touching will hurt the infant: I will answer, there can be no so great sharpness in the urine of so small an infant; and that, if that there be any, it is tempered by the admixture of the gentle vapr of sweat.

Besides, if you consider, or have regard to the use of such an humor (which is to hold up the child, lest by its weight it break the ties, by which it is bound to the womb;) we shall finde no humor more fit for this purpose than this serous, as which by its thickness is much more fit to bear up a weight, than the thin and too liquid sweat. For so we see the sea or salt-water carries greater weights without danger of drowning than fresh rivers do. Wherefore I conclude that there is no need, that the urine should be kept and contained in one coat, and the sweat in another. The Ancients who have writ otherwise, have written from observations made in beasts. Wherefore we make but only two coats, the *Chorion* and *Amnios*; the one of which, seeing it contains the other, they both so encompass the child, that they vest it on every side.

Felopijs in some sort seems to be of this opinion; for he only makes two coats, the *Chorion* and *Amnios*; but he thinks the infant makes the water into a certain part of the *Chorion*, as you may perceive by reading of his Observations. Both these coats are tyed between themselves by the intercourse of most slender nervous fibers, and small vessels penetrating from the outer *Chorion* to the inner *Amnios*. Wherefore unless you varily handle these coats, you may easily tear the *Amnios* in separating it. They are of the same temper with other membranes. Their use is different, for the *Chorion* is made both for the preservation of the vessels, which it receives from the womb for the generating of the umbilicall veins and arteries, as also to keep whole and safe the parts which it invests.

But the *Amnios* is to receive and contain the excrementitious and serous humors, which the child shut up in the womb is accustomed to evacuate. But this coat is very thin and soft, but strong and smooth, lest by its touch it might hurt the infant, whereupon it is called the Lambskin-coat.

C H A P. XXXVI.

Of the Navell.



The Navell follows these coats; It is a white body, somewhat resembling the wreathen cord, or girdle of the Franciscan-friers, but that it hath not the knots standing so far out, but only swelling in certain places, resembling a knot, only lifted up on one side; it arises and takes its originall from a fleshy mass, which we expressed by the name of swelling *Cotyledones*, and goes into the midst of the lower belly of the infant, yea verily into the midst of the whole body, whose root it is therefore said to be. For even as a tree by the root sucks nourishment from the earth, so the infant in the womb draws its nourishment by the navell. The greatness of it in breadth and thickness, equals the bigness of the little finger. But it is a foot and a half long, so that children are brought forth with it, encompassing their middle, neck, arms, or legs. The figure of it is round. It is composed of two arteries, one vein, and two coats. It hath these vessels from that great multitude of capillary veins and arteries, which are seen dispersed over the *Chorion*. Wherefore the vein entering in at the Navell, penetrates from thence into the hollow part of the Liver, where divided into two, according to *Galens* opinion, it makes the gate and hollow veins. But the arteries, carried

He shews by three severall reasons that there is no *Allantoides*.

Their temper and use.

What the Navell is.

The Navell is the center of the body.

The figure and composure.

Lib de format. fetus in utero.

by

by themselves the length of the Navell, cast themselves into the *Iliacæ*, which they make, as also all other, that from thence the vitall spirit may be carried by them over all the infant. It hath its two coats from the *Chorion*.

There is only one Vein in a child's Navell, but no *Ura-chus*.

But seeing they are mutually woven and conjoined without any *medium*, and are of a sufficient strength and thickness over all the Navell, they may seem to make the infants external skin and fleshy Pannicle. I know very many reckon two Umbilicall veins, as also arteries, and the *Urachus*, by, or through which the urine flows into the coat *Allantoides*. But because this is not to be found in women, but only in beasts, I willingly omit it, because I do not intend to mention any parts, but such as belong to humane bodies. Yet if there be any, which can teach me, that these parts, which I think proper to brute beasts, are to be found in women, I willingly confess, and that to his credit, from whom I have raped such benefit.

The other things that may be required concerning the Navell, as of its number, site, connexion, temper and use, may easily appear by that we have spoken before. For we have apparently set down the use, when we said, the Navell was made for that purpose, that the infant may be nourished by it, as the tree by the root, by reason of the continuation of the vessels thereof, with the preparing spermatick vessels made by God for that purpose, to whom be honor and glory for ever and ever. *Amen*.

The End of the third Book





The Fourth Book, *Treating of the Vitall parts contained in the* **CHEST.**

The PREFACE.



AVING finished the first Book of our Anatomy, in explanation of the naturall parts contained in the lower belly, now order requires, that we treat of the Brest; that so the parts in some sort already explained (I mean the veins and arteries) may be dispatched after the same order and manner, without interposition of any other matter.

And besides also that we may the more exactly and chearfully shew the rest of the parts which remain, as the head and limbs, knowing already the originall of those vessels which are dispersed through them. To this purpose, we will define what the Chest is, and then we will divide it into its parts. Thirdly, in these we will consider which parts contain, and which are contained, that so we may more happily finish our intended discourse.

CHAP. I.

What the Thorax or the Chest is; into what parts it may be divided, and the nature of these parts.



HE *Thorax*, or Chest, is the middle belly, terminated or bounded above with the coller-bones, below with the Midriff, before with the *Sternum* or brest, behinde, with the twelve *Vertebra's* of the back on both sides, with the true and bastard ribs, and with the intercostall and intercartilagineous muscles. Nature hath given it this structure and composition, lest that being a defence for the vitall parts against externall injuries, it should hinder respiration; which is no less needfull for the preservation of the native heat diffused by the vital spirits, and shut up in the heart, as in the fountain thereof, against internall injuries, than the other fore-mentioned parts against externall. For if the Chest should have been all bony, verily it had been the stronger, but it would have hindred our respiration or breathing, which is performed by the dilating and contracting thereof. Wherefore lest one of these should hinder the other, Nature hath framed it, partly bony and grilly, and partly fleshy. Some render another reason hereof, which is, that Nature hath framed the chest, that it might here also observe the order used by it in the fabrick of things, which is, that it might conjoin the parts much disagreeing in their composure, as the lower belly, altogether fleshy, and the head all bony, by a medium partaker both of the bony and fleshy substance; which course we see it hath observed in the connexion of the fire and water, by the interposition of the air; of the earth and air, by the water placed between them.

The Chest is divided into three parts, the upper, lower, and middle; the coller-bones contain the upper; the Midriff the lower; and the *Sternum* the middle. The *Sternum* in *Galens* opinion is composed of seven bones, I beleve by reason of the great stature of the people that lived then. Now in our times, you shall oft find it compact of three, four, or five bones, although we wil not deny, but that we have often observed it (especially in young bodies) to consist of seven or eight bones.

Wherefore those who have fewer bones in number in their *Sternum*, have them larger, that they might be sufficient to receive the ribs. This is the common opinion of the *Sternum*. Yet *Fallopins* hath described it far otherwise; wherefore let those who desire to know more hereof, look in his observations.

At the lower part of the *Sternum*, there is a gristle, called commonly *Furcula*, and *Malum granatum*, or the Pomgranate, because it resembles that fruit; others call it *Cartilago scuti-formis*, that is, the brest-blade.

The containing parts of the Chest.

Why nature hath made the Chest partly bony, partly grilly.

The number of the bones of the Sternum.

Cartilago scuti-formis, the brest-blade.

It is placed there, to be (as it were) a bulwark or defence to the mouth of the stomach, endued with most exquisit sense; and also that it should do the like to that part of the Midriff which the Liver bears up in that place, situate above the orifice of the ventricle by the ligament coming between, descending from the lower part of the same grisle into the upper part of the Liver.

The common people think that this grisle sometimes falls down. But it so adheres, and is united to the bones of the *Sternon*, that the falling thereof may seem to be without any danger, although oft-times it may be so moistened with watery and ferous humidities, with which the orifice of the stomach abounds, that (as it were) soaked and drunk with these, it may be so relaxed, that it may seem to be out of its place; in which case it may be pressed and forced by the hand into the former place and seat, as also by applying outwardly, and taking inwardly astringent and drying medicines to exhaust the superfluous humidity.

This Grisle at its beginning is narrow, but more broad and obtuse at its end, somewhat resembling the round or blunt point of a sword, whereupon it is also called *Cartilago Eniformis*, or the sword-like grisle. In some it hath a double, in others a single point.

In old people, it degenerates into a bone. Now because we make mention of this grisle, we will shew both what a Grisle is, and how many differences thereof there be, that henceforward as often as we shall have occasion to speak of a grisle, you may understand what it is.

What a Grisle is.

A Grisle is a similar part of our bodies, next to a bone most terrestriall, cold, dry, hard, weighty, and without sense, differing from a bone in driness only, the which is more in a bone. Wherefore a Grisle being lost, cannot be regenerated, like as a bone, without the interposition of a *Callus*.

The differences thereof.

The differences of these are almost the same with bones, that is, from their consistence, substance, greatness, number, site, figure, connexion, action, and use. Omitting the other for brevity sake, I will only handle those differences which arise from site, use and connexion. Therefore gristles, either adhere to the bones, or of, and by themselves make some part, as the gristles of the ey-lids called *Tarsi*, of the *Epiglottis* and throtle. And others which adhere to bones, either adhere by the interposition of no medium, as those which come between the bones of the *Sternon*, the collar-bones, the share and haunch-bones, and others; or by a ligament coming between, as those which are at the ends of the bastard-ribs to the *Sternon* by the means of a ligament, that by those ligaments being softer than a grisle, the motions of the Chest may be more quickly and safely performed. The gristles which depend on bones, do not only yeeld strength to the bones, but to themselves, and the parts contained in them, against such things as may break and bruise them. The gristles of the *Sternon*, and at the ends of the bastard-ribs are of this sort.

Their twofold use.

By this we may gather, that the gristles have a double use, one to polish and levigate the parts to which that slippery smoothness was necessary for performance of their duty; and for this use serve the gristles which are at the joints, to make their motions the more nimble. The other use is to defend those parts upon which they are placed, from externall injuries, by breaking violent assaults, by somewhat yeelding to their impression, no otherwise than soft things opposed against cannon-shot. We will prosecute the other differences of gristles in their place, as occasion shall be offered and required.

CHAP. II.

Of the containing and contained parts of the Chest.

The division of the Chest into its parts.



The containing parts of the Chest are both the skins, the fleshy Pannicle, the fat, the breasts, the common coat of the Muscles, the muscles of that place, the fore-mentioned bones, the coat investing the ribs, and the *Diaphragma* or Midriff. The parts contained are the *Mediastinum*, the *pericardium* or purse of the heart, the heart, the lungs and their vessels. Of the containing parts, some are common to all the body, or the most part thereof, as both the skins, the fleshy pannicle and fat. Of which being we have spoken in our first Book, there is no need now further to insist upon: Others are proper to the Chest, as its muscles, of which we will speak in their place, the breasts, the forementioned bones, the membrane investing the ribs, and the *Diaphragma* or Midriff.

We will treat of all these in order, after we have first shewed you the way, how you may separate the skin from the rest of the Chest. Putting your knife down even to the perfect division of the skin, you must draw a straight line from the upper part of the lower belly, even to the chin; then draw another straight line, overthwart at the collar-bones even to the shoulder-blades; and in the places beneath the collar-bones: (if you desire to shun prolixity) you may at once separate both the skins, the fleshy Pannicle, the fat, and common coat of the muscles; because these parts were shewed and spoken of in the dissection of the lower belly.

Yet

Yet you must reserve the breasts in dissecting of the bodies of women; wherefore from the upper parts of the breasts, as artificially as you can, separate only the skin from the parts lying under it, that so you may shew the Pannicle which there becometh fleshy and musculous, and is so spread over the neck and parts of the face, even to the roots of the hairs.

CHAP. III.

Of the Breasts or Dugs.



The Breasts, as we said, when we spoke of the nature of Glandules, are of a glandulous substance, white, rare, or spongiouse; in maids and women that do not give suck, they are more solid and not so large.

Wherefore the bigness of the Dugs is different, although of a sufficient magnitude in all. Their figure is round, somewhat long, and in some sort Pyramidall. Their compofure is of the skin, the fleshy pannicle, glandules, fat, nerves, veins, and arteries, descending to them from the *Axillaris* under the *Sternon*, betwixt the fourth and fifth, and sometimes the sixth of the true ribs.

And there they are divided into infinite rivelets by the interposition of the glandules and fat, by which fit matter may be brought, to be changed into milk by the faculty of the dugs.

We will speak no more of the nature of glandules or kernels, as having treated of them before; only we will add this, that some of the glandules have nerves, as those of the Breasts, which they receive from the parts lying under them, that is, from the intercostall, by which it comes to pass, that they have most exquisit sense. Others want a nerve, as those which serve only for division of the vessels, and which have no action, but only use.

They be two in number, on each side one, seated at the sides of the *Sternon* upon the fourth, fifth and sixth true ribs.

Wherefore they have connexion with the mentioned parts with their body, but by their vessels with all other parts, but especially with the womb by the reliques of the mamillary veins and arteries, which descend down at the sides of the brest-blade; in which place these veins insinuating themselves through the substance of the muscles; are a little above the navell conjoined with the *Epigastricks*, whose originall is in some sort opposite to the *Hypogastricks*, which send forth branches to the womb. By the meeting of these it is more likely that this commerce should arise, than from other and those almost capillary branches, which are sometimes seen to descend to the womb from the *Epigastrick*.

They are of a cold and moist temper, wherefore they say that the blood by being converted into milk * becomes raw, flegmatick and white by the force of the proper flesh of the dugs. Their action is to prepare nourishment for the new-born babe, to warm the heart from whence they have received heat, and to adorn the brest.

By this you may know that some Glandules have action, others use, and some both. At the top of the dugs there are certain hillocks, or eminencies called teats or nipples, by sucking of which the childe is nourished through certain small and crooked passages, which though they appear manifest to the sight, whilst you press out the milk by pressing the dug, yet when the milk is pressed out, they do not appear, nor so much as admit the point of a needle, by reason of the crooked ways made by nature in those passages, for this use, that the milk being perfectly made, should not flow out of its own accord against the nurses will. For so the seed is retained and kept for a certain time in the Prostats.

CHAP. IIII.

Of the Clavicles, or Coller-bones and Ribs.



If we should handle these parts after the common order, we should now treat of the Muscles of the Chest which move the arm, and serve for respiration, and which first offer themselves to our sight.

But for that they cannot be fitly shewed, unless we hurt the muscles of the shoulder-lade and neck, therefore I think it better to defer the explanation of these Muscles, untill such time as I have shewed the rest of the contained and containing parts, not only of the Chest, but also of the Head, that having finished these, we may come to a full demonstration of all the rest of the muscles, beginning with those of the head, which we first meet with, and so prosecuting the rest even to the muscles of the feet, as they shall seem to offer themselves more fitly to dissection, that so, as much as lyes in us, we may shun confusion.

Wherefore to return to our proposed task; after the foresaid muscles come the Coller-bones, the *Sternon*, and Ribs.

Their substance.

Magnitude Figure. Compofure.

Which Glandules have nerves, and which have none.

Their connexion.

How the breasts and womb communicate each with other.

Their temper. * *Recrudescere*. Their action and use.

The Nipples;

But that these parts may be the more easily understood, we must first know what a bone is, and whence the differences thereof are drawn.

What a Bone is.

Therefore a Bone is a part of our body most terrestriall, cold, dry, hard, wanting all manifest sense, if the teeth be excepted.

A double sense

I said manifest sense, that you may understand that the parts have a double sense of touching, the one manifest, such as resides in the flesh, skin, membranes, nerves, teeth, and certain other parts; the other obscure, yet which may suffice to discern the helping and hurting tactile qualities, such sense the bowels and bones have; for very small fibers of the nerves are disseminated to these parts by mediation of their coat, or membrane, I say, so small, that they can scarce be discerned by the eyes, unless (as *Galen* saith) by plucking such coats away from the parts.

Lib. 1. de Locis affe&is.

Why the bones have such smal veins.

But it is no marvail if Nature would have these parts in like manner to have such small veins, contrary to the lungs and most part of the muscles, only to yeeld so much nourishment to the part, as should be needfull; for seeing the substance of the bones is cold, hard, dense and solid, it wastes the less.

Whence the difference of bones may be taken.

Wherefore they need not so much blood for their nourishment, as the hot and soft parts; and besides the lesser bones have neither veins nor arteries, but draw fit nourishment, only by the force of the attractive faculty implanted in them.

The Clavicles or coller-bone.

The differences of bones are taken from many things, as from their *Apophyses*, *Epiphyses*, gristles, necks, heads, solidity, cavity, eminencies, marrow, consistence, bigness, number, figure, site. We will prosecute all these as they shall offer themselves in the demonstration of the bones; to which doctrine we will give a beginning at the Clavicles or coller-bones.

The Clavicles are two very hard and solid bones, without any great or notable cavity, situate on each side betwixt the side and upper part of the *Sternon* and top of the shoulder-blade, for the strength and stability of these parts, whence they take the name of *Claviculae* Clavicles, (from the Greek *κλεις*, which signifies, a Key or any other Bar or fastning of a door.) They carry the shape of a Surgeons Levatory.

Lib. 13. de usu part. cap. 11.

But you must note that the Clavicles seem to be fastned to the *Sternon* by the mediation of a gristly bone. Moreover the space and cavity contained within the coller-bones is called by the Latins *jugulum*, by the French the upper *furcula*, because the jugular veins pass that way; it sticks to the upper process of the shoulder by a Gristle which *Galen* calls the small gristle bone, although it be nothing else but a production of the *Os juguli*.

For the *Sternon*, which we said is framed of divers bones, as sometimes 3, sometimes 4, 5, 6, 7, and sometimes 8, you must note they are very spongy and full of pores, and of a far softer consistence than the coller-bones, wherefore more subject to corruption; besides they are mutually joined by interposition of muscles. Their use is to be as a shield to defend the vitall parts.

The Ribs.

The Ribs are 24 in number, on each side 12. seven of these are called true or perfect ribs, because they make a circle, at the one end joined to the *Sternon*, on the other to the *vertebra's*; the other are called bastard or short ribs, because they fall short in their way and come not to the *Sternon*; but they are fastned on the fore-side to the *Sternon* by gristles and ligaments, but on the back-part to the transverse *vertebra's* of the back-bone, and to the sides of the said *vertebra's*. But the short ribs are only knit to the *vertebra's*, wherefore that part of the *vertebra's* is called the root of the ribs.

Their consistence.

The exterior or fore-part of the bastard or short ribs is gristly, that they should not be broken, and that they might be the easier lifted up in the distensions of the stomach filled with meat. They are of a consistence sufficiently hard, yet more towards their root, than at the *Sternon*, where they come nearer together, and are more hardly broken; they are smooth both within and without, but in the midst they have some sign of being double; or hollow to receive the veins and arteries, which nourish their bony substance; they are fashioned like a bow; their use is the same with the *Sternon*, and besides to carry and strengthen the muscles serving for respiration.

CHAP. V.

The Anatomical administration of the Sternon.



He coat investing the ribs, which the common Anatomists call *Pleura*, is the last of the containing parts of the Chest, which because it lyes hid in the inner part thereof, it cannot be shown unless by pulling asunder of the *Sternon*; wherefore we must now shew the manner of opening the *Sternon*, that hereby we may not violate the originall or insertion of any of the muscles. Wherefore first you must understand that he which will shew in their proper place their originall and insertion of the pectorall muscles, of the *Mastoides*, of the two muscles of the bone *Hyois*, of the muscles *subclavii*, and *intercartilaginei*, ought first of all to separate all the pectorall muscles from

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the *Sternon* and the gristles from the true ribs; then to cut the ligaments, next the bones themselves, even from the sixth true rib to the clavicles.

And then shewing the *Mediastinum* stretched under the *Sternon* all the length thereof, he must separate the *Sternon* with his knife, and bend it up to the clavicles, and there cut it, reserving together with it the four muscles, that is, the two *Mastoides*, and the two moving the bone *Hyois*, because they either wholly or for the most part arise from the *sternon*.

Lastly, the Clavicles being somewhat thrust upwards, the gristles must on each side be turned outwards towards the arm; that so the containing parts of the Chest may not only lye open to view, and be easily shewed, but also the muscles may be contained in their place, untill they come to be shewed in their order.

And because the collar-bones must be lifted up very high, that the recurrent nerves may be more easily seen, and the distribution of the veins and arteries, the two small subclavian muscles, one on each side must be shown by the way, who have their originall from the inner and fore-part of the Clavicles, and an oblique descent to the *Sternon* towards the grille of the first rib.

For the Clavicles cannot be thus separated, but that these muscles must be violated and spoiled. Also you may divide the *Sternon* in the midst, that you may shew the inward pectoral muscles whole, having separated the muscles which arise from the upper part. All which things being performed as they ought, we must come to the coat investing the ribs, and then to the *Mediastinum*, as arising from it.

CHAP. VI.

Of the Pleura, or coat investing the Ribs.

The *Tunica subcostalis*, or coat investing the Ribs, being the last of the containing parts of the Chest, is a large and a broad membrane answerable in proportion of use and action to the *Peritonæum* of the lower belly. For as the *Peritonæum* generally and particularly covers all the naturall parts, binding and holding them in their places, so this coat invests all the vitall parts in generall, because it is stretched over all the inside of the Chest, but in particular whilst it gives each a coat from it self.

What the membrane investing the ribs is.

It hath its original from the *periosteum* (or as others will have it, from the *pericranium*) investing the *vertebra's* of the Chest at the roots of the ribs. Wherefore it sticks very fast to the ribs, scarce to be separated, as also to all the parts bounding the Chest, and contained in it.

Its original.

Vesalius reprehends *Galen*, because he said, that this was double on both sides; yet *Columbus* defends *Galen*, and verily it is seen to be double in the inner part of the Chest, under the ribs and the muscles of the ribs, that in that space there may be way for the veins, arteries, and nerves.

Some have made it twofold, and divided it into the internal and external; as those which have made two sorts of *Plurifies*, the true and bastard; placing the external above the Ribs and intercostal muscles; but the internal under the ribs, muscles, *Diaphragma* and *Sternon*.

Whether, as there is a two-fold *Plurifie*, so also a double *Pleura*.

But we, to shun ambiguity, intend only to prosecute those things which are manifest to the eyes; wherefore we say, that the ribs are lined on the inside with a double coat; on which immediatly and firmly sticks to them on every side called the *periosteum*, which is common to them and other bones.

The other which lyes upon that *periosteum*, and on the inside invests all the Ribs, whence it is called the *subcostalis tunica*. The substance, temper and compofure are the same, as in other membranes. The magnitude in length, as also the figure, is the same with the compass of the inner part of the Chest; the thickness of it is very little. This coat is commonly called the *Pleura*, from the name of the part which it covers or lines, (for the Greeks call the ribs *πλευρα*) and in like manner which happens betwixt the *periosteum* and this *pleura*, is called either a true or bastard *Plurifie*.

The magnitude and figure.

CHAP. VII.

Of the Mediastinum.

Now we must speak of the parts contained in the Chest, seeing we have already handled the containing, beginning with the *Mediastinum* as being a part which in dissection first presents it self to our sight. The *Mediastinum* is of the same substance, thickness, compofure, number, temper, as the *Pleura*. For the substance of the *Mediastinum* is membranous, and though it be stretched all the length of the Chest, yet it is of a smal thickness, receiving veins, nerves and arteries from all the parts to which it is knit, like as the *pleura* doth; but especially from the mamillary vessels, descending under the *sternon*.

The substance and magnitude.

It is in number one, but it is made of two membranes produced from the subcostall, for this ascending on each side by the hollowness of the Chest to the *sternon*, and then at right angles it is reflected to the bodies of the *vertebra's*, whence the *pleura* hath its originall.

In that reflection there is so much distance betwix each membrane, as may be sufficient to receive two fingers. For otherwise, seeing that they cannot penetrate through the heart, it was fit each side of the *Pleura* should turn to the *Pericardium*, that so they might arrive at the appointed place without offence. Neither yet is that space void and empty, but woven with many small nervous fibers. *Columbus* adds, that that place is often filled with a certain humor besides nature, which you may draw out or evacuate by opening the *sternon*.

The figure.

Yet I would gladly learn of *Columbus*, by what signs we may know that such an humor is contained there. For the figure, the *Mediastinum* with the *Pleura* on each side, represents the figure of a leather bottle, whose flat side is the *Mediastinum*, whose other side the *Pleura*; the bottom that part of the *Pleura* which is next the Midriff; the mouth the upper part of the *Pleura* at the first ribs. We shewed the site and connexion of the *Mediastinum*, when we declared its originall.

The use.

The use thereof is to separate the vitall parts (as it were) into two cells, the right and left, that if peradventure it happen that the one be hurt, the creature may live by the benefit of the other.

And it hath another use, which is to prop and hold up the *Pericardium*, that it fall not upon the heart with its weight, but tossed with the motions of the heart and Chest, it may move to this or that side.

CHAP. VIII.

Of the Diaphragma or Midriff.

What the Midriff is.



Although the Midriff may seem to be accounted rather a part containing than contained, yet for commodities sake we have deferred the demonstration thereof till now. Therefore it is a muscle round and long, terminating the lower part of the Chest.

Its substance, composition, &c.

It is of the same substance, composition and temper, as the muscles of the *Epigastrium*; it is made of two coats, the lower whereof is from the *Peritonæum*, and the upper from the *Pleura*. Which getting to them flesh, but not there, but in their circumference, by the benefit of the blood brought thither by the veins and arteries distributed through it, turn into a muscle, whose middle is nervous and membranous, but the extremities by which it is inserted, one while fleshy, as in that part next to the bastard ribs; another while tendonous, as where it touches the first and second *vertebra's* of the loins, for it ends in them by two Tendons manifest enough. It is one in number, interposed with an oblique site betwixt the naturall and vitall parts. It hath connexion with the lower part of the *Sternon* and short ribs, and the two first *vertebra's* of the loins, but by its coats and vessels with the parts from whence it received them.

Connexion.

Quantity.

The extent thereof is equal to the compass of the lower part of the Chest. The length of it is from the breast-blade, even to the first and second *vertebra* of the loins. The thickness is diverse, for it is far thicker in its fleshy extremity, than in its nervous originall.

Action.

The Action thereof is to help the expulsion of the Excrements by the mutuall assistance of the *Epigastrick* muscles, but the chief use is for respiration, of which it is one of the prime instruments. This partition the Ancients called *Phrenes*, because the inflammation thereof caused like symptomes as the inflammation of the brain, by reason of the large nerves on each side one, which come to it directly and primarily from the third, fourth, and fifth *vertebra* of the neck. This muscle differs from other muscles, specially in figure. It is perforated in three places, to give way or passage to the ascendent Hollow-vein, to the artery *Aorta*, and the Gullet.

Why the Diaphragma was called Phrenes.

CHAP. IX.

Of the Lungs.

Their substance. Quantity. The Lobes thereof.



The Lungs are of a soft substance and flesh, rare and like a sponge, of a various colour pamed; their quantity is sufficiently large; for most commonly they are divided into four lobes disjoined with a manifest and visible division, on each side two, whereby they may be the more easily opened and contracted, and the air may the better enter.

Besides also in large bodies, who have a very great Chest, there is found a fifth lobe, arising from the second lobe of the right side, as a cushion or bolster to bear up the Hollow-vein ascending from the Midriff to the heart.

In little men who have a shorter Chest, because the heart is so near as to touch the *Diaphragma*, this lobe is not seen, yet it is always found in Dogs.

Figure.

The Lungs represent the figure or shape of an Oxes foot or hoof, for like it they are thicker

thicker in their basis, but slenderer in their circumference, as you may see in blowing them up, by the weazon, with your mouth or a pair of bellows. They are compounded of a coat coming from the *Pleura*, which on each side receives sufficient number of nerves from the sixth conjugation; and also of the *Vena arteriosa* coming from the right ventricle of the heart, and the *Arteria venosa* from the left, as shall be shewed in the Anatomy of the heart; besides the *Apera arteria* or weazon coming from the throat; and lastly its own flesh, which is nothing else than the concretion of cholerick blood poured out like foam about the divisions of the foresaid vessels, as we have said of other parts.

Composition.

The body of the Lungs is one in number, unless you will divide it into two, by reason of the variety of its site, because the Lobes of the Lungs stretched forth into the right and left side do almost involve all the heart, that so they may defend it against the hardness of the bones which are about it, they are tyed to the heart, chiefly at its basis, but to the roots of the ribs, and their *vertebra's* by the coat it hath from thence; but by the vessels to these parts from whence they proceed. But oft times presently from the first and naturall conformation they are bound to the circumference of the ribs by certain thin membranous productions which descend from thence to the Lungs, otherways they are tyed to the ribs by the *Pleura*.

The sticking of the lungs to the ribs.

The nourishment of the Lungs is unlike to the nourishment of other parts of the body; for you cannot finde a part equally rare, light, and full of rare, which may be nourished with blood equally thin and vaporous. In temper they incline more to heat than to cold whether you have regard to their compofure of cholerick blood, or their use, which is to prepare and alter the air, that it hurt not the heart by its coldness. The Lungs is the instrument of voice and breathing by the weazon or wind-pipe. For the Lobes are the instruments of voice, and the ligaments, of respiration. But the *Larinx* or Throtle is the chief instrument of the voice; for the Weazon first prepares the voice for the Throtle, in which it being in some measure formed, is perfected in the palat of the mouth, as in the upper part of a Lute, or such like instrument, by the help of the *Gargareon* or *uvula* as a certain quill to play withall.

Their nourishment.

But as long as one holds his breath, he cannot speak; for then the muscles of the *Larinx*; ribs, the *Diaphragma*, and the *Epi-gastrick* muscles are pressed down, whence proceeds a suppression of the vocall matter, which must be sent forth, in making or uttering a voice.

Nature would have the Lungs light for many reasons; the first is, That seeing they are of themselves immovable, they might be more obsequious and ready to follow the motion of the Chest; for when it is straitned, the Lungs are straitned and subside with it; and when it is dilated, they also are dilated, and swell so big that they almost fill up all the upper capacity thereof.

Why the lungs are light.

Another cause is, That by this their rarity they might more easily admit the entring air, at such times as they have much or sodain necessity, as in running a race.

And lastly, that in Plurisies and other purulent abscesses of the Chest, the *Pus* or matter poured forth into the capacity of the Chest, may be sucked in by the rare substance of the Lungs, and by that means the sooner sent forth and expectorated.

The use of respiration is to cool and temper the raging heat of the heart. For it is cooled in drawing in the breath by the cool air, and in sending out thereof by avoyding the hot fuliginous vapor. Therefore the Chest performs two contrary motions, for whilst it is dilated it draws in the encompassing air, and when it is depressed, it expels the fuliginous vapor of the heart; which any one may easily perceive by the example of a pair of Smiths bellows.

The use of respiration or breathing.

C H A P. X.

Of the Pericardium or Purse of the Heart.



The *Pericardium* is (as it were) the house of the Heart, which arising at the basis thereof (either the ligaments of the *vertebra's* situate there, or else the vessels of the heart yeelding it matter) is of a nervous, thick and dense substance without any fibers. It retains the figure of the Heart, and leaves an empty space for the heart to perform its proper motions. Wherefore the bigness of the *Pericardium* exceeds that of the heart.

Whence it hath its matter.

It consists of a double coat, one proper, of which we have spoken; another common, coming from the *Pleura*; and also of veins, arteries, and nerves; the vessels partly coming from the mamillary, partly from the *Diaphragma*, chiefly there where it touches it; the nerves come on each side from the sixth conjugation.

It is only one, placed about the heart, and annexed to it at the basis thereof by its membranes, to the originall of the Lungs, and the *vertebra's* lying under them, and by the vessels to the parts from whence it received them. It is of a cold and dry temper; as every membrane is.

Number and connexion.

The use thereof is to cover the heart, and preserve it in its native humidity, by a certain

Use,

naturall

naturall moisture contained in it, unless you had rather say that the moisture we see contained in the *Pericardium*, is generated in it after death by the condensation and concretion of the spirits. Although this seems not very likely, because it grows and is heaped up in so great quantity in living bodies, that it hinders the motion of the heart, and causes such palpitation or violent beating thereof, that it often suffocates a man.

From whence,
the matter of
the watery
humor contain-
ed in the
Pericardium.

The Consis-
tence.

For this Palpitation happens also to hearty and stout men, whose hearts are hot, but blood thin and waterish, by reason of some infirmity of the stomach or liver; and this humor may be generated of vapors which on every side exhale into the *Pericardium* from the blood boiling in the ventricles of the heart, where kept in by the density thereof, they turn into yellowish moisture, as we see it happens in an Alembick.

Nature would have the *Pericardium* of a dense and hard consistence, that by the force thereof the heart might be kept in better state; for if the *Pericardium* had bin bony, it would have made the heart like iron by the continuall attrition; on the contrary, if it had been soft and fungous, it would have made it spongy and soft like the lungs.

C H A P. XXX.

Of the Heart.

What the
heart is, and of
what substance



The Heart, the chief mansion of the Soul, the organ of the vitall faculty, the beginning of life, the fountain of the vitall spirits, and so consequently the continuall nourisher of the vitall heat, the first living and last dying; which because it must have a naturall motion of it self, was made of a dense, solid, and more compact substance than any other part of the body.

The three sorts
of fibers of the
heart.

The flesh thereof is woven with three sorts of fibers, for it hath the right in the inner part descending from the basis into the point, that they might dilate it, and so draw the blood from the Hollow vein into the receptacles thereof, and the breath or air from the lungs by the *Arteria venosa*; it hath the transverse without, which pass through the right at right angles, to contract the Heart, and so drive the vitall spirits into the great Artery *Aorta*, and the cholerick blood to the Lungs by the *Vena arteriosa* for their nourishment; It hath the oblique in the midst to contain the air and blood drawn thither by the forementioned vessels, untill they be sufficiently elaborate by the heart.

All these fibers do their parts by contracting themselves towards their originall, as the right from the point of the heart towards the basis, whereby it comes to pass that by this contraction of the fibers the heart dilated becomes shorter, but broader, no otherwise than it is made more long and narrow by the contraction of the transverse, but by the drawing of the oblique, it is lessened in that part which looks towards the *vertebra's*, which chiefly appears in the point thereof.

The magni-
tude.

It is of an indifferent bigness, but yet in some bigger, in some less, according to the diverse temper of cold or hot men, as we noted in the liver.

Figure.

The figure thereof is pyramidall, that is, it is broader in the basis, and narrower at his round point.

Composition.

It is composed of the most dense flesh of all the body, by the affusion of blood at the divisions and foldings of the vessels, and there concrete, as it happens also to the other entrails. For the blood being there a little more dried, than that which is concrete for the making of the Liver, turns into a fleshy substance more dense than the common flesh, even as in hollow ulcers, when they come to a cicatrize.

The proper
vessels.

It hath the Coronall veins and arteries, which it receives either on the right side from the Hollow vein, or on the left from the basis at the entrance of the artery *Aorta*. You cannot by your eye discern that the heart hath any other nerves than those which come to it with the *Pleura*.

The Nerves.

Yet I have plainly enough observed others in certain beasts which have great hearts, as swine; they appeared seated under the fat which covers the vessels and basis of the heart, lest the humid substance of these parts should be dissolved and dissipated by the burning heat of the heart. Whereby you may perceive that the heat of the heart is different from the Elementary heat, as that which suffers fat to grow about this entrail, where otherwise it doth not concrete unless by cold or a remiss heat, which thing is chiefly worth admiration.

Number and
sit.

The Heart is one alone, situate most commonly upon the fourth *vertebra* of the Chest, which is in the midst of the Chest. Yet some think that it inclines somewhat to the left side, because we there feel the motion or beating thereof; but that happens by reason of its left ventricle, which being it is filled with many spirits, and the beginning of the arteries, it beats far more vehemently, than the right. It required that seat by the decree of Nature; because that region is the most safe and armed, and besides it is here on every side covered (as it were) with the hands of the Lungs.

Connexion.

It hath connexion with the fore-mentioned *Vertebra's*, but by the parts composing it, with those parts from whence it hath them; with the Lungs by the *Vena arteriosa*, and

and the *Arteria venosa*; and lastly, with all the parts of the body by the Arteries, which it sends to them all.

It is of a hot and moist temper, as every fleshy part is. The action thereof is, first to prepare the blood in its right ventricle, for the fit nourishment of the Lungs, for from hence it is that *Galen* saith, This right ventricle was made for the necessity of the Lungs. Secondly, to generate the vitall spirits in its left ventricle for the use of the whole body. But this spirit is nothing else than a certain middle substance between air and blood, fit to preserve and carry the native heat, wherefore it is named the Vitall, as being the author and preserver of life. In the inner parts of the heart there present themselves to our consideration the ventricles and the parts contained in the ventricles and between them; such are the *Valvule*, or valves, the vessels and their mouths, their distribution into the Lungs, the wall or partition, and the two productions or Ears of the heart; which because they are doubtful, whether they may be reckoned amongst the externall or internall parts of the heart, I will here handle in the first place.

Therefore these *Auricule* or Ears are of a soft and nervous substance, compact of three sorts of fibers, that so by their softness they might the more easily follow the motions of the heart, and so break the violence of the matter entering the heart with great force when it is dilated. For otherwise by their violent and abundant entrance they might hurt the heart, and (as it were) overwhelm and suffocate it; but they have that capacity which we see given by nature, that so they might (as it were) keep in store the blood and air, and then by little and little draw it forth for the use or necessity of the heart. But if any enquire, if such matters may be drawn into the heart by the only force of the *Diastole*, *ad fugam vacui*, for avoyding of emptiness; I will answer, That that drawing in or attraction is caused by the heat of the heart, which continually draws these matters to it, no otherwise than a fire draws the adjacent air, and the flame of a candle the tallow which is about the weik for nourishments sake. Whilst the heart is dilated it draws the air, whilst it is drawn together or contracted it expels it. This motion of the heart is absolutely naturall, as the motion of the lungs is animall. Some add a third cause of the attraction of the heart, to wit, the similitude of the whole substance. But in my judgment, this rather takes place in that attraction which is of blood by the *venæ coronales* for the proper nourishment of the heart, than in that which is performed for attraction of matters for the benefit of the whole body.

These Ears differ in quantity, for the right is far more capacious than the left, because it was made to receive a greater abundance of matter. They are two in number, on each side one, situate at the basis of the heart: The greater at the entrance of the hollow vein into the heart, the less at the entrance of the veinous and of the great Artery, with which parts they both have connexion. We have formerly declared what use they have, that is, to break the violence of the matters, and besides to be stays or props to the *Arteria venosa* and great Artery, which could not sustain so rapid and violent a motion as that of the Heart, by reason of their tenderness of substance.

Of the ventricles of the Heart.

THe Ventricles are in number two, on each side one, distinguished with a fleshy partition strong enough, having many holes in the superficies, yet no where piercing through.

The right of these Ventricles is the bigger, and encompassed with the softer and rarer flesh; the left is the lesser, but is engirt with a threefold more dense and compact flesh; for the right Ventricle was made for a place to receive the blood brought by the hollow vein, and for distributing of it, partly by the *Vena arteriosa* into the Lungs for their nourishment, partly into the left Ventricle, by sweating through the wall or partition, to yeeld matter for the generation of the vitall spirits.

Therefore because it was needfull there should be so great a quantity of this blood, it was likewise fit that there should be a place proportionable to receive that matter. And because the blood which was to be received in the right ventricle was more thick, it was not so needfull, that the flesh to contain it should be so compact; but on the contrary, the arterious blood and vital spirit have need of a more dense receptacle, for fear of wasting, and lest they should vanish into air; and also less room, that so the heat being united, might become the stronger, and more powerfully set upon the elaboration of the blood and spirits.

Therefore the right Ventricle of the heart is made for the preparation of the blood appointed for the nourishment of the Lungs, and the generation of the vitall spirits, as the Lungs are made for the mitigation or qualifying of the Air. Which works were necessary if the Physicall Axiome be true, *That like is nourished by like*, as the rare and spongy Lungs with more subtil blood; the substance of the heart gross and dense, with the veinous blood as it flows from the Liver, that is gross.

And it hath its Coronall veins from the Hollow vein, that it might thence draw as much as should be sufficient.

But the left Ventricle is for the perfecting of the vitall spirit, and the preservation of the native heat,

Temper and action.

What the vitall spirit is.

The *Auriculæ Cordis*, or ears of the heart.

Their magnitude and number.

Their use.

The partition between the ventricles of the heart. Why the right ventricle is more capacious & less compact.

Why the right ventricle is more capacious & less compact.

The action of the right ventricle.

The action of the left ventricle.

Of the Orifices and Valves of the Heart.

The uses of the four orifices of the Heart.

Here be four Orifices of the heart, two in the right, and as many in the left ventricle; the greater of the two former gives passage to the vein, or the blood carried by the hollow vein to the heart; the lesser opens a passage to the *vena arteriosa*, or the cholerick blood carried in it for the nourishment of the lungs.

The larger of the two other makes a way for the distribution of the Artery *Aorta*, and the vitall spirit through all the body; but the lesser gives egress and regress to the *Arteria venosa*, or to the air and fuliginous vapors. And because it was convenient that the matters should be admitted into their proper ventricles by these orifices, by the *Diastole*, to wit, into the right ventricle by the greater orifice, and into the left by the lesser; and because on the contrary it was fit that the matters should be expelled by the *Systole* from their ventricles, by the fore-mentioned orifices;

The Valves.

Therefore nature to all these orifices hath put cleaven valves, that is to say, six in the right ventricle, that there might be three to each orifice; five in the left, that the greater orifice might have three, and the lesser two, for the reason we will presently give.

How they differ.
Action.
Site.
Figure.
Substance.

These valves differ many ways: First, in action; for some of them carry in matter to the heart, others hinder that which is gone out, that it come not back again. Secondly, they differ in site, for those which bring in, have membranes without, looking in; those which carry out, have them within looking out. Thirdly, in figure, for those which carry in, have a pyramidall figure, but those which hinder the coming back again, are made in the shape of the Roman letter C. Fourthly, in substance, for the former for the most part are fleshy, or woven with fleshy fibers into certain fleshy knots ending towards the point of the heart; The latter are wholly membranous.

Number.

Fifthly, they differ in number, for there be only five which bring in, three in the right ventricle at the greater orifice, and two in the left at the lesser orifice; those which prohibit the coming back, are six in each ventricle, three at each orifice. Lastly, they differ in motion; for the fleshy ones are opened in the *diastole*, for the bringing in of blood and spirit, and contrariwise are shut in the *systole*, that they may contain all or the greater part of that they brought in. The membranous on the contrary are opened in the *systole* to give passage forth to the blood and spirits over all the body, but shut in the *diastole*, that that which is excluded might not flow back into the Heart. But you shall observe that nature hath placed only two valves at the orifice of the *Arteria venosa*, because it was needfull that this Orifice should be always open, either wholly or certainly a third part thereof; that the air might continually be drawn into the heart by this orifice in inspiration, and sent forth by expiration in the contraction of the heart. Whereby we may gather this, that there is but one third part of that air we draw into the heart in breathing, sent forth again in the form of vapor in expiration, because nature would have but one third part of the orifice to lye open for its passage out. Therefore the expiration or breathing out, and the *systole* of the heart and arteries, is shorter than the inspiration, so that we may truly say, that the inspiration, or drawing the breath in, is equally so long as the expiration is together with the rest, which is in the midst between the two motions.

Why there be only two Valves that *Arteria venosa*.

CHAP. XII.

Of the distribution of the *Vena arteriosa*, and the *Arteria venosa*.

Having hitherto shewed the originall of each of the vessels of the Heart, we must now speak of their distribution. The *Vena arteriosa*, or the Arterious vein; and the *Arteria venosa*, or the Veinous artery, each proceeding out of his proper ventricle, that is, the right and left, are divided into two large branches; one of which goes to the right and the other to the left hand, the one lying cross-ways over the other, the vein always riding over the artery, as you may understand better by the sight of your eyes, than by reading of books. These branches at their entrance of the lungs are divided into two other large branches, and each of them go to his peculiar Lobe of the lungs; and these again run almost into infinit other branches, dispersed in three places over the Lungs.

The artery always lyes under the vein.

A twofold reason why the Vein was made arterious or like an artery.

These vessels have acquired their names by reason of that transmutation of consistence, whereby the composition of a vein degenerates into an artery, and that of an artery into a vein, for the commodity of life. For this is a miracle of prudent Nature to change the coats of the vessels of the lungs; producing a vein which in its body should imitate an artery, and an artery which should represent a vein: for if the *vena arteriosa* should have retained its proper consistence, the arterious blood which is carried by it from the heart to nourish the lungs, might by reason of its subtilty penetrate through, and flow away by reason of the rarity of the veinous texture: and so nature should never have attained her con-

ceived

ceived end, that is, to nourish the Lungs, by reason of the continuall motion of their contraction and dilatation.

For nourishment cannot be assimilated to the part, unless it be put and cleave to it. Wherefore it was fit, that nature should make the body of this vein solid, that it might be immoveable, unshaken and stubborn (in respect of a vein which by its softness would have been too obsequious and yeilding to the agitation of the Lungs) that so it might have nourishment, which might be diffused into all parts thereof, and which might neither be drawn by its *diastole*, nor driven back into the heart by its *systole*. But the artery hath the consistence of a vein, that by that veinous softness according to the necessity of nature it might be the more readily contracted and dilated, to bring the air in and carry the vapours forth of the heart. Here we meet with a difficulty, which is, by what way the blood is carried out of the right into the left ventricle of the heart.

Galen thinks that there be certain holes in the partition made for that purpose; and verily there are such, but they are not perforated. Wherefore *Columbus* hath found out a new way, which is, that the blood is carryed to the lungs by the *Vena arteriosa*, and there attenuated; and carried from thence together with the air by the *Arteria venosa* to the left ventricle of the heart; this he writes truly very probably. *Botallus* in his treatise de *Catarrho* hath found out a third way, to wit, a vein, which he calls *Arteriarum nutritrix*, that is, The nurse of the arteries, which creeps a little above the Coronall to the right ear of the Heart, and then goes into the left ear thereof. But yet I am very much afraid, that this vein observed by *Botallus*, is that vessel observed by *Fallopious*, whereby the *Vena arterialis* is joyned to the *Aorta*, and by which all the vitall blood is carried for the forming and nourishment of the lungs whilst the infant is yet in the womb. Of which also *Galen* makes mention, but it had lain hid from his time to this day, but that *Fallopious* raised up the memory of it again.

Why the Artery was made like a Vein.

By what way blood may pass out of the right into the left ventricle.

The vein called the nurse of the arteries.

Fallop. initio obsar. Arteriarum. Gal. lib. 1. §. de usu part. cap. 6.

CHAP. XIII.

The distribution of the ascendent Hollow vein.

THe Hollow vein rising out of the gibbous part of the Liver, and resembling (according to *Galen*) the body of a tree, is divided into two notable branches, but not of a like bigness. For the greater, by the hind part of the Liver upon the back bone & by the way, receives certain other branches from the substance of the Liver which entred not into the great trunk with the rest. You may often see this descendent branch even to the back bone upon which it lies in this its descent, covered with the substance of the liver, so that it may seem that branch proceeds not from that common trunk together with the ascendent, although indeed it alwayes doth. But the lesser branch ascends to the upper parts, and is distributed after this manner following. For first arising into the midriffe it bestows two small veins upon it, on each side one, which from that part are called *Phrenicæ*. But from thence when it arrives at the right Ear of the Heart, it makes the *Coronales*, the Coronall or Crown veins, which compass the *basis* of the heart in manner of a Crown. Thirdly, entring somewhat more deeply into its right Ear, in its greater part it produces the *vena arteriosa*. Fourthly, lifted up above the heart, on the right side it produces the vein *Azygos* or *sine pari* (that is, without a fellow) which descending to the fourth rib, (reckoning from above downwards) nourisheth the intercostall muscles and also the membranes of the eight lower ribs, on both sides, sending a branch into each of the muscles at the lower part of the rib, which may be sufficient for their nourishment. Besides also oftentimes, especially in little men, this vein *Azygos* nourishes all the spaces between all the ribs by the like branches, which it sends in the same manner to the four upper ribs. Moreover also this *Azygos* sometimes, though but seldome, is found double; that is, on each side one. Here you must chiefly observe, that this vein after it hath nourished the spaces between the lower ribs, in its remainder descends under the *Diaphragma* and is joyned on the left side to the Emulgent vein; by which it is manifest how an Abscess may be critically evacuated by the urine, in a plurisie. But this same *Azygos* is more depressed on the right side, and meets with the *Vena lumbares*, but especially with one of them, which goes down to the thigh, whereby *Fallopious* gathers that it is very convenient in the beginnings of Plurisies to open the *vena poplitis*, the vein of the Ham. Fifthly above the *Azygos* (when it is wanting there) it sends forth the branch called *Intercostalis* to the other spaces between the upper ribs; although this is sometimes seen to come from the *Axillares*, which *Sylvius* calls the *subclavia*. Sixthly, it brings forth the *Mammariæ*, so called, because in their greater part they run to the dugs between the fourth and fifth ribs, for the uses formerly mentioned; men and women have on each side one of these coming from the *Subclavia*. They are sometimes found to proceed by a certain common orifice from the hollow vein, before it be divided into the *Subclavian* branches, but it is rather in beasts than in men; these veins descending by the sides of the *sternon* yeild nourishment to the two inner muscles of the chest, to the seven intercostall muscles of the true ribs, to the *sternon* it self and

Gal. lib. de form. fuer.

The greater descendent branch of the hollow vein.

The upper branch of the hollow vein is the less.

Vena phrenicæ Coronales.

Vena Arteriosa.

Vena Azygos, or sine pari.

This *Azygos* sometimes two.

How the matter of a plurisie may be evacuated by urin.

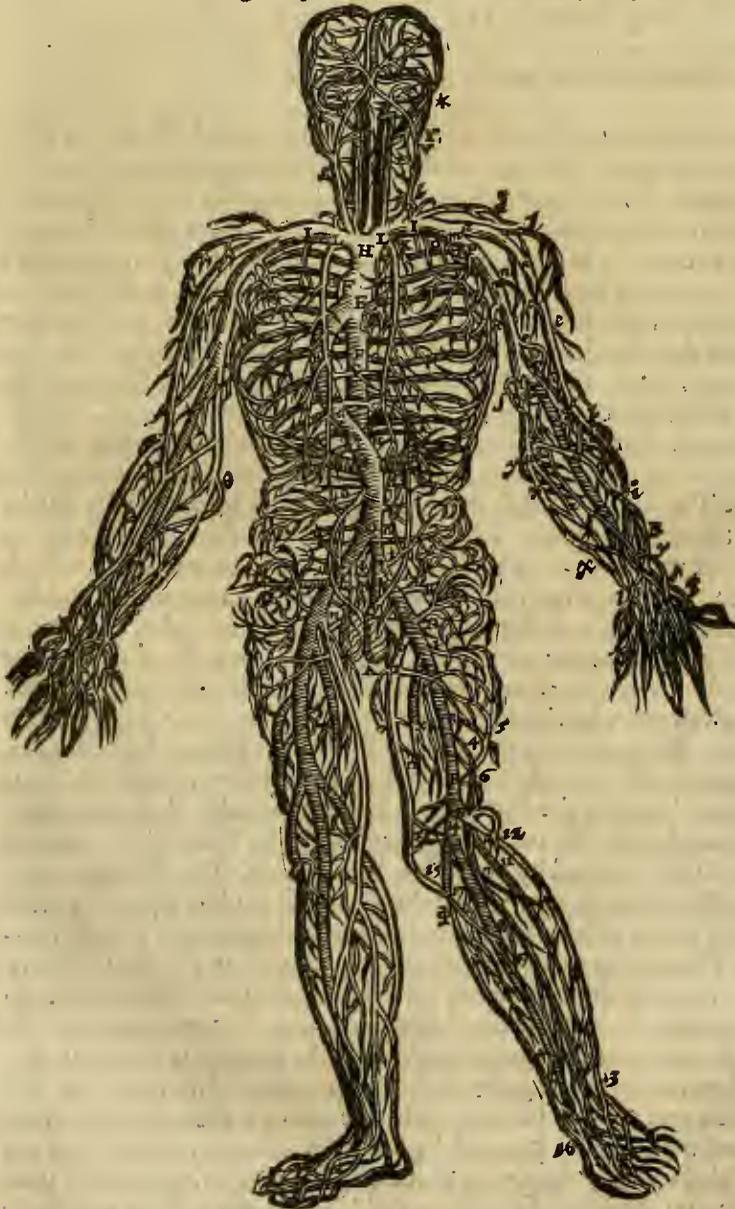
Intercostalis.

Mammariæ.

to its ligaments and gristles, as also to the *Mediastinum* & the upper part of the right muscles, and the adjacent parts. Seavently, it produces the *Cervicalis*, which on both sides through the holes of the productions of the *Vertebra's* of the neck, ascends to the head, sending many small branches into the spinall marrow through the holes by which the nerves pass, and also into the membranes, ligaments, gristles, bones, and neighbouring muscles. Eightly, the *Musculoſa* or musculous, which also arising out of the *Subclavie* is divided into two other branches, the one whereof goeth upon the breast to the paps nourishing the foremost muscles; wherefore in a bastard plurisie cupping-glasses may be fitly applied in this place.

The other branch descends to the upper muscles of the chest, but specially to that which is called *Latissimus*. The tenth is the *Axillaris*. The eleventh the *Humeralis*, of which we will treat in their place. The twelfth and last is the *Jugularis* properly so called, which is twofold, the internall and externall. The internall being the lesser doth presently on both sides from this very beginning ascend by the sides of the *Aspera Arteria* or weazon even to the mouth and skull, yeilding nourishment to the parts by which it passes, as to the next membranes and nerves. But when it comes to the *basis* of the *Cranium* it is divided into two branches, the greater whereof going back along the *basis* of the *Cranium* to the hind part thereof, sending a branch to the long muscle situate upon the *oesophagus*, it enters the *Cranium* with the small *Carotides* through the hole of the nerves of the sixth conjugation, where they become one common vessell. The lesser sending a slip to the organ of hearing by the hole called *Cæcum* (or the blind) also enters the *Cranium* and is spent in the thicker *meninx* neer to the hole of the third and fourth conjugation of nerves. The externall Jugular vein being greater and fairer, most commonly simple, yet sometimes double, either presently at his beginning, or a little after, ascends superficially on both sides of the neck, between the broad muscle, or fleshy pannicle, being there easie to be discerned, and other muscles situate at the sides of the neck, into which as also into the skin it sends certain branches for nourishment.

The Figure of the hollow vein whole and freed from the rest of the body.



A, The trunk of the hollow vein. The lower *AA*, At this place of the Liver, is seated the left part of the vein, and distributeth branches to the left side.

B. Sheweth how the trunk of the hollow vein in the chest (to give way to the heart) is curved or bowed to the right hand.

Betwixt A. and B. that part of the hollow vein which is betwixt the gibbous side of the Liver and the Midriffe.

C. The left midriffe vein called *Phrenica sinistra*, from which surcles do run in a man unto the purfs of the heart, for the midriffe and it do grow together.

D. The orifice of the hollow vein which groweth unto the heart.

E. the crown-vein called *coronaria*, which like a crown compasseth the basis of the heart, and sprinkleth his surcles on the outside thereof as far as to the cone or point.

FF. The trunk of the vein *Azygos* or *non parill*, descending along the right side of the rack-bones unto the loins.

GG. the lower intercostal veins, to the branches of the vein *Azygos*, which go unto the distances

ces betwixt the ribs, and afford furcles unto the muscles which lie upon the ribs and the rack-bones, and the membranes of the chest. *H.* the division of the hollow vein into two subclavian trunks near the Jugulum under the breast-bone. *II.* the subclavian branch tending on either side unto the arm; called by some *Axillaris*. *K.* the upper intercostall vein which commonly sendeth three slips unto the distances of the upper ribs, unto which the first intercostall vein sent no branches. *LL.* the descending mammary vein: this descendeth under the breast-bone unto the right muscles of the *Abdomen*, and affordeth furcles to the distances of the gristles of the true ribs, to the *Mediaſtinum*, the muscles that lye upon the breast and the skin of the *Abdomen*. *M.* the conjunction of the mammary with the Epigaſtrick vein ascending about the navill under the right muscles. *N.* the vein of the neck called *Cervicalis*, ascending towards the skull, which alloweth furcles to those muscles that lie upon the neck. *O.* the vein called *Muscula*, which is propagated with many furcles into the muscles that occupie the lower parts of the neck and the upper parts of the chest. *P.* *Thoracica superior*, the upper chest vein which goeth to the muscles lying upon the chest, to the skin of that place and to the dugs. *Q.* the double *Scapularis* distributed into the hollow part of the shoulderblade and the neighbour muscles: so also betwixt *P.* and *R.* sometimes small veins do reach unto the glandules that are in the arm-holes. *R.* *Thoracica inferior* running downward along the sides of the chest, and especially distributed into the muscle of the arm called *Latissimus*. *S.* the inner Jugular vein which entreth into the Scull after it hath bestowed some furcles upon the rough artery. *T.* the externall Jugular vein. *V.* the division of this vein under the root of the ear *X.* a branch of the externall Jugular which goeth into the inside of the mouth, and is diversly divided into the parts therein contained. *Y.* the exterior branch distributed near the *Fauces* into the muscles of the chops and the hole skin of the head. *Z.* a portion of the branch. *y.* reaching unto the face. *a. a.* the vein of the forehead. *a.* a portion of it creeping through the temples. *e. ** a propagation that goeth unto the skin of the Nowl or *Occiput*. *a. a.* the vein called *Cephalica*, or the externall vein of the arm which others call *Humeraria*. *b.* *Muscula superior*, a propagation of the *Cephalica* vein which goeth unto the backward muscles of the neck. Betwixt *b.* and *d.* on the backside issueth a branch from the *Cephalica* which passeth unto the outside of the blade, and a portion thereof runneth betwixt the flesh and the skin. *d. d.* a vein from the *Cephalica* which attaineth unto the top of the shoulder, and is consumed into the muscle that elevateth or lifteth up the arm, and into his skin. *e. e.* a small vein from the *Cephalica* dispersed through the skin and the muscles of the arm. *f.* the division of the *Cephalica* into three parts. *g.* the first branch runneth deep unto the muscles which arise out of the externall protuberation of the arm. *h.* the second branch which goeth to make the *median* vein. *i. i.* the third branch running obliquely above the wand and the outside of the arm. *k.* from this branch certain circles are divided into the skin, the chief whereof is marked with *k.* *l.* the third branch at the wrist which is joyned at *l.* with the branch of the *Basilica* marked with *x. m.* the *Basilica* which on the right hand is called *Hepatica*, on the left hand *Lienaris*. *n. o.* a branch of the *Basilica* going to the heads of the muscles of the cubit at *n.* and to the muscles themselves at *o. p.* a notable branch of the *Basilica* running obliquely, and bestowing furcles upon the muscles that issue from the externall protuberation. This branch descendeth together with the fourth nerve. *q.* division of the *Basilica* into two branches and that is noted with *q.* is ever accompanied with an artery. *f.* a branch of this vein bestowed upon the skin of the arm. *t.* a branch of the *Basilica* which together with the branch of the *Cephalica* marked with *b.* makes the *mediana* or middle vein marked with *a. u.* a branch of the *Basilica* going to the inner head of the arm; *xx.* a branch issuing out of the former that creepeth along unto the wrist and toward the little finger conjoyning it self with a branch of the *Cephalica*. *y.* A vein running out unto the skin at the outside of the cubit. Upper *z.* a propagation issuing out of a branch of the *Basilica* marked with *t.* lower *z.* a branch of the *Basilica*. *x.* going to the inside of the Arm. *a.* the *Median* or common vein. *β.* the partition of the Median vein above the wrist: This division should have been made above *z.* the Externall branch of the partition which goeth to the outside of the head. *δ.* from which issueth a small branch to the inside. *ε.* the internall branch under *ε.* which toward the middle and the ring finger is especially disposed. *ζ.* the vein of the thumb dispersed into the mountenet or hillock, which is conjoyned with the branch noted with *δ.* *ζ.* the trunk of the hollow vein from which issue branches unto the parts seated under the liver. *η.* the fatty vein called *Adiposa sinistra*, which goeth unto the fat of the kidneys. *θ.* the two Emulgents which lead wheyey blood unto the kidneys. *λ.* the two spermaticall veins leading the matter of the seed unto the testicles. *V.* the beginning of the bodden vessell called *vas varicosam*. *ϕ.* the veins of the loins called *Lumbares*, which are sent in the knots or knees to the rackbones, to the marrow of the back, to the muscles that lie upon the loins, and to the *Peritonæum*. *σ.* the bifurcation of the hollow vein into the Iliack branches, which bifurcation is not unlike. *λ.* *Muscula superior*, a transverse branch going to the muscles of the *Abdomen*, and to the *Peritonæum*. *π.* the division of the left Iliack vein, into an inner branch at *π.* and an utter at *ρ.* *Muscula media* the utter propagation of the branch *ρ.* distributed through the muscles of the *coxa* and the skin of the buttocks, *υ.* an inner propagation of the same branch.

branch ρ which goeth unto the holes of the holy bone. σ the vein called *Sacra*, which goeth to the upper holes of the holy bone. χ ψ the vein *Hypogastrica* distributed to the bladder, to the muscles of the fundament, and the neck of the womb. ϕ a vein arising from the utter branch marked with σ , which is joyned with some branches of the internall vein, near the holes or perforations of the share-bone. 3 1. a vein which when it hath passed the share-bone distributeth one branch into the cup of the *coxendix* and to the muscles of that place. κ , another small branch which runneth under the skin at the inside of the thigh. λ the congress or meeting of the foresaid vein, with a branch marked with char. 2. and distributed into the leg. 1, the *Epigastrick* vein, a propagation of the utter branch σ , perforating the *Peritonæum*, whereto as also the muscles of the *Abdomen*, and the skin it offereth branches, the chief branch of this vein is joyned with the descending mammary above the navill at *M*. Δ *Pudenda* an inner propagation of the branch. ϵ running overthwart unto the privities. Θ *Saphæna* or the ancle vein or the inner branch of the crurall trunk, which creepeth through the inside of the leg under the skin unto the tops of the toes. Λ the first interior propagation of the *Saphæna* offered to the groin. Ξ , the utter propagation thereof divided to the foreside or outside of the thigh. Π , the second propagation of the *Saphæna* going to the first muscle of the leg. Σ , the third propagation of the *Saphæna* going to the skin of the whirle-bone, and unto the hand. ϕ the fourth propagation of the *Saphæna* dispersing his muscles forward and backward. ψ branches from this unto the foreside of the inward ankle, to the upper part of the foot, and to all the toes. ω , *Ischias minor*, called also *Muscula interior* the utter branch of the crurall trunk divided into the muscles of the *coxendix*, and to the skin of that place. 1, 2, and this also may be called *muscula*. 3, the exterior and lesser which passeth into some muscles of the leg. 2, the interior greater and deeper unto the muscles of the thigh. 3, 4, the vein called *Poplitea*, made of two crurall veins divided under the knee. 5, From this a surcle is reached upward unto the skin of the thigh. 6, but the greater part runs by the bent of the knee under the skin as far as the heel. 7, also to the skin of the outward ankle. 8, the vein called *Suralis* or calf vein, because it runneth unto the muscles that make the calf of the leg. 9, The division of the *Surall* vein into an exterior trunk 9, and an interior 14. 10, 11, the division of the exterior trunk under the knee into an externall branch, which along the brace attaineth unto the muscles of the foot. 11, and an internall. 12, 13, 12, 13, which descending along the outside of the leg to the upper part of the foot is cloven into divers branches, and in the back of the foot mixeth it self with *Poplitea*, or the ham vein. 20. 14. the interior branch of the *Surall* vein which runneth into the backside of the leg. 15, a branch hereof descending to the inside of the heel and the great toe, and is divided into divers surcles. 17, *Ischias major* issuing out of the internall trunk at 14, and running through the muscles of the calf. 18, a propagation hereof derived unto the upper part of the foot, and affording two surcles to every toe. 19, the remainder of the inner trunk. 14. behind the inner ankle, approacheth to the bottom of the foot and is consumed into all the toes. 20, the commixion of the vein *Poplitea* with the small or calf-branch at 13.

Where the externall jugular vein may be fitly opened in inflammations of the parts of the mouth.

Venæ cæcæ

Vena pupis

But when it arrives to the basis of the lower part of the head, it is divided into more branches, one whereof is carried to the muscles of the bone *Hyois*, the *Larinx*, the tongue and the lower part of the tongue (in which place it is commonly opened in the squinances, and other inflammations of the mouth) and to the coat of the nose. Another is carried to the *Dura mater*, passing on both sides through a hole situate under the bone *mastoides*, and besides, ascending to the bone of the back part of the skull, it comes obliquely to the upper part of the suture *lambdoides*, where these branches meeting together, pass into the reduplication of the *Dura mater*, dividing the fore-part of the brain, that so joined and united, they may make the *torcular*; the third ascendent is distributed upon the back-part and basis of the lower jaw, to the lips, the sides of the nose, and the muscles thereof; and in like manner to the greater corner of the eyes, to the fore-head and other parts of the face, and at length by meeting together of many branches, it makes in the forehead the vein which is called *vena recta* or *vena frontis*, that is, the forehead vein. The fourth ascending by the glandules behind the ears, after it hath sent forth many branches to them, is divided into two others, one whereof passing before, and the other behind the ear, are at length spent in the skin of the head. The fifth and last wandring over all the lower part of the head, going to the back part thereof, makes the *vena pupis*, which extended the length of the head by the sagittal suture, at length goeth so far, that it meets with the *vena frontis*, which meeting is the cause, that a vein opened in the forehead, is good in griefs of the hinder part of the head, and so on the contrary. But we must observe that in the *Cranium* of some, the *vena pupis* by one or more manifest passages sends some portion thereof to the inner part of head, so that the *vena pupis* being opened may make revulsion of the matter which causeth the internall pains of the head.

CHAP. XIII.

The distribution of the Nerves, or sinews of the sixth conjugation.

Because the distribution of the arteries cannot be well shewed, unless we violate those nerves which are carryed over the Chest, therefore before we shew the distribution of the arteries, we will as briefly as we can, prosecute the distribution of these nerves.

Now the sixth conjugation brings forth three pair of nerves; for, passing out of the skull; as it comes down to the Chest, it by the way sends forth some branches to certain muscles of the neck, and to the three ascending muscles of the *Larinx* on each side of the *Sternum* and upon the clavicles. Then the remainder descending into the Chest, is divided on each side into these three pair. The first pair makes the *Ramus costalis*. The second, the *Ramus recurrens*. The third pair, the *Ramus stomachicus*. The *Ramus costalis*, or costall branch is so called, because descending by the roots of the ribs, even to the holy bone, and joining themselves to these which proceed from each of the *Vertebra's* of the spine, they are carryed to all the naturall parts.

The *Recurrens*, or recurrent is also called, because as it were starting up from the chest, it runs upward again, but these two Recurrent nerves do not run back from the same place; but the right from below the artery, called by some the axillary, by others Subclavian, and the left from beneath the great artery, descending to the naturall parts. But each of them on each side ascending along by the weazon, even to the *Larinx*, and then they insinuate themselves by the wings of *Cartilago scutiformis*, and *Thyroides* into the proper muscles, which open and shut the *Larinx*.

By how much the nerves are nearer the originall, to wit, the brain, or spinall marrow; they are by so much the softer. On the contrary, by how much they are further absent from their originall, they are so much the harder and stronger, which is the reason that Nature would have these recurrent nerves to run back again upwards, that so they might be the stronger to perform the motions of the muscles of the *Larinx*. But the *Stomachicus* or stomach-branch is so called, because it descends to the stomach or ventricle. For this branch descending on both sides by the sides of the gullet, sends many branches from it into the inner substance of the lungs, into the coat thereof, into the *Pericardium* and heart; and then coming into the upper orifice of the stomach, it is spent in many branches, which folded after divers manners and wayes, chiefly makes that mouth or stomach, which is the seat of the Animall appetite (as they term it) and hunger, and the judger of things convenient or hurtfull for the stomach. But from thence they are diversly disseminated over all the body of the ventricle.

Moreover the same branch sends forth some small branches to the liver and bladder of the gall, giving each part by the way, so much sense as should be sufficiently necessary for it. Here you must note, the stomach branch descends on each side one, knit to the gullet, and by the way they divide themselves into two branches, each of which goes to the opposite side, that it may there join it self to the nerve of that side. To which purpose the right is carried above the gullet, the left below it, so that these two stomatick become four, and again these four presently become two.

Three pair of nerves of the sixth conjugation.

Ramus Costalis

Recurrens.

An anatomical Axiome.

Why nature would have the vocall nerves recurrent.
Ramus stomachicus

CHAP. XV.

The Division of the Arteries.

The Artery arising forth of the left ventricle of the heart, is presently (the two Coronall Arteries being first spred over the substance of the heart) divided into two unequal branches. The greater whereof descends to the lower parts, being distributed, as we formerly mentioned in the third book, and 22. Chapter. The lesser ascending to the upper parts, is again divided into two other unequal branches, the lesser of which ascending towards the left side, sends forth no artery from it, untill it arrive at the rib of the Chest, where it produces the subclavian artery, which is distributed after the manner following.

First, it produces the intercostall, and by it imparts life to the three intercostall muscles of the four upper ribs, and to the neighbouring places.

Secondly, it brings forth the Mammillary branch, which is distributed as the Mammillary vein is.

Thirdly, the *Cervicalis*, which ascends along the neck by the transverse productions to the *Dura mater*, being distributed as the *Vena Cervicalis* is.

Fourthly, passing out of the Chest, from the back part of the Chest, it sends forth the *musculosa*, whereby it gives life to the hind muscles of the neck, even to the back part of the head.

Fifthly,

The left branch of the ascending artery is less then the right. The distribution of the left subclavian artery into the;

1
Intercostalis.

2
Mammaria.

3
Cervicalis.

4
Musculosa.

5
Humeraria du-
plex.

6
Thoracica du-
plex.
The distributi-
on of the right
subclavian
artery.

The Carotides,
or sleepey arte-
ries.

Their division.
The distributi-
on of the inter-
nall branch of
the sleepey
arteries.

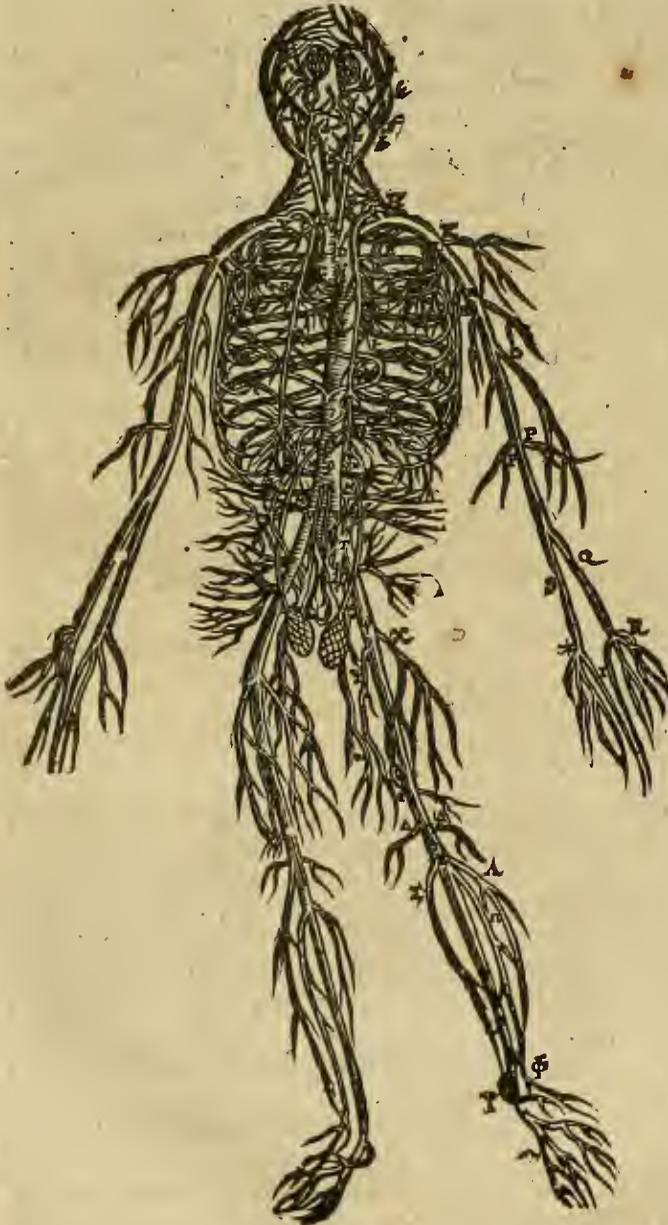
To what parts
the extremall
branch of the
sleepey artery
arrives.

Fiftly, having wholly left the Chest, it sends forth the two *Humeraria*, or shoulder arteries, the one whereof goes to the muscles of the hollow part of the shoulder blade, the other to the joynt of the arm and the muscles situate there, and the gibbous part of the shoulder blade.

Sixthly and lastly, it produces the *Thoracica*, which also is twofold, for the one goes to the fore muscles of the Chest, the other to the *Latissimus*, as we said of the vein, the remnant of it makes the *Axillaris* of that side.

The other greater branch likewise ascending by the right side, even to the first rib of the Chest, makes also the subclavian of that side, which besides those divisions it makes on this side, like those of the left side, hath also another which makes the right and left *Carotides* or sleepey arteries; which ascending undivided with a nerve of the sixth conjugation and the internall jugular vein, by the sides of the *Aspera Arteria* or windpipe, when they come to the *Pharinx*, they are divided on each side into two branches, the one internall, the other externall. The internall and greater is sent to the *Pharinx*, *Larinx*, and tongue; then entring into the head by the long hole and the back part of the upper jaw, it sends many branches to the nose, eyes, the inside of the temporal muscles and to the *Crassa meninx*, or *Dura mater*: the remainder of this branch going by the side holes of the same, that it might there make the *Plexus admirabilis* as we see. And then it is spent upon the basis of the brain abundantly diffused over the *tenuis meninx* or *Pia mater*, & then the membrane or *Plexus Choroides*. The external or lesser branch of the sleepey arteries goes to the cheeks, the temples, & behind the ears; lastly, it sends a branch into the long muscle of the neck, with which the internal Jugular vein insinuates it self into the *Dura mater*, entring by the hole of the nerves of the sixth conjugation.

The Figure of the Arteries.



- A. The orifice of the great Artery, or the beginning thereof, where it issueth out of the heart.
- B. *Coronaria*, so called, because like a crown it compasseth the basis of the heart.
- C. The division of the great artery into two trunks, V. i.
- D. The left subclavian climbing obliquely upward unto the ribs.
- E. the upper intercostall artery, or a branch which bestoweth four propagations unto the distances of the lower rib.
- F. The neck artery which through the transverse processes of the rackbones of the neck, attaineth to the scull, bestowing furcles unto the marrow and his neighbour muscles.
- G. The left Mammary artery running under the brest-bone, and to the navill. It distributeth furcles to the *Mediastinum*, the muscles of the brest, and of the *Abdomen*.
- H. *Muscula*, or a branch attaining to the backward muscles of the neck.
- I. The *Scapular* arteries which go unto the hollownes of the blade, and of the muscles that lie thereon.
- K. *Humeraria* which climbeth over the top of the shoulder
- L. *Thoracica superior*, sprinkled unto the forward muscles of the Chest. M. *Thoracica inferior*, which passing along the sides
- of the Chest, attaineth to the *broad* muscles of the arm. N. the axillarie artery running out into the arm and affording branches unto the muscles thereof. O. A branch reaching to

to the outside of the cubit lying deep. PP. Branches to the joint of the cubit with the arm. Q. The upper branch of the artery running along the *Radius* and offering furcles to the thumb, the fore-finger, and the middle finger. k. A furcle creeping unto the outside of the hand, and led betwixt the first bone of the thumb and that of the after-wrist, supporteth the fore-finger where we use to feel the pulse. S. the lower branch of the artery running along the *Vlna* and communicating furcles to the little finger, the ring finger, and the middle finger. * A little branch unto the muscles about the little finger. T. the distribution of the upper and lower branches into the hand and the fingers. V. the trunk of the great artery ascending to the *Jugulum*, and the division thereof in that place into X, Y, Z. X. the left *Carotis* or sleepey artery. Y. *Subclavian dextra* is divided into branches, as the right is divided. Z. *Carotis dextra*, called also *Apoplectica* and *Dithargica*. a. the division of the left *Carotis* in the chops. b. the exterior branch of that division going into the face, the temples, and behind the ears. c. the inner branch going to the throttle, the chops, and the tongue. d. the division hereof at the basis of the skull, into two branches which enter the *sinus* of the *Dura mater*. e. a propagation of the branch b. unto the muscles of the face. f. the distribution of the branch b. under the root of the ear. g. the fore-branch hereof creeping up the temples. h. the back branch running on the backside of the ear under the skin. i. the trunk of the great artery, descending unto the spondells of the back. kkk. the lower *Intercostal* arteries which go unto the distances of the eight lower ribs, from which are offered furcles to the marrow, and to the muscles that grow to the back and to the Chest. l. the artery of the midriffe called *Phronica* or *Diaphragmatica*. ζ, *Mesenterica Superior*, but you must note that above ζ, the trunk of the *Celiacall* artery is taken away, lest the multitude of letters in so small a Table should breed obscurity. η, θ, the right and left *emulgents* running from the *Aorta* or great arterie unto the kidneys. ι, κκ, the spermaticall arteries on either side going to the testicles. λ, the lower *Mesentericall* artery on the left below μ, running especially into the Colick gut on that side. μμ, the arteries called *Lumbares*, which run overthwart and like knees, affording furcles to the muscles that grow to the loins, and to the *Peritoneum*. μ. the lower; *Muscula superior* running into the sides of the *Abdomen* and the muscles. νν. the bifurcation of the great artery into two *iliack* trunks, and at the sides, but somewhat inward are branches which make those that are called *Sacra*. T. the division of the left *Iliack* trunk into an inner branch at ξ and an utter at φ. ξ. the inner *Iliack* branch. ο, *Muscula inferior*, the utter propagation of the inner branch going unto the muscles which cover the branch bone and the *Coxendix*. π. *Hypogastrica*, the inner propagation of the inner branch going to the bladder, the yard and the neck of the womb. ς. the umbilicall artery. ς. the remainder of the branch ξ, assuming an addition from the utter branch near φ, and so falling through the hole of the share-bone into the leg. τ. *Epigastrica*, it ascendeth upward unto the right muscle of the *Abdomen*, and about the navell is joyned with the mammary artery. υ. *Pudenda*, it creepeth overthwart the share-bone. φ. the *Crurall* trunk without the *Peritoneum*. χ. *Muscula cruralis exterior*, going into the fore muscles of the thigh. ψ. *Muscula cruralis interior*, going unto the muscles of the inside of the thigh. ω. The conjunction of this artery with the branches. ρ. *Poplitea*, going to the muscles on the backside of the thigh. ΔΔ. which communicateth small branches to the joint of the knee, and the muscles that make the calfe of the leg. Θ. the division of the *Crurall* artery under the ham into three branches. Α. *Tibiaa exterior*, it accompanieth the brace-bone, and is consumed into the muscles. Ζ. the chief part of the *crurall* artery. Ζ. the upper and backer *Tibiaa*. Πφ. the lower and backer *Tibiaa* running unto the upper side of the foot at φ. ψ. a propagation of the *crurall* artery going to the inner and upper side of the foot, and sprinkling a branch unto the ankle. Ω. a propagation unto the lower part of the foot which affordeth furcles to each toe.

But we must note that there be more veins in a mans body, than arteries, and besides that the veins are far thicker. For there is no need for preserving the native heat in the parts themselves, either of so many, or so large instruments of that kind. Therefore you may often find veins without arteries, but never arteries without veins.

But we understand that an artery is a companion to a vein, not only when it touches it, or adheres to it by common membranes, as usually it happens; but also when it is appointed together with the vein for the use of the same part.

C H A P. XVI.

of the Thymus.

he *Thymus* is a glandule, of a soft, rare, and spongiouse substance, of large bignesse, situate in the furthest and highest part of the Chest, amongst the divisions of the subclavian or Jugular veins and arteries, as yet contained in the Chest, for this use; that it might serve these vessels for a defence against the bony hardnesse of the Chest, and besides, that as it were by this prop or stay, the distributions of these vessels

What the *Thymus* is.

The use.

The magni-
tude.

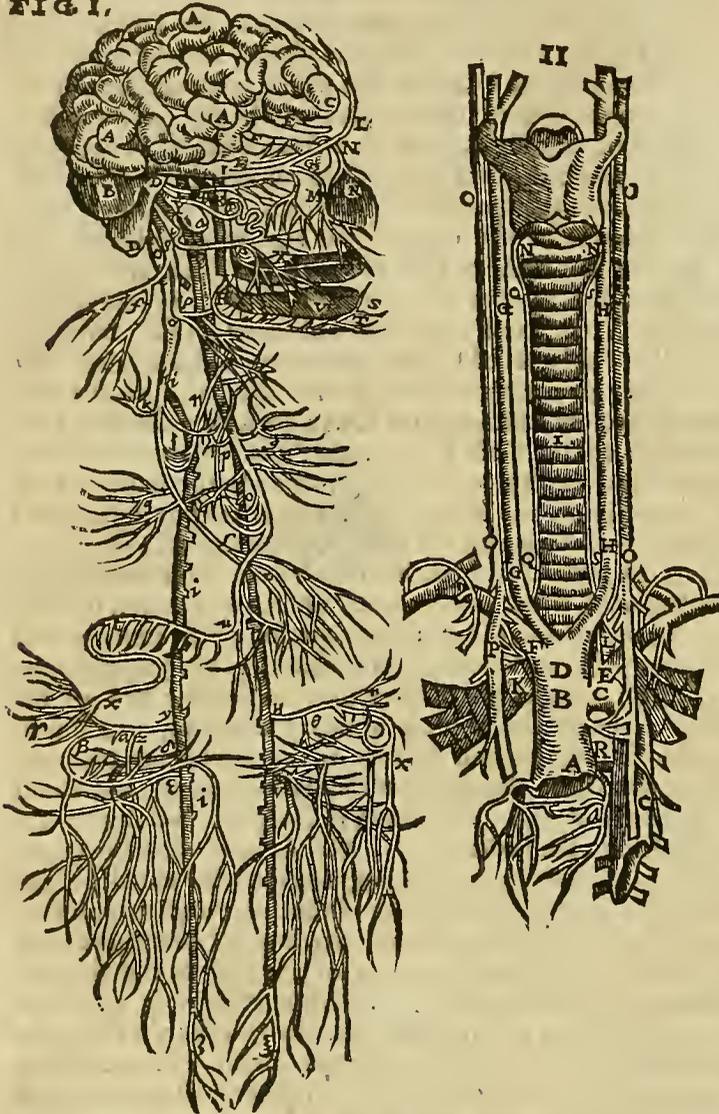
vessels might become the stronger ; for so we see that nature hath provided for others, especially such as are the more noble and worthy. This glandule appears very large in beasts and young men, but in such as have attained to full growth it is much less, and scarce to be seen.

C H A P. XV II.

Of the Aspera Arteria, the rough Artery or Weazon.

The Figure of the Aspera Arteria or Weazon.

FIG. I.



- A. The orifice of the great artery cut from the heart.
 aa. the coronall arteries of the heart.
 B. C. D. the division of the great artery in two trunks, the descending C. the ascending D.
 E. the left axillarie, or subclavian artery.
 F. the right axillarie or subclavian artery.
 G. the right *Carotis* or sleepy artery.
 H. the left *Carotis*.
 I. the trunk of the rough artery or weazon.
 K. L. The division of the rough artery into two branches, of which the right goes into the right, and left into the left side of the lungs; which branches are again subdivided into many other.
 M. the head of the Rough Artery called the *Larinx* or *Throttle*.
 N. N. Certain Glandules or Kernells at the root of it.
 OO. the right and left nerves of the sixth and seventh conjugation. P. A revolution of small branches of the right nerve to the right *Axillary Artery*. QQ. The right *Recurrent Nerve*.

R. A revolution of small branches of the left Nerve unto the descending trunk of the great Artery. SS. The left recurrent Nerve.

The substance.



The *Aspera Arteria* or Weazon seeing it is the instrument of voice and respiration, is of a gristly, ligamentous, and wholly various substance. For if it had been one rough, and continued body with the *Larinx* or *throttle*, it could not be neither dilated, nor compressed; opened, nor shut, neither could it order the voice according to our desire.

Composure.

It is composed of veins from the internall Jugular, of arteries arising from the *Carotides*, and of nerves proceeding from the *Recurrent* branch, of a double membrane, of which the externall comes from the *Peritoneum*; the internall, which is the stronger and woven with right fibers, from the inner coat of the mouth, the which is common with the inner coat of the *oesophagus* or gullet. And also it consists of round gristles, yet not drawn into a perfect circle, composed in manner of a channell, and mutually joyned together in order, by the ligaments that proceed from their sides and ends.

Why the back
part of the
Weazon is li-
gamentous,

These same ligaments perfect the remnant of the circle of this *Aspera Arteria*, on that part next the gullet; which is thought to be done to this end; that that softness of a ligament, might then give place, when we swallow harder and greater gobbets of meat. Of the two sorts of ligaments which are annexed to the gristles of the weazon, some tie and fasten together the rings or circles, which give means both to it, and these circles

to be drawn in length; other some bring these gristles into a perfect circle, which also yeeld them means of dilatation. These ligaments cover the inner superficies, but the gristles are placed without, to resist the incurſion of externall injuries. But we must note, that by this communion of the inner coats of the weazon and gullet, we reap this benefit in the commodiouness of the action, that one of these parts being depressed, the other is lifted up, like a rope running in a wheel or pully. For thus whilst the gullet is depressed to swallow any thing, the weazon is lifted up; and on the contrary when the stomach rises up in vomiting, the weazon is depressed. It is only one, and that seated between the *Larinx* (from which it takes its beginning) and the lungs in which it ends; first dividing it self into two large branches, the right and the left, and besides each of these entering into the substance of the lungs, is again divided into two others; to each of the Lobes one; and to conclude, these be subdivided into infinite others, through the substance of the Lobes.

All these branches are gristley even to the ends. They are situate between the ends of the *Artera venosa*, and the *Vena arteriosa*, that the entrance of the air into the heart by the *arteria venosa* might be speedier, as also the passage out of the vapour, by the *vena arteriosa*. Thus it hath connexion with these in the ends, or utmost parts thereof, but by the other parts compassing it, with the members from whence it takes them. The temperament thereof is cold and dry. The action is to carry the air to, and vapours from the lungs; that by dilating, but this by pressing the gristles together.

Why the fore-part is gristley.

The number and size. The division of the weazon through the Lobes of the Lungs.

The temper and action.

CHAP. XVIII.

Of the Gullet.

The *Oesophagus*, or Gullet, which is the passage of the meat and drink, is of a middle substance between the flesh and sinews, because it consists of one nervous membrane and another fleshy. The nervous is placed the innermost, and is continued to the inner coat of the mouth even to the Lips, (whereby it comes to pass,) that the Lips tremble in diseases which are ready to be judged by a criticall vomiting, and to the inner part of the *Aspera Arteria*; it consists of right Fibers for the attraction of the meat, which we see is sometimes so quick and forcible in hungry people, that they have scarce time to chew it, before they find it, to be pluckt down, as it were with a hand. The fleshy Coat placed without is woven with transverse fibers, to hasten the going of the meat into the stomach, and for expulsion in vomiting and breaking of wind. These two coats are continued with the two coats of the stomach, and have the like site. Besides, the Gullet hath these parts composing it, as a vein from the Gate and Hollow ascendent vein; a nerve from the sixth conjugation, an Artery from that which creeps alongst the bottome of the stomach with the *vena Gastrica*, or else from the Arteries ascending the hollow part thereof; but also besides all these vessels it may have a third coat from the membrane investing the Ribs, or *Pleura*. The magnitude of the Gullet is large enough, yet some be bigger, some less, according to the variety of bodies. The figure of it is round, that so it might be more large to swallow meat, and less subject to offence. It is placed between the back bone and weazon from the roots of the tongue even to the stomach. But as it descends alongst the back bone, when it comes to the fourth *Vertebra* of the Chest, it turns to the right side, to give way to the great Artery *Aorta* and the descendent Artery, then it turns to the left side to the stomach, or mouth of the ventricle. Nature hath fastened it to the *Diaphragma* with strong membranous ties, lest that if it had lain upon the Artery it should have hindred the passage of the vitall spirit to the lower parts. It is only one and that tyed to the forementioned parts, both by its vessels and membranes. It is of temper rather cold than hot, as all those parts, which are more nervous than fleshy, are. The Action thereof is to draw and carry down the meat, and to cast forth such things by vomit as trouble the stomach. Here must note, that whilst we swallow down, the Gullet is drawn downwards, and the weazon upwards, which is the cause that we cannot sup and blow, swallow and breath together at the same instant; which we must think to happen by Gods singular providence; to whose name be glory for everlasting, Amen.

The substance.

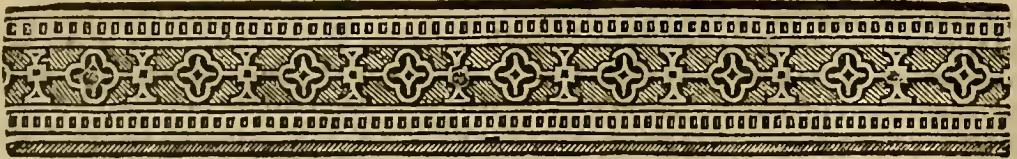
Attractive force thereof.

The composition.

The magnitude. The Figure; Site.

Temper and action. Why we cannot sup and blow at one time.

The End of the fourth Book.



The Fifth Book,

Of the Animall parts contained in the HEAD.

C H A P. I.

A Generall description of the Head.



Having hitherto declared two generall parts of mans body, that is, the Naturall and Vital, it is now fit to betake our selves to the last, that is, the Animall, beginning with the Head.

Wherefore we will first define the head, then divide it into its parts; thirdly, describe each of these parts; fourthly, demonstrate them after the order they offer themselves to our sight in dissection.

The head therefore is the seat of the senses, the Palace and habitation of reason and wisdom, from whence as from a fountain infinite actions and commodities arise. It is seated above the rest of the

body, that the Animall spirit from thence, as from a tower, may govern and moderate the whole body, and perform all actions according to the præscript of nature. By the head we understand all that which is contained from the Crown of the head to the first *vertebra* of the neck.

The best figure of the head is round, lightly flatted on each side, *extuberating* something to the fore and hind part thereof. For from hence is taken an argument of the goodness of the senses; on the contrary, those which are exactly round, or acuminated, and sharp towards the top, are not thought good. The head is divided into the face, forehead, temples, the forepart, the crown and hind part.

By the face we understand, whatsoever is contained between the Eye-brows and the lower part of the chin. By the forehead, all the space from the eye-brows even to the Coronall Suture. By the temples, whatsoever is hollowed from the lesser corner of the eye, even to the ears. By the forepart of the head, whatsoever runs in length from the top of the forehead, or the Coronall Suture, even to the Suture *Lambdoides*, and on each side to the *Ossa petrosa*, the stony bones, or scaly Sutures. By the Crown we signifie a certain point exquisitely in the midst of the Sagittall Suture, which is sufficiently known. By the *Occiput* or hind part of the head, that which is terminated by the Suture *lambdoides*, and the first *vertebra* of the neck.

Of all these parts there be some simple, some compound, besides some are containing, some contained. Of the containing some are common to all the parts of the head, as the skin, the fleshy pannicle and *pericranium*; others are proper to certain parts, as the fleshy pannicle to the neck, face, forehead, and skin covering the *Cranium*, the common coat of the muscles to the fat and face; the skull and both the *Meninges* to the brain.

The parts contained are the substance of the brain, the four ventricles, and the bodies contained in them, the nerves, the mamillary processes; the *Plexus Choroides* or *Rete Admirabile*, the *Glandula Basilaris*, and others of which we will speak hereafter.

We must now speak of the containing parts beginning with the skin; for the order of teaching requires that we take our *Exordium* from the more simple, but first we will say something of the hair.

The hair is nothing else than an excrement generated and formed of the more gross and terrene portion of the superfluities of the third concoction, which could not be wasted by insensible transpiration. The benefit of it is, that consuming the gross and fuliginous or footy excrements of the brain it becomes a cover and ornament for the head.

This hair of the head and eye-browes have their originall from the first conformation of the infant in the womb, the rest of the hairs of the body arise and grow forth as the body grows and becomes more dry, of which sort are the hairs which cover the chin, armpoles, groins, and other parts of our bodies.

What the head is.
Why seated in the highest place.

The figure.

The division thereof.

The containing parts of the head.

The parts contained.

What the hair is.
The use thereof.

CHAP. II.

Of the musculous skin of the Head, (commonly called the hairy scalp) and of the Pericranium.

THe skin which covers the skull, and is covered with the hair, is far more fleshy, thick, hard and dry than any other part of the body, especially which wants hair. The skin hath almost the like condition of quality as those parts have, which it doth simply cover, but is as it were lost in them, or grown into one with them, as in the lips and forehead with the fleshy pannicle, wherefore it is there called musculous; in other places it adheres to the gristles, as on the sides of the nostrills and corners of the Eyes, whereupon it is there called gristely.

It hath connexion with the *Pericranium*, because joyned to it, it receives nerves from the first and second *Vertebra* of the neck, and from the third conjugation of the brain which are disseminated through all its substance, whereby it comes to pass, that the wounds, contusions, and imposthumes, that happen in or upon this skin, are not to be neglected.

The * *Pericranium*, (but I suppose it should be the *Periosteum*) is a most thin membrane, which next and immediately covers all the bones of the body, and this on the head is called by a peculiar name the *Pericranium* by reason of the excellency of the *Cranium* or skull; in other bones it is termed the *Periosteum*: And as the *Pericranium* takes its originall from the *Crassa meninx* propagating it self by certain strings or threds sent forth by the futures and holes of the skull, so all other membranes of the body have their originall either from this *Pericranium*, or *Crassa meninx*, sending forth their productions, as well by the holes or passages of the head, as by these of the spinall marrow or back bone it self, even to the Holy bone.

Of which this is an argument, for in what part soever of the body a membrane is hurt, presently the hurt or sense thereof comes to the *Crassa meninx*. For so those who have but their little Toe hurt when they sneeze, or cough, perceive an increase of their pain, by the passage thereof to the brain.

The use of this *Pericranium* is to cover the skull; and to give notice of things hurtfull, by the power of the quick sense which it is endued withall, and the *Periosteum* doth the like in other bones. Besides it sustaines and fastens by the futures the *Crassa meninx* to the skull; lest it should fall by reason of its weight upon the *Pia mater*, and so hurt it, and hinder the pulsation of the brain and arteries that are plenteously spread through both the *Meninges*. Wherefore the *Pericranium* hath most strait connexion with the *Crassa meninx*, because it takes the originall from thence.

We must think the same of the other membranes of the body, which thing is very notable in the solution of the continuity of the membranes.

CHAP. III.

Of the Sutures.

THe Sutures do sew or fasten together the bones of the skull; these be five in number. Three are true and legitimate, two false and spurious. The Coronall, the first of the true Sutures, is seated in the forepart of the head, descending downwards overthwart the forepart of the head to the midst of the temples; it is so called, because *Corolle*, that is, wreaths, crowns, or garlands, are set upon that place.

The second is called the *Sagittalis*, or right future, as that which running through the crown divides the head into two equall parts, as with a straight line, running the length of it from the Coronall to the *Lambdoides* or hind Suture.

But this third Suture *Lambdoides*, is so called because it represents this Capitall greek letter Lambda Λ . You must understand this description of the Sutures, not as alwayes but as for the greater part to be thus. For there be some skulls that want the foremost Suture, or other some the hind, and sometimes such as have none of the true Sutures, but only the false and spurious. But also you shall sometimes find the *Sagittal* to run to the nose.

And oft times there be three or four Sutures in the back part of the head, so that indeed the number of the Sutures is not certain. Which also we find observed by *Cornelius Celsus*; where he writes, that *Hippocrates* was deceived by the Sutures by chance, for that he conjectured that the bones of the back part of the head, were broken; because his Probe thrust to the roughnes of the second suture *Lambdoides*, staid as at a cleft made in the bone by a stroak.

The other two are called the false, stony and scaly Sutures, by reason they are made by a scaly conjunction of the bones, but not by a toothed saw or comb-like connexion. But if any ask, why the head consists not of one bone, that so it might be the stronger: I answer

What the hairy scalp is.

Its connexion * Our Author with *Fallopins* and *Laurentius* confounds the *pericranium* and *periosteum*; but *Vesalius*, *Baubin* and *Bartolinus* distinguish them making the *pericranium* thin and soft, and the *periosteum* most thin and nervous, and of most exquisite sense.

Why the wounds thereof must not be neglected.

The *Pericranium* and *periosteum* of the same nature.

Whence all the membranes proceed.

Why when any membranous part is hurt in any part of the body, the head is affected be consent.

The use of the *Pericranium*.

Their use and number.

Some skulls want Sutures.

Cels. lib. 8, cap. 49.

Why the skull
consists of di-
vers bones.

it is, that so it might be the safer both from internall and externall injuries. For the skull being as it were the tunnel of the chimney of this humane fabrick, to which all the smoky vapours of the whole body ascend, if it had been composed of one bone, these vapours should have had no passage forth.

In what bodies
and by what
means the *Vena*
pupis some-
times enters
into the parts
within the
skull.

Wherefore the grosser vapours pass away by the Sutures, but the more subtil by the pores of the skull; some have their Sutures very open, but others on the contrary very close.

Therefore nature hath otherwise compendiously provided for such as want Sutures; For it hath made one or two holes, some two fingers breadth from the *Lambdoides*, through which the *Vena pupis* enters into the skull, and they are of that largeness that you may put a points tag into them, that so the vapours may have free passage forth, otherwise there would be danger of death; thus nature hath been careful to provide for man against internall injuries; and in like manner against externall, for it hath made the head to consist of divers bones, that when one bone is broken the other may be safe, the violence of the stroke being stayed in the division of the bones.

In what men
one part of the
being head
stricken, the
opposite is
broken;

Whereby you may know, that if the skull chance to be broken in the opposite side to that which received the blow, that it happens either by reason of the defect of sutures, or else because they are imperfect, & too firmly closed; otherwise it is impossible such fractures should happen by reason of the separation of the bones, which breaks the violence of the blow that it can go no further.

Why we must
not apply a
Trepan to the
Sutures.

And certainly, as it is rare to find a skull without Sutures, so it is rare to find such kind of fractures. Therefore Chirurgeons must diligently observe the Sutures and site of them, lest they be deceived and take them for fractures, or unawares apply a Trepan to them, whence by breaking the veins, arteries and nervous fibers by which the internall parts communicate with the externall; there may ensue increase of pain, a violent defluxion of blood upon the *Crassa meninx*, and the falling thereof upon the brain, (the fibers being broken by which it stuck to the *Pericranium*) and so consequently a deadly interception of the pulsion of the Brain.

CHAP. IIII.

Of the Cranium, or Skull.

What the *Cra-*
nium or skull is.



The *Cranium*, or Skull covering the brain like an Helmet, is composed and consists of seven bones, of which some are more dense, thick and hard than other some.

Why the nowl
bone is harder
than the rest.
* My Author
means by the
Os Basilare in
this place the
wedg bone: but
some Anato-
mists make it a
Synonyma of
this *Os occipi-*
tis.

The first is the *Os occipitis*, or Nowl bone seated in the back part of the head, more hard and thick than the rest, because we want hands and eyes behind, where- by we may keep or save our selves from falling.

The forehead
bone, next to
the nowl bone
is harder than
the rest.

A Cavity to be
observed in the
forehead bone.

This bone is circumscribed, or bounded by the suture *Lambdoides*, and the * *Os basilare*. The eminencies and as it were heads of this bone are received into the first *Vertebra*; for upon this the head is turned forwards and backwards, by the force of fourteen muscles and strong ligaments, which firmly tye these heads of the Nowl bone in the cavities of this first *vertebra*.

The second bone of the skull is in the forepart, and is called the *Os coronale* or *Os frontis* the forehead bone, it hath the second place in strength and thickness. It is bounded by the Coronall suture; and the ends of the wedgbone: in this forehead bone there is often found a great cavity under the upper part of the eyebrows, filled with a glutinous, gross, viscid and white matter or substance, which is thought to help to elaborate the air for the sense of smelling.

Chirurgeons must take special notice of this cavity, because when the head chanches to be broken in that place, it may happen, that the fracture exceeds not the first table; wherefore being ignorant of this cavity, and moved with a false persuasion that they see the brain, they may think the bone wholly broken, and to press the *Meninges*, whereupon they will dilate the womb, and apply a Trepan and other instruments to lift up the second table of the bone, without any need at all, and with the manifest danger of the life of the patient.

Ossa parietalia
& *Bregmatis*.

The third and fourth bones of the skull are the *Ossa parietalia*, or *Bregmatis*, having the third place of density and thickness; although this density and thickness be different in divers places of them. For on the upper part of the head, or crown, (where that substance turns not to a bone in children untill they have all their teeth, so that it feels soft in touching, & through it you may feel the beating of the brain) these bones are very tender, so that oft times, they are no thicker than ones nail, that so the moist and vaporous excrements of the brain, shut up where the greater portion of the brain resides, may have a freer passage by the Brains *diastole* and *systole*. These two square bones are bounded above with the Sagittall suture, below with the scaly, on the forepart with the coronall, and on the hind part with the *Lambdoides*.

Ossa petrosa, or
the scaly bones.

The fifth and sixth bone of the skull are the two *Ossa petrosa* stony or scaly bones, which are

are next to the former in strength. They are bounded with the false or bastard Suture, and with part of the *Lambdoides*, and wedgbone.

The seventh is the *Os sphenoides*, *basilare*, or *Cuneiforme*, that is, the wedgbone. It is called *Basilare*, because it is (as it were) the basis of the head. To this the rest of the bones of the head are fitly fastned in their places. This bone is bounded on each side with the bones of the forehead, the stony bones, and bones of the Nosi and Palat. The figure represents a Bat, and its proccesses her wings.

There is besides these another bone at the basis of the forehead bone, into which the mamillary proccesses end, the Greeks call it *σφαιροειδης* the Latins *Cribrosum* and *Spongiosum*, the spongy bone, because it hath many holes in it not perforated in a direct passage, as in a sine, but winding and anfractuons, that the air should not by the force of attraction, presently leap or ascend into the brain, and affect it with its qualities, before it be elaborated by its lingring in the way. There are besides also, six other little bones, lying hid in the stony bones at the hole or auditory passage; on each side three, that is to say, the *Incus* or Anvill, the *Malleolus* or Hammer, and the *Stapes* or stirrop, because in their figure they represent these three things; the use of these we will declare hereafter.

But also in some skulls there are found some divisions of bones, as it were collected fragments, to the bigness almost of ones thumb, furnished and distinguished by their proper commissures, or sutures, which thing is very fit to be known to a Chirurgeon in the use of a Trepan.

Verily he may give a conjecture hereof, whilst he separates the *pericranium* from the skull, for the *pericranium* is with greater difficulty pluckt away from the sutures, because the *Crassa meninx* hath straiter connexion therewith by his nervous fibers sent forth in such places. The skulls in women are softer and thinner than in men, and in children more than in women, and in young men more than in men of a middle age. Also the *Æthiopians* or Blackmoors, as also all the people inhabiting to the South, have their skulls more hard and composed with fewer sutures.

Therefore as it is written by *Hippocrates*, such as have their Skulls the softer, the symptoms in fractures are more dangerous and to be feared in them. But the Skull by how much the softer it is, by so much it more easily and readily yeelds to the perforating Trepan. Moreover in some skulls, there be bunches standing out besides nature, made either round or cornered, which the Chirurgeon must observe for two causes; the first is for the better consideration of a blow or fracture. For in these bunches or knots, the solution of the continuity cannot be, if it seem to be stretched in length, but that the wound must penetrate to the inner parts. For in a round body there can be no long wound, but it must be deep, by the weapon forced the deeper, because as a round body touches a plain but only *in puncto* in a prick or point: so whatsoever falls only lightly or superficially upon it, only touches a point thereof. But on the contrary, a long wound must be upon a plain surface, which may be but only superficial.

Another cause is, because such bunches change the figure and site of the Sutures. And the Chirurgeon must note that the skull hath two tables, in the midst whereof the *Diploe* is; which is a spongy substance into which many veins and arteries, and a certain fleshiness are inserted, that the skull should not be so heavie, and that it might have within it self provision for the life thereof; and lastly that there might be freer passage out for the fuliginous vapors of the brain.

The upper table is thicker, denser, stronger and smoother than the lower. For this as it is the slenderer, so it is the more unequal, that it may give place to the internal veins and arteries, (which make a manifest impression into the second table on the inside thereof) from which branches enter into the skull by the holes which contain the eyes. Which thing fastens the *Crassa meninx* to the skull, and is therefore very worthy to be observed.

For in great contusions when no fracture or fissure appears in the skull by reason of the great concussion or shaking of the brain, these vessels are often broken, whence happens a flux of blood between the skull and membranes, and lastly death. But it is fit the Chirurgeon take good heed to the tender and soft substance of the *Diploe*, that when he comes to it, having passed the first table, he may carefully use his Trepan, lest by leaning too hard, it run in too violently, and hurt the membranes lying underneath it, whence convulsion and death would follow. To which danger I have found a remedy, by the happy invention of a Trepan, as I wil hereafter more at large declare in handling the wounds of the head.

Os sphenoides,
or the wedg-
bone.

Os Ethmoides,
or *cribrosum*.

The three
bones of the
auditory
passage.

By what means
a Chirurgeon
may conjecture
that there are
extraordinary
Sutures in
certain places
of the skull.

The skulls of
such as inhabit
the Southern
countreys, are
more hard and
dense.

We must
observe the
extuberancies
besides nature,
which are in
some skulls.

The site and
substance of
the *Diploe*.

There may be
a deadly rup-
ture of the
vessels of the
brain without
any fracture of
the skull.
Caution to be
had in the use
of the Trepan.

C H A P. V.

Of the Meninges, that is, the two membranes called
Dura Mater and Pia Mater.

Why the bone
Ethmoides is
perforated.



The *Crassa meninx* is one of the first and principall membranes of the body; it goes forth by the futures and the holes of the nerves that proceed out of the skull; and it passes forth by the bone *Ethmoides* perforated for that purpose, to carry smells to the brain, and purge it of excrementitious humors. This same *Crassa meninx* invests the inner coat of the Nose; also it passes forth of the great hole through which the spinall marrow passes, vested with this *Crassa meninx*, with all the nerves and membranes. For which cause if any membrane in the whole body be hurt, by reason of that continuation which it hath with the *Meninges*, it straight communicates the hurt to the head by consent.

The confi-
sience of the
Crassa meninx.
The use.

The *Crassa meninx* is thicker and harder than all other membranes in the body; whereupon it hath got the name of the *Dura mater*, besides also it begirts, produces, and defends the other membranes.

What the
Torcular is.

The use of it is to involve all the brain, and to keep it when it is dilated, that it be not hurt by the hardness of the skull. For the course of nature is such, that it always places some third thing of a middle nature, betwixt two contraries. Also the *Crassa meninx* yeelds another commodity, which is, that it carries the veins and arteries entering the skull for a long space. For they insinuate themselves into that part, where the duplicated or folded *Meninges* separate the brain from the *Cerebellum*, and so from thence they are led by the sides of the *Cerebellum*, untill they come (as it were) to the top thereof; where being united, they insinuate themselves into that other part of the *Crassa meninx*, where in like manner being duplicated and doubled, it parts the brain at the top into the right and left. These united veins run in a direct passage even to the forehead, after the manner of the Sagittall future; They have called this passage of the mutually infolded veins, the *Torcular* or *Press*, because the blood which nourishes the brain is pressed and drops from thence by the infinite mouths of these small veins. Therefore also here is another use of the *Crassa meninx*, to distinguish the brain by its duplication, being it thrusts it self deep into its body, into two parts, the fore and hind, and presently to separate the same into the right and left; that one part being hurt, the other may remain safe and sound, performing its duty to the creature, as we see in some that have the *Palsy*. *Columbus* observed that this *Meninx* was double, and verily I have found it true by my own sight.

One part of
the brain being
hurt the other
keeps the
creature alive.
The confi-
sience of the
Pia mater.

The other *Meninx* or membrane of the brain, called *Pia mater*, is most slender interchanged with divers veins and arteries, for its own and the brain's nourishment and life. This doth not only involve the brain, as the *Crassa meninx* doth, but also more deeply penetrates into the anfractuons passages thereof, that it may every where joyn and bind it to it self, not easily to be drawn from thence, by many small fibers whereby it descends even to the cavities of the ventricles thereof. Wherefore you must see it absolutely in the site as we have mentioned, and not pluck it away unless with the substance of the Brain.

The sense of
the *Meninges*.

These membranes when they are hurt or afflicted, cause grievous and most bitter torment and pain; wherefore I dare say, that these membranes are rather the authors of sense, than the brain it self, because in diseases of the Brain, as in the *Lethargy*, the party affected is troubled with little or no sense of pain.

C H A P. VI.

Of the Brain.

What the
brain is.

The quantity.

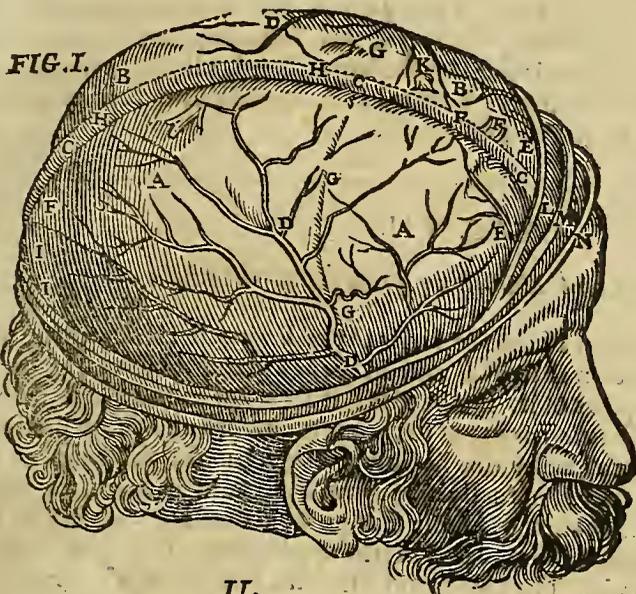
Temper.



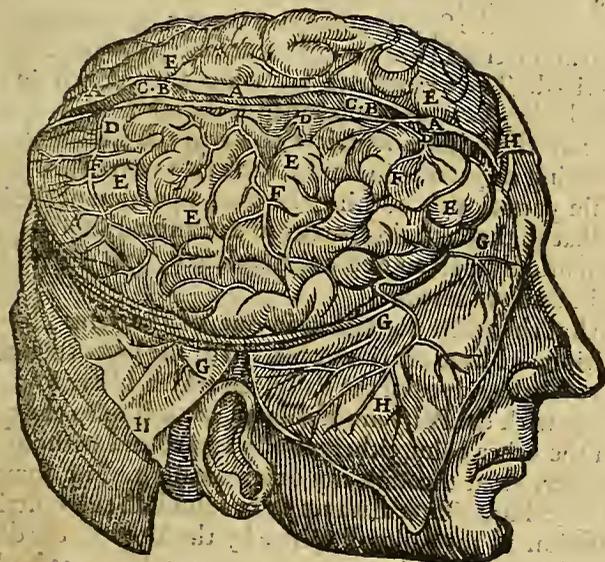
Now followeth the Brain, the beginning of the nerves and voluntary motion, the instrument of the first and principall faculty of the Soul, that is, the Animall and Rationall. Man hath this part in greater plenty than any other Creature, for it almost fills the whole skull. But if it should have filled it all, the Brain could not be moved, that is, dilated and contracted in the skull. It is of a cold and moist Temperature. The laudable temper of the Brain is known by the integrity and perfection of the internall and externall senses, the indifferency of sleep and waking, the maturity or ripeness of judgment, and constancy of opinions, from which, unless it meet with better and more probable, it is not easie to be moved.

The

The first figure of the Head, as it appears when the skull is taken away.
The second figure shewing the Brain, the skull and Dura mater being taken off.



II.



AA, BB. The Dura meninx or thick membrane.

CCC. The third Sinus of this membrane.

DD. The course of the veins as they run through the membrane or the second vein of the brain.

EE. The first vein of the brain.

FFF. Certain small veins which perforate the skull and reach to the pericranium or skull-skin.

GGG. Fibers of the Dura meninx passing through the Coronall Suture, which fibers make the Pericranium.

HH. fibers passing through the sagittal Suture.

II. Others passing through the Lambdall Suture.

K. A knob which useth to grow to the Sinus of the Skull.

L. A cavity in the forehead bone.

M. The skull.

N. The Pericranium of skull-skin.

Fig. 2.

AAA. A part of the Crasse meninx dividing the brain. BB. the third Sinus of the same Crasse membrane opened.

CC. the beginning of the vessels out of the third Sinus into the Pia mater.

DDD. the propagation or branches of these vessels. EEE. the Pia mater or thin meninx immediately compassing the brain. FFF. Certain vessels running through the convolutions or branches of the brain. GGG. Certain branches of veins running through the sides of the dura meninx. HHH. The thick membrane reflected downward.

You shall know the brain is more hot, by the quickness of the senses and motions of the body, by shortness of sleep, the suddain conceiving of opinions and change of them, by the slippery and failing memory, and lastly, by easily receiving hurt from hot things, as the Sun and Fire. Such as have a cold brain, are slow to learning, and to conceive other things; but they do not easily put away their once conceived opinions. They have slow motion to action, and are sleepy. Those who have a dry brain, are also slow to learn; for you shall not easily imprint any thing in dry bodies, but they are most constant retainers of those things they have once learned; also the motions of their bodies are quick and nimble. Those who have a moist brain do easily learn, but have an ill memory, for with like facility as they admit the speices of things and imprint them in their minds, do they suffer them to slide and slip out of it again. So clay doth easily admit what Character or impression soever you will, but the parts of this clay which easily gave way to this impression, going together again, mixes, obliterates and confounds the same. Therefore the senses proceeding from a cold brain are dull, the motions slow, the sleep profound.

The action of the brain is to elaborate the Animall Spirit and necessary sense serving the whole body, and to subject it self as an instrument to the principall faculties, as to reason. The brain is twofold, the fore and hind. The hind by reason of its smallness is call

The Action;
Number,
call

called the *Cerebellum*, (the little or After-brain). But the fore by reason of its magnitude hath retained the absolute name of the brain. Again this fore-brain is twofold, the right and left, parted by that depression, which we formerly mentioned, of the *Meninges* into the body of the brain. But this division is not to be here so absolutely taken, as though the Brain were exactly divided and separated into so many parts, but in the sense as we say the Liver and Lungs are divided a pretty way, whereas at their Basis they have one continued body. The outward surface of the Brain is soft, but the inward hard, callous & very smooth; when on the contrary, the outward appears indented and unequal with many windings, and crested as it were with many wormlike foldings.

CHAP. VII.

Of the Ventricles and Mamillary processes of the Brain.

The substance of the brain is porous and sweats forth blood.

The four ventricles thereof.

The magnitude of the upper ventricles of the brain.

The *Septum Lucidum*.

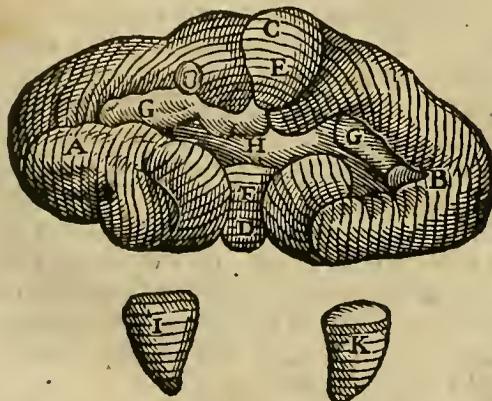
Why the Palsy of one side is not presently communicated to the other.

FOR the easie demonstration of the ventricles of the brain, it is convenient you cut away a large portion thereof, and in your cutting observe the blood sweating out of the pores of it. But besides, it is fit you consider the spongy substance by which the excrements of the brain are heaped up, to be presently strained out, and sent away by the hollow passage. In the substance of the brain you must observe four ventricles, mutually conjoynd by certain passages, by which the spirits endued with the *species* of things sensible may go from one into another. The first and two greater, one on each side are placed in the upper brain. The third is under them in the middle part of the brain. The fourth and last at the fore side of the *Cerebellum*, towards the beginning of the spinall marrow. The two formost are extended the length way of the brain in the form of a semicircle, whose horns look or bend outwards. They are spacious and large, because it was meet the Spirits contained there together with their excrements, should be there purified and clesed; but in other ventricles, the pure and already elaborate spirits are only received. These ventricles are white and smooth in their inner superficies; but that on each side they have an extuberancy at the midst of the semicircle, situate at the basis of the Pillar of the middle ventricle towards the nose under the *Septum lucidum* or cleer partition, severing or parting in sunder these two ventricles.

This *Septum lucidum*, or cleer or thin partition, is nothing else than a portion of the brain indifferently solid, but very clear, that so through this partition the animall spirits contained in these two ventricles may mutually pass and be communicated, and yet no other grosser substance may pierce the thin density thereof.

Wherefore it is not to be feared, that the water contained in one of the ventricles may pass to the other through this partition, as I have oft times observed to the great admiration of the spectators in the dead bodies of such as dyed of the Palsy, in which I have found the ventricle of that side which was taken with the Palsy much dilated; according to the quantity of the water contained therein, the other being either wholly empty and without any; or certainly no fuller than in any other, dead through any other occasion. For some affirm that there is a certain kind of waterish moisture alwayes to be found in the ventricles, which may be made by the condensation of the Animall spirits by the force of the deadly cold. But these two first ventricles of the brain go into one common passage, as both the bellows of a fornace, whereby the spirit instructed with the species of things goes into the under, or middle ventricle from the former. In these same first ventricles the *Plexus Choroides* is to be considered, and in like manner the passage by which the grosser excrements are driven or sent into the pituitary Glandule.

The third Figure represents the *Cerebellum* with the wormy processes separated from it.



AB. The right and left part of the After-brain.

CD. The anterior and posterior regions of the middle part of the After-brain.

E. The anterior wormy proceffe.

F. The posterior wormy proceffe.

GG. In this place the After-brain did grow to the spinall marrow.

H. The cavity in the spinall marrow maketh the

fourth ventricle. IK. The anterior and posterior proceffes of the brain, called *vermi-formes* or

This *Plexus Choroides* is nothing else, but a production of the *Pia mater* diversly folded with the mutuall implication of veins and arteries woven in the form of a net. These vessels are of magnitude and capacity sufficient, both to yeild life and nourishment to that particle to which they are fastened; as also for the generation of the Animall spirits, as which take fit matter from the veins stretched forth into the same *Plexus*, the hind artery and vein *Torcular*; and also from the air entring into the brain by the mamillary proecesses. But the mamillary proecesses are certain common wayes for conveyance of the air and smells into the brain, and carrying of excrements from the brain.

The *Plexus Choroides*.

The *Proecessus Mamillares*.

For thus in them who have the *Catarrhe* and *Coryza* or pose, neither the air, nor smells can penetrate into the brain; whence frequent sneezings ensue, the brain strongly moving it self to the expulsion of that which is troublesome to it. But of the excrements of the brain, whether bred there, or proceeding from some other part, some are of a fumid and vaporous nature, which breath insensibly through the Sutures of the skull; Others are gross and viscid, of which a great part is expelled by both these productions, or through each of them. For thus in the Pose you may see some who have one of their nostrils stoppt, the other running, and some who have both obstructed. The most proper benefit of the two first ventricles of the brain is to entertain the Phantase as in a convenient seat and habitation, seeing the mind there estimates and disposes in order the species of things brought in from the externall senses, that so it may receive a true judgment of them from reason which resides in the middle ventricle.

The use of the upper ventricles of the Brain.

The third ventricle is seated between the hindermost extremities of the former ventricles, and the last ventricle of the *Cerebellum*. In this six parts present themselves to our consideration, that is, the *Psalloides* or Arch, the *Conarium*, or pine Glandule, the Buttocks, wormlike productions, the Bafon and passage which is from this middle into the last & hindmost ventricle. The *Psalloides* or Arch is nothing else, but the cover of the middle ventricle, resembling a roof borne up with three staves or pillars, the one whereof is extended to the nose under the *Septum lucidum*, the two other on each side one, look towards the back part of the brain. This is the reason of this figure which is outwardly convexe and inwardly concave, to wit, that there might be free space for that motion which the Animall spirit inwardly produces, and besides that it might more easily sustain the burden of the brain lying upon it. For an arched figure is the most convenient of all other to sustain a weight.

The seat of the third ventricle of the brain. The parts to be considered in it.

What the *For-nix* or Arch is; and the use thereof.

The *Conarium* or Pine glandule, is a small Glandule of the same substance with the brain, round and somewhat long, like a Pine Apple, from whence it hath the name; this Glandule is seated over against a small hole which descends to the lowest ventricle. It hath this use, to strengthen the division of the vessels led thither with the production of the *Pia mater* for the generation of the Animall spirits, and the life and nourishment of the brain.

What the *Conarium* or pine Glandule is.

The *Nates* or Buttocks are subjected or placed under this Glandule, that is, bodies of a solid and white substance drawn out in length like a childs buttocks, especially in beasts, and chiefly in a sheep. These buttocks have such a solid substance, that so they may keep open and free the passage, or channell that runs down from the middle to the lower ventricle, by means of which the Brain participates with the *Cerebellum*.

What the *Nates* or Buttocks are.

The worm is a production of the *Cerebellum* or After-brain, to wit, a portion of the same being in the top or beginning and as it were in the entrance thereof, being like many little circles or wheels mutually knit together by slender membranes; and it is so called because it resembles those thick white worms which are found in rotten wood. It doth as it were perform the office of a porter to the formerly mentioned passage, that it may give way and entrance into the *Cerebellum*, to a necessary quantity of spirits, when need requires; lest that, if they should rush with a sodain violence into the *Cerebellum*, they might confound the imprinted notions of things to be remembred.

What the worm is.

The *Pelvis* or Bafon is a passage appointed for the carrying away of the gross excrements by the palate, and is so called because it hath the similitude and use of a Bafon or Tunnell: it descends from the third ventricle into the Glandule which is seated between the proecesses of the wedg-bone called the saddle thereof, as you may perceive by putting in a spathern. Now there remains the last of the six parts proposed to our consideration in the third ventricle, that is, the Channell or passage running from this third ventricle into the fourth, for the use formerly mentioned.

Here the *Pelvis* or Bafon is confounded with the Tunnell.

This Channell descending in its original from the Bafon, goes from thence under the buttocks into the last ventricle, the *Meninges* being perforated; which that you may shew, it is fit you put the end of a spathern through it. The benefit of a third ventricle is, that it may be as a Tribunall or Judgment-seat, to the Reasoning faculty, when the mind will draw conclusions from things seen.

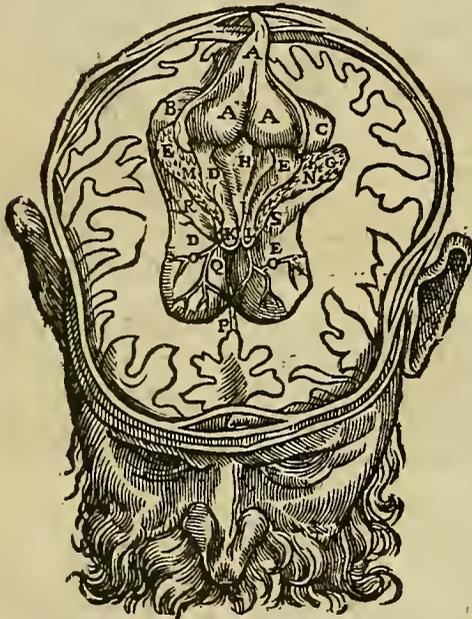
The Channell from the third into the fourth ventricle.

The fourth and Fifth figure of the Brain.

FIG. V.

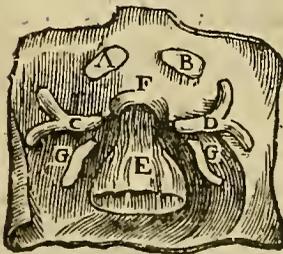


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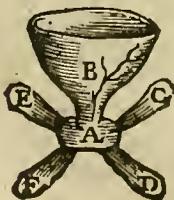


The Sixth figure of the Brain.

XI.



XII.



X,

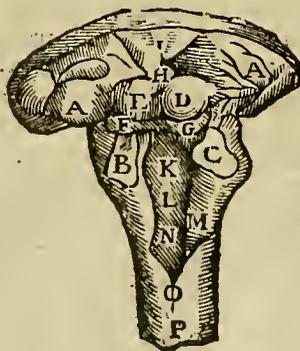


Figure 5.

- RRR. The lower superficies of the callosous body reflected.
- STV. The triangular surface of the Fornix or Arch.
- XX. The lower part of the partition of the ventricles continued with the Arch.
- YY. The upper part of the partition continued with the callosous body.

Figure 6.

- AAA. The lower surface of the Arch.
- BC. Two corners of the Arch, by which it is continued with the ventricles.
- DE. The right and left ventricles.
- FG. Arteries climbing up from the sleepy arteries through the lower side of the ventricles for the forming of that complication of vessels which is called *Plexus choroides*.
- H. A vessell issuing out of the fourth *Sinus* under the Arch, and passing into the third ventricle.
- IKL. The division of this vessell, a part whereof goeth to the right ventricle at K. and another to the left at L.
- MN. The *Plexus choroides* made of the artery FG. and the vessell H.
- OO. Small veins passing through the ventricles of the brain, produced from the vessels K. and L. P. Other veins arising from the same, dispersed without the ventricles into the *Pia mater*. Q. A passage from the third ventricle unto the *Bason* or *Tunnell*. RS. Canales or *Sinus* graven or furrowed in the substance of the ventricles; in which the phlegm is led along to the orifice of the fore-said passage marked with Q.

Figure 10.

- AA. Parts of the spinal marrow cut from the Brain.
- BC. The places where this marrow did grow unto the brain.
- DE. The Testicles, FG. The but-tocks, H. the Pine-Glandule.
- From I to K, a part of the third ventricle going to the fourth, under the Testicles.
- KLMN. A part of the fourth ventricle which is engraven in the marrow. O. The top of the fourth ventricle, P. The place where the spinal marrow goeth out of the skull, Figure 11. AB. Parts of the optick nerves. CD. The sleepy arteries. E. The *Bason* or *Tunnell* hanging down. F. A hole or perforation of the *dura meninx*, through which the *Tunnell* reacheth unto the Glandule. GG. Parts of the second conjugati-

on of sinews. Figure 12. A. The Glandule. B. The *Bason* or *Tunnell* called *Pelvis* or *Infundibulum*. CDEF. The four holes through which the phlegmatick excrement issueth.

The fourth ventricle is seated in the place we formerly mentioned; it is less than the rest, but more solid; less as that which was not to receive the spirit before it was purified, and cleansed from all impurities; but more solid, that it might contain it the safer. The use thereof is, to be as a treasury and store-house of the opinion, and judgments which reason shall decree, that when need requires, we may fetch and draw them from thence as laid up in store. I know *Galen* and the Greek Physicians have not so distinguished in places the three fore-mentioned faculties; but have written that they all are all over confused through the whole substance of the brain, which opinion also *Fernelius* in his *Pathologia* hath renewed. Yet I had rather follow this opinion, as commonly received and celebrated by the *Arabian* Physicians.

The fourth ventricle of the brain.

The Mamillary processes are the instruments and passages of smelling being of the same substance with the brain, and like nerves, which run out from the hind horns of the upper or foremost ventricles of the brain to the *Ethmoides* and spongy bones of the nose, that hence they may receive the divers kinds of smells, and carry them into the Brain. But although they be like nerves, yet they are not accounted nerves because they go not out of the skull.

The use of the Mamillary processes.

CHAP. VIII.

Of the seven conjugations of the Nerves of the Brain; so called, because they always shew the Nerves conjugated and doubled, that is, on each side one.



He nerves are the ways and instruments of the Animall spirit and faculty, as of which those spirits are vehicles, as long as they are contained in the brain; they consist of the only and simple marrowey substance of the brain, or spinall marrow. But passing forth of the brain, they have another membranous substance which involves them joyned with them from the two membranes of the brain; and according to the opinion of some Anatomists, they have also a third from the ligaments drawn as well from divers others, as from these by which they are tyed to the *Vertebra's*; Yet this opinion seems absurd to me, seeing such a membrane, as that which is insensible, wholly repugnes the condition of a nerve, which is to give sense to the parts to which it is inserted.

What a Nerve or Sinew is.

Its substance. Whether the nerve have a third membrane from the Ligaments of the *Vertebra's*.

The magnitude of the nerves is different, according to the divers necessity of sense incident to the parts into which they are inserted. Their figure is round, and long, like to a conduit pipe to carry water in; the membranes of the brain, with which the nerves are covered, being dilated and stretched over them, after the same manner that the processes of the *Peritonæum* involves the spermatick vessels, with which they go down to the Testicles, and take life and nourishment by the capillary veins and arteries, which descend to them with the membranes. They are made for this use, that they may impart sense to the sensitive parts, and motion to these that are fit to be moved. All the nerves descend from the brain either mediately or immediately; their Number is seven and thirty pair, or conjugations, whereof seven have their originall immediately from the brain, the other thirty from the spinall marrow.

Their magnitude.

Their figure.

Their use.

Their number.

The first conjugation of the nerves of the brain is thicker than all the rest, and goes to the eyes, to carry the visive spirit to them. These arising from divers parts of the brain, in the middle way before they go out of the skull meet together crosswise like the Iron of a Mill (which is fastened in the upper stone) going into one common passage with their cavities not visible to the eye; that so the spirits brought by those two nerves may be communicated, and they are mutually joyned and meet together so, that being driven back from one eye they may flie back into the other. An argument whereof may be drawn from such as aim at any thing, who shutting one of their eyes see more accurately; because the force of the neighbouring spirits united into one eye, is more strong than when it is dispersed into both. This conjugation when it comes into the glassie humor, is spent in the structure of the net-like coat which contains this humor on the back part.

The first conjugation of nerves.

The second conjugation goes into many parts, at its passing forth of the skull; and in the bottom of the circle of the eye it is distributed into the seven muscles moving the eyes.

The second conjugation.

The third is twofold, in the passage out of the skull it is likewise divided into many branches, of which some are carryed to the temporall muscles, into the *Masseteres* or grinding muscles into the skin of the face, forehead and nose; Other some are sent into the upper part of the cheek, and the parts belonging to it, as into the teeth, gums and the muscles of the upper lip; and those which are called the round which incompass the mouth on the inside; the last are wasted in the coat of the tongue, to bestow upon it the sense of tasting.

The third conjugation.

The fourth conjugation is much smaller, and is almost wholly wasted upon the coat of the Palat of the mouth, to endue it also with the sense of tasting.

The fourth conjugation.

The fifth at its originall and having not as yet passed forth of the skull, is divided into two,

The fifth conjugation.

and sends, the greater portion thereof to the hole of the ear, or passage of hearing, that it may support the auditory faculty; and it sends forth the other lesser portion thereof to the temporall muscles by the passage next to it; by which the second conjugation passes forth.

The sixth conjugation.

The sixth being the greatest next to the first, passing entire forth of the skull, imparts some small branches to certain muscles of the neck and throttle, and then descending into the chest, it makes the recurrent nerves, and dispersed over all the parts of the two lower bellies, it passes even to the bladder and testicles, as we shewed in the former book.

The seventh conjugation.

The seventh is inserted and spent upon the muscles of the bone *Hyoid*, the tongue, and some of the throttle, to give them motion; it passes forth of the skull by the hole of the nowl bone at the extuberancies thereof.

The seventh figure shewing the eighth conjugation of the Nerves of the Brain.

FIG. I.

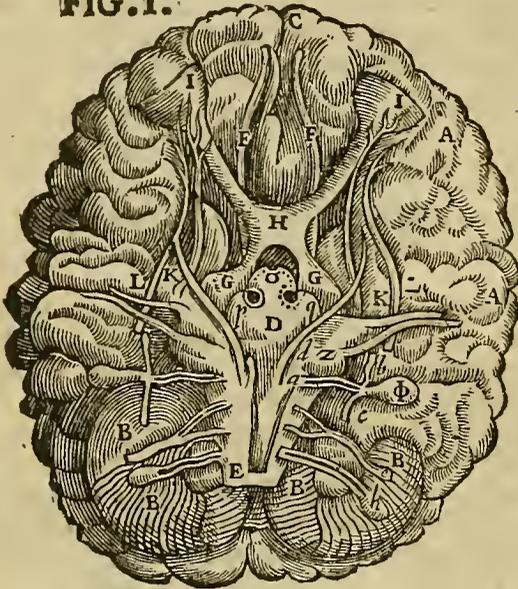
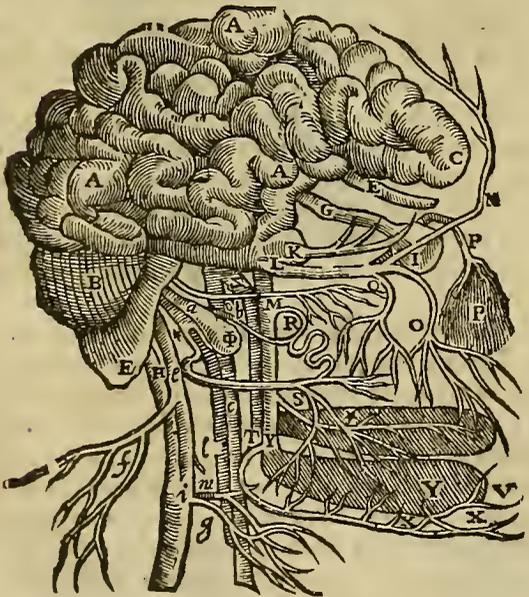


FIG. II.



AA, 2. The brain.

BB 1, 2. the After-brain. CC 1, 2. the smelling of the brain. which some call the mamillary processes.

D 1, the beginning of the spinall marrow out of the Basis of the brain.

F 1, 2. a part of the spinall marrow when it is ready to issue out of the skull.

FF 1, 2. the mamillary processes which serve for the sense of smelling.

GG 1, 2. the optick nerves.

H 1. the coition or union of the optick nerves.

II 1, 2. the coat of the eye whereinto the optick nerves are extended.

KK 1, 2. the second pair of the sinews ordained for the motion of the eyes.

LL 1, 2. the third pair of sinews, or according to the most Anatomists, the lesser root of the third pair.

MM 1, 2. the fourth pair of sinews (or the greater root of the third pair.

N 2. a branch of the third conjugation derived to the musculous skin of the forehead.

O 2. a branch of the same to the upper jaw.

PP 2. another into the coat of the nostrils.

Q 2. another into the temporall muscles. R 2, a branch of the fourth conjugation crumpled like the tendril of a vein. S 2. a branch of the same reaching unto the upper teeth, and the gums. T 2. another of the same to the lower jaw. V 2. a Surcle of the branch T, to the lower lip.

XX 2. another surcle from the branch T, to the roots of the lower teeth.

YY 2. the assumption of the nerves of

the fourth conjugation unto the coat of the tongue. Z 1, 2. the fourth pair are vulgarly so called which are spent into the coats of the palat. a 1, 2. the fifth pair of sinews which belong to the hearing, the *Auditory* nerve spread abroad into the cavity of the stony bone. *, a hard part of the fifth conjugation above, the * which may be counted for a distinct nerve. b 1, 2. a small branch derived from this harder part of the first pair. c. 1, 2. a lower branch from the same originall. d 1, 2. this nerve is commonly ascribed to the fifth pair, but indeed is a distinct conjugation which we will call the Eighth, because we would not interrupt the order of other mens accounts. e 1, 2. the sixth pair of sinews. f 2. a branch from them derived to the neck and the muscles couched thereupon. g 2. another branch to the muscles of the Larinx or throttle. h 1, 2. the seventh pair of sinews. i 1. the union of the seventh pair with the sixth. l 2. a propagation of the seventh pair to those muscles which arise from the Appendix called *Styloides*. m 2. Surcles from the seventh conjugation to the muscles of the tongue, the bone *Hyoid* and the Larinx. o p q 1. three holes; through the hole o the phlegm issueth out of the third ventricle of the brain to the Tunnell, and at p q. is the passage of the *Soporary* arteries to the ventricles of the Brain.

CHAP. IX.

Of the Rete Mirabile, or wonderfull Net, and of the Wedg-bone.

THe Animall spirit is made of the vitall, sent from the heart by the internall sleepey Arteries to the brain. For it was requisite that it should be the more elaborate, because the action of the Animall is more excellent than that of the vitall; nature hath framed a texture of Arteries in many places running cross one another, in the form of a Net divers times doubled; (whereupon it had the name of the wonderfull Net) that so the spirit by longer delay in these Labyrinthian or maze-like turnings, might be perfectly concocted and elaborate, and attain to a greater fitness to perform the Animall functions.

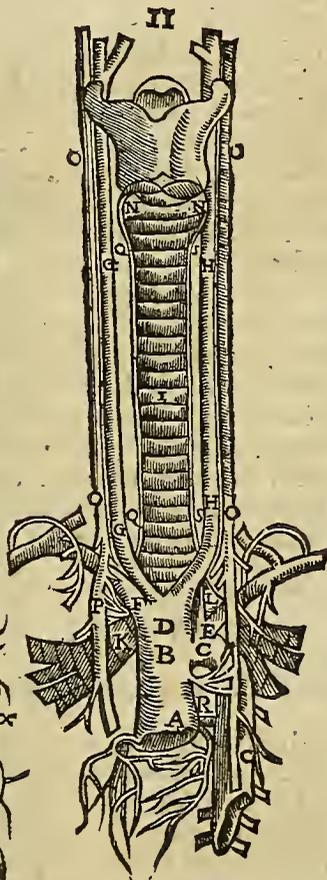
This wonderfull Net situate at the sides of the *Apophyses clinoides* or productions of the wedg-bone, is twofold; that is, divided by the pituitary Glandule which is situate between the said *Apophyses Clinoides*, having the wedgbone lying under them, next to the *Crassa Membrana*, being perforated on the right and left side, next to which lye bones as rare as a sponge even to the Palat, by which the Phlegme is purged by the mouth and nose; and therefore, I think, that spittle flows, which such as have a moist brain, continually spit out of their mouth.

The existence of the Animall spirit. What the Rete Mirabile is.

The site and number.

The Eight Figure of the brain.

FIG. I.



- A, The brain.
- B, the *Cerebellum* or after-brain.
- C, a process of the brain, but not that which is called *Mamillaris*.
- DD. The marrow of the back as it is yet within the skull.
- E, the *Mamillary* process or instrument of smelling.
- F, the optick nerve.
- G, the coat of the eye into which the optick nerve is spread.
- H, the nerve that moveth the eye or the second pair.
- I, the third conjugation, or the harder and lesser branch of the nerves of the third conjugation brought forward.
- K, the fourth conjugation of the greater and thicker nerve of the third pair bending downward.
- L, a branch of the nerve marked with I, which goeth to the forehead.
- M, another branch of the nerve I, reaching to the upper jaw. NN, a nerve proceeding from the branch I, inixed or woven with the coat of the nose. O, the nerve of the temporall muscle issuing from the branch I. P, a nerve contorted of the nerves K and b. Q, a nerve proceeding from the branch K, to the sockets of the upper teeth.
- R, a nerve creeping from the nerve K to the lower jaw. S, a furdle of the branch R, offered to the lower lip. TT, other furdles from the branch R, attaining to the lower teeth. VV, a branch of the nerve K, diffused into the coat of the tongue. XX, the fourth pair of sinews which go into the coat of the palat. Y, the fifth pair of sinews which are the nerves of

hearing. a, the membrane of the ear, unto which that fifth nerve goeth. bc, two small branches of the fifth conjugation uniting themselves with the nerve P. d, the eighth conjugation or a nerve of the fifth pair attaining unto the face. ee, the sixth pair of nerves. f, a branch from the nerve e, reaching to the muscles of the neck. g, small branches detived unto the throtle or *larinx*. h, the bifurcation of the nerve into two branches. iii, an inner branch hanging to the rackbones, and strengthening the *intercostall* nerves, and is therefore called *intercostallid*. kk, Surcles of the outer branch going to the heads of the muscles, to the breast-bone and to the collar-boones. lm, branches of the right nerve l, making the right Recurrent nerve. mn, the insertion of the recurrent sinews into the muscles of the *larinx*. op, branches of the left nerve making the left recurrent sinew p. qq, branches from the first conjugation going to the coat of the lungs. r, small nerves of the heart and of the purse thereof called the *Pericardium*, as also some approaching to the coats of the lungs. s, nerves on either side sent to the stomach. t, the right stomach nerve going to the left orifice of the stomach. uu, the left stomach nerve going to the right orifice of the stomach. x, a nerve from the branch u, passing into the hollownes of the liver. y, the nerve belonging to the right side of the kell. z, the nerve belonging to the colick gut. a, a nerve creeping to the gut called *duodenum* and the

the beginning of the *jejunum* or empty gut. *β*, a nerve implanted in the right side of the bottom of the stomach. *γ*, a nerve belonging to the liver & bladder of gall. *δ*, a nerve reaching unto the right kidney. *ε*, a branch reaching the *Mesenterium* and the guts. *ζ*, a branch sprinkled to the right part of the bladder. *η*, a branch going through the left part of the kel. *θ*, furcles derived to the colick gut and the kel. *κ*, small branches inserted into the spleen. *λ*, a nerve approaching to the left side of the bottom of the stomach. *μ*, a branch belonging to the left side of the *Mesenterium* and the guts. *ν*, a branch which attaineth to the left kidney. *ξ*, small nerves creeping through the left side of the bladder. *ο*, the seven pair of sinews. *π*, a branch derived from the sixth conjugation to the muscles which arise from the process called *Styloides*. *ρ*, a branch of the seventh conjugation which goeth to the muscles of the tongue, of the bone *hyois*, and of the throttle or *larinx*. *ς*, a conjunction or coition of the 6. and 7. pair into one Nerve.

What the *Apophyses Clinoides* are.

Whether the *Rese mirabilis* differ from the *Plexus Choroïdes*.

These *Apophyses clinoides* are certain productions of the *Os basillare* or wedg-bone, (called the Saddle thereof,) between which, as I said, the pituitary glandule lies with part of the wonderfull net. There is a great controversie amongst anatomists concerning this part; for *Vesalius* denies that it is in man, *Columbus* admits it, yet he seems to confound it with the *Plexus Choroides*. Truly I have observed it alwayes after the manner, as *Sylvius* alleges against *Vesalius*. It remains, that we recite the perforations of the skull, because the knowledg of these much conduces to the understanding of the insertions of the veins, arteries and nerves.

CHAP. X.

Of the holes of the inner Basis of the skull.



IN the first place are reckoned the holes of the bone *Ethmoides*; then those of the optick nerves. Thirdly, of the nerves moving the eyes. Fourthly, of that portion, of the nerves of the fourth conjugation which go to the temporall muscles. Fifthly are reckoned, these holes scarce visible, situate under the pituitary glandule, by which the spittle is evacuated. Sixthly, that hole which is in the wedg-bone made for the entrance of the internall sleepy Arteries, composing the wonderfull Net, and then passing into the brain by a great slit. That perforation which we reckon in the seventh place is commonly double, made for the entrance of one of the branches of the internall Jugular vein. The eighth hole is somewhat long, of an ovall figure, by which, part of the third conjugation and all the fourth conjugation passes forth. The ninth are the auditory passages. The tenth are very small holes, and give way to the vein and artery going to the auditory passage, above the *foramen cæcum*. In the eleventh place are reckoned the perforations which yeeld passage forth to the sixth pair of nerves, to part of the sleepy Arteries, and of the internall Jugular. In the twelfth those which yeeld a way out to the seventh conjugation. The great hole of the Nowl-bone through which the spinall marrow passes, is reckoned the thirteenth. The fourteenth is that, which most commonly is behind that great hole, by which the Cervicall veins and arteries enter in.

CHAP. XI.

Of the perforations of the externall Basis of the Brain.



HERE is a hole on each side at the Eye-brows, by which passes a small nerve from the third conjugation coming out of the cavity of the Orb of the eye, and going by the forehead bone to the eye-brows, that it may give motion to the two muscles of the upper eye-brow and forehead. Yet oftentimes the hole is but to be seen on one side, oft times there is a cleft in stead thereof, otherwhiles it is not perforated nor cleft at all. The second, is the perforation of the greater corner of the ey, by which a portion of the nerves of the third conjugation descends to the coat of the nose; in this hole the *Glandula Lachrymalis* is seated. The third is seated under the eye, that it may give way to the other portion of the nerves of the third conjugation going to the partt of the face, and the teeth of the upper jaw. The fourth is at the beginning of the palat, amongst the cutting or shearing teeth, through which a vein, an artery and the coat of the palat passes out. In the fifth order are reckoned the perforations of the palat, by which the nerves descend from the fourth conjugation, to give, or cause the taste. In the sixth order are ranked the holes of the palat serving for the respiration, and the flegm falling from the brain by the nostrils. And there is a cleft under the yolk bone ascending into the Orb of the eye, by which there is a way, as wel for the nerves of the third conjugation to the temporall muscles, as also for certain veins and arteries. But also there is noted another hole at the manillary process, which is not perforated in the judgment of the sense. Besides there is thought to be another at the hind root of the same process, by which a certain small vein passes from the Jugular to the *Tercular*. But I have only noted these three passages by the way, because there is so much variety in them, that nothing can be certainly said of them. ¶

CHAP. XII.

Of the Spinall Marrow, or Pith of the Back.

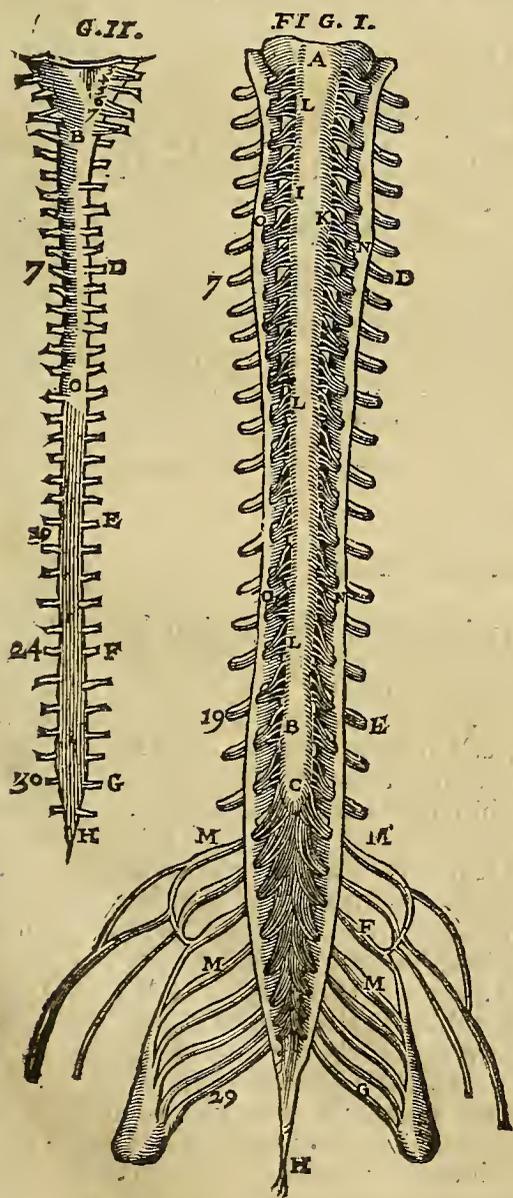


The Spinall Marrow is like a River running from the fountain of the brain. This sends nerves for sense and motion to all the neighbouring parts under the head, spreading its branches as from the body of a tree. These branches, as we shall hereafter shew, are on each side thirty. This same spinall marrow is covered with the two membranes investing the brain, distinguished by no distance of place, as in the brain. But also it hath another membrane added to these, being very hard and dense, which keeps it from being broken and violated by the violent bending of the body forwards and about. The diseases of this marrow do almost cause the like Symptoms, as the diseases of the brain; For they hurt the sense and motion of all the parts lying beneath them: as for example; If any of the *vertebra's* of the back bone, be moved out of their place, there follows a distortion or wresting aside of the Marrow; but then especially if it happen that one of the *vertebra's* be strained, so sharp and bitter a compression urges the marrow by reason of the bony body of the *vertebra*, that it will either rend it, or certainly hinder the passage of the spirit by it. But by these same holes of the *vertebra's* the veins and arteries go to the spinall marrow for to give life and nourishment to it, as the nerves by them pass forth into all the lower parts of the body.

Figure 1. sheweth the form of the spinall marrow properly so called, with its membranes, and the nerves proceeding from it.

Figure 2. the spinall marrow naked and bare, together with its nerves, as most part of Anatomists have described it.

The tenth Figure of the spinall marrow.



- A. The beginning of the spinall marrow where it falls out of the skull.
- B. The thickness thereof in the spondels or rack bones of the loins.
- C. The division thereof into strings, or hairy threds.
- D. The seven nerves of the neck.
- From D. to E. or from 7. to 19. shew the nerves of the back.
- From E. to F. the nerves of the loins.
- From F. to G. the nerves of the *Os sacrum* or holy bone.
- H. The end of the marrow.
- IKL. Do shew how the nerves do issue from the marrow in strings.
- MM. The knots of the sinews made of the conjunction of those strings.
- NO. The membranes that invest the marrow.

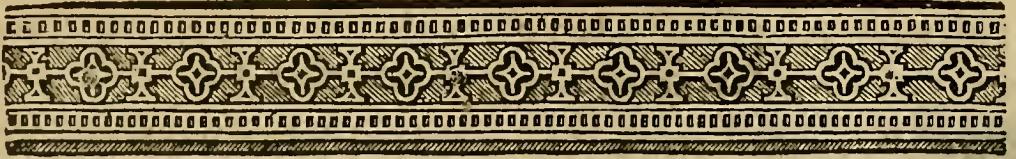
Figure 2.

- A. The beginning of the spinall marrow in the skull.
- 3, 4, 5, 6, 7. these Characters shew (according to *Vesalius* opinion) how the conjugations of the nerves of the brain do take their originall from the marrow remaining yet within the skull.
- B. The egress of the spinall marrow out of the skull.
- C. The cords or strings whereinto it is divided.
- D 7. The marrow of the neck and seven pair of sinews. E 19. Twelve pair or conjugations of nerves proceeding from the marrow of the Chest.
- F 24. The marrow of the loins and 5. pair of sinews. G 30. the marrow of the holy bone and 6. pair of sinews.
- H. The extremity or end of the spinall marrow.

What the Spinall marrow is:

The coats of the spinall marrow.

The diseases from the hurting of the spinall marrow.



The Sixth Book,

Treating of the *Muscles and Bones*, and the other *Extreme parts of the BODY.*

The Preface.



Eraventure some may wonder that I have ended my fifth book of Anatomy, before I have fully described all the parts of the head, the which seemed as it were only appointed for that purpose. Therefore I must yeeld a reason of this my intention. I have a desire in one Treatise and as it were at one breath, to prosecute the Anatomy of the Muscles. Wherefore because the parts of the head not yet described, principally consist of the Muscles, therefore I desired to comprehend them together with this same description of the extreme parts of the body; beginning at the upper part of the face; to wit,

The description of the bones being unknown, it must necessarily follow that the original and insertion of the muscles must be so also.

The endowments of the face. The countenance is the bewrayer of the will,

the eyes: but having first described the bones of the face, without the knowledg of which it is impossible to shew the original and insertion of the Muscles. We have formerly noted, that by the face is meant whatsoever lyes from the Eye-browes even to the Chin. In which there is such admirable industry of nature, that of the infinite multitude of men you cannot find two so like, but that they may be distinguished by some unlikenesse in their faces; also it hath adorned this part with such exquisite beauty, that many have dyed by longing to enjoy the beauty desired by them. This same face albeit it little exceeds halfe a foot, yet it indicates and plainly intimates by the sodain changes thereof, what affections and passions of hope, fear, sorrow and delight possesse our minds; and what state our bodies are in, sound, sick, or neither. Wherefore seeing the face is of so much moment, let us return to the Anatomical description thereof, which that wee may easily and plainly perform we will begin with the bones thereof, whereby, as we formerly said, the original and insertion of the Muscles may be more certain and manifest to us.

CHAP. I.

Of the bones of the Face.



Bones in each orb of the Eye.

What the Zygoma is, and what use it hath.

The *Ægylops*. The two bones of the nose. The two inner bones of the palat.

He bones of the face are 16, or 17. in number. And first, there be reckoned 6. about the orbs of the eyes, that is 3. to each orb, of which one is the bigger, another lesser, and the third between both; each of these touch the forehead bone in their upper part. Besides, the greater is joyned with a suture to the proesse of the stony bone, and so makes the *Zygoma*, that is, the *Os Jugale* or yoaik bone, framed by nature for preservation of the temporall muscle. The lesser is seated at the greater corner of the eye, in which there is a hole perforated to the nose, and in this is the glandule in which the *Ægylops* doth breed. The middle is in the bottom, or inner part of the orb, very slender and as it were of a membranous thinnesse: then follow the two bones of the nose which are joined to the forehead bone by a suture, but on the foreside between themselves by harmony. But on the back or hind part with two other bones, on each side one, which descending from the bone of the forehead (to which also they are joined by a suture) receive all the teeth. These two in *Galens* opinion are seldome found separated. But these are the thickest of all the bones of the face hitherto mentioned, knit by a suture with the greatest bone of the orb, on the back part with the wedg-bone, on the inner side with the two little inner bones of the palat, which on the inside make the extremity thereof, whereby it comes to passe, that we may call these bones the hinder, or inner bones of the palat. They reckon one of these bones the eleventh and the other the twelfth bone of the head; these two little bones on their sides next to the winged productions of the wedg-bone, receive on each side one of the nerves of the fourth

fourth conjugation, which in the former book, we said were spent upon the membrane of the palat.

And in *Galens* opinion there be other two in the lower Jaw, joined at the middle of the chin; although some think it but one bone, because by the judgement of sense there appears no division or separation therein. But you may see in children how true this their supposition is, for in men of perfect growth it appears but one bone; these two are reckoned for the thirteenth and fourteenth bones. Now these two bones making the lower Jaw, have in their back part on each side two productions, as they lye to the upper Jaw, the one of which represents the point of a sword, and is called the *Corone*; the other is obtuse and round; which is inserted into the cavity seated at the root of the proësse of the stony bone, neer to the passage of the ear.

This may be strained to the forepart by violent gaping, by retraction of the muscles arising from the wing-like proësses, and ending at the lower angles of the broader part of the same Jaw.

This Jaw is hollow as also the upper, especially in the back-part, being filled with a white and glutinous humour, conducing to the growth of the teeth. This humour hath its matter from the blood brought thither by the vessels, veins, arteries and nerves from the third conjugation entring in here by a passage large enough. Whereby it comes to passe, that this part is not only nourished and lives, but also the teeth receive sense by the benefit of the nerves entring thither with the vein and artery, by smal holes to be seen at the lower roots of the teeth; and thence it is that a beating pain may be perceived in the tooth-ach, because the defluxion may be by the arteries; or rather because the humour flowing to the roots of the teeth, may presse the artery in that place; beside also you may see some appearance of a nervous substance in the root of a tooth newly pluckt out.

But also you must consider, that this Jaw from its inner capacity produces at the sides of the chin two nerves of a sufficient magnitude, over against the lower dog-teeth, and the first of the smaller grinding teeth, as I have noted in the description of the nerves of the third conjugation. I have thought good to put thee in mind of these, that when thou shalt have occasion to make incision in these places, thou maist warily and discreetly handle the matter, that these parts receive no harme.

There remains another bone seated above the palat, from which the gristly partition of the nose arises, being omitted of all the Anatomists, for as much as I know. Now therefore that you may the better remember the number of the bones of the face, I will here make a repetition of them.

There are six of the orbs of the eyes, at each three. The seventh and eight wee may call the Nasall, or nose bones. The ninth and tenth the Jaw-bones. The eleventh and twelfth are called the innce bones of the palat. The thirteenth and fourteenth the bones of the lower Jaw. The partition of the nose may be reckoned the fiftenth.

Now it remains having spoken of these bones, that wee treat of the teeth, the Eyebrowes, the skin, the fleshy pannicle, the Muscles, and lastly, the other parts of the face.

CHAP. II.

Of the Teeth.

The teeth are of the number of the bones, and those which have the most have thirty two, that is, sixteen above, and so many below; of which in the forepart of the mouth there are four above and as many beneath, which are called *Incisorii* cutting or shearing teeth, to cut in sunder the meat, and they have but one root. To these are joynd two in each Jaw, that is, on each side of the other one, which are called *Canini dentes*, Dog-teeth, because they are sharp and strong like dogs-teeth; these also have but one root, but that is far longer then the other have.

Then follow the *Molares* or Grinders, on each side five, that is, ten above, and as many below, that they may grind, chew, and break the meat, that so it may be the sooner concocted in the stomach; for so they vulgarly think, that meat well chewed is halfe concocted; those grinders which are fastened in the upper Jaw, have most commonly three roots, and oft-times four. But these which are fastened in the lower, have only two roots, and sometimes three, because this lower jaw is harder than the upper so that it cannot be so easily hollowed, or else because these teeth being fixed and firmly seated, needed not so many staves as the upper, which as it were hang out of their seats. The shearing teeth cut the meat because they are broad and sharp; the dog-teeth break it, because they are sharp pointed and firm; but the grinders being hard, broad and sharp, chew and grind it afunder. But if the grinders had been smooth, they could not fitly have performed their duty, for all things are chewed and broken afunder more easily by that which is rough and unequal.

Wherefore they sharpen their Millstones when they are smother than they should be,

The two bones of the Jaw.

Two productions on each side of the lower Jaw.

The Luxation of the lower Jaw.

The lower Jaw filled with a marrowy humour.

How the teeth feel.

Why the teeth have a beating pain.

The nerves of the lower Jaw must be observed.

The bone of the nose above the palat, or the partition of the nose.

The teeth are bones.

The shearing teeth. The Dogteeth.

The Grinding teeth.

Why the upper grinding teeth have more roots. The use of the teeth.

The teeth are fastened in the jaws by *Gomphosis*.

The fastening of the teeth in the jaws is to be observed.

Wherein the teeth differ from the other bones.

For what use the teeth have sense.

The fore-teeth help for the articulation of the voice.

by picking them with a sharp Iron. The teeth are fastened in the jaws by *Gomphosis*, that is, as a stake or nail, so are they fixed into the holes of their jaws; for they adhere so firmly thereto in some, that when they are pluckt out, part thereof follows together with the tooth; which I have often observed to have been also with great effusion of blood. This adhesion of the teeth fastened in their jaws, is besides strengthened with a ligament, which applies it selfe to their roots together with the nerve and vessels. The teeth differ from the other bones, because they have action whilst they chew the meat; because being lost they may be regenerated, and for that they grow as long as the party lives, for otherwise by the continuall use of chawing they would be worn and wasted away by one another. You may perceive this by any that have lost one of their teeth, for that which is opposite to it becomes longer than the rest, because it is not worn by its opposite. Besides also they are more hard and solid than the rest of the bones, and indued with a quick sense by reason of the nerves of the third conjugation which insert themselves into their roots; for if you rub, or grind a tooth newly pluckt out, you may see the remains of the nerve; they have such quick sense, that with the tongue they might judg of tastes. But how feel the teeth, seeing they may be filed without pain? *Fallopius* answers, that the teeth feel not in their upper or exterior part, but only by a membrane which they have within. And the teeth have another use, especially the fore-teeth, which is, they serve for distinct and articulate pronuntiation; for those that want them fault in speaking, as also such as have them too short, or too long, or ill ranked. Besides, children speak not distinctly before they have their fore-teeth. And you must note that the infant as yet shut up in its mothers womb hath solid and bony teeth; which you may perceive by dissecting it presently after it is born.

But even as there are two large cavities in the forehead bone at the eye-browes, filled with a viscous humor, serving for the smelling; and in like manner, the air shut up in the mamillary processes is for hearing; so in the jaws there be two cavities furnished with a viscid humour for the nourishment of the teeth.

CHAP. III.

Of the Broad Muscle.



Now we should prosecute the containing parts of the face; to wit, the skin, the fleshy pannicle and fat; but because they have been spoken of sufficiently before, I will only describe the fleshy pannicle, before I come to the dissection of the eye, that wee may the more easily understand all the motions performed by it, whether in the face or forehead.

First, that you may more easily see it, you must curiously separate the skin in some part of the face. For unlesse you take good heed, you will pluck away the fleshy pannicle together with the skin, as also this broad muscle to which it immediately adheres, and in some places so closely and firmly, as in the lips, eye-lids and the whole forehead, that it cannot be separated from it, Nature hath given motion, or a moving force; to this broad muscle, that whilst it extends, or contracts it selfe, it might serve to shut and open the eye. It will be convenient to separate the muscle thus freed from the skin, beginning from the forepart of the clavicles even to the chin, ascending in a right line, and then turning back as far as you can; for thus you shall shew how it mixes it selfe with the skin and the muscles of the lips.

When thou shalt come to the eyes, thou shalt teach how the eye is shut and opened by this one muscle, because it is composed of the three sorts of fibers; although by the opinion of all who have hitherto written of Anatomy, those actions are said to be performed by the power of two muscles appointed for that purpose; one of which is at the greater corner on the upper part, the other resembling a semicircle at the lesser corner, from whence extending it selfe to the middle of the gristle *Tarsus*, it meets with the former ending there, but they are in part extended over all the eye-lid, whereby it commeth to passe that it also in some sort becomnieth movable. But although in publike dissections these two muscles are commonly wont to be solemnly shewed, after the manner I have related; yet I think, that those which shew them know no more of them than I do. I have grounded my opinion from this, that there appears no other musculous flesh in these places, to those which separate the fleshy pannicle, or broad muscle, than that which is of the pannicle it selfe, whether you draw your incision knife from the forehead downwards, or from the cheek upwards.

Besides, when there is occasion to make incision on the eye-browes, we are forbidden to doe it transverse, lest this broad muscle falling upon the eye, make the upper eye-lid unmoveable: but if such a cut be received accidentally, we are commanded presently to stich it up; which is a great argument that the motion of the upper eye-lid is not performed by its proper muscles, but wholly depends and is performed by the broad muscle. Now if these same proper muscles which we have described should be in the upper eye-lid, it should

There are no particular muscles appointed to open and shut the eye, for that is the work of the broad muscle only. Divers reasons to that purpose.

Why you must take heed of making a transverse incision upon the eye-browes.

be meet, (because when one of the muscles is in action, the other which is its opposite or Antagonist, rests or keeps holyday) that when that which is said to open the eye is employed, the opposite thereof resting, the upper eye-lid should be drawn towards its original, as we see it happens in convulsions: because the operation of a muscle is the collection of the part which it moves towards its original.

Therefore seeing such a motion or collection appears not any where in the eye-lid, I think it therefore manifest that all the motion of this upper eye-lid depends upon this broad muscle, and that it alone is the author of the motion thereof.

The original of this broad muscle is from the upper part of the *Sternum*, the clavicles, the shoulder blades, and all the spines of the *vertebra's* of the neck: but it is inserted into all these parts of the head which want hair, and the whole face, having divers fibers from so various an original, by benefit of which it performs such manifold motions in the face (for it so spreads it self over the face, that it covers it like a vizard) by reason of the variety of the original and the production of the divers fibers of this muscle. But I have not in the description of this muscle prosecuted those nine conditions, which in the first book of my Anatomy I required in every part, because I may seem to have sufficiently declared them in the description of the muscles of the *Epigastrium*. Wherefore hence forward you must expect nothing from me in the description of muscles besides their original, insertion, action, composition, and the designation of their vessels.

The action of a muscle.

The original of the broad muscle.

The insertion and reason why we expresse so many motions with the face.

CHAP. IV.

Of the Eye-lids and Eye-browes.



Because we have saide into mention of the eye-lids, and eye-browes, and because the order of dissection also requires it, we must tell you what they are, of what they consist, and how and for what use they were framed by nature. Therefore the eye-browes are nothing else, than a rank of hairs set in a semi-circular form upon the upper part of the orb of the eye, from the greater to the lesser corner thereof, to serve for an ornament of the body, and a defence of the eyes against the acrimony of the sweat falling from the forehead.

What the eye-browes are.

Their use.

But the eye-lids on each side two, one above and another below, are nothing else than as it were certain shuttings appointed and made to close and open the eyes when need requires, and to contain them in their orbs. Their composure is of a musculous skin, a gristle and haire set like a pale at the sides of them to preserve the eyes when they are open, chiefly against the injuries of small bodies, as motes, dust and such like. These hairs are alwaies of equall and like bignesse, implanted at the edges of the gristly part, that they might alwaies stand streight and stiffe out. They are not thick, for so they should darken the eye. The gristle in which they are fastned is encompassed with the *pericranium* stretched so far before it produce the *Conjunctiva*. It was placed there, that when any part thereof, should be drawn upwards or downwards by the force of the broad muscle or of the two proper muscles, it might follow entirely and wholly by reason of its hardnesse. They call this same gristle, especially the upper, *Tarsus*. The upper and lower eye-lid differ in nothing, but that the upper hath a more manifest motion, and the lower a more obscure: for otherwise nature should have in vain encompassed it with a musculous substance.

What the eye-lids are.

Their composure and use.

What the *Tarsus* is.

CHAP. V.

Of the Eyes.



The Eyes are the instruments of the faculty of seeing, brought thither by the visive spirit of the optick nerves, as in an aqua-duct. They are of a soft substance, of a large quantity, being bigger or lesser according to the bignesse of the body. They are seated in the head, that they might overlook the rest of the body, to perceive and shun such things as might endanger, or endamage the body; for the action of the eyes is most quick, as that which is performed in a monent, which is granted to none of the other senses. Wherefore this is the most excellent sense of them all. For by this we behold the fabrick and beauty of the heavens and earth, distinguish the infinite varieties of colours, we perceive and know the magnitude, figure, number, proportion, site, motion and rest of all bodies. The eyes have a pyramidall figure whose basis is without, but the Cone or point within at the optick nerves. Nature would have them contained in a hollow circle, that so by the profundity and solidity of the place they might be free from the incursions of bruising and hurtfull things.

What the eyes are.

Their site.

The quicknes and excellency of their action.

Figure.

They are composed of six muscles, five coats, three humours, and a most bright spirit; (of which there is a perpetual afflux from the brain) two nerves, a double vein, and one artery,

Composition.

tery,

Glandula Lachrymalis.

Fistula Lachrymalis.

Why fat is placed about the eyes.

tery, besides much fat, and lastly, a Glandule seated at the greater angle thereof, upon that large hole which on both sides goes to the nose, and that, lest that the humors falling from the brain should flow by the nose into the eyes, as we see it fares with those whole eyes perpetually weep, or water, by reason of the eating away of this glandule, whence that affect is called, the *Fistula lachrymalis*, or weeping Fistula.

But there is much fat put between the muscles of the eye, partly that the motion of the eyes might be more quick, in that slipperiness of the fat, as also that the temper and complexion of the eyes, and chiefly of their nervous parts, might be more constant and lasting, which otherwise by their continuall and perpetuall motion would be subject to excellent dryness. For nature, for the same reason hath placed Glandules flowing with a certain moisture, neer those parts which have perpetuall agitation.

C H A P. VI.

Of the Muscles, Coats and humors of the Eye.

The number, site and action of the muscles.



Here are six muscles in the eye, of which four perform the four direct motions of the eye: they arise from the bottom of the orb, and end in the midst of the eye encompassing the optick nerve. When they are all moved with one endeavour, they draw the eye inwards. But if the upper only use its action, it draws the eye upwards; if the lower, downwards; if the right, to the right side; if the left, to the left side.

The two other muscles turn the eye about; the first of which being the longer and slenderer, arises almost from the same place, from which that muscle arises, which draws the eye to the right side to the greater corner. But when it comes to the utmost part of the inner angle, where the *Glandula lachrymalis* is seated, it ends in a slender Tendon, there piercing through the middle membrane which is there, as through a ring; from whence it presently going back is spent in a right angle towards the upper part of the eye, betwixt the insertions of those two muscles, of the which one draws the eye upwards, the other directly to the outward corner, as it is observed by *Fallopius*, or rather, which I remember I have alwaies observed, they turn between the muscles which move the eye upwards, and to the inner corner.

This fifth muscle when it is drawn in towards its beginning, so draws the eye with its circular tendon, that it carries it to the greater corner.

The sixth muscle is contrary to that; for it hath its originall from the lower part of the orb at a small hole, by which a nerve of the third conjugation passes forth; and being that it is most slender, whilst it ascends transversely to the outward corner, it involves the eye so also, that it is inserted in it by a small Tendon, so that the Tendons of them both are oftentimes taken but for one. That thou mayst truly and accurately observe this anatomicall description of the eye, the eye must not be pluckt out of its orb, but rather the orb it self must be broken and separated.

For thus thou shalt certainly and plainly see the forementioned original of the muscles. For the five coats, the first which is first met with in dissection, comes from the *Pericranium*, and is extended over all the white of the eye, even to the *Iris* or Rain-bow. The duty of it is to strengthen, bind and contain the eye in its orb, wherefore it had the name *Conjunctiva*, others called it *Adnata*, or *Epiphephycos*.

The second is called the *Cornea*, because it resembles a horn in colour and consistence; this coat differs and varies from it self, for in the forepart, as far as the *Iris* goes, it is clear and perspicuous, but thick and obscure in the hind part, by reason of the diverse polishing. On the fore-part it is dense, that it may preserve and contain the Crystalline and waterish humor, but withall transparent, so to give the object a freer passage to the Crystalline. It hath its originall from the *Crassa meninx*, proceeding forth from the inner holes of the orb of the eye, for it compasses the eye on every side.

The third is called the *Vvea* or Grapy coat, because in the exterior part it represents the colour of a black grape; it arises from the *Pia mater*, and encompasses all the eye, except the *pupilla* or apple of the eye, for here being perforated, it adheres to the horny coat by the veins and arteries which it communicates to it for life and nourishment. But when it arrives at the *Iris*, then forsaking the *Cornea*, it descends deep into the eye, and in some sort is turned about the Crystalline humour, to which also it most firmly adheres, so bounding the waterish humour, and also prohibiting that the Albugineous humor do not overwhelm the Crystalline. This grapy coat is as it were dyed on the inside with divers colours, as black, brown, blew, or green like a rain-bow; and that for these ensuing benefits.

The first is, if that it had been tintured with one colour, all objects would have appeared of the same colour, as it comes to passe when we look through green or red glasse. But it must be coloured, that so it may collect the spirits dissipated by the Sun and seeing.

The 5 coats of the eye.

1
Conjunctiva, or
Adnata.

2
Cornea, or the
Horny coat.

3
Vvea, or the
grapy coat.

Why the grapy coat resembles divers colours.

Table 3. figure 1. sheweth the Membranes and humors of the eye by lines drawn after the manner of a true eye.

Figure 2. sheweth the horny coat with a portion of the Optick Nerve.

Fig. 3. sheweth the same divided by a transverse section.

Fig. 4. sheweth the Uvea or Grapy coat with a portion of the Optick Nerve.

Fig. 5. The Grapy coat of a mans eye.

Fig. 6. The Horny, Grapy and the Choroides.

Fig. 7. The interior superficies of the Grapy coat.

Fig. 8. The posterior part of the horny coat together with the said Net coat separated from the Eye.

Fig. 9. The coat of the vitreous or glassy humor called Hyaloides.

Fig. 10. Three humours joine d together.

Fig. 11. The forward part of the Crystalline.

Fig. 12. The Crystalline humour covered yet with his coat.

Fig. 14. The Crystalline of a mans eye.

Fig. 15. His Coat.

Fig. 16. The watery humor disposed upon the Crystalline round about.

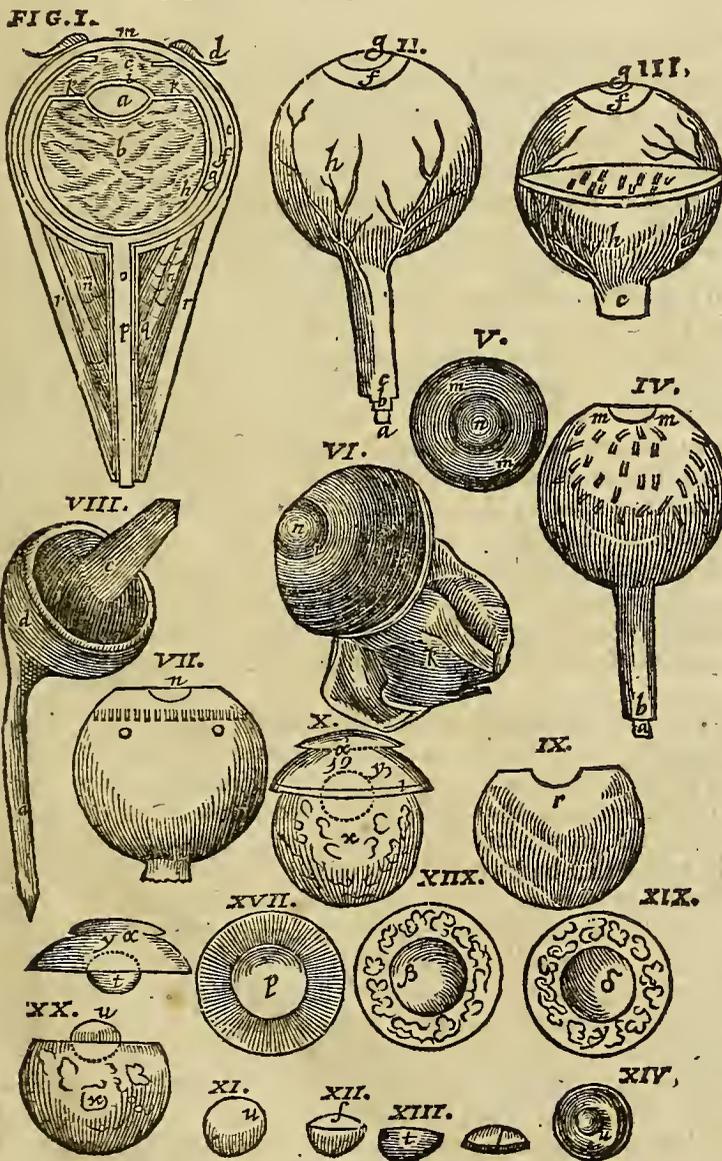
Fig. 17. The hairy processes beamingly sprinkled through the fore side of the coat of the glassy humor.

Fig. 18. The fore side of the glassy humor.

Fig. 19. The place of the watery humor.

Fig. 20. The glassy humor containing or comprehending the Crystalline.

The figure of the Eye.



The explication of the first Figure by it selfe.

- a, The Crystalline humor:
- b, The Glassie humor.
- c, The watery humor.
- d, The utmost coat called Adnata.
- e, The dark part of the horny Tunicle which is not transparent.
- f, The Grapy coat called Uvea.
- g, The Net-like coat called Retiformis.
- h, The coat of the glassy humor cald Hyaloides.
- i, The coat of the Crystalline.
- kk, The hairy processes cald Processus ciliares.
- l, The impression of the Grapy coat where it departeth from the thick coat.
- m, The horny coat, a part of the thick coat.
- nn, The fat betwixt the Muscles.
- o, The optick Nerve.
- p, The Dura meninx.
- q, The Pia mater or thin Meninx.
- rr, The Muscles.

The explication of the other 19. figures together.

- a 2, 4, 8. The Optick nerve.
- b 2, 4, The thin Meninx cloathing the Nerve. c 2, 3, 4
- The thick Meninx cloathing the nerve. d 8. the posterior part of the hor-

ny coat. e 8. The coat called Retina gathered together on an heap. f 2, 3. The rain-
bow of the eye. g 2, 3. The lesser circle of the eye or the pupilla. h 2, 3. Vessels disper-
sed through the Dura meninx. i 3, 6. The grapy coat, but i, in the 3. Fig. sheweth how the vessels doe
join the hard membrane with the grapy coat. k. 6. The horny or hard membrane
turned over. ll 3, 4. Certain fibers and strings of vessels, whereby the grapy coat is tyed

to the horny. *mm* 4, 5. The impression of the grapy coat where it recedeth or departeth from the horny coat. *nn* 4, 5, 6, 7. The *pupilla* or apple of the eye. *oo* 7. The Ciliar or hairy proceses. *p* 7. The beginning of the grapy coat made of a thin membrane dilated, but *p* in the 17. figure sheweth the Ciliar proceses sprinkled through the fore part of the glassie humor. *r* 9. The bosome or depression of the glassie humor receiving the Crystalline. *s* 12, 15. The bredth of the coat of the Crystalline. *t* 12, 13, 14, 16. The posterior part of the Crystalline humor, which is sphericall or round. *u* 11, 14, 20. The fore part of the same Crystalline depressed. *x* 10, 20. The amplitude of the glassie humor. *y* 10, 16, 19. The amplitude of the watry humor. *z* 19. The place where the glassie humour is distinguished from the watry by the interposition of the *Hyaloides* or coat of the glassy humor. *a* 10, 16. The place where the grapy coat swimmeth in the watry humor. *b* 18. The cavity or depression of the glassie humor which remaineth when the Crystalline is exempted or taken from it. *d* 19. the cavity or depression of the watry humor made by the same means.

Thirdly, it was convenient it should be painted with infinite variety of colours for the preservation of the sight. For as the extreame colours corrupt and weaken the sight, so the middle refresh and preserve it, more or lesse as they are neerer, or further remote from the extremes. It was fit it should be soft, that so it might not hurt the Crystalline humor upon whose circumference it ends; and perforated in the part objected to it, lest by its obscurity it should hinder the passage of the objects to the Crystalline, but rather that it might collect by its blacknesse as a contrary, the great and as it were diffused variety of colours, no otherwise than we see the heat is strengthned, by the opposition of cold; some call this coat *Choroides*, because it is woven with many veins and arteries, like the coat *Chorion* which involves the infant in the womb.

Amphiblestroides or *Retiformis*, Net-like coat.

Now follows the fourth coat called *Amphiblestroides* or *Retiformis*, the Net-like coat, because proceeding from the optick nerve dilated into a coat, it is woven like a net with veins and arteries which it receives from the grapy coat, both for the life and nourishment both of it self, as also of the glassie humor which it encompasses on the back part. The principall commodity of this coat is, to perceive when the Crystalline humor shall be changed by objects, and to lead the visive spirit instructed or furnished with the faculty of seeing, by the mediation of the glassie humour, even to the Crystalline being the principall instrument of seeing. It is softer than any other coat, lest the touch of it should offend that humor. Wherein thou wilt admire the singular order of nature, which as in other things it passes not from one extreme to another unless by a *Medium*, so here it hath not fitted the hard horny coat to the soft humors, but by interposition of divers *media* of a middle consistence. For thus after the harder coats *Adnata* and *Cornea* it hath placed the grapy coat, by so much softer then these two, as the Net-like coat is softer then it, that thus it might passe from extreme to extreme as it were by these degrees of hardnes and softnes.

An Anatomical Axiome.

Arachnoides, five *Araneosa*, the Cobweb-coat.

The fifth and last coat is called *Arachnoides*, because it is of the consistence of a spiders web. And we may well resemble this coat, to that skin of an union which exceeds the other in clearnes, whiteness, and thinness. This *Araneosa* or Cobweb-like coat encompasses the Crystalline humor on the fore side, peradventure that so it might defend it, as the chief instrument of seeing, if the other humors should at any time be hurt. It hath its originall from the excrementitious humidity of the Crystalline humor, hardned into that coat by the coldnes of the adjacent part; absolutely like the thin skin which encompasses the white of an Egg.

The 3 humors of the eye.

Aqueus, or watery.

The first humor of the eye is called the *Aqueus* or waterish, from the similitude of water; it is seated between the transparent part of the horny coat, the portion of the Crystalline humor lying towards the apple of the eye; and that reflection of the grapy coat which comes from the *Iris* to the circumference of the Crystalline humor, that filling the empty space it may distend the *Cornea*, and so hinder the falling thereof upon the Crystalline which would spoil the sight; as also that by its moisture it might hinder the drying of the Crystalline humor. Peradventure it is made of the whayish humor sweating out of the vessels of the coats, having their orifices for the most part in that place, where this waterish humor resides. The second humor and middlemost in situation is called the Crystalline, because it imitates Crystall in the brightnes and colour; if so be that we may attribute any colour to it. For indeed it was fit that none of the three humors should be tintured with any colour, as those which would be the instruments of sight, lest they might beguile us in seeing, as red and green spectacles do; for that is true which we have red written by the Philosopher; That the subject or matter appointed for the reception of any form should want all impression thereof. Hence nature hath created a formless matter, the humors of the eyes without colours, wax without any figure, the mind without any particular knowledg of any thing, that so they might be able to receive all manner of forms. The figure of the Crystalline humor is round, yet somewhat flatted on the fore side, but yet more flatted behind, that so the objects might be the better retained in that, as it were, plane figure, and that they might not fly back as from a Globe, or round body, in which they could make but short stay; lest it might be easily moved from its place by the force of any thing

2 *Crystallinus*, *Crystalline*.

A Philosophical Axiome.

thing falling or hitting against it, because that body which is exactly round touches not a plane body but only in a point or prick. Half this humor swims in the glassie humor, that so it may be nourished from it by transposition of matter; or rather (seeing it is encompassed on every side with the fitt coat, that the matter cannot easily be sent from the one into the other) by the benefit of the vessels produced even unto it as well by the Net-like coat as by the Grapy, but it is filled with a bright spirit on the forepart, which lyes next to the waterish humor, and the space of the Apple of the eye.

Of which thing this is an argument, that as long as a man remains alive, we see the eye every way full, and swoln, but lank and wrinkled when he is dead; besides also one of the eyes being shut, the *Pupilla* of the other is dilated by the spirit compelled to fly thither. And also for the same cause the horny coat is wrinkled in very old men, and the *Pupilla* is straitned by the wrinkles subsiding into themselves, which is the cause that they see little, or not at all; for by age and success of time the humor is consumed by little and little, the implanted spirit vanishes away, and smaller quantity of spirits flow from the brain, as from a fountain which is also exhausted. The horny coat at his original, that is, in the parts next the *Iris*, seemeth to be very nigh the Crystalline humor, because all the coats in that place mutually cohere as touching one another, but as it runs further out to the *Pupilla*, so it is further distant from the Crystalline. Which you may easily perceive by Anatomical dissection, and the operation of touching or taking away a Catarrhaet: for whereas a Catarrhaet is seated between the horny coat, and Crystalline humor, the needle thrust in, is carried about upwards, downwards, and on every side through a large and free space, neither touching the horny coat nor Crystalline humour, by reason these bodies are severed by a good distance filled with spirit and a thin humour. The use of it is, that it may be like a looking-glasse to the faculty of seeing carried thither with the visive spirit.

The third and last humor is the *Vitreus* the glassie, or rather Albugineous humor, called so, because it is like molten glasse, or the white of an Egg. It is seated in the hind part of the Crystalline humor, that so it may in some sort break the violence of the spirit flowing from the brain into the Crystalline humour, no otherwise than the watry humor is placed on the foreside of the Crystalline to hinder the violence of the light and colours entering that way. This glassie humor is nourished by the Net-like coat.

We have formerly spoken sufficiently of the nerves of the eye: Wherefore it remains that we speak of the veins. Some of these are internall, carried thither with the coats of the vessels of the brain; other some externall, stretched over the externall parts of the eye, as the Muscles, and coat *Adnata*; and by these veins inflammations and redness often happen in the externall parts of the eye: for which the *Vena pupis* must be opened, and cupping glasses and horns must be applied to the nape of the neck and shoulders: as in the internall inflammations of the eye, the cephalik vein must be opened to avert and evacuate the moribifick humor.

Gal. Cap 5. lib 10. de usu part.

In what place Catarrhaet or suffusion breeds

3
Vitreus seu Albugineus, that is Glassie or like the white of an Egg.

The veins of the eye.

What veins may be opened in what inflammations of the eyes.

CHAP. VII.

Of the Nose.

THe Nose is called in Greek *Rhiz*, because the excrements of the Brain flow forth by this passage, thou maist understand it hath a divers substance by composition. The quantity, figure and site are sufficiently known to all. But it is composed of the skin and muscles, bones, gristles, a membrane or coat nerves, veins and arteries. The skin and bones both contained and containing, have formerly been explained, as also the nerves, veins and arteries. The gristles of the Nose are six in number; the first is double, separating both the nostrills in the top of the nose extended even to the bone *Ethmoides*. The second lyes under the former. The third and fourth are continued to the two outward bones of the nose. The fifth and sixth being very slender and descending on both sides of the nose, make the wings or moveable parts thereof. Therefore the use of these gristles is, that the nose moveable about the end thereof, should be lesse obnoxious to externall injuries, as fractures and bruises, and besides more fit for drawing the air in and expelling it forth in breathing. For nature for this purpose hath bestowed four muscles upon the nose, on each side two, one within, and another without.

The External taketh its original from the cheek, and descending obliquely from thence, and after some sort annexed to that which opens the upper lip, is terminated into the wing of the nose, which it dilates.

The internall going on the inner side from the jaw-bone, ends at the beginning of the gristles that make the wings, that so it may contract them. The coat which inwardly invests the nostrills and their passages, it produced by the five-like bones from the *Crassa meninx*, as the inner coat of the palat, throttle, weazon, gullet and inner ventricle, that it is no marvel, if the affects of such parts be quickly communicated with the brain. This same coat on each side receives a portion of a nerve from the third

The Gristles of the nose.

The muscles thereof.

The temper,
action and use.

conjugation, through the hole which descends to the nose by the great corner of the eye. The nose in all the parts thereof is of a cold and dry temper. The Action and profit thereof is to carry the air and oft-times smells to the mamillary processes, and from thence to the four ventricles of the brain, for the reasons formerly shewed. But because the mamillary processes being the passages of the air and smells are double, and for that one of these may be obstructed without the other, therefore nature hath also distinguished the passage of the nose with a gristly partition put between, that when the one is obstructed, the air by the other may enter into the brain for the generation and preservation of the animall spirit. The two holes of the nose first ascend upwards, and then downwards into the mouth, by a crooked passage, lest the cold air, or dust should be carried into the lungs. But the nose was parted into two passages as we see, not only for the forementioned cause, but also for helping the respiration and vindicating the smell from externall injuries; and lastly, for the ornament of the face.

Why the nose
was parted in
two.

CHAP. VIII.

Of the Muscles of the Face.

Their number.

Now we must describe the muscles of the face pertaining as well to the lips as to the lower jaw. These are 18. in number, on each side nine, that is, four of the lips, two of the upper, and as many of the lower. But there belong five to the lower jaw. The first of the upper lip being the longer, and narrower, arising from the yoke-bone descends by the corner of the mouth to the lower lip, that so it may bring it to the upper lip, and by that means shut the mouth. The other being shorter and broader, passing forth of the hollowness of the cheek, or upper jaw (by which a portion of the nerves of the third conjugation descends to these two muscles, and other parts of the face) ends in the upper part of the same upper lip, which it composes together with the fleshy pannicle and skin, and it opens it by turning up the exterior fibers towards the nose, and shuts it by drawing the internall inwards towards the teeth.

The first of the lower lip being the longer and slenderer, entering out of that region which is between the externall perforation of the upper jaw (through which on the inner part of the same, a nerve passeth forth to the same muscles) and the muscle *Masseter*, (of which hereafter) then ascending upwards by the corner of the mouth, it ends in the upper lip, that so it may draw it to the lower.

The other broader and shorter begins at the lower part of the chin, and the hollowness thereof, and ends at the lower lip which it makes, opening it within and without by its internall and externall fibers, as we also said of its opposite. And that I may speak in a word, nature hath framed three sorts of muscles for the motion of the mouth, of which some open the mouth, others shut it, and othersome wrest it and draw it awry; but you must note that when the muscles of one kind jointly perform their functions (as the two upper which we described in the first place, on each side one, which draw the lower lip to the upper, and the muscles opposite to them) they make a right or streight motion; but when either of them moves severally, it moves obliquely, as when we draw our mouth aside. But these muscles are so fastned and fixed to the skin, that they cannot be separated; so that it is no great matter whether you call it a musculous skin, or a skinny muscle: (Which also takes place in the palms of the hands and soles of the feet) but these muscles move the lips the upper jaw being not moved at all.

CHAP. IX.

Of the Muscles of the lower Jaw.

Their number.

The Tempo-
rall muscle.

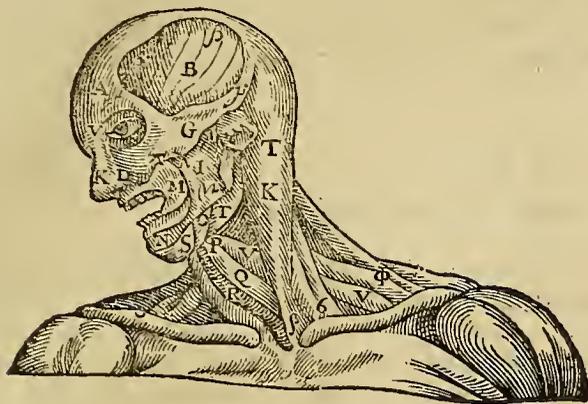
WE have said these muscles are five in number, that is, four which shut it, and one which opens it, and these are alike on both sides. The first and greater of these four muscles which shut the Jaw is called *Crotophita* or Temporall muscle; it arises from the sides of the forehead and *Bregma* bones, and adhering to the same and the stony bone, it descends under the yoke-bone, from whence it inserts it self to the proceffe of the lower jaw which the Greeks call *Corone*, that it may draw it directly to the upper, so to shut the mouth.

Why the
wounds of the
temporall
Muscle are
deadly.

But you must note, that this muscle is tendinous even to his belly, and that it fills and makes both the temples. It is more subject to deadly wounds than the rest by reason of the multitude of nerves dispersed over the substance thereof, which because they are near their originall, that is, the brain, they infer danger of sodain death by a convulsion which usually follows the affects of this muscle, but also in like manner it causes a Fever, the Phrensy and *Coma*.

The figure of the chief muscles of the Face.

FIG. II.



- A. The muscle of the forehead and the right fibers thereof.
- B. The Temporall muscle.
α. β. γ. his semicircular originall.
- D. The muscle of the upper lip.
- G. The yoaq-bone under which the temporall muscles passe.
- l. The Masseter, or Grinding muscle:
- K. The upper gristle of the nose.
- M. A muscle forming the cheeks:
- N. The muscle of the lower lip.
- O. A part of the fifth muscle of the lower Jaw called Digastricus, that is, double bellied.
- Q. R. The first muscle of the bone Hyoides growing unto the rough Artery.

- S. The second muscle of the bone Hyoides under the Chin.
- T. The third muscle of the bone Hyoides stretched to the Jaw.
- T. K. The seventh muscle of the head and his insertion at T.
- V. V. The two venters of the fourth muscle of the bone Hyoides.

φ. The place where the vessels passe which go to the head, and the nerves which are sent to the Arm.

Therefore that it should be lesse subject or obvious to externall injuries, Nature hath, as it were, made it a retiring place in the bone, and fortified it with a wall of bone raised somewhat higher about it. The other Muscle almost equall to the former in bigness, being called the *Masseter*, or grinding muscle, makes the Cheek; it descends from the lowest part of the greatest bone of the orb (which bends it self as it were back, that it may make part of the yoaq-bone) and inserts it self into the lower Jaw, from the corner thereof to the end of the root of the proceffe *Corone*, that so it may draw this Jaw forward and backward, and move it like a hand-mill.

The *Masseter* or grinding muscle.

Wherefore nature hath composed it of two sorts of fibers, of the which some from the neck (the cheek in that place under the eyes standing somewhat out like an apple arising from the concurrence of the greater bones of the orb and upper jaw) descend obliquely to the corner and hinder part of the lower jaw, that it may move it forwards. Other some arise from the lower part of the same yoaq-bone, and descending obliquely intersect the former fibers after the similitude of the letter X, and insert themselves into the same lower jaw at the roots of the proceffe *Corone*, that so they may draw it back: Truly by reason of these contrary motions it is likely this muscle was called the *Masseter* or grinder.

The third, which is the round muscle, arises from all the Gums of the upper jaw, and is inserted into all the gums of the lower, investing the sides of all the mouth with the coat, with which it is covered on the inside, being otherwise covered on the outside with more fat than any other muscle. The action thereof is, not only to draw the lower Jaw to the upper, but also as with a shovell to bring the meat dispersed over all the mouth under the teeth, no otherwise then the tongue draws it in.

The round muscle.

The fourth being shorter and lesse than the rest arising from all the hollowness of the winged proceffe of the *Wedge-bone*, is inserted within into the broadest part of the lower Jaw, that so in like manner it may draw the same to the upper. This is the muscle through whose occasion, we said this lower Jaw is sometimes dislocated.

The lesser muscle of the lower Jaw.

The figure of the Muscles of the lower Jaw.

FIG. III.



- A. A hole in the forehead bone in the brim of the seat of the eye, sending a small nerve of the third pair to the muscles of the forehead and the upper eye-brow.
- B. The Temporall muscle.

The fifth and last muscle of the lower jaw from the proceffe *styloides* of the stony bone, ascends to the forepart of the Chin, near to the connexion of the two bones of this jaw,

The fifth and last muscle.

The use of these mentioned muscles.

to draw this Jaw downwards from the upper in opening the mouth. This muscle is slender and tendinous in the midst, that so it might be the stronger, but it is fleshy at the ends. All these muscles were made by the singular providence of nature, and engrafted into this part for the performance of many uses and actions, as biting asunder, chewing, grinding and severing the meat into small particles, which the tongue by a various and harmless motion puts under the teeth. Thus much I thought good to say of the parts of the face, as well containing as contained.

CHAP. X.

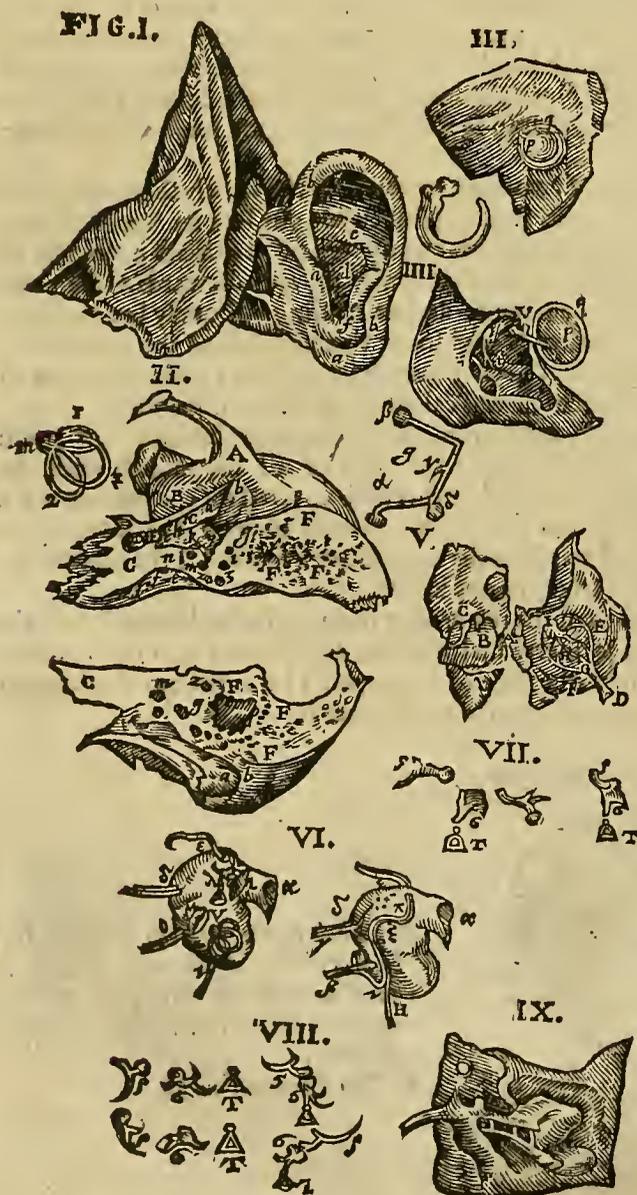
Of the Ears and Parotides or kernels of the Ears.

The nature and composition of the ears. What the Fibra and pinna are. The figure and the reason thereof.



The Ears are the Organs of the sense of hearing. They are composed of the skin, a little flesh, a gristle, veins, arteries and nerves. They may be bended or folded in without harm, because being gristly, they easily yeeld and give way; but they would not do so, if they should be bony, but would rather break. That lap at which they hang pendants and Jewels, is by the ancients called *Fibra*, but the upper part *pinna*. They have been framed by the providence of nature into two twining passages like a Snails shell, which as they come neerer to the *foramen cecum* or blind hole, are the more straitned, that so they might the better gather the air into them, and conceive the differences of sounds and voices, and by little and little lead them to the membrane.

The Figure of the ears and bones of the auditory passage.



Tab. 10. sheweth the ears and the divers internall parts thereof.

Fig. 1. sheweth the whole externall ear, with a part of the Temple bone.

Fig. 2. sheweth the left bone of the Temple divided in the midst by the instrument of hearing, whereabout on either side there are certain passages here particularly described.

Fig. 3, and 4. sheweth the three little Bones.

Fig. 5. sheweth a portion of the bone of the temples which is seen neer the hole of Hearing divided through the midst, whereby the Nerves, Bones and Membranes may appear, as Vesalius of them conceiveth.

Fig. 6. sheweth the Vessels, Membranes, Bones and holes of the Organ of hearing, as Platerus hath described them.

Fig. 7, and 8. sheweth the little bones of the hearing of a man and of a Calfe, both joined and separated.

Fig. 9. sheweth the Muscle found out by Aquapendens.

For the particular declaration see D. Crooks Anatomy. pag. 577.

This membrane which is indifferently hard hath grown up from the nerves of the fifth

fifth conjugation, which they call the auditory. But they were made thus into crooked windings, lest the sounds rushing in too violently should hurt the sense of hearing. Yet for all this we oft find it troubled and hurt by the noise of thunder, Guns and Bels. Otherwise also lest that the air too sodainly entring in should by its qualities, as cold, cause some harm: and also that little creeping things and other extraneous bodies, as fleas and the like, should be stayed in these windings and turnings of the waies, the glutinous thickness of the cholerick excrement or ear-wax hereunto also conducing, which the brain purges and sends forth into this part, that is, the auditory passage framed into these intricate Mæanders.

But that we may understand how the hearing is made, we must know the structure of the organ or instrument hereof. The membrane which we formerly mentioned to consist of the auditory nerve, is stretched in the inside over the auditory passage like as the head of a Drum. For it is stretched and extended with the air, or auditory spirit implanted there, and shut up in the cavity of the mamillary proceſſe and *foramen cæcum*, that smitten upon by the touch of the externall air entring in, it may receive the object, that is, the sound, which is nothing else then a certain quality arising from the air beaten or moved by the collision and conflict of one or more bodies.

Such a collision is spread over the air, as the water which by the gliding touch of a stone produces many circles and rings one as it were rising from another. So in rivelets running in a narrow channel, the water stricken, and as it were, beaten back in its course against broken, craggy and steep rocks, wheels about into many turnings: this collision of the beaten air flying back divers waies from arched and hollow roofed places, as Dens, Cisterns, Wells, thick Woods and the like, yeelds and produces a double sound, and this reduplication is called an Echo. Wherefore the hearing is thus made by the air, as a medium, but this air is twofold, that is, externall and internall.

The exterior is that which encompasses us, but the interior is that which is shut up in the cavity of the mamillary proceſſe and *foramen cæcum*, which truly is not pure and sole air, but tempered and mixed with the auditory spirit. Thence proceeds the noise or beating of the ears, when vapors are there mixed with the air instead of spirits, whereby their motion is perturbed and confused. But neither do these suffice for hearing, for nature for the more exact distinction of sounds hath also made the little bones, of which one is called the *Incus* or anvil, another the *Malleolus* or hammer, the third the *Stapes* or stirrop, because the shape thereof resembles a German stirrop. Also it may be called *Deltoides*, because it is made in the shape of the Greek letter Δ.

They are placed behind the membrane, wherefore the anvil and hammer moved by the force of the entrance of the externall air, and beating thereof against that membrane, they more distinctly expresse the difference of sounds, as strings stretched within under the head of a Drum; as for example, these bones being more gently moved represent a low sound to the common sense and faculty of hearing, but being moved more vehemently and violently, they present a quick and great sound; to conclude, according to their divers agitation, they produce divers and different sounds.

The Glandules should follow the Ears in the order of Anatomy, as well those which are called the emunctories of the brain, that is, the *Parotides*, (which are placed as it were at the lower part of the ears) as these which lye under the lower Jaw, the muscles of the bone *Hyoides* and the tongue, in which the *Scrophule* and other such cold abscesses breed. It shall here suffice to set down the use of all such like Glandules.

Therefore the *Parotides* are framed in that place by nature, to receive the virulent and malign matter sent forth by the strength of the brain, by the veins and arteries spread over that place. The rest serve to strengthen the division of the vessels, to moisten the ligaments and membranes of the Jaw, lest they should be dried by their continuall motion. Their other conditions and uses are formerly handled in our first book of Anatomy.

CHAP. XI.

Of the bone Hyoides, and the Muscles thereof.

The substance of the bone *Hyoides* is the same with that of other bones. The figure thereof imitates the greek letter υ from whence it took the name, (as also the name υμυλοειδης; and from the letter λ it is in like sort called λυμβοειδης; by some it is stiled *os Gutturis* and *os Linguae*, that is, the Throat-bone and Tongue bone. The composition thereof consists of many bones joined into one by the interposition of gristles.

This bone is bigger in beasts and composed of more bones, and that not only by the intercourse of gristles, but also of ligaments. It is seated with its basis (being gibbous on the

For what use the ear-wax serves.

For what use the membrane stretched under the auditory passage serves.

What sound is;

The cause of an echo.

The 3 bones of the auditory passage.

Their use;

Whence the difference of sounds;

The reason of the name.

The composition.

The first.

forepart for constancy, and arched on the inside that it might receive and contain the root of the tongue) upon the upper part of that gristle of the throtle which is called *scutiformis* or Shield-like, (for this seems to prop it up by the strength of two processes rising at the basis thereof) and the root of the tongue. From this basis it sends forth two horns to the sides of the tongue on each side one, which in men are tyed to the Appendix *styloides* by ligaments sent from it self. Contrary then it is in beasts, who have it of many bones united as we said, by the intercourse of ligaments even to the root of the *styloides*. Wherefore this bone hath connexion with the forementioned parts, and other hereafter to be mentioned. It hath the same temper as other bones have. The use of it is, to minister ligaments to certain muscles of the tongue, and insertion as well to the two foremost and upper muscles of the throtle, as to its own, of which we will now treat.

The temper and use.

The muscles of the bone *Hyoides*.

The muscles of the bone *Hyoides*, according to the opinion of some are eight, on each side four; of which there be two, one of which *Galen* refers to the common muscles of the *larinx* or throtle; and the other to those which move the shoulder-blade upwards. Howsoever it be, the first of the four before mentioned arises from the Appendix *Styloides*, and passing over the nervous substance of the muscle opening the lower jaw, is inserted into the horns of the bone *Hyoides*. This muscle is very thin, yet somewhat broad, the which in that respect may easily be cut, unless you have a care in separating the muscle which opens the lower Chap. The second ascends obliquely from the upper part of the shoulder-blade near the production thereof called *Coracoïdes*, to the beginnings of the horns of the said bone *Hyoides*. This is round and nervous in the midst that so it might be the stronger, as that is which we formerly said opens the lower jaw; and it is refer'd by *Galen* amongst those which move the shoulder-blade upwards. The third arises from the upper part of the *sternon*, and is inserted at the root and basis of the bone *Hyoides*; yet *Galen* refers it to the common muscles of the *Larinx*; whose opinion takes place rather in beasts, than in man, seeing in man this muscle cannot be found either to proceed, or be inserted into the throtle, as it is in beasts. The fourth and last descends within from the chin to the root of the bone *Hyoides*. The first of these muscles with its companion or partner moves the bone *Hyoides* upwards, the second downwards; the third backwards; and the fourth forwards. I would declare whence these muscles have their vessels, had I not abundantly satisfied that thing, when I treated of the distribution of the nerves, veins and arteries.

The action of these muscles.

CHAP. XII.

Of the Tongue.

What kind of flesh the tongue hath.



THE tongue is of a fleshy, rare, loose and soft substance; it enjoys flesh of a different kind from the rest of the flesh, as chiefly appears when you cut it from the first original of the muscles thereof; which thing hath moved some, that they have made a fourth kind of flesh proper to the tongue and different from the rest, *viz.* the fibrous, musculous, and that of the bowells. The quantity thereof is such that it may be contained in the mouth, and easily moved to each part thereof. The figure of it is triangular, which it rather expresses in the basis, which is at the root of the bone *Hyoides*, than in its point, or forepart, where from a triangle it becomes more dilated. It is composed of a membrane (which it hath from that which lines all the inside of the mouth) muscles 4. nerves two on each side, the one whereof is sent from the third conjugation, into the coat thereof; the other from the seventh is sent into the musculous substance even to the end thereof for motions sake; so that those sensifick nerves from the third conjugation only give to judg of tastes, compose the coat, and touch or enter not the flesh. Besides it is composed of veins and arteries on each side one, which it receives from the externall *Jugular* and *Carotides*, running manifestly to the end thereof on the lower side, that so they might be easily opened in the diseases of the mouth and throtle; they commonly term these the *Vene nigrae* or black veins.

The quantity. The figure.

Composure. The nerves.

The muscles of the tongue.

The muscles of the tongue, are absolutely ten, on each side five. The first narrow at the beginning and broader at the end, descends into the upper side of the tongue from the Appendix *Styloides*, and together with its copartner draws it upwards. The second hath its original within from the lower jaw, about the region of the grinding-teeth, and is inserted into the lower side of the tongue, the which with its partner draws it downward. The third proceeds from the inner part of the chin, and goes to the root of the tongue, that when need requires it may put it forth of the mouth. The fourth the greatest and broadest of them all, composed of all sorts of fibers, passes forth from the basis of the bone *Hyoides*, and ends at the lower part of the tongue, which with its companion plucks it back into the mouth. The fifth and last most usually arises from the upper part of the horns of the bone *Hyoides*, and goes to the roots of the tongue between the two first, that it may move it to the sides of the mouth.

mouth. The temper thereof, as of all other flesh, is hot and moist. The first action and commodity thereof is, to be the organ of the sense of tasting, wherefore it was made fungous and spongy, that by reason of the rarity of it, it might more easily admit the taste conjoined with the spittle, as a vehicle. Another to be an instrument to distinguish the voice by articulate speech, for which it was made movable into each part of the mouth. The third is to be a help to chew and swallow the meat. For which cause it is like a scoop or dish with which we throw back the corn into the mill, which hath escaped grinding. And because, when the tongue is dry, it is less nimble and quick to perform its motions, as appears by those which can scarce speak by reason of thirst or a burning Feaver: therefore nature hath placed very spongy glandules at the roots thereof, on each side one, which like sponges suck and receive, both from the brain and other places, a waterish and spittlely humor, with which they humect and make more glib, not only the tongue, but also the other parts of the mouth, as the throat and jawes; these glandules are called the *Tonsillæ*, or Almonds of the throat.

The temper, action, and manifold use of the tongue.

The use of the glandules placed at the roots of the tongue.

CHAP. III.

Of the Mouth.

The mouth is that capacity which bounded with the cheeks and lips contains within its precincts the teeth, tongue, and the beginnings of the throat and gullet. Therefore the use of the mouth is to contain the tongue, and serve it in the fitter performance of its actions; and although many parts hereof have been formerly handled, as the lips, teeth, jawes, tongue, almonds, and passages of the palat coming from the nose, yet it remains, that we declare what the palat, the *Gargareon*, or *Vvulva*, the *Pharinx*, and *fauces* or Chops are. The Palat (or as it is commonly called, the Roof of the mouth) is nothing else but the upper part of the mouth bounded with the teeth gums and upper Jaw. In which place the coat common to the whole mouth, is made rough with divers wrinkles, that the meats put up and down between the tongue and the Palat might be broken and chewed more easily by that inequality and roughness. If any would find the nerves, which descend into the palat from the fourth conjugation, let him separate that coat and cast it from the fore to the hind part of the mouth; for so he shall find them at the sides and hind parts of the bones of the Palat, which incompass the Palat, and at the beginning of the inner holes of the mouth, which descend from the nose, and region of the productions of the wedgbone called the Saddle. These holes or passages are open, that we may breath the better when we sleep, and that when the nose is not well, the excrements which seek their passage by it, may be easilier drawn away by the mouth. This same coat is woven with nervous fibers, that like the tongue it might judg of taste; these fibers compose a coat that hath a middle consistence betwixt soft and hard. For if it should have been any harder, like a bone or gristle, it would have been without sense, but if softer, hard, acrid and sharp meats would have hurt it.

What it is.

The use.

What the palat is.

The nerves thereof.

Why the holes of the palat are open.

What kind of coat the palat hath.

CHAP. XIII.

Of the Gargareon, or Vvulva.

By the *Gargareon* we understand a fleshy and spongy body, in shape like a pine apple, hanging directly down at the further end of the palat and basis of the bone *Ethmoides*, where the two holes of the palat come from the nose, above the entrance of the throtle. This little body is situate in this place to break the violence of the air drawn in by breathing, and that by delay it might in some sort temper and mitigate it by the warmth of the mouth. Besides, that it might be as it were the *Pleurum*, or quill of the voice, so to diffuse the fuliginous vapour sent forth in breathing, that it may be dispersed over all the mouth, that resounding from thence it may be articulate, and by the motion of the tongue distinguished and formed into a certain voice. Which use is not small, when we see by experience that such as have this particle cut away, or eaten, or corrupted by any accident, have not only their voice vitiated and depraved, but speak ill-favouredly, and as they say, through the nose; and besides in process of time they fall into a consumption by reason of the cold air passing down before it be qualified. This same particle, is also a means to hinder the dust from flying down through the weazon into the Lungs. By the *Pharinx* and *fauces* is meant the inner and back part of the mouth, set or placed before the entrance of the Throtle and Gullet; being so called, because that place is narrow and strait, that as it were by these straits, the air drawn in by the mouth might be forced down by the Throtle, and the meat into the Gullet.

What the *Gargareon*, or *Vvulva* is.

The site and manifold use thereof.

The discomforts that ensue the loss of the *Vvulva*.

What the *Pharinx* and *fauces* are.

CHAP. XV.

Of the Larinx, or Throttle.

What is meant
by the *Larinx*.



First we must shew what is meant by the *Larinx* and Throttle, then prosecute the other conditions of it after our accustomed manner. Therefore by the *Larinx* we understand nothing else in this place, than the head & extremity of the rough artery, or weazon, which comes neerer to gristly substance, than to any other. The quantity thereof is sufficiently large, yet divers according to the diversity of bodies. It resembles in shape the head of a *Germane* pipe. The composition of it consists of 18. muscles, on each side nine, which as they are like in quantity, so also in strength and action; of three gristles, veins, arteries and nerves, as we shewed, when we spoke of the distribution of the vessels; as also of a double coat, the one externall, the other internall, as we shewed when we spoke of the weazon. These three gristles are joyned together by certain Ligaments and muscles; the foremost gristle, which also is the greater, is called by the Greeks *βυρροειδής*, in Latin commonly *Scutiformis*, that is shield-like, because it resembles a shield. The second being the hinder and middle in magnitude, wants a name, wherefore it is called the *innominata* or nameless gristle. The last and least, which notwithstanding may be parted into two, so lyes upon the edges of the other, that it resembles the mouth of an oyl pot, or a pitcher, whereupon the Greeks call it *Arytenoides*. These gristles thus fitted amongst themselves utter a distinct voice, by the benefit of the *Epiglottis*, or After-tongue; and also of the muscles opening and shutting, dilating and compressing them, whence proceed infinite varieties of voices. For thus when they are opened and dilated, they yeeld a heavy, or dull sound; when they are shut or drawn together, a quick, or sharp sound; and to conclude, they make it infinite wayes different according to the infinite variety of the dilatation, or constriction thereof. Therefore because it was fit these gristles should be moveable, especially the *Arytenoides*, and *Thyroides*, nature hath put to them on each side 9 muscles, of which three are common, and six proper. The first of the common lying hid under the third muscle of them that move the bone *Hyoides*, arises from the root of the same bone, and by an oblique descent inserts it self at the basis of the shield-like gristle, to dilate it upwards and downwards. The second ascends obliquely from the inner part of the *sternon* according to the length of the weazon (whence it is called *Bronchius*) to the bottom and sides of the same shield-like gristle, that it may open and dilate it with its wings. This muscle is seen from the first original thereof, even a great part of the way straitly to cohere with the third muscle of the bone *Hyoides*; therefore under each of the muscles, there is a glandulous body spread about the fore and upper part of the weazon, on that place where it applies it self to the throttle; this body although it resemble a fleshy substance, yet it is a glandule, which being pluckt away by a certain Emperick taking upon him to cure the kings evill, caused a defect of voice on one side, because he pulled away the recurrent nerve lying upon the glandule as it goes to the throttle, as *Galen* reports, *Lib. de locis affectis*. The third and last arises from the parts of the *Vertebra's* of the neck lying transversly upon the sides of the gullet, and ends at the wings and sides of the shield-like gristle, that it may tye it more straitly to the second gristle. But these three are called common muscles, because they take their original from some other place than the throttle, that so they may be inserted into some part thereof; for they are called the proper muscles which arise from the Throttle it self, which we have said to be six on each side: the first of which arising from the fore part of the second gristle, makes a circle under the basis of the shieldlike gristle; whilst ascending obliquely to the basis thereof, it is afterwards inserted in a part of it, so to strengthen and dilate it. The second in like manner arising from the second gristle, from that place where it adheres to the first, it runs obliquely crossing the first to the inner and forepart of the gristle *Thyroides* neer to the basis thereof, that it may joyn it to the second. The third from the hind basis of the second gristle ascends directly to the basis of the third gristle *Arytenoides*, that with the second muscle it may open and shut it. The fourth ascends from the sides of the second gristle, neer the originall of the second muscle, to the sides of the *Arytenoides*, that with the second muscle it may open and shut it. The fifth arises from the inner middle of the shield-gristle, and ends in the fore-part of the *Arytenoides* at the insertion of the fourth muscle, that so it may press down the said gristle.

The magni-
tude, figure,
and compo-
sit.

The descripti-
on of the
3 gristles of the
Larinx.

Whence the
infinite variety
of voices pro-
ceed.

The muscles of
the *Larinx*.
Their number.

A notable
history.

And

Whence the
muscles of the
Throttle have
their nerves.

The sixth and last ascends by the hind basis of the *Arytenoides* to the fore basis of the same, to press it down. But you must note, that all such muscles as arise from below upwards, receive branches from the recurrent, but especially those who open and shut the gristle *Arytenoides*. But the site, temper, connexion, and use of the throttle may easily be known by that we have said before: Although it be a thing very full of difficulty to search out and demonstrate all the conditions of the organically parts, by reason of the diversity of their composition. Wherefore hence-forward concerning the substance, temper, and other circumstances of such parts as we shall omit, you may have recourse to those things which we have written in the Demonstration of the simple and similar parts, of which these organically

nicall are compos'd; as if any should ask of what temper the *Larinx* is, you shall answer, of a cold, dry, and hot, and moist, because it consists both of a gristly and fleshy substance. He which reckons up all the parts of the mouth, must not omit that gristly and membranous body which arises from the roots of the tongue, which that it might be more quick for motion, that is, whereby it might be more easily erected and depressed (for those things which are more soft do continually slide away, but those which are too hard cannot be bended) it was convenient it should be neither too hard nor too soft, that it might be erected whilst we breath, but depressed when we swallow. It is a principall instrument of the voice, for it cannot be well articulated unless the way were strait. Therefore it straitens that way, and the passage of the gristles of the throttle, but specially the *Arytenoides*; it is alwayes moist by a certain native, and inbred humidity; wherefore if it happen to be dried by a fever, or any other like accident, the speech is taken away. It is bound on both sides by the common membrane of the mouth to the sides of the *Arytenoides* even to the back part thereof, that so like a cover it may open and shut the orifice of the throttle, that none of the meat and drink in swallowing may fall into the weazon, in such abundance as may hinder the egress and regress of the air. For we most not think that this body doth so closely shut the orifice of the throttle, but that some small quantity of moisture alwayes runs down by the inner sides, as the walls thereof, to moisten the lungs; otherwise *Eclagma's* should be of no use in the diseases of the Chest. And because that this little body is partaker of voluntary motion, therefore according to the opinion of some there are four muscles bestowed upon it, two which may open it and two that shut it, on each side one. The opening muscles descend from the root of the bone *Hyoides*, and in their infertion growing into one they are terminated in the root of this body, that is, the *Epiglottis* in the back part thereof. The shutting muscles (in those creatures where they are found) arise on the inside between the coat and gristle thereof. Truly I could never observe and find these four muscles in a man, though I have diligently and earnestly sought for them, but I have alwayes observed them in beasts. Therefore some have boldly affirmed that this little body in swallowing lies not upon the orifice of the Throttle, unless when it is pressed down by the heaviness of such things as are to be swallowed; but that at all other times by reason of the continuall breathing it stands upright, the Throttle being open. There remain as yet to be considered, two small bosomes, or cavities, or rather fissures, which nature hath hollowed in the very throttle under the *Epiglottis*, on each side one, that if by chance any of the meat or drink should fall, or slip aside in the *Larinx*, it might be there stayed and retained. Beside that, the Air too violently entring, should be in some sort broken by these clefts, or chinks, no otherwise then the blood and spirit entring into the heart through the *Auricula* or Ears thereof.

The *Epiglottis*,
or After-
tongue.

Of potable
things some-
what alwayes
falls upon the
Lungs.

The muscles of
the *Epiglottis*.

The use of the
cavities or fis-
sures of the
Throttle.

CHAP. XVI.

Of the Neck and the parts thereof.

First we will define what the Neck is, then prosecute the parts thereof as well proper, as common, especially those of which we have not as yet treated. For it were superfluous to speak any more of the skin, the fleshy pannicle, the veins, arteries, nerves, gullet, weazon and muscles ascending and descending to the parts into which they are inserted amongst the neck; wherefore you must not expect that we should say any thing of the neck, more than to describe the *Vertebra* or rack bones, being the proper parts thereof, and the ligaments as well those proper to the neck, as those which it hath in common with the head; and lastly the muscles as well those it hath in common with the head and chest, as those of its own. Therefore the neck is nothing else, then a part of the head, which is contained between the nawl bone and the first *vertebra* of the back. First in the neck the *Vertebra's* must be considered, and we must shew what they have proper and peculiar, and what common amongst themselves, that we may the more easily shew the originall and infertion of the muscles growing out of them and ending in them. The neck consists of seven *Vertebrae* or Rack-bones, in which you must consider their proper body; and then the holes by which the spinall marrow passes; thirdly the *Apochyfes* or processes of the *Vertebrae*; fourthly the holes through which the nerves are disseminated into other parts from the spinall marrow, and besides the perforations of the transverse productions by which the veins, and arteries, which we call *Cervicales*, ascend amongst the neck, and lastly the connexion of these same *vertebrae* or Rack-bones. For the first, by the body of the *vertebra*, we understand the forepart thereof upon which the gullet lies. For the hole, that is not alwayes the largest in those *vertebrae* which are nighest the head; but it is alwayes encompassed with the body of the *vertebrae*, and besides with three sorts of processes, except in the first Rack-bone, that is right, transverse and oblique. By right we understand these extuberancies in the rack-bones of the neck which are hollowed directly in the upper part of them, and rise up crested on each side to sustain and receive the basis of the Rack-bone which is set upon it. By the oblique processes we understand the bunchings out

What the neck
is.

What to be
considered in
the *vertebrae* of
the neck.

Which be the
right processes
of the *vertebrae*
Which the
oblique.

Which the transverse.

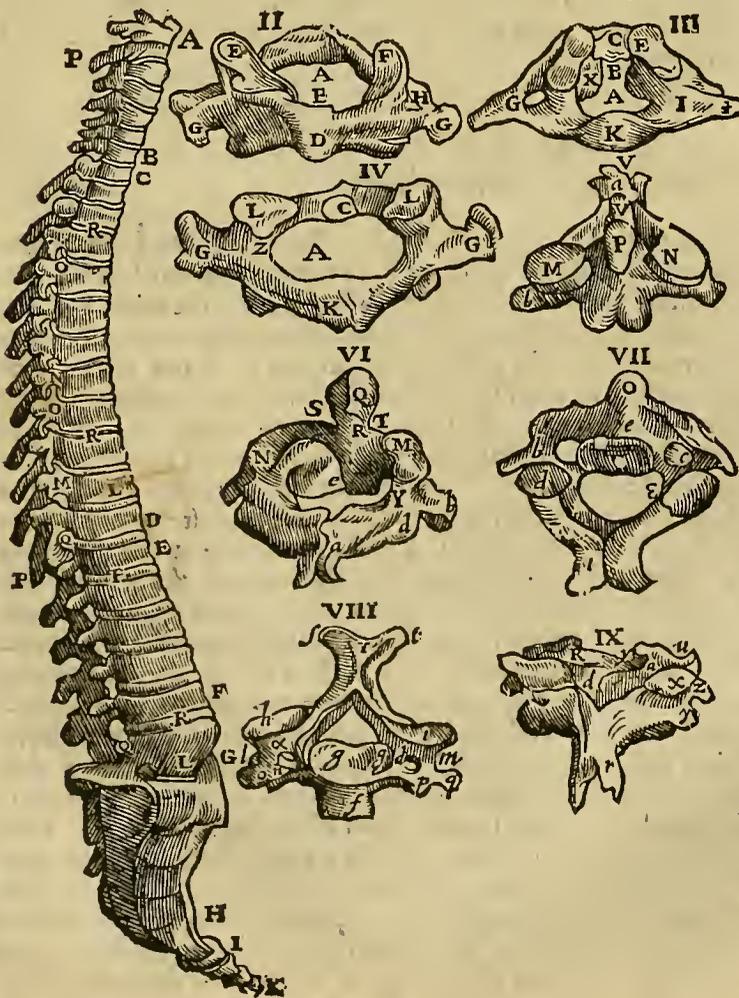
The connexions of the vertebra of the neck.

The process called the tooth.

out by which these Rack-bones are mutually knit together by *Ginglymos*; these are seated between the right and transverse processes. By the transverse we understand the protuberations next the body, which divide the *vertebra* or Rack-bone in a straight line. These processes are perforated that they may give way to the before described veins and arteries, which entering the Spinal marrow by the holes of the nerves nourish the Rack-bones and parts belonging to them. Besides you must note that the perforations of the Rack-bones of the neck, by which the nerves proceed from the spinal marrow to the outward parts, are under the transverse process, that is growing or made by the upper and lower *vertebra*, contrary to all the other which are in the rest of the Rack-bones. For the connexion of the Rack-bones, you must know that all the *vertebrae* of the spine have six connexions, two in their own bodies, & four in their oblique processes. By the two first connexions they are so mutually articulated in their own bodies that each are joyned with other both above and below. But by the four other by their oblique ascendent & descendent processes on each side two, they are so mutually inarticulate, that as the fourth Rack-bone of the neck by its oblique ascendent processes, is received of the descendent processes of the third rack-bone; so it receives the oblique ascendent processes of the first, by its oblique descendent, for alwayes the oblique ascendents are received, and the descendents receive. Yet we must except the first Rack-bone of the neck which is contained with four connexions by his lower oblique processes, and by its upper by which it receives the oblique processes both of the nowl-bone, and of the second Rack-bone. The second *vertebra* or Rack-bone must also be excepted which is holden by five connexions, that is to say, four by its oblique processes, and the fifth by its own body, by which it is knit to the body of the third *vertebra*. But we must note, that whereas nature hath not given a Spine to the first Rack-bone, yet it hath given it a certain bunch or extuberancy in ste ad thereof; in like manner, seeing it makes no common passage with the second *Vertebra* for the passing forth of the nerve, it is perforated at the sides of its body, and it is made very thin on the fore side, as if it were without body, that it might receive the fore process raised in the upper body of the second Rack-bone, which *Hippocrates* calls the tooth, to which the principall Ligament of the head is fastened, which descends within from the hind part of the head under the *Apophyses clinoides* or processes of the wedg-bone.

Table 20. Figure 1. Sheweth all the Rack-bones of the back knit together. Figure 2. Sheweth the fore and upper face of the neck, &c. See D. Crook, pag. 398.

FIG. I



From A, to B, the seven *vertebrae* of the neck.
 From C, to D, the twelve *vertebrae* of the chest.
 From E, to F, the five rack-bones of the Loines.
 From G, to H, the *Os sacrum*, or Holy-bone consisting, commonly of 6. *vertebrae*.
 From I, to K, the bone *Coccyx* or the rump-bone according to the late writers.
 LL, the bodies of the *vertebrae*.
 M, the transverse processes of the *vertebrae*.
 N, the descendent processes.
 OO, the ascendent processes.
 PP, the backward processes.
 QQ, the holes that are in the sides of the *vertebrae* through which the nerves are transmitted.
 RR, A gistly Ligament betwixt the *vertebrae*.
 A, 2, 3, 4, the hole whereout the marrow of the back issueth.
 B, 2, 3, The cavity which admiteth the root of the second rack-bone.
 C, 3, 4, a cavity or *Sinus* in the same place crusted over with a gristle.
 D, 2, a prominence in the outward region of this *Sinus*.
 EF, 2, 3, the *Sinus* or cavity of the first rack-bone which admiteth the 2. heads of the nowl-bone.
 GG, 2, 3, 4, the transverse process of the 1. *Vertebra*.
 H, 1, the hole of this transverse process.

L, 3, the *Sinus* which together with the cavity of the nowl-bone marked with E, maketh a common passage prepared for the nerves.

R, 3, 4, a rough place where the spine of the first rack is wanting.

LL, 4, two cavities of the first rack receiving the 2. bunches of the second rack marked with MN.

MN, 5, 6, the 2. bunches of the second rack which fall into the cavities of the first. O, 7, the appendix or root of the second rack. P, 5, a knob of this appendix crusted over with a gristle. Q, 6, the backside of the tooth.

R, 6, the *Sinus* or cavity of the same, about which a transverse Ligament is rowled containing the said tooth in the cavity of the first rack. ST, 6, Certain cavities at the sides of the tooth whence the roots issue of the fore-branch of the second pair of sinews. V, 5, the point of the tooth. X, 3, an asperity or roughness where is a hole but not thrilled through. Y, 6, a cavity of the second rack which together with the cavity marked with Z, maketh a hole through which the nerves do issue. Z, 4, the *Sinus* of the first rack. a, 5, 6, 7, the double spine of the second rack. b, 5, 6, 7, the transverse process of the second rack. c, 7, the hole of the said transverse process. d, 6, 7, the descending process of the second rack whose cavity is marked with d, in the 6. figure. e, 6, 7, the place where the body of the second rack descendeth downward. f, gg, 8, the lower side of the body of the third rack at f, the two eminent parts of the same at gg. h i, 8, the ascending processes. Im, 8, the two descending processes. n o p q, 8, the transverse processes. r, 8, 9, the spine or backward process. st, 8, the two tops of the spine. u, 9, the descending process of the third rack. x, 9, the ascending process. y, the transverse process of the third rack. a, 8, 9, the hole of this transverse process. β, 9, the upper hollowed part of the body of the third rack. β, 9, the *Sinus* or cavity which maketh the lower part of a hole through which the conjugations of the nerves are led. ε, 7, the upper part of the same hole.

And by this articulation the head is bended forwards and backwards, as it is moved to the sides by the articulation of the first Rack-bone with the second. That process is bound by two Ligaments, the first of which being greater and broader is external, comprehending in the compass thereof all the upper articulation, ascending from the rack-bones to the head, or rather descending from the head to them, as any other Ligament going from one bone to another; The other is the stronger and also incompasses the articulation mixing its self with the gristle, which by its interposition binds together all the Rack-bones, the first excepted, as you may see in pulling asunder the Rack-bones of a Swine; and the whole Spine or Back-bone is tyed together and composed throughout with such Ligaments.

By what articulation the head is bended backwards and forwards.

The Holy bone is composed of 4. *Vertebrae* (or rather of five, or six, as in the figure following) besides the Rump-bone, it receives, and holds fast the *Ossa Ilium*, or Hanch-bones, and is as a Basis to all the Rack-bones placed above it, whereby it comes to pass that the Rack-bones from the Head to the Holy-bone grow still thicker, because that which supports ought to bigger than that which is supported. There is a certain moisture, tough and fatty, put between the Rack-bones, as also in other joynts, to make them glib and slippery, that so they may the better move. Whilst this motion is made, the Rack-bones part one from another.

The *Vertebrae* of the Holy bone.

The commodities or uses of the Spine are said to be four. The first is, that it is, as it were, the seat and foundation of the composure and construction of the whole body, as the Carcass is in a ship. The second, that it is a way or passage for the marrow. The third is, because it contains and preserves the same. The fourth is, that it serves for a wall or bulwark to the entrails, which lye and rest upon it on the inside. And because we have fallen into mention of Ligaments, it will not be amiss to insert in this place, that which ought to be known of them. First, therefore, we will declare what a Ligament is, then explain the divers acceptions thereof, and lastly prosecute their differences.

The manifold uses of the Backbone.

Therefore a Ligament is nothing else than a simple part of mans body, next to a bone and Gristle the most terrestriall, and which most usually arises from the one or other of them either mediately or immediately, and in the like manner ends in one of them, or in a Muscle, or in some other part; whereby it comes to pass that a Ligament is without blood, dry, hard, cold, and without sense, like the parts from whence it arises, although it resemble a Nerve in whiteness and consistence, but that it is somewhat harder.

What a Ligament is.

Why it is without sense?

A Ligament is taken either generally or more particularly; in general, for every part of the body, which ties one part to another, in which sense the skin may be called a Ligament, because it contains all the inner parts in one union. So the *Peritoneum* comprehending all the naturall parts, and binding them to the back-bone: so the membrane investing the Ribs, (that is, the *Pleura*) containing all the vitall parts; thus the membranes of the brain; the nerves, veins, arteries, muscles, membranes, and lastly all such parts of the body, which bind together and contain other, may be called Ligaments, because they bind one part to another; as the nerves annex the whole body to the brain, the Arteries fasten it to the heart, and the veins to the liver. But to conclude, the name of a Ligament more particularly taken, signifies the part of the body, which we have described a little before.

What parts may be called Ligaments in a general signification?

The differences of Ligaments are many, for some are membranous and thin; others broad, others some thick and round, some hard, some soft, some great, some little; some wholly gristly, others of a middle consistence between a bone and a gristle, according to the nature of the motion of the parts, which they bind together in quickness, vehemency and slowness. We will shew the other differences of Ligaments, as they shall present themselves in dissection.

The differences of Ligaments properly so called.

CHAP. XVII.

Of the Muscles of the Neck.

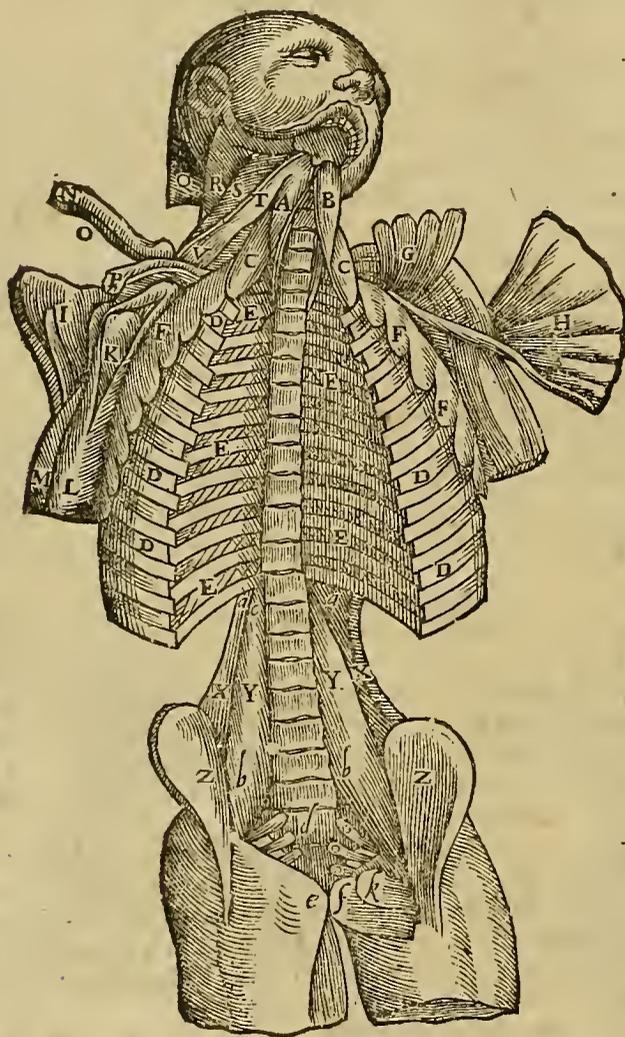
Their number.



The Muscles of the neck as well proper as common, are in number twenty, or else twenty two, that is, ten, or eleven on each side; of which, seven only move the head, or the first *vertebra* with the head; the other three or four, the neck it self.

Of the seven which move the head, and with the head the first *Vertebra*, some extend and erect it, others bend and decline it, others move it obliquely, but all of them together in a successive motion move it circularly, and the like judgment may be of the Muscles of the Neck.

The fourth Figure of the Muscles. This Figure sheweth the cavities of the middle and lower bellies, the bowels being taken out, but most part of the bones and muscles remaining.



AB. The first muscle bending the neck called *Longus*.

CC. The second bender of the neck called *Scalenus*.

DDDD. The outward *intercostal* muscles.

EEEE. The inner *intercostal* muscles.

FFF. The second muscle of the chest called *serratus maior*.

G. The first muscle of the shoulder-blade called *serratus minor*, separated from his originall.

H. The first muscle of the arm called *Pectoralis*, separated from his originall.

I. The second muscle of the arm called *Deltoides*.

K. The bone of the arm without flesh.

L. The first muscle of the cubit called *Biceps*.

M. The second muscle of the cubit called *Brachialis*.

N. The clavicle or collar-bone bent backward.

O. The first muscle of the chest called *subclavius*.

P. The upper process of the shoulder-blade. Q. The first muscle of the head called

obliquus inferior. R. The second muscle of the head called *Complexus*. S. The

fourth muscle of the shoulder-blade called *Levator*. TV. The two bellies of the fourth muscle of the bone *Hyois*.

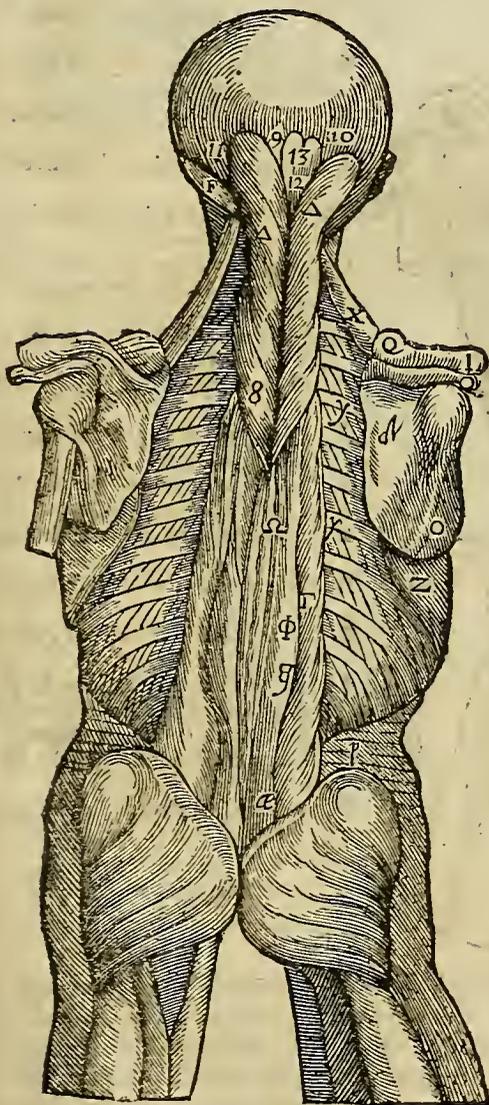
XX. aa. The fift muscle of the back whose originall is at aa. YY. bb. cc. The sixt muscle of the thigh called *Psoe*, whose originall is at cc. and tendon at bb. ZZ. The seventh muscle of the thigh. d. the holy bone. ooo. The holes of the holy bone, out of which the nerves do issue. e. A portion of the fifth muscle of the thigh arising from the share-bone. f the share-bone bared. k. The ninth muscle of the thigh or the first *circumflexor*.

But before I can come to the description of their originall and insertion, I must admonish thee, that the 2 Muscles of the shouder-blade must first be taken away by dissection; that is, the *Trapezius*, or Table-muscle, and the *Rhomboides*, or square-muscle; whose originall and insertion that we may the better demonstrate, (or rather the action by which we seek that originall and insertion,) they must be pulled up, beginning at their insertion, which is at the shoulder-blade (as shall be shewed in the proper place) turning them up towards their originall, that is, to the Spine. Besides the less *Rhomboides*, the hinder, and upper (called also the *Dentatus* or toothed-muscle) must be raised from its originall, which is at the three lower Rack-bones of the Neck and the first of the back, and turned up to its insertion, which is at three spaces of the lower ribs
nigh.

nigh to the hind, and upper angle of the Shoulder-blade, as shall be shewed in fit place hereafter. These muscles thus raised up, the 4 muscles which erect and extend the head must be taken away, and then those two which move it obliquely, and lastly one which bends, or declines, for thus anatomical order requires. Yet if you think good, you may, not hurting the other, first of all cut away that which is called the *Mastoides*, which declines or bends the head. For these 4, which lift up and extend the head, the first from the figure of the spleen is called the *Splenius*, it ascends from the 5, upper spines of the back and the 4, lower of the neck, and is obliquely inserted at the back part of the head and the mamillary process, whence you may raise it towards its originall. The second by reason of its compo sure is called *Complexus*; this passing from the third, fourth and fifth transverse process of the back and often from the first of the neck, ascends directly to the back part of the head, in compassing the lower and side part of the neck, you may easily take it up; if you begin at the spine, and so go forwards to the transverse processes and mamillary processes of the nowl-bone. This *Complexus* may be divided into two or three muscles, but that with some difficulty, by

The *Splenius*;The *Complexus*;
in.

The fifth Figure of the muscles in which some muscles of the Head, Chest, Arm, and shoulder-blade are described.



I. The process of the shoulder-blade, called the top of the shoulder.

O. The fourth muscle of the arm or the greater round muscle, to which Fallopius his right muscle is adjoined, which some call the lesser round muscle.

Q. Q. The first muscle of the arm or the upper bade-rider.

X. The second muscle of the shoulder-blade or the Levator or heaver.

Z. The second muscle of the chest or the greater Saw-muscle.

Y. The first muscle of the chest or muscle called Sacrolumbus.

αβ. His place wherein he cleaveth fast to the longest muscle of the back.

γγ. The tendons of the muscle obliquely inserted into the ribs.

ΔΔ. The first pair of the muscles of the head or the Splinters.

Ch. 8. 9. Their length whose beginning at 8 and insertion at 9.

10. 11. The sides of this muscle.

12. That distance where they depart one from the other.

13. The two muscles called *Complexi*, near their insertion.

φ. The second muscle of the back or the Longest muscle.

α. The fourth muscle of the back or the Semi-spinatus.

δ. The shoulder-blade bare.

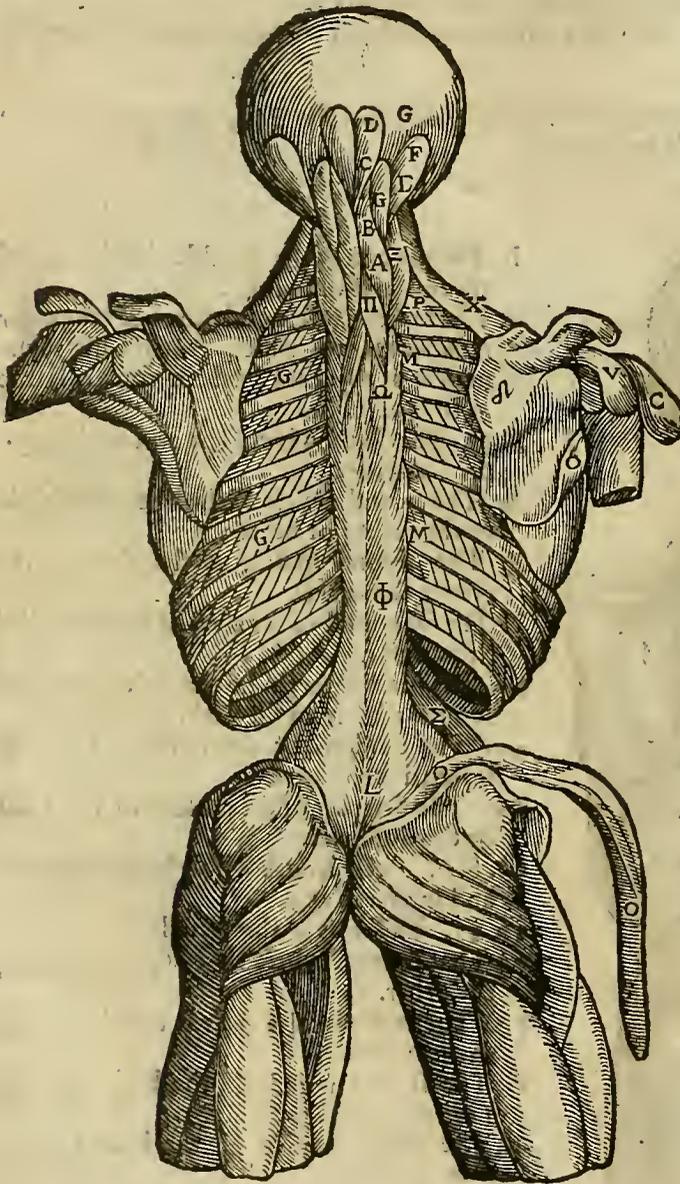
p. A part of the transverse muscle of the Abdomen.

reason of its folded texture. The third and fourth, which be two of the eight little muscles, being four on each side, do ascend somewhat obliquely, the first truly from the whole side of the second *Vertebra*. The second from the whole side of the process of the first *Vertebra*, which it hath in stead of a spine; they ascend to the back part of the head just against the spine; these two muscles by the consent of all Anatomists are called right, or direct muscles, only moving the head: these truly must not be pluckt from the places of their originall, nor insertion, but only bound by a string put under them, that so they may be the more easily shewed. On each side follow two oblique muscles, one whereof only moves the head; the other primarily the first *Vertebra*, but secondarily, and by accident

The Recti. or
2 right mus-
cles.

accident the head it self. For the first, contrary to the opinion of some, it arises from the transverse process of the first rack-bone, and then is inserted, above the insertion of the first right muscle: the which in like manner you must lift up, by something put underneath it, but not separate it. The other entering forth of the spine of the second *Vertebra*, is inserted at the process of the first, contrary to the original of the precedent, although some think otherwise. It will be convenient in the like manner only, to lift up this with a string, and not pluck him from his place, that so you may see how all these make a perfect triangle. The action of this muscle is contrary to the action of the precedent, as the contrariety of its original and insertion shew.

The sixth Figure of the muscles, shewing some of the muscles of the Head, Back, Chest, Shoulder-blade and Arm.



- A D.* the second pair of the muscles of the head, or the two *Complexi*, the first part is at *A D.*
BC. the second part *EF*, the third part rising up under *G* and inserted at *F.*
G. the fourth part of this muscle or the right muscle of the head according to *Fallopins*, which *Vesalius* made the 4 part of the 2.
GG. (Betwixt the ribs) the externall *Intercostall* muscles.
L. the original of the 2. muscle of the back.
M. His tendons at the rack-bone of the neck.
O. the upper *O* the fourth muscle of the arm or the greater round muscle.
OO. the lower, the 6 muscle of the chest, or the *Sacrolumbus* hanging from his original.
Q. the sixth muscle of the arm or the upper *Bladerider* inverted.
V. the third ligament of the joint of the arm.
X. the fourth muscle of the shoulder-blade or the *heaver*.
Z. the second muscle of the Chest, or the greater *Saw* muscle.
Z. the three muscles of the neck called *Transversalis*.
II. the 4. muscle of the neck called *Spinatus*.
S. the first muscle of the back, or the *Square* muscle.
Φ. the 2. muscle of the back or the *Longest*, whose original is at *L* and his tendons at the *Vertebrae* at *MM.*
Ω. the fourth muscle of the back called *Spinatus*.
∂. the back of the shoulder-blade stayed.

Which may be truly called the proper muscle of the neck. The two motions of the head.

Wherefore when the first oblique moves the head obliquely forwards, the second pulls it back by the first *Vertebra*, this with his associate of the other side, may be truly termed the proper muscles of the neck, because they belong to no other part; whereas it is contrary in other muscles. But we must note, that the head (according to *Galens* opinion) hath two motions, one directly forwards and backwards, as appears in beckning it forwards, and casting it backwards; the other circular.

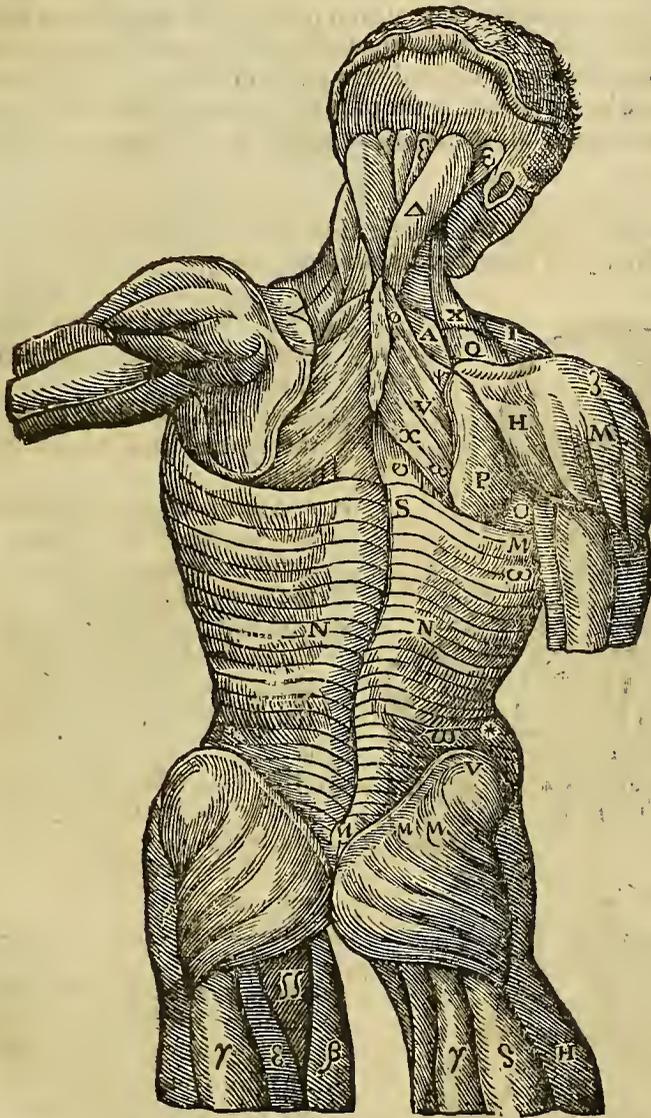
The first in *Galens* opinion is performed by the first *Vertebra* moved upon the second; the second by the head moved upon the first *Vertebra*; for which he is reproved by the latter Anatomists, who teach that the head cannot be turned round or circularly upon the first *Vertebra* without putting it out of joint.

For the last which bends the head, it ascends from the upper and side part of the *Sternum*, and the next part of the clavicle, obliquely to the *Apophysis Mastoides* or mamillary process of the hind part of the head, whence it is called the *Mastoides*. You may divide this by reason of its manifold original rather into two, than into three muscles. But it had been better that the head might have been moved every way, equally back-

The *Mastoides*?

backwards and to the right and left sides; but thus it would often have been strained to our great damage and danger of life; neither could there have been such facility of motion without a looseness of the joint. Therefore nature had rather bestow upon the head an harmless faculty of fewer motions, than one furnished with more variety, but with a great deal more uncertainty and danger. Wherefore it hath made this juncture not laxe or loose, but stiffe and strong.

The seventh Figure of the muscles; shewing some muscles of the head and Chest, the Trapezius or Table-muscle being taken away: as also of the blade and arm.



- A. The prominent part of the fourth muscle of the chest called *Serratus posterior superior*.
 Δ. the first muscle of the head called *Splenius*.
 E. the insertion of the second muscle of the head called *complexus*.
 I. the collar bone bared.
 M. the back part of the second muscle of the arm called *Deltoides*.
 ζ. his backward originall.
 θ. his implantation into the arm.
 NN. the fourth muscle of the arm called *Latissimus*.
 S μ. his originall from the spines of the rack-bones and from the holy-bone.
 ω. the connexion of this muscle with the hanch-bone, which is led in the inside from μ to ω.
 ω. the place where it lyeth upon the lower angle of the Basis of the shoulder-blade.
 O. the four muscles of the arm called *Rotundus major*.
 e. some muscles of the back do here offer themselves.
 P. the fifth muscle of the arm called *superescapularis Inferior*. Q. the sixth muscle of the arm called *Superescapularis Superior*. S. the beginning of the third muscle of the arm called *Latissimus*. V. the third muscle of the blade called *Rhomboides*. φ. X. his originall from the spines of the rackbones. √. his insertion into the basis of the shoulder-blade. χ. the fourth muscle of the blade called *Levator*. * a part of the oblique descendent muscle of the *Abdomen*.

After the shewing of these muscles, we must come to three or four of the neck, of which number two (which some reduce to one) extend, another bends, and the last moves side wayes, and all of them with a motion succeeding each other turn it about as we said of the muscles of the head. The first of these which extend, taking its originall from the six transverse processes of the six upper rack-bones of the back, or rather from the root of the oblique, ascends directly to the spine of the second vertebra of the neck, and the oblique process thereof; some call it the *Transversarius*; that is, the transverse-muscle. This, if you desire to take it away, it is best first to separate it from the spine, then to turn it upwards to the transverse processes; unless you had rather draw it a little from its partner and companion in that place where their originals are distinct, seeing it is the last and next to the bones.

Marvell not, if you find not this distinction of their originall, so plain and manifest, for it is commonly obscure. For the muscle *spinatus*, as it most commonly comes to pass, arising from the roots of the seven upper spines of the back, and the last of the neck, is inserted into other spines of the neck, so that it might easily be confounded with the former

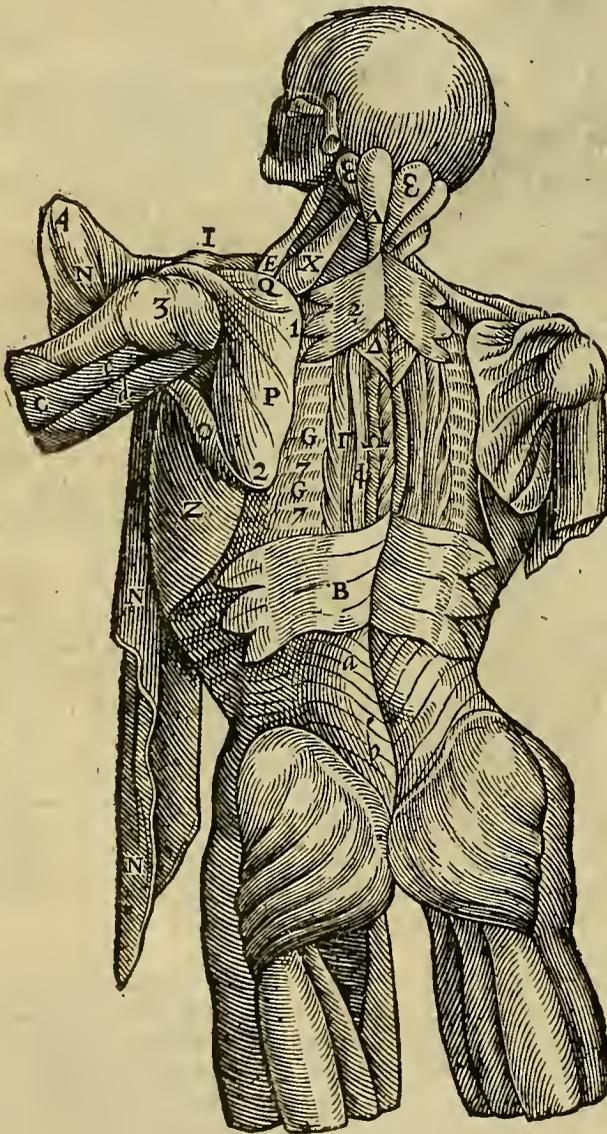
The *Transversarius*.

The *Spinatus*.

by Galen. The third bends the neck, and arising within from the body of the five upper *Vertebrae* of the back (though with a very obscure originall, specially in lean bodies) it ascends under the gullet alongst the neck, even to the nowl-bone, into whose inner part it is obscurely inserted. Wherefore it is likely that it helps not only to bend the neck, but also the head. This muscle is made of oblique fibers proceeding from the body of the *Vertebrae*, all the way it passes to the transverse processes of the other *Vertebra*. But it seems with its copartner which is opposite to it, to make a certain hollow path upon the bodies of the *Vertebrae*, to the gullet, and it is called the long muscle. The fourth and last, which we said moves the neck to one side, is called *Scalenus* from the figure thereof; it ascends from the hinder and upper part of the first rib of the Chest, inserting its self into all the transverse processes of the neck by its fibers, which as it were for the same purpose, it hath sufficiently long, that it may fasten it self from the furthest and lowest process of the neck into the first or highest thereof. The passage of the nerves through this to the arm makes this muscle seem double or divided into two. For the veins and arteries pertaining to the neck, they have been declared in the proper Chapters of the distributions of the vessels; it remains that you note, all these muscles receive nerves from the *Vertebrae* whence they arise.

The Longus.
The Scalenus.

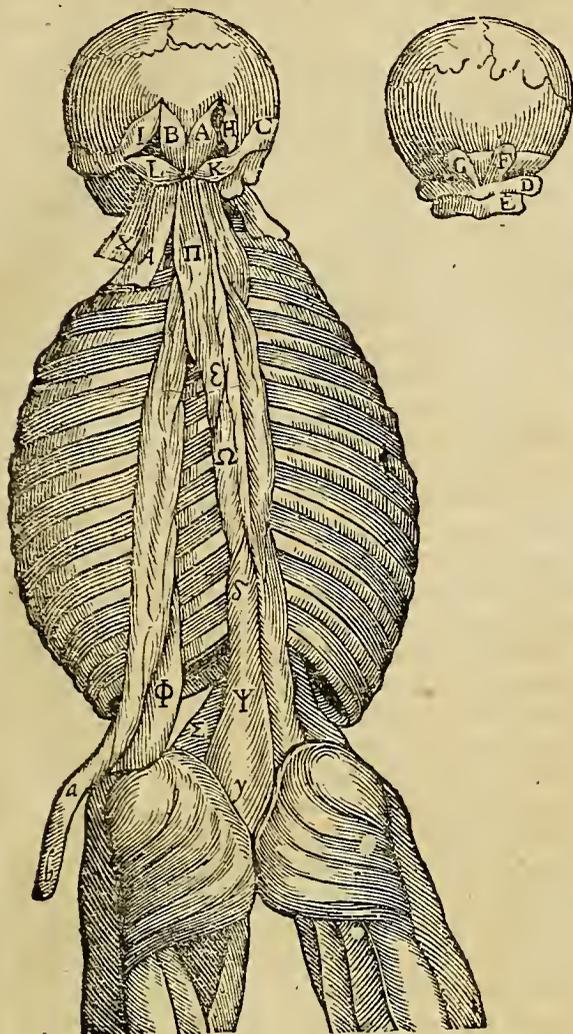
The eight Figure of the muscles, especially those of the Chest, Head, and Shoulder blade, the Trapezius, Latissimus, and Rhomboides, being taken away.



- A. The fourth muscle of the chest, or the upper and hinder Saw-muscle.
 B. the 5 muscles of the chest, or the lower and hinder Saw-muscle.
 a. b. a membranous beginning of the muscle of the *Abdomen*, descending obliquely down from the spine of the back.
 C. the first muscle extending the Cubit at c, his originall is from the neck of the arm, and from the lower basis of the blade at d.
 E. the originall of the fourth muscle of the bone *hoyois* from the blade.
 G G. the outward intercostall muscles.
 I. the Clavicle or collar-bone bared.
 N. the upper, the second muscle of the arm called *Deltoides*, char. 4, 5. the beginning of this muscle.
 N. the third muscle of the arm or the broad muscle separated.
 O. the fourth muscle of the arm or the lower *Super-Scapularis* or blade-rider.
 1, 2, 3. Char. His originall at the basis of the shoulder-blade at 1, 2. and his insertion into the joynt of the arm at 3. Q. the sixt muscle of the arm or the upper *Super-Scapularis*. X. the fourth muscle of the blade called *Levator* or the heaver. Z. the

second muscle of the Chest or the greater Saw-muscle. 7. 7. Char. the ribs. F. the sixt muscle of the chest, or the muscle called *Sacrolumbus*. A. the first muscle of the head or the splinter. E E. the second muscle of the head or the insertion of the muscles called *complexi*. B. the second muscle of the back or the longest muscle. O. the fourth muscle of the back called *Semispinatus*.

The ninth Figure of the muscles, shewing the muscles of the Head and Neck;



- A B, the third pair of the Muscles of the head called *Recti Majores*.
 C, the Mamillary process.
 D, the transverse process of the first rackbone.
 E, the process of the second rackbone of the neck.
 F G, the fourth pair of muscles of the head called *Recti Minores*.
 H I, the fifth pair of muscles of the head called *obliqui Superior*.
 K L, the sixth pair of muscles of the head called *obliqui inferiores*.
 X, the fourth pair of muscles of the shoulder blade.
 alpha, the second muscle of the neck called *Scalenus*, which Falopius maketh the eight muscle of the chest.
 pi, the fourth muscle of the neck called *spinatus*.
 zeta, the first muscle of the back called *Quadratus*.
 phi, the second muscle of the back called *Longissimus*.
 gamma, the sinus or bosom of this muscle, whereby it giveth way unto the third muscle of the back, called *Sacer*.
 delta, his Originall.
 epsilon, the third muscle of the back called *Sacer*. zeta, his Originall. delta, his end.
 zeta, the fourth muscle of the back called *Semispinatus*. eta, his upper end under the fourth muscle of the neck.

CHAP. XVIII.

Of the Muscles of the Chest and Loins.

WE must now speak of the Muscles both of the Chest which serve for respiration, as also of the Loins. But first we must know that the hind part of the Chest called the *Metaphrenum*, or back, consists of twelve *Vertebrae*, the Loins of five, all which differ not from the *Vertebrae* of the neck, but that they are thicker in their bodies than these of the neck; neither are they lesser in holes, neither have they their transverse processes perforated or parted in two as the rackbones of the neck have. Besides each of these rack bones alone by it self, on each side in the lower part thereof makes a hole, through which a nerve hath passage from the spinall marrow to the adjacent parts, when on the contrary in the *Vertebrae* of the neck, such holes or passages are not made, but by meeting together of two of them.

Concerning the processes of the Rackbones of the Chest, whether transverse, right or oblique, they differ nothing from these of the neck (I mean even to the tenth) but that the transverse seeing they are not perforated, as we said before, do as it were sustain the ribs, being straitly bound to them with strong ligaments both proper and common; but after the tenth *Vertebra* of the back, the two other of the back, and all those of the loins are different, not only from those of the neck, but also from the ten first of the back, by reason of their oblique processes, because from the eleventh (which is received, as well by that which is above it, as by that under it, for the strength of the whole back, and the easier bending thereof without fear of fracture or dislocation) the above mentioned processes of the lower rack bones which were wont to receive, are received; as on the contrary they receive which were wont to be received. They differ besides from all the forementioned, by reason of their spines, because from the eleventh they begin by little and little to look upwards, contrary to the former.

But if any ask, how the tenth *vertebra* of the back may be termed the midst of the

In what the *Vertebrae* of the neck and loins agree and differ.

How the tenth *vertebra* of the back, may be said to be the middle of the spine.

The number of the muscles of the Chest.

The muscles dilating the Chest.

The muscles contracting the Chest.

The *Subclavius* is the first of the muscles dilating the chest. *Serratus major*.

Serratus posterior and *superior*.

The oblique ascendent of the lower belly.

The eleven *Intercostales externi*.
6. *Intercartilaginei*.

The *Sacrolumbus*, the first of those which contract the chest.

The oblique descendent, the right and transverse of the *Epigastrium*.

Triangulus musculus.

Intercostales interni.

Intercartilaginei interni.

Muscles always receive their nerves in their heads.

spine, being the whole spine consists of twenty four *vertebrae*? He may know that this may be true, as thus; if the six bones of the holy bone, and the fourth of the Rump (being more gristly than bony) be numbered amongst the bones of the Spine; for then from the setting on of the head to the eleventh rack bone of the back are seventeen in number, and so many from thence downwards.

But let us return to the muscles of the Chest serving for respiration. First, you must know that these Muscles are fouricore and nine, that is, on each side forty four, alike in strength, thickness, site, and action; and one besides in the midst which they call the *Diaphragma* or midriff. Of these forty four, there are twenty two which dilate the chest in drawing in the breath; that is, the *Subclavius*, the *Dentatus*, or *Serratus major* in the opinion of some, both the *Rhomboides* or *Serrati postici*; the oblique ascendent of the lower belly, the eleven *Intercostales*, and the six *Intercartilaginei externi*. On the contrary, as many contract the breast in expiration; to wit, the *Sacrolumbus*, the oblique descendent, the Right and transverse of the lower belly, the inner *Triangular*, the six *Intercartilaginei*, and the eleven inner *Intercostales*. Of these twenty two dilating the Chest, the first from the site is called the *Subclavius*, for it descends obliquely from the inner and forepart of the *Clavicula* or Caller bone, into the gristle of the first rib, even to the *Sternon*, and dilates it. The second is the *Serratus major*, the greater Saw muscle arising according to the opinion of some from the whole *basis* of the shoulder blade on the inside, and it is transversely inserted into the nine upper ribs, producing certain toothed or saw-like processes running further to the bones of the rib, than to the spaces between them, or Intercostal muscles, whereupon it hath the name of the Saw muscle; yet some have referred this muscle to them of the shoulder blade. The third descends from the three lower spines of the neck, and the first of the back, by means of a membranous and most thin ligament, into the three or four upper ribs, running further into their spaces or Intercostal muscles, than into the ribs themselves, whereupon it is called *Serratus posterior & superior*, that is, the hinder and upper Saw muscle. The fourth in like manner ascends by means of a membranous and thin ligament from the three upper spines of the loins, and the two last of the chest, or back, into three or four of the lower, or last of the bastard ribs, sent forth further into them or their bones, than into the Intercostal muscles possessing the spaces between them, wherefore it is called *Serratus posterior & inferior*, the hinder and lower Saw muscle. Moreover these two last muscles have been called by a common name from their figure the *Rhomboides*, that is, the square muscles. The fifth which we said was the ascendent of the *Epigastrium*, hath already been sufficiently described in his place. The eleven *Intercostales externi*, or external Intercostal muscles descend obliquely from the back part of the lower side of the upper rib, into the forepart of the upper side of the rib lying next under it, after a quite contrary manner to the six *Intercartilaginei*, who having like originall and insertion amongst the gristles, as the Intercostal amongst the ribs, descend obliquely from the forepart backwards. And thus much of the muscles dilating the Chest in inspiration.

But the first, of the other muscles, being as many in number, which contract the Chest in expiration, arising from the holy-bone, and the oblique processes of the loines, ascends (firmly and confusedly adhering with the *Musculus sacer*, or holy muscle, which we shall describe hereafter) to the roots of the twelve ribs, imparting in the ascent a small tendon to each of them, by which it draws these ribs towards the transverse processes; and by reason of its Originall it is called *Sacrolumbus*, that is, the Holy loin-muscle.

The second, third, and fourth, which we said were the oblique descendent, right, and transverse of the *Epigastrium*, have been formerly described in their place.

But by the way you must note that these three muscles of the *Epigastrium* help expiration rather by accident, than of themselves, to wit, by driving back the midriff towards the lungs by the entrails, which also they force upwards, by drawing the parts into which they are inserted towards their Originall. The fifth which we called the *Triangulus*, or *Triangular*, may be called the *compressor* of the gristles, which proceeding from the inner sides of the *Sternon*, goes to all the gristles of the true ribs; this is more apparent under the *Sternon* in beasts, than in men, though it be not very obscure in them neither. For the internal Intercostal muscles, in my judgment, they arise from the lower sides of the upper rib, & descending obliquely from the forepart backwards, are inserted into the upper side of the rib next under it; so that they may follow the production of the fibers of the external *Intercartilaginei*; as the six internal *Intercartilaginei* follow the site of the external Intercostal proceeding from behind forwards; wherefore as well the Intercostal, as the *Intercartilaginei*, every where intersect each other, after the similitude of the letter X. I know some have written that the internal muscles (whether intercostal or *Intercartilaginei*) ascend from the upper side of the lower rib forwards, and backwards.

But if this were true, it would follow that these muscles admitted their nerves in their tail, and not in their head, seeing the nerve always goes under the rib, and not above it.

The last muscle of the chest, that is, the *Diaphragma* or Midriff, is sufficiently described before; wherefore it remains we describe the muscles of the Loins. These are six in number, on each side three, equal in thickness, strength and situation; one of these bends, and the other two extend the Loins; it is called by reason of the figure the *Triangulus*, or Triangular which bends the Loins, it ascends from a great part of the hind side of the Hanch-bone into the transverse processes of the Loins, and the last of the Chest on the inside, for which cause it is made of fibers short, long, and indifferent, answering to the nearness or distance of the said processes. The first of the extenders is called the *Semispinatus*, because even to the middle of its body it takes the originall from the spines of the Holy bones and Loins; this with its oblique fibers ascends from all the said spines to the transverse processes, as well of the Loins as Chest. The other is called *Sacer*, the Holy-muscle, because it takes its originall from the Holy-bone, or the sides thereof; it ascends with its oblique fibers to the spines of the Loins, and of the eleven lower Rack-bones of the Chest.

The midriffe.
The muscles of the loins.
They are three pair.
Triangulus.

Semispinatus;

Sacer.

CHAP. XIX.

Of the Muscles of the Shoulder-blade.



Now we must describe the muscles of the extreme parts, and first of the Arm; taking our beginning from these of the shoulder-blade. But first, that we may the better understand their description, we must observe the nature and condition of the shoulder-blade. Therefore the blade-bone on that part, which lies next unto the ribs, is somewhat hollowed; wherefore on the other side it somewhat buncles out. It hath two ribs, one above, another below: by the upper is meant nothing else than a border or right line, which looking towards the temples is extended from the exterior angle thereof under the collar-bone, even to the *Processe Coracoides* which this rib produces in the end thereof: By the lower, the under side which lies towards the lower belly and the short ribs.

The description of the blade-bone, or shoulder-blade.

Besides, in this shoulder-blade we observe the *basis*, head and spine. By the *basis* we understand the broader part of the shoulder-blade, which looks towards the back-bone. By the head we understand the narrower part thereof, in which it receives the head of the Arm in a cavity, indifferently hollow, which it produces both by it self, as also by certain gristles, which there fastned encompasse that cavity. This kind of cavity is called *Glene*.

The basis of the blades.
The head of the shoulder blade.

This receives and contains the bone of the arm, by a certain strong ligament encompassing and strengthening the joint, which kind of ligament is common to all other joints; this ligament arises from the bottom of the cavity of the shoulder-blade, and circularly encompasses the whole joint, fastning it self to the head of the arm; there are also other ligaments besides this, which incompasse and strengthen this articulation. By the spine is meant a processe, which rising by little and little upon the gibbous part of the blade, from the *basis* thereof where it was low and depressed, becomes higher untill it ends in the *Acromion*, or upper part thereof. Nature hath made two productions in this bone (that is to say, the *Acromion* from the spine, and the *Coracoides* from the upper side) for the strengthening of the articulation of the arm and shoulder-blade, that is, lest the arme should be easily strained upward or forwards; besides, it is fastned to the clavicle, by the processe *Acromion*.

The spine of the blade,
The processe

Acromion and *Coracoides.*
The muscles of the shoulder-blade.

The muscles which move the shoulder-blade are six in number, of which four are proper, and two common. The first of the four proper seated in the forepart, ascends from the bones of five or six of the upper ribs, to the *Coracoides*, which it draws forwards, and is called *Serratus minor*, that is, the lesser saw-muscle; which that you may plainly shew, it is fit you pull the pectorall muscle from the collar-bone, almost to the middle of the *Sternon*. The other first opposite against it, is placed on the fore side, and draws its originall from the three lower spines of the neck, and the three upper of the Chest, from whence it extends it self, and ends into all the gristly basis of the shoulder-blade, drawing it backwards; it is called the *Rhomboides*. The third from its action, is called the *Levator*, or the heaver, or lifter up, seated in the upper part, it descends from the transverse processes of the four first *Vertebrae* of the neck into the upper angle and spine of the blade. The fourth called *Trapezius*, or the Table-muscle, is seated in the back-part and is membranous at the originall, but presently becomes fleshy: it arises from almost all the back-part of the head, from all the spines of the neck, and the eight upper *Vertebrae* of the chest, and then is inserted by his nervous part, almost into the whole basis of the blade; extending it self above the muscles thereof, even to the midst of its spine, where being fleshy it is inserted even to the *Acromion*, the upper part of the clavicle, and in some sort to the upper rib. This muscle hath a threefold action, by reason of its triple originall. The first is to draw the shoulder-blade towards its originall, that is, to the nowle, and spine of the neck; the other is to draw it towards the back, because of the contraction of the middle or

Serratus minor.

Rhomboides.
Levator.

Trapezius.

trans-

transverse fibers which lead it directly thither; and the other is to draw it downwards by reason of the original it hath from the fifth, sixth, seventh and eighth spine of the *Vertebrae* of the Chest.

But we must note, that these divers actions are not performed by this muscle, by the assistance of one only nerve, but by more, which come into it by the spinall marrow, by the holes of the *Vertebrae*, as well of the neck as the chest, from whence it takes the original. For the two other which are the common muscles of the blade, and arm, or shoulder, we will describe them with the muscles of the shoulder or arm: for one of these which is called the *Latissimus*, that is, the broadest, ascends from the holy-bone to the shoulder-blade and arm.

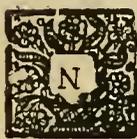
Latissimus.

Pectoralis.

The other the named *Pectoralis* comes from the *Sternum* and collar-bone to the shoulder-blade and arm.

CHAP. XX.

The description of the Hand taken in generall.



Now it befits us to describe in order the muscles of the arm; but first we must know, what it is that we call the arm. But seeing that cannot fitly be understood, unlesse we know what the hand is, seeing that the arm is a part of the hand; therefore first we must define what a hand is, and then divide it into its parts. Therefore the hand is taken two manner of waies, that is, generally and

specially.

What is meant by the hand in generall.

The hand generally taken, signifies all that which is contained from the joyning of the arm to the shoulder-blade, even to the ends of the fingers. But in particular it signifies only that which is comprehended from the furthest bones of the cubit, or the beginning of the wrist, to the very fingers ends.

Therefore the hand in generall is an instrument of instruments, made for to take up and hold any thing. It is composed of three great parts, that is, of the Arm, Cubit, and Hand, vulgarly, and properly so called; but the hand taken thus in particular is again divided in three other parts, the *Carpus* or *Brachiale*, the wrist, the *Metacarpium* or *Postbrachiale*, the after-wrist, and the fingers; all these parts (seeing each of them are not only organical parts, but also parts of organical parts) are composed of all, or certainly of the most of the similar parts; that is, of both the skins, the fleshy pannicle, the fat veins, arteries, nerves, muscles or flesh, coats both common and proper, bones, gristles, and ligaments, all which we will describe in their order.

The differences of the hand from the site thereof.

But first I think good to admonish you of the differences of the hand taken from the site thereof, and these differences are six in number, the fore, the hind, the internal, the external, the upper and lower side or part thereof.

By the fore we mean that part which looks directly from the thumb to the shoulder: by the hind, we understand the part opposite to it, which from the little finger looks towards the basis of the shoulder-blade. By the inside we signifie that part which lies next to the sides of the body, when the hand retains its naturall site; by the outside, the part opposite to it. The upper and lower side you may know by the very naming thereof.

Why the hand is divided into so many fingers

The hand properly so called is divided into five fingers, that so it may hold and take up bodies of all figures, as round, triangular, square and the like, and gather up the least bodies with the fingers ends, as needles, pins, and such like.

Why the nails are added to the soft flesh of the fingers.

Nature hath bestowed two hands upon us, that so they may help each other, each moving to each side. But for the taking up and holding of small bodies it was fit, that the fingers of their own nature soft, should be armed with nails, that consisting of soft flesh and an hard nail, they might serve for all actions; for the nail is a stay to the soft flesh, which otherwise would turn away in meeting with an hard body; the use of the nails is to scratch, shave, and pull off the skin, to rend, pinch, and pluck asunder small bodies. They have not bony hardnesse, that so they might not break but bend.

Why the nails grow continually.

Yet other creatures have hard nails to serve them in stead of weapons. Their figure is round, because such a figure is lesse obnoxious to externall injuries; and by reason they are subject to wearing, they grow continually.

Nature hath placed flesh on the inner and side part of the fingers, so to presse more straitly, the things they once take hold of, so that by holding them close together we can hold water that it may not run out. The length of the fingers is unequal, that when they are opened and stretched forth, they make as it were a circular figure; for so it comes to passe, that the hand can hold all bodies, but especially round.

It remains that we prosecute the distribution of the veins, arteries, and sinews, which run over all the parts of the hand taken in generall and particular, whereby we may more commodiously hereafter handle all the proper parts thereof.

CHAP. XXI.

The distribution of the Subclavian vein, and first of the Cephalica, or Humeraria.



Two large veins descend from the Subclavian, the one from the lower side, the other from the higher. Yet sometimes, and most usually, both these proceed from the same common orifice, as in men of a low stature in the arm. The one of these is called the *Axillaris*, the other the *Humeraria*, or *Cephalic*; therefore this Cephalick passing forth of the Subclavian runs superficially along the fore-side, between the muscle *Deltoides*, and the Tendon of the pectorall muscle, and descends in the midst between the common coat of the muscles, and the fleshy pannicle, even to the bending of the cubit, where in lean bodies it is plainly to be seen, whereas in fat bodies it is hardly to be perceived, being as it were buried in abundance of fat. This vein having in its descent, sent forth some small branches, both to the skin, as also to certain muscles over which it runs, is divided into two, a little above the outward protuberation of the arm. One of the branches into which it is divided descending obliquely to the fore part of the cubit, a little below the bending of the cubit, it meets, and is united with the like branch in the same place, as shall be shown hereafter.

The Cephalick vein.

That which arises from this concurrence, is called the median vein, because it arises from two branches, and is seated between them. They usually open this median vein in the diseases of the head and liver, which require Phlebotomy; but if it shall not be sufficiently manifest, when you judge it must be opened, for a generall evacuation of the whole body; you may cut one of these branches, by whose concurrence it is made, which you shall think the fitter; and because each branch draws from the next parts, according to the straightness of the fibers, rather than from the opposite side; if you would evacuate the head, and liver equally, by opening either of these branches, it is convenient that opening that branch (for example) which comes from the Cephalick, you presently lay your thumb upon it, untill you suppose you have drawn a just quantity of blood from the liver, by the *Basilica*, or liver-vein; which done, you may take off your thumb, and suffer the blood to follow freely, by the open branch of the Cephalick, untill you have drawn as much blood as you shall judge requisite; otherwise you will draw it but from one part, to wit, the head. So you shall evacuate it only from the liver, if you open the branch which comes from the *Basilica*, and concurs to the generation of the median.

The median vein.
How by opening the median vein, you may draw more or lesse blood from the head or liver.

Moreover, when there is need to open the *Basilica*, and it shall be no where conspicuous, the Cephalick or median being easie to be discerned at the same time, you may in stead thereof open the median, or if it be not to be found, the Cephalick, pressing but the trunk thereof with your thumb, as we said before, lest the head should be evacuated in stead of the liver. You may doe the same in the *Basilica*, if when there shall be necessity to open the Cephalick, it shall not appear. Most of those which at this day open a vein, in stead of the median, open that branch of the *Basilica* which ascends together with the Cephalick to make the median. But you must understand that the median descends between the two bones of the cubit, even to the end thereof, and then divided into many branches, it is at length spent on the back of the hand behind the thumb, the fore and middle fingers, or the after-wrist. Sometimes it runs back into the following branch, and then at the wrist it departs from it, to be bestowed upon the forementioned parts. The other branch of the Cephalick, which we may call the fore and outward Cephalick, descending directly down to the midst of the wand, thence wanders overthwart in to the hind part of the arm, where encreased with a branch from the *Basilica*, it is distributed over all the back of the hand, which with the median it nourisheth. But the branches of these veins do so run through the forenamed parts, that by the way they yeeld them necessary provision.

CHAP. XXII.

The Description of the Axillary vein.



The Axillary arising at the insertion of the pectorall muscle, or a little higher, after it hath produced the two *Thoracice* it is divided under the tendon of that muscle into two fair branches, that is to say, into the inner deep Axillary, and the skin or outward Axillary. The deep or inner having still for his companion in his descent, the axillary artery, and the nerves of the third conjugation, after it hath produced the small externall musculous of the arm, it goes into the bending of the elbow, where running somewhat deep with the artery and nerve into the muscles of the cubit, it is divided into three other branches, of which one descending with the wand, slides under the ring, into the inner side of the hand, and hath bestowed two small branches on the thumb, two others on the fore, and one upon the middle-finger, so that all of them ascend by the sides of these fingers, the other descending with the artery,

The axillary is divided into the deep axillary, and outward axillary.

as the former alongst the cubit, sends branches to the rest of the fingers, like as the former. The third goes on the foreside between the two bones even to the wrist, and the square muscle.

But you must note that the veins of which we now treat, do not only make these divisions mentioned by us, but infinite others besides, as well in the parts which they goe to, as also in the inner muscles of the hand which they nourish.

And thus much of the internall and deep axillary vein. For the externall or skin Axillary (which first appears under the skin, especially in lean bodies, a little above the inward production of the arm) it is divided in that place into two branches, the one whereof descending to the bending of the arm meets, and is united with the Cephalick branch, sooner or later, that so it may produce the median, as we formerly mentioned.

The other branch having sent forth many shoots of a different length and thicknesse, as well into the skin, as into the other neighbouring parts, descending alongst the lower side of the bone of the cubit, properly so called, is at length spent upon the fore and outward Cephalick branch, which we said descended alongst the wand; and thus united, they run over all the hand, where in the right hand, between the middle and fore finger, they make the *Salvatella*; but in the left, in the same place, they produce the *Splenitica*.

The *Salvatella*
and *Splenitica*.

But alwaies remember, (if in dissection you find any thing otherwise than we have delivered it) that the distribution of the vessels is so various, especially in the hands) that there can no certain rule be delivered thereof.

CHAP. XXIII.

The Distribution of the Axillary Artery.

THe Axillary artery from the first originall, which is presently after the two *Thoracicae*, descending between the muscle called *Biceps*, or the two headed muscle, and the *Brachieus*, with the deep Axillary vein, distributes a large branch amongst the outward muscles of the arm, which extend the cubit, and is spent in the externall muscles of the same, which arise without, from the productions of the arm.

And this is called the *Ramus Musculus*, or Musculous branch, as also the vein that accompanies this arterie. Then this artery when it comes to the bending of the cubit, thrusting it self into the muscles bending the fingers, communicates certain branches to the parts pertaining to the dearticulation of the cubit with the shoulder, and other parts there situate, as it did in the upper parts, by which it descended hither. Verily it may be a generall rule; that every vessell sends or bestows certain portions thereof by the way to all the parts by which it passes. But if you should ask, why I have not prosecuted these productions; I would answer; I never intended to handle other than large and fair branches of vessels, by rash incision of which, there may happen danger of death or a disease. For it would be both an infinit and needles busines to handle all the small devarications of the veins, arteries, and nerves. Therefore this artery sunk into these muscles, when it comes almost to the midst of the cubit, presently or a little after it is divided into two large branches, the one of which alongst the wand, and the other alongst the cubit is carryed into the hand on the inside under the Ring. For both these branches are distributed and spent upon the hand after the same manner as the branches of the internall Axillary vein, that is, having sent by the way some little shoots into the parts by which they passe, at the length the branch which descends by the Wand of the remainder thereof, bestows two sprigs upon the thumb, on each side one, and two in like manner on the fore finger, and one on the middle; the other which runs alongst the Ell, performs the like office to the little and the middle or ring finger, as you may see by dissection.

An Anatomical
Axiome.

CHAP. XXIV.

Of the Nerves of the Neck, Back, and Arm.

The 7 pair of
nerves of the
neck.

The first pair.

NOW we should handle the sinewes of the Arm, but because these proceed from the nerves of the neck and back; I think it fit therefore to speak something of them in the first place.

Therefore from the neck there proceeds seven pair of nerves, the first of which proceeds from the nowl bone, and the first *Vertebra* of the neck; as also the first pair of the Back from the last *Vertebra* of the neck, and the first of the Chest. But all these nerves are divided into two or more branches of the first pair (that is to say, on each side) go, the one to the small right muscle, ascending from the first rack-bone of the neck to the nowl bone, the other to the long muscle on the foreside of the neck.

The second
pair.

The branches of the second pair are distributed, some with a portion which they receive from

from the third pair over all the skin of the head; the two others go as well to the muscles, which are from the second *Vertebra* to the backpart of the head, and from the same to the first *Vertebra*, as also to the long muscle before mentioned.

One of the third pair of sinews is communicated to the head, as we said before, but others to the Muscles which extend, or erect the head and the neck; there is also one of these distributed into the neighbouring side muscle and part of the long.

The nerves of the fourth pair go, one to the muscles as well of the neck as the head, and to the broad muscle; the other after it hath sent some portion thereof into the long muscle and the side muscles of the neck, it descends with a portion of the fifth and sixth pair to the Midriff. One of the branches of the fifth pair is bestowed on the hind muscles of the neck and head, the other upon the long muscle and midriff; the third is communicated to the *Levatores*, or Heaving muscles of the arm and shoulder.

One of the nerves of the sixth pair goes to the hind muscles of the neck and head, another to the Midriff, the third with a portion of the seventh pair of the neck, and of the first and second of the chest go to the arms and heaving muscles of the shoulder-blade.

One of the branches of the seventh pair runs to the broad muscle and to the neighbouring muscles both of the neck and head; another encreased with a portion of the fifth and sixth pair of the neck, and a third joyned to the second and third pair of the chest descending into the arm go to the hand.

But you must note that the muscles which take their original from many *Vertebrae*, whether from above downwards, or from below upwards, admit nerves not only from the *Vertebrae* from whence they take their original, but also from them which they come near in their descent, or ascent.

There pass twelve conjugations of nerves from the rack-bones of the chest.

The first entering forth from between the last rack-bone of the neck and the first of the chest, is divided (that is, on each side, each nerve from his side) into two or more portions, as also all the rest. Therefore the branches of this first conjugation go some of them to the arms, as we said before, others to the muscles, as well these of the chest, as others arising there, or running that way.

The branches of the second conjugation are distributed to the same parts, that these of the first were.

But the branches of all the other conjugations even to the twelfth, are communicated, some to the intercostall muscles running within under the true ribs even to the *Sternum*, and under the bastard ribs even to the right and long muscles; and the costall nerves of the sixth conjugation are augmented by meeting these intercostall branches by the way as they descend by the roots of the ribs. Other particles of the said nerves are communicated to the muscles as well of the chest, as spine, as the same muscles pass forth, or run alongst by the *Vertebrae*, from whence these nerves have either their original, or passage forth.

Having thus therefore shewed the original of the sinews of the arm, it remains that we shew their number and distribution.

Their number is five or six; proceeding from the fifth, sixth, and seventh *Vertebra* of the neck, and the first and second of the chest. The first of which not mixed with any other from the fifth *Vertebra* of the neck, goes to the muscle *Deltoides* and the skin which covers it.

The other 4 or 5 when they have mutually embraced each other, not only from their first original but even to the shoulder, where they free themselves from this convolution, are distributed after the following manner.

The first and second descending to the muscle mentioned a little before, and thence sometimes even to the hand, is by the way communicated to the muscle *Biceps*, and then under the said muscle it meets and is joyned with the third nerve. Thirdly, it is communicated with the longest muscle of the cubit, in the bending whereof it is divided into two branches descending alongst the two bones of the cubit, untill at last born up by the fleshy pannicle it is spent upon the skin and inner side of the hand.

The third lower than this, is first united with the second, under the muscle *Biceps* then straightway separated from it, it sends a portion thereof to the arm which lies under it, and to the skin thereof; lastly, at the bending of the cubit on the fore side, it is mingled with the fifth pair.

The fourth the largest of all the rest, coming down below the third branch under the *Biceps*, with the internall axillary vein and artery, is turned towards the outward and backpart of the arm, there to communicate it self to the muscles extending the cubit, and also to the inner skin of the arm, and the exterior of the cubit; the remainder of this branch when in its descent it hath arrived at the joint of the cubit, below the bending thereof it is divided into two branches, the one whereof descending alongst the cubit is spent on the outside of the wrist; the other associating the wand is on the outside in like manner in two branches bestowed upon the thumb, and in as many upon the fore finger, and by a fifth upon the middle finger though more obscurely.

The fifth branch being also lower than the rest, sliding between the muscles bending and exten-

The third pair.

The fourth pair.

The fifth pair.

The sixth pair.

The seventh pair.

The 12. pair of nerves of the chest.

The first pair.

The second pair.

The other pairs.

The nerves which are carried to the arms.

extending the cubit, when it comes behind the inner protuberation of the cubit (in which place we said before the third Branch meets with this) it is communicated to the internall muscles of the same, and then divided into three portions, one of which on the outside alongst the middle of the cubit goes in two sprigs to the little finger, and so many to the middle finger, and one to the ring finger; the other two, the one without & the other within the ring, goe to the hand, where after each of them hath bestowed what was requisite on the muscles of the hand, they are wasted into other five smal portions, of which these which are from that portion which descends without the ring, send two sprigs to the little, two to the fore, & one to the middle finger; but these which come from that which passes under the ring, by such a distribution communicates it self to other fingers, as two sprigs to the thumb, two to the fore and one to the middle finger. The sixth the lowest and last runs between the skin and fleshy pannicle, by the inner protuberation of the arm, and then is spent upon the skin of the Cubit.

CHAP. XXV.

The description of the bone of the Arm, and the Muscles which move it.



Because we cannot perfectly demonstrate the originall of the muscles of the arm, (especially of the two arm muscles) not knowing the description of this bone; first therefore we will describe it, then return to the originall of the muscles arising from thence. The bone of the arm is the greatest of all the bones in the body, except the Thigh-bone; it is round, hollow and filled with marrow, with a great Appendix or head on the top thereof, having

an indifferent neck, to which it is knit by *Symphysis*, for appendices are no otherwise united to their bones. In the lower part thereof it hath two processes, or protuberations, one on the fore side, another on the hind, between which swellings there is a cavity like to half the compass of a wheel, about which the cubit is moved. The extremities of this cavity ends in two holes, of which one is the more externall, the other more internall: these cavities receive the heads of the cubit, that is, the fore, or internall receives the fore proceffe when the arm is bended inwards, but the externall or hinder the exterior as it is extended.

For the head of the arm it hath a double connexion, the one with its own neck by *Symphysis*; that is, a naturall union of the bones without any motion; the other with the slightly engraven cavity of the shoulder-blade, which we call *Glene*, by that kind of articulation which is called *Arthrodia*; this connexion is made firm and stable by the muscles descending into the arm from the shoulder-blade, as also by the proper ligaments descending from the circle and brow of the cavity of the *Acromion* and *Coracoïdes* to this head of the arm; this same head of the arm is, as it were, more cleft and open on the inner side, than on the fore side, that so it may give way to one of the ligaments coming from the shoulder-blade to the muscle *Biceps*. Forasmuch as belongs to the lower end of the bone of the arm (which we said hath two processes) we may say that it is fastned to the bones of the cubit by two sorts of articulation; that is, by *Ginglymos* with the Ell or proper bone of the cubit, and by *Arthrodia* with the *Radius* or wand, which in a lightly engraven cavity receives the fore proceffe of the arm, and is turned about it for the motion of the hand. The hinder proceffe is chiefly added for the safety and preservation of the veins, arteries and nerves.

These things thus shown, it is worth our labour to know the figure of the arm it self, as it lies between the forementioned appendices and processes; that in the case of a fracture, we may know how conveniently to restore it; therefore first we must understand, that this bone is somewhat bended and hollowed on the inside under the cleft of the head thereof, but bunching out on the out and fore side.

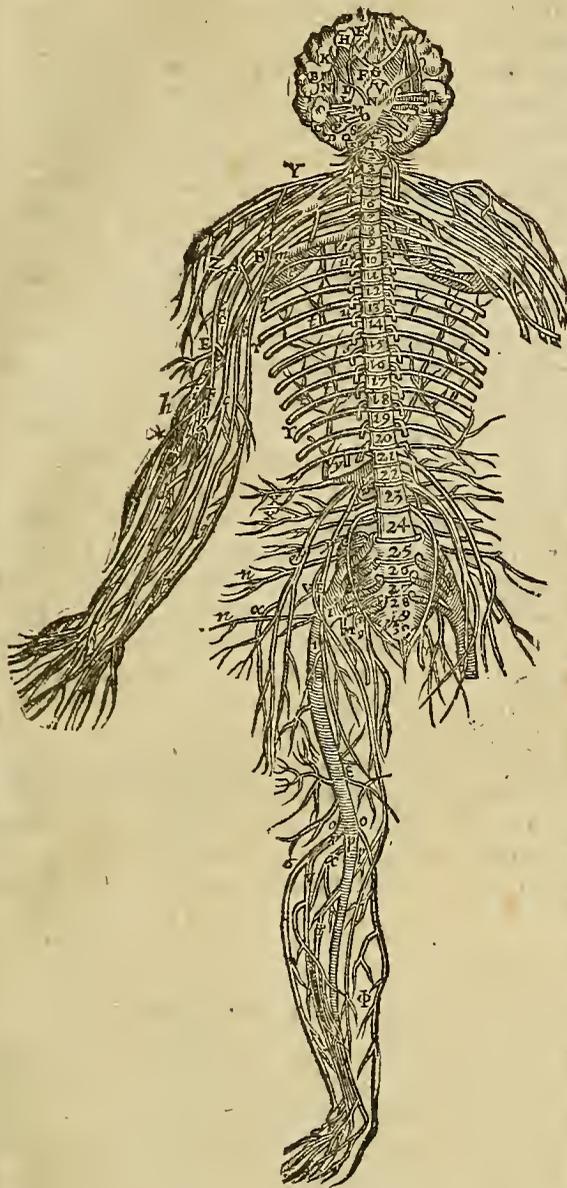
Wherefore seeing it must be moveable forwards and backwards, upwards and downwards, nature for the performance of so many motions hath furnished it with eight muscles, which are six proper and two common with the shoulder-blade. Of which number two move it forwards, two backwards, two upwards and downwards. Which must not be understood so, as that these two muscles should move it directly forwards inclining neither upwards, nor downwards; and the other two should move it so upwards, as it should incline neither forward nor backwards; but thus, that it cannot be moved neither to this nor that part unlesse by the help and proper action of this, or that muscle. Thus therefore if the pectorall with his associate perform their duty or action, the arm is alwaies moved for wards, as it is lifted up by the action of the *Deltoides* and his companion, and so of the rest.

The greatnesse and figure. The Appendix of the Arm. The processes of the arm.

The figure of the arm.

The 8 muscles thereof.

Table 24. sheweth the brain together with the After-brain, the spinall marrow and the nerves of the whole body.



- A, That part of the brain that is next the nostrils.
- B, That part which is at the side of the ventricles.
- C, The back part of the brain.
- D, The *Cerebellum* or After-brain.
- E, The mamillary proceſſe in the right ſide.
- F, The original of the optick nerve.
- G, Their conjunctions.
- H, The coat into which the optick nerve is extended.
- I, The ſecond pair of the ſinews of the brain.
- K, The leſſer root of the third conjugation.
- L, The thick root of the ſame conjugation according to the common opinion.
- M, The fourth conjugation of the ſinews.
- N, The leſſer root of the fiſt pair.
- O, The bigger root of the ſame pair.
- P, The ſmall membrane of the ear which they call the *Tympany*.
- Q, The lower branch of the bigger root of the fiſt conjugation.
- S, The ſixt pair of ſinews.
- T, The ſeventh pair.
- V, The beginning of the ſpinall marrow out of the middle of the baſis of the brain.
- X, The right ſinew of the midriff cut off.
- Z, A branch from the fiſt pair creeping to the top of the ſhoulder.
- Z, The fiſt nerve of the arms from whence there goeth a branch to the ſkin.
- A, The ſecond nerve of the arm, and a branch thereof from into the fiſt muſcle of the cubit.
- B, The third nerve of the arm and a branch going to the ſkin on the outſide.
- C, A branch from the third nerve to the ſecond muſcle of the Cubit.
- D, The congreſſe or meeting of the ſecond nerve with the third.
- E, A ſmall branch from the third nerve to the ſecond muſcle of the *Radius*.
- F, The diſtribution of the ſecond nerve into two branches.
- * The leſſer branch of this diſtribution lengthned out to the ſkin as far as the thumb.
- a, The place of the ſpinall marrow where it iſſueth out of the brain 1, 2, 3. &c. Thirty pair of nerves ariſing from the ſpinall marrow are here noted by their Char. that is to ſay, 7. of the neck, 12. of the Cheſt, 5. of the loins, and 6. of the holy-bone.
- b, The thicket branch of the 2 nerve divided into 2 parts.

z, Branches of the 3 nerve ſprinkled here and there.
 d, Nerves from the third pair to the thumb, the fore finger and the middle finger.
 ee, The 4 nerve of the arm. f, The paſſage hereof through the inſide of the ſhoulder.
 g, A tripartition of this branch where it toucheth the cubit. bb, A branch diſtributed from the 4 nerve to the outward ſkin of the cubit. z, the upper branch of the diſtion of the 4 nerve. kk, A branch of i, reaching to the outſide of the hand. ll, the lower branch of the diſtion of the 4 nerve paſſing through the backſide of the cubit. m, the fiſth nerve of the arm. n, branches of this nerve diſperſed here and there. oo, A branch of the 5 nerve reaching to the inſide of the hand and the fingers. p, A furcle of the branch o, derived to the outſide of the hand and the fingers. qq, the 6 nerve of the arm and the courſe thereof under the ſkin. rr, the intercoſtall nerves there cut off where they are together with the ribs reflected forward. ſſ, branches on each ſide running backward. tt, nerves attaining unto the cheſt. uu, the commixtion of the nerves, rr, with the deſcending branch of the 6. conjugation of the brain. xx, nerves from the loins led unto this place. y, A branch going to the reſticle here cut off. z, A nerve reaching to the 1 muſcle of the thigh. o, the 1 nerves of the leg. aβ, A furcle of the former nerve derived to the ſkin at a, and inſerted into the muſcles at β γ, the 2 nerve of the leg. βββ, A nerve from the former, allowed unto the ſkin as low as the foot, and paſſing along the inſide of the leg. ε, a branch of the 2 nerve running unto the muſcles. ζ, the 3. nerve of the leg. η, a furcle thereof unto the ſkin. θ, another furcle unto the muſcles. ι, the 4. nerve of the leg. κκ, the anterior propagations of the nerves proceeding from the holy-bone. λ, the end of the ſpinall marrow. μ, a branch from the 4. nerve inſerted into the muſcles ariſing from the *Coxendix* or hip bone. ν, another branch going to the ſkin of the thigh on the backſide. ξ, a propagation derived to the 4. muſcle of the leg and to the ſkin of the knee. oo, nerves attaining to the heads of the muſcles of the foot. ωω, the diſtion of the 4. crural nerve into two trunks σ, a branch from the trunk π, diſperſed into the outward ſkin of the leg. τ, a furcle of the trunk π, derived to the muſcles. υ, another furcle to the ſkin of the leg on the foreſide. φ, a branch of the trunk ρ, to the ſkin of the inſide of the leg and of the foot. χ, a furcle of the trunk ρ, to the hindmoſt ſkin of the leg. ψ, a branch of the whole trunk ρ, led along to the forward part of the leg and the foot. ω, the deſcent of the trunk ρ, into the foot.

But to come to the original and inſertion of theſe muſcles; the one of theſe two which move the arm forwards called by reaſon of his original, the *Pectorall*. ariſing from more than
 The original and inſertion of the pectoral muſcle.

than half of the Collar bone, and almost all the *Sternum*, and the 6, 7, and 8. rib, goes up and fastens it selfe to the *Coracoïdes*, by a membrane or a membranous tendon sufficiently strong (for which cause it is said to be common to the shoulder and arm) and it goes into the arm between the muscles *Deltoides* and *Biceps* with a strong tendon composed of fibers crossing each other, of which some descend from the Collar-bone and the upper part of the *Sternum*, others ascend from the lower originall hereof; that is, from the 6, 7, and 8 ribs: and although the action of this muscle be diverse, by reason of the diversity of its fibers arising from divers places, yet alwaies it drawes the arm forwards, whether it be moved upwards, downwards, or to the Breast; the other which is his companion descends from the whole lip or brow of the sinous or hollow part of the blade, which it fills in the forepart of the arm neer the head thereof. For the two *Levatores*, or the lifters up of the arm, the first named *Deltoides* descends from almost halfe the clavicle, the process *Acromion* and all the spine of the shoulder-blade into the foreside of the arm the bredth of four fingers below the joint. It hath divers actions according to the diversity of the fibers, as also every muscle hath; yet howsoever it is contracted, whether by the fibers from the clavicle alone, or by the spinall alone, or by both at once, it alwaies lifts and heaves the arm upwards. The other which is his associate descends from the gibbous part of the shoulder-blade, contained between the upper rib thereof, and the spine between the processes *Acromion* and *Coracoïdes*, to the neck of the arm; and this we will call the *Epomis* or *Scapularis*; that is, the shoulder muscle. But the first and larger of the two muscles, which draw the arm backwards, arises from the greatest part of the utter lip of the gibbous part of the shoulder-blade, which is under the spine thereof, and lying upon the blade it self, it goes into the hind part of the arm above the neck thereof. The other which is contiguous to it and his partner in working, but lesser, passes from the upper and exterior part of the lower rib of the shoulder-blade, and thence as it were in some sort extending it self upon the gibbous part thereof neer unto that rib, it goes into the arm. This muscle seems to be the same with the former, being fleshy without even above the top of the shoulder. One and the lesser of these two which draw downwards, enters out from the streight line of the lower rib of the blade, and goes into the lower part of the arm about the neck thereof. The other called the *Latissimus* or broadest, ascends from the spines of the holy-bone, of the loins, and often also from the nine lower of the chest, by the lower corner of the shoulder-blade into which is inserted by a membranous tendon, as also it is into the inner part of the arm neer unto neck by another strong tendon; whereupon this muscle is called a common muscle of the shoulder and arm. But when this muscle happens to be wounded, the arm cannot easily be stretched forth, or lifted up.

The *Deltoides*.

The *Epomis* or *Scapularis*.

CHAP. XXVI.

The description of the bones of the Cubit and the muscles moving them.



After these muscles, follow those which bend and extend the cubit, but because their insertion cannot be fitly demonstrated, unlesse the bones of the cubit be first described; therefore first of all we will delineate the bones themselves. But verily lest this doubtful word cubit should cause obscurity; first we must note, that it hath a threefold signification, for oftentimes it is used for all that part of the hand which lies between the arm and wrist, oft-times for the lower bone of this part, sometimes for the upper part of this bone which is turned within the orb or cavity of the arm (no otherwise than a cord in the wheel of a Pulley) and this is called the *Olecranon*. Here truly we use this word Cubit in the first signification. Wherefore we say the cubit is composed of two bones, the one of which we call the *Radius* or wand, or the lesser *Focile* of the arm; the other we properly call the Cubit or El. These two bones stick together at their ends being firmly bound together by strong ligaments; but the middle parts of them are a pretty way distant from each other, and chiefly towards their lower ends, for the better situation and passage of the muscles and vessels from the inner side to the exterior, as shall be shewed in sit place. The wand hath two *Epiphyses* or Appendices, the one at the upper end, the other at the lower. The upper is round and hollowed on the surface like a basin, it receives the fore proceffe of the bone of the arm, bound to the same by strong ligaments, descending as well from that proceffe of the arm, as the *Olecranon* into the circumjacent parts of this appendix of the wand. This connexion is made for this use, that we may turn our hand upwards and downwards by the cubit turned and twined about this proceffe. But the lower appendix of this wand is hollowed on the inside that so it might more commodiously receive the bones of the wrist, but gibbous without, that it might be safer; now this wand is softer and thicker at the lower end, but lesser and harder above, where on the inside it hath a swelling out, whereby to receive the muscle *Biceps*, besides on the outside of the middle thereof it is somewhat gibbous and round, so to become more safe from the injuries of external bodies; but it is hollowed, or bended on the inside for the better taking and holding any thing in the hand. But that side which lies next to the El is flatted for the fitter originall and seat of the muscles; lastly, it is seated upon the bone of the Cubit, or El, just against the thumb.

What is meant by the Cubit.

What the *Olecranon* is. The 2 bones of the Cubit.

The two Appendices of the wand.

The figure and site of the wand.

But

But the *Ell*, or bone of the cubit properly and particularly so called, hath in like manner two appendices, the one above, the other beneath. The upper which also is the greater, is fitted to the orb of the arm in which it goes to and again for the extension and bending of the arm, no otherwise than a rope runs in a pulley but that it turns not absolutely and perfectly round, which is caused by the two processes of unequal bigness, the which are therefore stayed in the holes or cavities of the bone of the arm, the greater proceſſe which we called *Olecranon* is letted by the exterior hole that so the extension of the arm can be no further, but the lesser proceſſe by the inner hole, makes the bending thereof the lesse perfect. The composition of these bones is by *Ginglymos*, and it is strengthened not only by common ligaments coming from the muscles, which move the bones themselves, but also by proper ligaments descending from the processes of the arm and the lips of the holes and cavities standing about the appendix of the cubit. The other lower and lesser appendix is in some sort hollow on the inside for the fitter receiving the bones of the wrist, but the outside is round and ends in a point, whence it is called by the Greeks *Styloides*. But now this *Ell* (contrary in this to the wand) is thicker towards the arm, but slenderer towards the wrist. And besides in the thicker part thereof it is hollowed or bended towards the inside, and in the same place is gibbous or bunching forth on the outside; but it is round and straight, unless on that side which lies next the wand, for the rest, it is hollow and full of marrow like the wand. The site of the *Radius* or wand is oblique, but that of the cubit or *Ell* is right, that the arm might be the better and more easily moved; because the motion by which the arm is extended and bended is according to a right line, but that by which the inside of the hand is turned upwards and downwards, is performed obliquely and circularly. Wherefore it was expedient that the wand should be oblique, and the cubit straight; for the cubit-bone is appointed for to extend and bend the arm, but the wand to perform the wheeling and turning about thereof; and this is the cause that it was fitting there should be a different connexion of these bones with the arm. These things were fitting to be spoken concerning the nature of these bones, that in the cure of fractures we may work the more safely and happily, taking indication from that which is agreeable to nature: wherefore now it remains that we come to the description of the muscles which are seated in the arm, the cubit-bone, or *Ell*. These are four in number, two extending it, and two bending it. The first of the benders is called *Biceps*, by reason of its two heads, the one whereof descends from the *Coracoïdes*, that other from the lip of the cavity of the shoulder-blade by the fissure or cleft of the head of the bone of the arm. These two heads under the neck of this arm becoming fleshy, are firmly united at the belly and midst of the arm, and thus united are at the length implanted by a strong tendon to the inner protuberation of the wand. The other is called the *Brachialis*, by reason of the strait coherence thereof with the bone of the arm; this fastned under the *Biceps* descends obliquely on the back and upper part of the bone of the arm into the top of the wand and the inner side of the *Ell*. But the first of the extenders is called the *longus* or long muscle, this descends from the lower rib of the shoulder, and cleaving to the bone of the arm goes thither (fastned and as it were alwaies most straitly joined with his fellow muscle, specially near the cubit) where you shall presently hear. The other termed the *Brevis* or short Muscle, being the companion of the long, descends on the hind part of the neck of the bone of the arm, as it were growing to, and lying under the former long muscle, so that making one common broad tendon outwardly fleshy, inwardly nervous, they are inserted into the *Olecranon*, so by mutual assistance to extend the cubit.

The Appendices of the bone of the cubit.

The figure of the cubit bone or *Ell*.

The muscles moving the cubit. The *Biceps*, or two-headed muscle.

The *Brachialis*.

The *Longus*.

The *Brevis*.

CHAP. XXVII.

The Description of the Bones of the Wrist, Afterwrist and Fingers.

WE said before that the Hand taken more particularly and properly, is divided into the Wrist, Afterwrist, and Fingers, and that the hand in this signification is bounded by the ends of the bones of the cubit and fingers. All the parts of the wrist, which it hath common with the afterwrist, have been already also plentifully explained, this only remains to be noted, that the skin as well of the hands as of the feet, is of a middle nature between pure flesh and pure skin, no otherwise than that which covers the forehead, but that this which covers the palms of the hands and soles of the feet is unmoveable; but it is most thick, especially on the feet, lest it should be easily offended by continuall going. Besides the common parts, the wrist is composed of eight small bones mutually knit together in a certain order, and by *Diarthrosis* with the two bones of the Cubit, but mutually and amongst themselves by *Synarthrosis*, by interposition of gristles and ligaments as well common, that is, coming from the muscles, as proper, descending alwaies from the upper to the lower. But these same bones are some lesse than other some; besides, they are hard and without marrow, gibbous on the outside for the security and comlineſſe of the hand, but hollow on the inside for to give way to the tendons going into the fingers. These bones are disposed in two ranks.

What the Hand properly so called is.

The first rank contains only three, but the second five. The three of the first rank are thus arrayed, or placed, that one of them may receive the Appendix *Styloides*, of the cubit; the other the Ell and the wand together, and the third may be received by the wand. But three of the five bones of the second order sustain the four bones of the afterwrist and are knit to the same by *Synarthrosis*, after which manner of connexion they are joined to the bones of the first rank; the fourth sustains the first bone of the thumb, to which also it is coarticulate by *Synarthrosis*; the fifth and last is seated on the inside against the Ell, chiefly above that bone of the first order, which receives the Appendix *Styloides* of the cubit, this is the least and weakest of them all by reason of its gristly substance, which makes the ring with certain ligaments running from one of the inner sides of the wrist to the other.

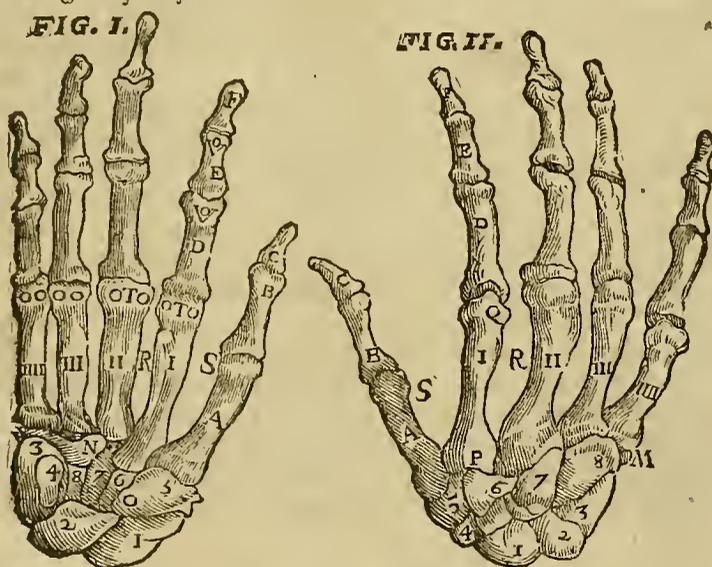
What the *Anulus* or ring is.

This ring is placed there, as well for the preservation of the sinews, veins, and arteries passing under it (left when we lean upon our hand or wrist, these parts should be hurt by compression) as also for the commodity of the action of the muscles bending the finger, which in the performance of their action and the contracting themselves might deform the hand by their passing forth of the cavity of the wrist. For what attraction soever is made by strings, if it be free and not hindered, is according to a straight line.

The bones of the Afterwrist.

Now follow the bones of the second part of the hand, or of the afterwrist. These are four in number, gibbous without, but arched within, or hollow in the middle; for hence is the palm of the hand, or certainly the greater part thereof; their ends next the fingers are somewhat remote from each other, that in these clefts the muscles *Interossea* might find a place and seat. But these ends have each an Appendix, as you may perceive in the Skeleton of a child. But you must note that by the first bone of the wrist or afterwrist, we mean that which is in the fore-side of the hand, that is to say, that in the wrist which lies under the thumb, and that in the afterwrist, which is seated under the fore finger, as these which keep in order the fingers which exceed the rest in necessity and dignity.

The Figure of the bones of the Hand. The 1. shews the inside of the right hand, and the 2. shews the back side of the same.



The Charact. 1, 2, 3, 4, 5, 6, 7, 8. shew the eight bones of the wrist.

A, 1, 2. The first bone of the Afterwrist lying under the thumb.

I. II. III. IIII. The 4 other bones of the Afterwrist annexed to the fingers.

B, C, The two bones of the thumb.

D, E, F. 1, 2. The 3 bones of the forefinger which are the same in the other fingers.

M, 1, 2. A little bone sometimes fastned outwardly at the joint of the eight bone of the wrist.

N, 1. A proesse of the eight bone of the wrist, swelling out into the ball of the hand.

O, 1. A proesse of the fift bone of the wrist, from which a ligament proceeds.

P, 2. An appendix of the bones of the wrist, by which they are articulated to the afterwrist.

Q, 2. Another Appendix which with its head entreth into the cavity of the finger.

R, 1, 2. The space between the bones of the afterwrist.

S, 1, 2. Two little seed-bones set on the inside and outside of the first joint.

T, 1. Two seed-bone in the first of the four fingers.

VV, 1. One seed-bone in the second and third joint of the fingers.

The bones of the fingers.

After these follow the fifteen bones of the fingers; that is, three in each, which are hollow and fistulous, full of a thin and liquid marrow, and not of grosse and thick, as in the arm and thigh. They are outwardly gibbous, but inwardly hollow and flat for the fitter seat of the tendons ascending alongst the fingers on the inside even to the upper joint. The which that nature might the better strengthen and preserve, it hath produced from the lips of the inner cavities of these bones a membranous and strong ligament, which running overthwart from one side to the other doth so frailty close the tendons to their bones, that they cannot goe forth of their places, or incline to either side. They are connexed on the outside, that they might be more fit to hold any thing. But for the first bones of the 4 fingers and thumb, four are joined together with so many bones of the afterwrist by *Synarthrosis*, for the bones of the afterwrist are moved by no manifest motion; the fift is knit to the second rank of the bones of the wrist, therefore that bone cannot be attributed to the after-

afterwrist, as some have written, seeing it hath manifest motion and is knit by *Diarthrosis*, but the bones of the afterwrist are only fastned by *Synarthrosis*. For the second and third rank of bones of the fingers, they are knit the second to the first, and the third to the second by *Diarthrosis* and *Arthrodia*, because besides the manifest motion they have, they receive each other by a superficial cavity, as those of the first rank, the bones of the afterwrist, and those of the second rank, them of the first; those of the third them of the second. And all the bones of the fingers are larger and thicker at their basis, but smaller towards the ends, and they are bound by ligaments especially proper, which (as we said formerly) descend from the first to the second; so that the last bones seeing they have not to whom to communicate their nerve, make and produce nails thereof: Wherefore the nails are generated by the fibers of the ligaments, and the excrement of the tendons which are terminated at the bottom of the nails. Now remain the *Ossa Sesamoidea*, or seed-bones: these are 19 in number in the inner joints of each of the hands, and as many in each foot, viz. two in the first joint of the four fingers and in the second of the thumb, and one in each of the rest. For the inner side of the joints, you may for the most part observe one in each of them; yet in the second joint of the thumb there be two, above the two tendons, which are somewhat gristly.

They are made for this use, that they firm and strengthen the joints, so that the bones of the fingers may not be turned awry, or thrust forth of their places by strong and violent motions, as it sometimes happens in the whirlebone of the knee. They are called *Sesamoidea* from the resemblance they have to the seed of *Sesamum* which is somewhat long and flat.

Whence the nails are generated.

The *Ossa Sesamoidea*, or seed-bones.

Their use.

CHAP. XXVIII.

Of the muscles which seated in the cubit move the Wand and with it the Hand.

Now must we describe the muscles of the formerly described parts; that is, those which are seated in the cubit, which are carryed to the inside of the hand, and those which are called the *Interosses*. Now the muscles of the cubit are 14, seven externall and seven internall; two of the seven externall doe primarily twine or turn up the Wand, and secondarily or by accident turn the palm of the hand upwards, whereupon they have called them *Supinatores* or turners up of the hand; two extend the wrist, whereupon they are named *Carpitenses* or the wrist-extenders; two the fingers, whence they are stiled *Digitumtenses* or fingerstretchers; to conclude, the seventh and last is termed *Abductor* or *Obliquator externus*. The first of the two *Supinatores* is called the Long, or Longest, because it descends from the outside of the arm above the processes thereof, and is inserted by a round and strong tendon into the lower Appendix. The other descends obliquely from the outward and upper proceffe of the arm, and is inserted at the third part of the wand by a membranous and fleshy tendon before and on the inside thereof. The upper of the two extenders of the wrist, descending above the wand from the external and upper proceffe of the arm, is inserted by two tendons into the first and second bone of the afterwrist, which sustain the fore and middle fingers.

The muscles of the cubit.

The *Supinatores*.

The *Carpitenses*.

The *Digitumtenses*.

The *Obliquator externus*.

The first of the *Supinatores*.

The second.

The upper of the *Carpitenses*.

The lower.

The other and lower, descending from the same place as the former, above the cubit is inserted into the fourth bone of the afterwrist which bears up the little finger. These muscles whilest they move alone, that is, each with his Antagonist, to wit, the wrist-benders, they move obliquely upwards or downwards, the whole hand properly so called. The first and greater of the extenders of the fingers, or finger-stretchers arising from the *Olecranium*, or bone of the cubit, descends superficially between the two bones of the cubit even to the wrist, in which place it is divided into four tendons, which passing under the ring seated there end (each distinguished by a common ligament above the bone of the afterwrist) in the last joints of the four fingers, adhering nevertheless firmly to the bones, which are above these joints.

The greater of the *Digitumtenses*.

The other which is the lesser, arising almost in the middle of the wand, goes obliquely to the thumb into which it is inserted by two tendons; the one thicker which is inserted into the root thereof, and draws it from the other fingers; the other slenderer continued even to the upper joint thereof, and by its action extending the thumb.

The lesser.

The seventh which is the *Abductor* or *Obliquator*, is seated at the hind part of the hand; that is, towards the little finger; we have often found this divided in two, yea verily we have found it triside, or divided into 3. this year in three or four dead bodies, one portion thereof went to the lower side of the ring-finger with two Tendons, the other in like manner to the middle and forefingers, and the third to the thumb.

The *Obliquator* or *Abductor externus*.

And for all that it is thus divided, yet some have taken and accounted it for one muscle, because it hath one originall and action, which is to draw the fingers backwards, some have added to this the extender of the thumb by reason of their common originall; and thus of four muscles they have made one divided into seven tendons, distributed, as is formerly shewed. But when the *Obliquator* of the ring-finger is wanting, as it often happens, the extender of the finger supplies that defect by certain productions of tendinous strings. But some also have written, that this muscle which we said hath seven tendons,

is only a production of the deep fore muscle, which should be sent through the space between the bones of the cubit; yet I had rather make it a muscle of it self, by reason of its strait adhesion with the bones of the arm and wand. And let thus much suffice for the external muscles of the cubit, which you may comprehend in the number of seven, as we have done; or in six, if you take away one of the 4. or in nine, if you had rather resolve it into 4. with *Galens*; or in eight, if you divide this muscle only into three. For in very deed the *Abductor* or *Obliquator* of the ring-finger is not often found in men.

The muscles of the inner part of the cubit.

Now must we come to the inner muscles of the cubit, the first of which compasses the skin of the palme of the hand, whence it is called the *Palmaris*. The second and third joined by the communion of their action turn down or prone the wand, and consequently the hand, so that the palme looks towards the feet, whereupon they are called *Pronatores*.

The *Palmaris*.

The 4. and 5. joined also in affinity of action bend the wrist, wherefore they are named *Carpiflexores*, wrist-benders. The sixth and seventh are appointed to bend the first, second, and third joints of the fingers, wherefore they are termed *Digitumflexores*, *Fingerbenders*. For their originall; the *Palmaris*, the least and uppermost of them all, descends fleshy from the hind proceffe of the inner arm, and a little after ending in a long and slender tendon, it is spent in the skin of the palm of the hand even to the roots of the fingers. For it was necessary that this skin should straitly cohere with the subjacent parts, not only for the fitter taking or comprehension of any thing, lest that skin in holding should be wrinckled and drawn away from the palme and fingers, and so be an impediment; but besides that the hand might have a more exact sense to distinguish of hot, cold, moist, dry, smooth, equal, rough, soft, hard, great, little, and such other qualities. Then follow the two *Pronatores*, of which one called the round, comes obliquely from the inner side of the hind proceffe of the arm almost to the middle of the wand, to which it adheres by a membranous and fleshy tendon, even to the place appointed for insertion. The other square three or four fingers broad, yet somewhat slender, seated within under all the muscles which descend on the inside to the wrist or fingers, upon the ends of the bones of the cubit, ascends transverse from below the *Ell*, unto the top of the wand, where it ends in a membranous tendon. Both the *Carpiflexores*, or wrist-benders, arise from the hind, but inner proceffe, and descend obliquely, (the one more, or lesse than the other) the one alongst the *Ell*, but the other alongst the wand; and that which descends alongst the *Ell*, is inserted into the eight bone of the wrist, which we said made part of the ring; the other which follows the wand is inserted with his greater part into the bone of the wrist, and with the rest into the first bone of the after-wrist which sustains the fore finger.

The *Pronatores*.

The *Carpiflexores*.

The *Digitumflexores*.

The *Sublimis* *Digitumflexor*.

Now remain the *Digitumflexores*, or *Fingerbenders*, which because they lye upon one another, the upper is called the *Sublimis*, but the lower the *Profundus*. The *Sublimis* or upper, arising from the inner part of the hind proceffe of the arm, and from the upper parts of the *Ell* and wand, descends between these two bones of the cubit even to the wrist and ring; divided into 4 tendons it is inserted into the second dearticulation of the four fingers, which it bends by the force of this his proper insertion; as also the first, as well by the power of the common ligament, as by certain fibers coming from it, which it sends thither by the way in its passage. But these 4 tendons neer unto this their insertion are divided into two, so to give passage and add strength to the tendons of the deep muscles descending into the third and last joint of the fingers.

The *profundus* *Digitumflexor*.

But this same *Profundus* or deep muscle arising from the upper and inner parts of the *Ell* and wand, descends between these two bones under the *Sublimis*, also undivided even to the wrist, where it is divided into 5 Tendons which it brings forth under the common ligament, and the divisions of the tendons of the *Sublimis* even to the last joint of the fingers, which they bend, by this their proper insertion, as also the bones of the first and second joints of the fingers by the means of the common ligament and fibrous productions which they bestow upon them by the way. Besides these forementioned there is seen also a certain membranous ligament which engirts the tendons in the compasse of the fingers.

CHAP. XXIX.

Of the Muscles of the inside of the hand.

The number of the muscles of the inside of the hand.



The muscles of the inside of the hand are 7 in number; the first is called *Thenar*, because it makes the greater part of the *Palme*; the second from the site is called the *Hypothenar*; the third the externall *Abductor* of the thumb. The four other are called by reason of their figure the *Lumbrici* or wormy muscles, or the *Abductores*, or *Drawers* of the four fingers to the thumb. Now the first called

The *Thenar*.

Thenar, thicker than the rest, arises from all the bones of the afterwrist, taking its beginning from that bone which bears up the ring finger, whence ascending alongst the *Vital* line even to the end thereof at the first bone of the afterwrist sustaining the fore finger, and it is at length inserted into the last joint of the thumb by the longest fibers, but by the middle

middle and shortest fibers almost into all the inner part of the first bones of two joints, and by reason of this, the thumb is drawn to the other fingers, and from them again by his lower originall.

Some divide this muscle into three, by reason of his divers actions, making the first to arise from the root of the bone of the afterwrist which bears up the ring finger; but the other from that middle bone of the afterwrist which sustains the middle finger; but of the third, from the upper end of that bone which underprops the fore finger, and that the insertion of them all, is, as we formerly mentioned. But the former opinion likes me better, both for shunning confusion, and abbreviating the doctrine of the number of muscles.

The *Hypothenar* arises from the fourth bone of the afterwrist, and that bone of the wrist which sustains it, and then with its longest fibers, it is inserted into the second joint of the ring finger, and by the shortest into the first, through which occasion, as also in respect of its twofold action, some have divided it into two, that the one of them might lead it from the rest, and the other might draw it to the thumb.

The third the externall *Abductor* of the thumb, descends from the first bone of the afterwrist, into the first and second joint of the thumb; wherefore some have divided it into two. The *Lumbrici*, or four externall *Abductores* of the fore fingers arise from a membrane, investing and binding together the tendons of the *Digitumflexores*, or fingerbenders, and at length on the sides towards the thumb even by a small tendon, running even to the second joint of the four fingers.

Now the *InterosSES* of the afterwrist, remain to be spoken of; these are six, two in each of the spaces between the fingers, one internall, the other externall, of which the internall descending with oblique fibers from the side of the first bone of the afterwrist, goes also into the sides of the fingers, that so it may the more closely bind together the bones of the afterwrist, whose action is manifested when we thrust our fingers into a strait glove, or when we bend our hand. Some think that it helps also the drawing of the fingers towards the thumb. The externall ascends also by oblique fibers from the sides of the second bone of the afterwrist, to the first joints of the fingers, intersecting the internall which we now described after the manner of the letter X, for to extend the palm of the hand, and help the drawing away of the fingers from the thumb.

Here concluding the description of the muscles of the whole hand taken in generall, you shall note that they are 39. in number, that is, eight appointed to move the arm; four set to move the cubit in generall; seven seated on the outside of the cubit, and as many on the inside in the same cubit, moving the wand, and with it the hand; seven on the inside of the hand: and lastly, the six *InterosSES*. Some encrease this number, saying, there are nine on the externall part of the cubit, and eleven on the inside of the hand.

CHAP. XXX.

A Description of the Leg taken in generall.



After the hand follows the description of the Leg. Wherefore to take away all doubtfulnesse, we will first define the leg; then divide it into the parts more and lesse compound; thirdly, we will prosecute all things common to all these parts; fourthly, those which are peculiar to each; and then, God willing, we will give an end to our Anatomy.

Now this word *Crus*, or leg, is used two manner of wayes, that is, either generally or specially, and specially again after two sorts, that is, either absolutely and simply so, or with an adjunct. It is simply taken for all that which is between the knee and the foot. But with an adjunct for the greater bone thereof. But the leg taken in generall, is the instrument of going, containing all whatsoever is from the hips, to the very ends of the toes. It is divided into three great parts, that is to say, the thigh, the leg, or shank, and the foot. By the thigh we mean that which lies between the hip and the knee. By the leg, properly so called, or shank, that which is contained between the knee and the foot. By the foot all from thence to the ends of the toes.

Again, they divide the foot into three parts; that is, the *Tarsus* or instep, the *Pedion* or top of the foot, and the *Digitum pedum*, or toes. We understand by the instep, that which is contained in the first seven bones, which answers in proportion to the wrist of the hand. By the top of the foot, that which is comprehended in the five following bones, which is answerable to the afterwrist. That which remains, we call the toes. But because all these parts have other common and proper parts, we will only follow the distribution of the veins, arteries, and nerves; seeing we have sufficiently explained the rest, when we described the containing parts of the body in generall.

The *Hypothenar*.

The externall *Abductor* of the thumb.
The *Lumbrici*.

The *InterosSES*.

The number of the muscles of the whole taken in generall.

The diverse acception of the leg.

The thigh
The leg or shank.
The foot.

The division of the foot.
The instep.
The top of the foot.
The toes.

C H A P. XXXI.

A Description of the Crural vein.

The beginning
of the Crural
vein.
The two bran-
ches thereof.



The crural vein begins then, when the hollow vein passing forth of the *Peritoneum*, and stretched to the hanch bone, and the sides of the *Pubis* in the groin, is first divided into two large branches, the one of which descends on the inside, alongst the bones of the whole leg, together with the artery and nerve; the other runs down outwardly and superficially alongst the leg, between the fat lying under the skin, and the muscles even to the foot, and is spent in the skin thereof. This because it is alwaies apparent and manifest, is called properly by the Greeks *Sapheia* but commonly *Saphena*.

By what veins,
the matter cau-
sing those tu-
mors called
Bubones flow
down.

This vein by the way presently at its originall is divided into two branches, the one internal, the other external; of which the internal is spent upon the *Bubones*, and other glandules of that place and the skin, and by this branch come the defluxions called *Bubones*; the other branch is wasted in the fore and utter skin of the upper part of the thigh; then a little lower, that is, about the bredth of three or four fingers, it is gathered again into one branch made of many little ones, which is spent in the fore and hind skin of this thigh. Thirdly, a little below the middle of the thigh it is again divided into two other branches, of which the one goes into the skin on the foreside, and the other on the hindside. Fourthly, it is distributed by two other small sprigs into the skin, on the fore and hind part of the knee; whith oftentimes are not found, especially when the *Poplitea* or ham vein, is somewhat larger than ordinary. Fifthly, a little below the knee, it produces two other branches, lying upon each other in their passage out into the fore and hind skin of that place. You must note, that branch which runs into the skin of the hind part, is carried by a certain other sprig, which it produces, into a branch of the *Poplitea* passing forth of the two twin muscles. Sixtly, in the bigger part of the calf of the leg, it is divided into two other branches, which in like manner are distributed into the skin, as well in the foreside as the backside of the leg.

Where and in
what diseases,
the *Sapheia*
must be open-
ned.

At length after many other divisions, which for brevity sake I omit, when it arrives at the fore and inner side of the ankle (where it is commonly opened in the diseases of the parts below the midriff which require blood-letting) it is parted into two other branches, the lesser of which descends to the heel; the other in many sprigs is spent upon the skin of all the upper and lower part of the foot and toes.

To what pla-
ces, and by how
manifold divi-
sions the inter-
nall branch of
the crural vein
goes.

Ischiadica vena.
Muscula vena.

The second branch of this crural vein, which we said descends within together with the artery and nerve, even into the foot, is divided; first, piercing somewhat deep in, it produces four divarications; one internal descending below the original of the into *saphia* the muscle called *Obturator externus*, and into certain other external muscles. The three other run outwardly, the first towards the huckle-bone, by which the *Ischias* is made, the two other into the fore muscles of the thigh, neither are these sprigs far remote from one another. Secondly, al that branch is divided into two other branches, the one above, the other below, an artery alwaies accompanying it; the lower of which is spent upon many of the hinder muscles of the thigh ending nigh the ham. The upper, besides, that it bestows many branches upon the fore and inner muscles of the thigh; descending to the ham, it produces the *Poplitea* or ham vein, made sometimes of two branches, the one proceeding from above, and the other from below. This *Poplitea* descending by the bending of the ham, is spent one while upon the skin of the calf of the leg, another while upon the knee, otherwhiles encreased with branches of the *Sapheia*, it goes on the outside of the ankle to the skin, on the upper side of the foot, and sometimes on the lower.

Poplitea vena.

Suralis vena.

Thirdly, a little below the original of the ham vein, and under the bending of the knee, it brings forth the *Suralis*, which is bestowed upon the muscle of the *Sura*, or calf of the leg, and upon the skin of the inner side thereof, and of the foot continued sometimes even to the inner part of the great toe.

Fourthly, under the head of the hinder appendix of the bones of the leg, it produces between these two bones, another vein, which nourishing the fore muscle of the leg, is consumed upon the foot.

*Ischiadica ma-
jor.*

Fifthly and lastly, it brings forth the *Ischiadica major* or greater *Ischias*, which is divided into two branches of an unequal bignesse; the larger whereof, from his originall descending alongst the inner part of the leg bone, insinuates it self under the muscles of the calf, between this and the heel, into the sole of the foot, upon which it is wasted, divided into ten small sprigs, two for each toe; the other being the lesser descending alongst the *Perone*, or shin-bone, is consumed between it and the heel, yet sometimes it is produced, not only even to the muscle the *Abductor* of the toes, but also by five surcles, even to the fourth toe, and the sides of the middle toe.

C H A P. XXXII.

The Distribution of the Crurall Artery.

THe crurall artery arising from the same place whence the crurall vein proceeded, and descending with the internall crurall vein, is distributed as followeth.

First, into the muscle of the thigh, which spreading it self through the muscles thereof meets with the utmost *hypogastrica*, descending with the vein through the common hole of the huckle and share bone, and is joined with it.

Secondly, when it arrives at the ham, between the *Condylus* or processes of the leg, it sends two branches into the knee.

Thirdly, a little after it produces another branch, which it sends to the exterior muscles of the leg, and when it arrives at the middle of the leg, it is divided into two branches, between the twin muscles and *Soleus*, the one internall, the other externall; the internall, some surcles communicated by the way to the parts by which it passes, but specially to the joint of the ankle, stretches it self over the sole of the foot, between the lower extremity thereof and heel, whither when it arrives, it is divaricated into five surcles, of which it bestowes two on the great toe, two on the next, and one on the middle toe. The externall descending in like manner to the sole of the foot, between the *fibula* and the heel, besides other sprigs, which it may spread by the way, it produces one without on the joint of the ankle, another in the muscle, the *Abductor* of the toes, to the wrist and back of the foot. But the remainder is divided into five portions, of which two are sent to the fourth, and two to the little toe, and one to the middle.

Arteria muscula
cula.

C H A P. XXXIII.

Of the Nerves of the Loins, Holy-bone and Thigh.

THere arise five conjugations of nerves from the loins, divided into externall and internal branches; the external are diffeminated into the *Rachite* or chin muscles; the muscles *Semispinatus* and *Sacer* and the skin lying over them. The internall are sent into the oblique ascendent and transverse muscle of the lower belly, into the *Peritoneum*, into the loin and chest muscles arising there, but after a different manner; for some are absolutely carried thither, as the nerves of the first conjugation of the loins, and oftentimes also of the second, but that sometimes they send a small sprig to the testicles, when the *Costall* have sent none thither; but some lower are partly distributed there, and partly sent some other way; for the greater portions first united amongst themselves, then presently with the portions of these of the holy-bone, goe into the thigh, as we shall shew in the distribution of the nerves of the holy-bone.

Now from the holy-bone, proceed six conjugations of nerves, reckoning that for the first which proceeds from the last *Vertebra* of the loins, and first of the holy-bone, and that the sixth which proceeds from the lowest part of the holy-bone, and the first of the rump; these conjugations of nerves are divided into externall and internall branches.

The lesser externall passing forth by the externall and hinder holes of the holy-bone, are distributed into the parts properly belonging thereto, to wit, the muscles and skin thereof; for every nerve by the law of nature first and alwaies yeelds to the neighbouring parts, that which is needfull, then presently to others as much as it can.

Wherefore if thou wouldst know whence each part hath his vessels at the next hand, that is, the veins, arteries, and nerves, thou must remember the site of each part, and the course of the vessels, and to consider this, that the veins and arteries as speedily and conveniently as they can, insinuate themselves into the parts, sometimes at the head or beginning, somewhiles by the middle or extremes thereof, as there is occasion.

But a nerve principally enters a muscle at the head thereof, or at least not far from thence, but never by the tail, whereby it may easily be understood by what branch of each vein, artery, and nerve, each part may have nourishment, life, and sense. The other internall branches of the foresaid conjugations goe, especially the four uppermost united from their originall with the three lowermost of the loins, into all the leg, as you shall presently hear. But the two lower are consumed upon the muscles called *Levatores Ani*, the *Sphincter* muscle of the same place; besides, upon the muscles of the yard, and neck of the bladder in men, but in women upon the neck of the womb and bladder.

For these parts admit another in their bottom from the costall nerve, being of the sixth conjugation of the brain; these thus considered, let us come to the nerves of the thigh, which (as we said) from their first originall, as it were compacted and composed of the greater portion of the three inner and lower branches of the loins, and the four upper of the holybone, are divided in the thigh into four branches, of which the first and higher descending from above the *Peritoneum*, to the little *Trochanter*, is wasted upon the inward and superficial muscles of the thigh, and the skin which covers them a little above the thigh.

The five conjugations of the nerves of the loins.

Where the testicles have their nerves.

The conjugation of the nerves proceeding through the holybone.

An Anatomical axiom.

The second, descending with the crural vein and artery by the groin, is divided into two branches like as the vein, the one internall, the other externall, of which the internall descending with the vein and arterie is sent into the inner and deep muscles of the thigh, ending above the knee. But the externall descending superficially with the *Saphæia*, even into the foot, gives branches by the way to the skin which covers it.

The third seated under these former, passing by the hole common to the share and hanch-bone, sends certain branches to the groins, to the muscles called *Obturatores*, to the *Triplices*, and sometimes to the muscles of the yard, and it ends at the midst of the thigh.

The fourth, which is the thickest, solidest and hardest of all the nerves in the body, descending wholly from the productions of the holy-bone, and descending outwardly, between the lower part of the same bone, and the *Os Ilium*, or Hanch-bone to the thigh, bestows certain sprigs to the hind muscles thereof proceeding from the protuberation of the *Ischium* or huckle-bone, and in like sort it gives othersome to the skin of the buttocks, and also to the skin covering the forementioned muscles.

A little after, it is parted into two branches descending undivided even to the bending of the knee, they both are communicated by divers fibres of the muscles of the leg; yet so as the lesser produces another branch from the rest of the portion thereof descending on the fore part of the leg, alongst the shin-bone unto the top of the foot, where it is divided into ten fibres scarce apparent to the sight, two running to each of the toes. The other greater descending in like manner in the remainder of its portion by the hind part of the leg into the sole of the foot, casts it self with the veins and arteries between the heel and leg bone, were first divided into two branches, each of which presently parted into five, send two sprigs to the sides of the toes. And these are the most notable and necessary distributions of the vessels and nerves; we purposely omit others which are infinite, and of which the knowledge is impertinent.

CHAP. XXXIV.

Of the proper parts of the Thigh.



AVING explained the common parts of the leg in generall; now we must come to the proper, beginning at the Thigh. The proper parts of the Thigh, are muscles, bones, and ligaments. But because the demonstration of the muscles is somewhat difficult, if we be ignorant of the description of the bones from whence they arise, and into which they are inserted; therefore we judge it worth our labour, first to shew the bones, and the dearticulation of these of the Thigh; beginning with these bones which are knit with the upper part of the holy-bone. And they are two in number, on each side one, commonly called the *Ossa Ilium*; each of these is composed of three bones, of which one is the upper, another the lower and anterior, and the third the middle, and after a manner the posterior. The upper by a particular name is called the *Os Ilium*, the hanch-bone, and it is the largest and biggest, having a gristly Appendix in the compass thereof, even to the connexion it hath with the other neighbouring bones, whose upper part we term the right line thereof; but the *basis*, which is adjoined to it by *Symphysis*, we call the lip or brow thereof, because it stands both somewhat out and in, after the manner of the brow. But that which lies between the *basis* and straight line we name the Rib; this same upper bone hath two hollow superficies, the one internall, the other externall. The connexion thereof by *Symphysis*, is twofold, the one with the upper part of the holy-bone; the other with that bone we called the middle, and after some sort the posterior; which taking its beginning from the narrower part of the *Os Ilium*, makes that cavity in which the head of the thigh is received; this cavity the Greeks call *Cotyle*, the Latins *Acetabulum*, and it is ended by the side of the hole common to it, and the share-bone; this middle, and in some sort posterior bone is called properly and particularly the *Os Ischii*, or huckle-bone, and contains nothing else but the forementioned cavity, but that on the hind and lower part thereof, it brings forth a proesse, which adjoins it self to the share-bone at the lower part of the common hole, in which place it appears very rough and unequal, and it is called the tuberositie of the huckle-bone, at whose extremity also it brings forth a little head somewhat resembling the proesse of the lower jaw called *Coronc*. The third bone named *Os pubis* or the share-bone, stretches it self even to the highest part of the *pecten*, where meeting with the like bone of the other side, it is united to it by *Symphysis*, after which manner also, all these three bones are united; it is reported, that this bone opens in women in their travel, yet hitherto I can find no certainty thereof.

You may perceive a manifest separation of these three bones in the *Skeleton* of a child; for in those who are of more years, the gristles which run between these connexions turn into bones.

Now follows the thigh-bone, the biggest of all the bones of the body; it is round, and so bended that it is gibbons on the exterior and forepart thereof, that so it might be the safer from

Of how many bones the *Ossa Ilium* consist.

What the *Os Ilium* strictly taken is.

What the line, lip, brow and rib of the *Os Ilium* are.

The *Os Ischium*, or huckle-bone

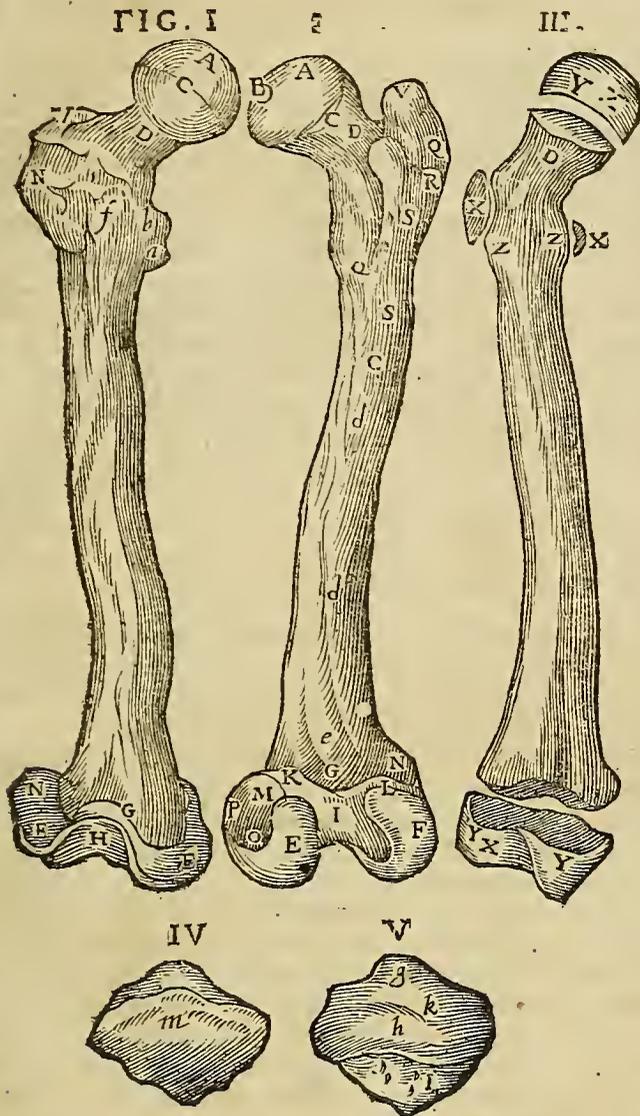
The *Os pubis*, or share-bone.

The description of the thigh-bone.

from

from externall injuries; but on the hind and inner part, it is hollow or sinuous, like to the back of an Ass, whereby the muscles might have a more commodious originall and insertion.

The figure of the Thigh-bone.



A 1, 2. The head of the thigh going into the cup of the hip-bone.

B, 2. A sinus in the head of the thigh, into which is inserted a round ligament.

C 1, 2. The conjunction of the appendix of the thigh with the bone it self.

D 1, 2, 3. The neck of the thigh.

E F The two lower heads of the thigh.

G 1, 2. The conjunction of the lower appendix.

H 1, 2. A sinus betwixt the two heads of the thigh.

K 2. A part of the lower head of the thigh, from whence the first muscle of the foot doth proceed.

L 2. Another part from whence the second and first muscles arise.

M 2. Another part to which the Tendon of the fifth muscle of the thigh is inserted.

N 1, 2. A sinus of the outward side of the head for the fourth muscle of the leg.

O 2. A sinus of the inside through which the tendons doe passe.

P 2. A protuberation at which the said tendons are reflected.

Q 2. The upper proceffe of

the thigh, and betwixt Q and D is the sinus. R 1, 2. The union of the proceffe with the thigh. S S 2. A rough line from the impression of the externall proceffes. T 1. The anterior impression of the internall proceffes, β , betwixt T and V another impression higher than the former. V. 1, 2. The fourth impression in the top of the proceffe. X 3. Four X; shew the four appendices of the thigh. Y 3. Three Y, shew the three heads of the thigh. ZZ 3. Two proceffes of the thigh. a 1. The interior proceffe of the thigh. b 1. The conjunction of the proceffe with the thigh, c c 2. A line descending obliquely from the inner proceffe. dd 2. A line running through the length of the thigh. e 2. The largeness of the thigh in this part. f 1. A roughness from which the eighth muscle issueth. g, b 5. A knob of the Whirle-bone going into the sinus marked with I, which is betwixt the heads of the thigh. i 5. A sinus fitted for the inner head of the thigh. k 5. A sinus agreeing with the externall head of the thigh. l 5. the lower asperity or roughness. m 4. The foreside of the pattell or whirle-bone rough and unequal.

That sinuous part a little below the midst thereof, is divided into two lines, the one whereof goes to the internall tuberosity, the other to the externall of the lower appendix of the same thigh. These are chiefly to be observed, because the oblique fibers of the vast muscles thence take their originall.

Besides, this bone hath two appendices in the ends thereof, as easily appears in a child's thigh; the upper appendix makes the round head of the thigh it self, which (as every other appendix) seated upon a long neck, is received in the cavity of the hanch-bone by Enarthrosis; it is stayed and fastned there by two sorts of ligaments, of which the one is common, proceeding from the muscles, which descend from above, about the neck thereof; the other is proper, which is twofold, that is, one membranous and broad, proceeding from the

The two appendices of the thigh-bone.

the whole cavity of the orb, or cup, descending about all the head of the thigh, above the neck thereof; the other thick and round, descending from the second cavity of the *Cotyle* it self, which is extended, even to the common hole at the top of the head thereof.

The two processes of the thigh-bone make the two *Trochanters*.

Besides, under this head, that bone hath two processes, the one great and thick, the other little and short.

The greater seated in the hind part, is called the great *Trochanter*; the lesser situate in the inner part, is named the little *Trochanter*.

Whence the marrow becomes partaker of sense.

But you must note, that the greater *Trochanter*, on the higher and hind part thereof, which looks towards the head of this bone, makes a certain small *sinus* or bosome, into which the twin muscles and others, whereof we shall hereafter speak, are implanted; we must also consider the multitude of holes encompassing this neck, between the head and the two *Trochanters*, which yeeld a passage to the vessels, that is, the veins, arteries, and nerves, into the marrow of the bone it self, whence the marrow it self becomes partaker of sense, especially on that part which is covered with a coat, and the bone lives and is nourished.

The other Appendix of the thigh, that is, the lower, is the greatest and thickest, rising as it were with two heads, which are divided by two cavities, the one superficial and on the fore side, whereby it receives the whirl-bone of the knee; the other deep, and on the back part, by which it receives the gristly and as it were bony ligaments, proceeding from the eminencie which is seen between the two cavities of the upper appendix of the bone of the leg, which *Hippocrates*, *lib. de fracturis*, calls in his tongue *Diaphysis*.

CHAP. XXXV.

Of the Muscles moving the thigh.

Their number.



The muscles of the thigh are just fourteen in number, that is, two bend it, whereupon they are called the *Flexores*, or benders; three extend it, whereupon they are called *Tensores*, extenders; three move it inwards, driving the knee outwards, and drawing the heel inwards, as when we crosse our legs; yet some make these three one, and call it the *Triceps*, or threeheaded muscle. Six spread it abroad, and dilate it, as happens in the act of venery.

Four of these are called *Gemini* or Twins, by reason of the similitude of their thicknesse, originall infertion and action; the two other are called *Obturatores*, because they stop the hole which is common to the share and back-bones.

The two *flexores*.

Now one of the two *Flexores*, being round, descends on the inside with fibers of an un-equall length from all the transverse processes of the loins, above the hind commissure of the hanch and share-bones, and is inferted into the little *Trochanter*; the other broader and larger from the originall passes forth of the whole lip, and inner brow of the hanch-bone, and filling the inner cavity thereof, is inferted above the forepart of the head of the thigh, into the little *Trochanter* by a thick tendon, which it with the fellow muscle lately described, produces even from the fleshy part thereof, wherefore you need to take no great pains in drawing or plucking them away.

The three *tensores*,

The three *Tensores* or extenders, make the buttocks, of which the first being the thicker, larger, and externall, arising from the rump, the holy-bone, and more than half of the exterior and hinder lip of the hanch-bone, is inferted by oblique fibers, some four fingers bredth from the great *Trochanter* at the right line, which we said, resembled an Asses back.

The second, which is the middle in bignesse and site, descends from the rest of the lip, and from the fore and outward rib of the hanch-bone, and above the midst of the bone, is inferted into the upper part of the great *Trochanter*, by a triangular infertion above the upper and exterior part thereof.

The third being lesser, shorter, and thinner, lying hid under these former, proceeds from the middle of the externall surface of the hanch-bone; and then is inferted into the greater part of the right line of the great *Trochanter*.

These three muscles have a great and large originall, but a narrow infertion, as it were by oblique fibers.

Three *Intromoventes*,

Then follow those three muscles which move the thighs inwards, straiten and crosse them, so that the knee stands forwards or outwards, but the heel is drawn inwards, as you may understand by their infertion, although some think otherwise. But these three muscles by their originall, partly fleshy, and partly membranous, arise from the upper and forepart of the circumference of the share-bone, and thence are inferted into the hind line of the huckle-bone, some higher than othersome; for the lesser and shorter stays at the roots of the little *Trochanter*, the middle descends a little deeper, the third with the longest of his fibers, descends even to the midst of the line.

This if it be so, that is, these muscles proceeding from the fore and upper part, to be inferted into the hinder line of the huckle-bone, whilst they alone perform their action, and draw the thighs together, they will turn them outwards, just so as when we put them across,

acrosse, but they will not draw one heel to another, and put the heel outwards, for such like motion is performed by the inner vast muscle of the thigh, moving the leg. Now follow the six which move the buttocks.

The movers of the buttocks.

The first, and higher of the *Quadrage mini*, or the four twiv muscles, passes forth of the commissure of the holy-bone, with the bone of the rump, or rather from the lowest extrem of the holy-bone, and thence it is inserted into the cavity of the great *Trochanter* by a tendon of a sufficient largeness.

The second proceeding from the hollow part or fissure, which is between the extremity of the huckle-bone, and the tuberosity or swelling out of the same, is inserted in like manner into the cavity of the great *Trochanter*.

The third ascends from the inner part of the swelling out of the huckle-bone, a little above, between the two *Trochanters*, into the cavity of the greater of them.

The fourth and last, the lowest and broadest of them all, proceeds from all the exterior protuberance of the huckle-bone, and thence is inserted into the great *Trochanter*, and these four muscles lie hid under the thick and more eminent part of the buttocks; wherefore that you may the better shew them, they must be turned up towards their originall.

The two *Obturatores* remain to be spoken of, that is, the internall and externall, both which arise from the circuit and circumference of the hole which they stop, which as we said is common to the share and huckle bone, but the internall ascends to the exterior root of the great *Trochanter* by the middle fissure between the upper part of the protuberance of the huckle bone, and the spine which stands up in the hinder basis of the hanch bone.

The two Obturatores.

But the externall proceeds from the exterior cavity, and the middle space between the tuberosity of the huckle bone and cavity thereof, and is inserted into the lower part into the cavity of the great *Trochanter*, together with the *Quadrage mini*.

If you would plainly see the exterior *Obturator*, you must either cut off the beginning of the three-headed muscle, or handsomely pluck it away, and then extend it, and turn it up; the internall is easily discerned when the bladder is taken away.

CHAP. XXXVI.

Of the bones of the Leg, or Shank.



Those which would describe the muscles of the leg, ought first to describe the bones thereof, beginning at the *Rotula*, or whirle bone of the knee.

What the *Patella*, or white bone of the knee is.

This bone is grifly on the outside, and round in compass, but on the inner and middle part after some sort gibbous, but somewhat flatted at the sides, that so it may be fitlier applied to the joint of the knee, and fitted within the anterior cavity of the two appendices of the thigh, and the upper and foremost of the leg.

The use thereof

The use thereof is to strengthen the joint of the knee, and to hold the leg at his due extent, so that it may not be bended so far forwards, as it is backwards.

The bones of the leg are two, the one thicker, called by the particular and proper name, the *Os Tibie* or leg bone; the other which is lesser, is termed *Perone*, or *Fibula*, but commonly the lesser *facile*, (and in English it may be termed the shin-bone.) The thicker being hollow and marrowie, is seated in the inner part of the leg, having two processes, the one bigger, the other lesse.

What, and how many bones the leg hath.

The leg-bones

The bigger seated on the upper part of the bone, and conjoined to it by *Symphysis*, makes two superficial and side cavities disjoined by an indifferent rising; wherefore this bone is connext to the bone of the thigh by *Ginglymos*. For in the cavities thereof it receives the lower and hinder protuberances of the Appendix of the thigh bone, but the middle eminencie thereof, is received by it between the two protuberances thereof.

This joint is strengthened, not only by the force of the tendons, or muscles ending there; but also of three strong ligaments, of which one proceeds from all the externall, another from all the internal parts of thar connexion; the third which we, out of *Hippocrates*, called *Diaphysis*, from the distance or space between them. The other proceffe of the leg bone, which we called the lesse, seated in the lower part thereof, makes as it were a double cavity, whereby it receives the *Astragalus* or pastern bone; but on the inside it makes the ankle, as the *Perone* makes it without: between these ankles the *Astragalus* is received on the sides, and turned as the nut in a Crosse-bow, as often as there is need to bend or extend the Foot. Besides, this same leg-bone, being triangular, hath three eminencies made in the shape of an Asses back; the sharper descends along the fore part, called by the Greeks *Antionemion*; the second resides on the inner part, and the third on the outer; all these must be diligently observed, and chiefly, that on the forepart; because it is as a guide and rule to a Chirurgion in the well setting of a broken leg. The *Perone*, or shin bone, is seated, as it were, on the outside, and as behind the leg-bone; it hath also two appendices hollow on the inside, but gibbous on the out. This bone by the upper of these is fastned and inserted under the inner, and in some sort the hinder appendix of the leg bone, so that it is in no sort articulated with the thigh, but serves only in stead of a leaning stock. But by the lower, this same bone is not only received in the lowest part of the leg, or ankle, or pastern bone, but

What *Diaphysis* is.

The *Perone* *facile*, or shin bone.

also receives part thereof, which is joined on the same side with the heel, especially then when we bend our foot outwards.

This bone is fastned to the forementioned bones by *Synarthrosis*, but bound by strong ligaments proceeding from the same bones, and mutually sent from one to another, or if you had rather, from the upper into the lower, as we said in the arm. But this same *fibula* or shin bone is also triangular, having three lines, of which one stands outwards, another on the fore-side, and the third behind.

CHAP. XXXVII.

Of the Muscles of the Legs.

Their number.



ALL the motions of the leg, are performed by eleven muscles, of which there be six on the fore-side, and five on the hind. But of these, some move the leg only, as those which take their originall from the bone of the thigh; others truly move the leg, but with the thigh, as those which arise above the thigh, that is, from the hanch, huckle, and share bones.

The Longus.

The first of these on the fore-side called the Long, but commonly the *Sutorius* (or Tailor muscle, by reason of its action) it arises from the lower and fore extremity of the spine or appendix of the hanch bone, and descending obliquely above the other muscles, is inserted by a large and membranous tendon, in the fore and inner part of the leg under the knee; the action thereof is to crosse the legs, but being first bended by the muscles presently to be treated of, it helps also the three headed muscle in the performance of the forementioned action.

The Membranosus.

The second of these four muscles is termed the *membranosus*, or membranous, because it is wholly such, unlesse at the originall where it descends fleshy from the root and basis of the above mentioned spine of the hanch bone, and that obliquely with its membranous and broad tendon (mixed with the common coat of the muscles) into the outward part of the leg, which it moves outwards, as also the thigh with the four twin muscles; for as we have in another place observed, of two oblique motions concurring in one, is made a right motion; and besides, almost all the motions of the body, are thus performed; the muscles which perform such motions are placed and opposed in an oblique site, as may be perceived by the motions and site of the muscles of the hand taken in generall.

The Rectus.

The third, called the *Rectus*, or right (because it descends above the *Crureus*, alongst the right fore line of the thigh, between the two vast muscles) comes forth between the extremity of the appendix of the hanch bone and cavity thereof, with a very strong ligament, and then is inserted into the forepart of the leg, passing over the midst of the whirlbone of the knee; it extends the leg, with the three following, but by accident it may help the bending of the thigh.

The two Vasti.

The fourth and fifth are called *Vasti*, vast or huge muscles, by reason of their largeness, the one of these is internall, the other externall: they both arise with right fibers, from their originall, but with oblique at their insertion, by reason whereof they both seem to have a compound action from a right and oblique motion; the right helping for the extension of the leg, but the oblique to draw one knee to another, or to disjoin both the knees; the internall comes by its right fibers from the root of the little *Trochanter*, but by its oblique from the inner descendent line of the thigh. The externall passes forth by its right fibers from the root of the great *Trochanter*, but by the oblique from the externall descendent line of the same bone. But all these fibers are in certain places so mixed with the *Crureus* that they cannot be separated unlesse you violate the one of them; they go into the leg (each on his side) above the whirlbone of the knee alongst the sides of the right muscle, with which it makes an unseparable tendon, as you shall presently hear. The sixth and last of these fore muscles called the *Crureus*, or thigh muscle (by reason of the strait and firm adhesion, which it hath with the thigh bone, which is by some called *Crus*) from the space between the two *Trochanters* descends under the right muscle and two vast muscles into the forepart of the thigh, even to the whirlbone of the knee. But we must note that these four last muscles make a common thick and broad tendon, with which they cover the *Patella*, or whirl bone, and all the fore dearticulation of the knee, that they cannot be separated without tearing; wherefore we must think that this tendon serves the knee for a ligament; now all these muscles performing their action together, extend the leg.

The Crureus.

The five hind muscles follow to be spoken of; of which three arise from the tuberositie of the huckle bone, going into the inner part; the fourth from the middle of the *Pubis*, called *Biceps*, that is, the two-headed muscle into the outside of the leg. Of the internall, one passing from the forementioned tuberosity, descends ligamentous even into the midst of the thigh, and then becoming fleshy, is inserted by its tendon, after the manner we formerly mentioned.

The three Internall.

The other being slender, passing forth also from the same place, with its tendon, is inserted with the tendon of the long muscle, and ends in the inner part of the leg, which with its companion, it draws inwardly, and brings to the other, which same thing it performs in the thigh, by the help of the three-headed muscle. The

The third being the inner, or hinder, descends from the middle part of the shank-bone, with a broad and slender ligament, and is inserted with a round tendon, into the inner part of the leg after the manner of the forementioned.

The fourth called *Biceps* takes one of the two heads, of which it consists, from the last mentioned tuberositie, the other from the outer line of the thigh, but is inserted into the externall part of the leg, as we formerly said.

The fifth and last called the *Popliteus* descends obliquely fleshy from the externall condyle or knot of the thigh, into the inner and hinder part of the leg, at the joining thereof to the shin-bone; the action thereof is, to draw the leg, after a manner inwards.

The *Biceps*, or two-headed muscle.

The *Popliteus* or ham muscle.

C H A P. XXXVIII.

Of the Bones of the Foot.



The Order of Anatomy requires, that we now prosecute the muscles moving the foot; but because we should in vain deliver their insertion, the disposition and condition of the bones of the foot, not being first known, wherefore it first behoves us, to set forth their description. Therefore the bones of the foot are six and twenty in number, distinguished into three ranks; that is, the bones of the *Tarsus* or Instep, are seven; those of the *Pedium*, the afterwrist, or Back of the foot, five; and those of the toes, fourteen. Of the seven bones of the instep, there are 4 named, and 3 unnamed. The first of the named immediately following the bones of the leg, is called *Astragalus*, the pastern or ankle-bone. This hath three connexions, one, as we said before, in the upper and broader part, with the bones of the leg, of which it is received; the other in the lower and hind part, by which it receives the upper and inner proceffe of the bone of the heel; the third on the fore-side by which it is received in the cavity of the *Os Naviculare* or *Scaphoides*, that is, the boat-like bone. By the first connexion the foot is extended and bended; by the second it is moved with the heel to the sides: the two first connexions are by *Diarthrosis*, the last by *Synarthrosis*. But it is strengthened by strong and broad ligaments, descending and ascending from one bone into another; also they are strengthened by membranes, muscles and tendons, descending to the foot, above and under these joints. But this bone hath three proceffes, as three feet fastened to the bone of the heel; of which the first and least is under the outer ankle; the bigger (which *Galen* saith, makes a round head, fastned on a long neck) looks towards the forepart of the foot, over against the great toe, and the next toe to it; the middlemost is at the heel, behind the leg-bone.

I passe over in silence many other things; as the smoothness and asperity or roughness of the bone, which I had rather you should learn by ocular inspection, than by book. The second bone lying under this is called the *Calcaneum*, or heel-bone, being the biggest of all the bones of the foot, upon which all the body relies when we go. It hath two upper proceffes, the one great, the other little. The great is received in the hind and outer proceffe of the *Astragalus*; the lesser is received on the inside in the third proceffe of the same bone, which we said had a round head fastned to a long neck. Besides, it is round on the hind part, and much disjointed from the leg-bone, but on the fore and longer part, it is knit by *Synarthrosis* to the Die-bone, whose lower and inner part, it seems to receive; the superficies thereof is wholly unequal, and rising up with many swellings. On the inner side it makes as it were a channell, so to give way, as well to the vessels as tendons going to the sole of the foot and toes. Lastly, we must consider the holes by which the vessels passe into that bone to give it nourishment; by reason of which vessels the fracture of this heelbone, is very dangerous, because of the pressing and contusion of the vessels; as *Hippocrates* shews. For the ligaments of this heel, or heel-bone, they are such, as these of the *Astragalus*, to wit, tendons, membranes and ligaments properly so called, coming from one bone to another. The third bone of the foot is named *Scaphoides* or boat-like, from the resemblance it hath to a boat, for on that part which looks towards the pastern bone, it is hollow; but on that part which is next the three *Innominata*, or nameless bones (which it sustains, and of which it is received, as it in the cavity thereof receives the head of the *Astragalus*) it is gibbous like the bottome of a boat. The connexions thereof are by *Synarthrosis*, and they are strengthened by the forementioned ligaments; this same bone is arched on the upper part, but somewhat hollowed or flatted below; the inner part ends in a point, like the prow of a ship, but the outer obtuse like the stern of a ship. The fourth bone of these which have names, is called the *Cuboides*, from the resemblance of a Die; although that similitude be very obscure. On the forepart it sustains the toes, which by a certain proportion to the fingers of the hand, may be called the ring and little toes; but it is sustained on the hind part, with the back part of the heel; on the inner side it is joined with the boat-like bone, and that nameless bone which sustains the middle toe; on the outside, it produces a rising like the back of an Ass, which on the lower part is extended transversely all the length thereof; at the two sides of this eminency or rising, there are two small cavities, in form of a channel.

Their number.
The bones of the Instep.

The *Astragalus* its three connexions and their use.

Its three proceffes.

The description of the *Calcaneum* or *Calc.*

Why a fracture of the heel is so dangerous. *Hippocrates*, Sect. 3. lib. de *fracturis*.
The *Os Scaphoides*, or boat-like bone.

The *Os Cuboides* or Die bone.

The Figure of the bones of the Foot properly so called.

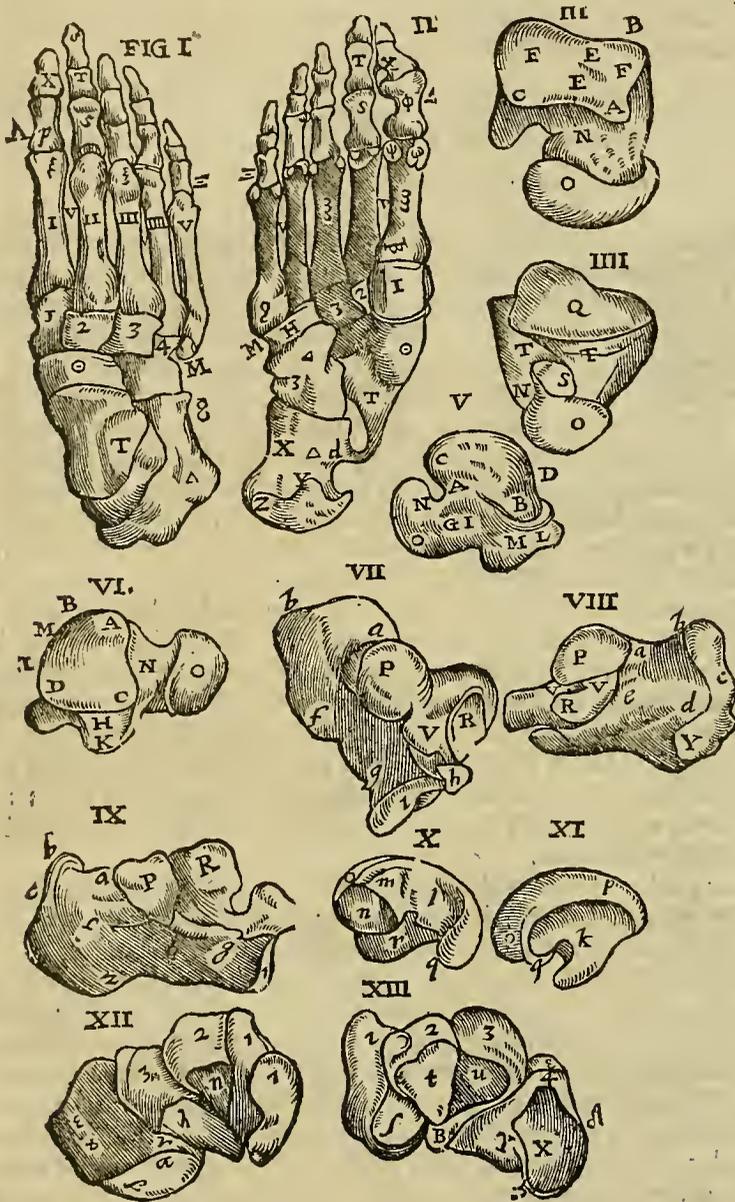
Figure 1, and 2. shew the bones of the right foot fastned together their upper face and their neather face:

Fig. 3, 4, 5, and 6. shew the upper, lower, inner and outer sides of the Talus or pastern.

Fig. 7, 8, 9. sheweth the same sides of the Heel.

Fig. 10, and 11. sheweth the forward and backward side of the boat-bone.

Fig. 12, 13. shew the fore and back part of the wrist made of four bones.



ABCD 3,5,6. The protuberation of the Talus joined to the appendix of the leg-bone, and of this protuberation four sides.

EE 3. A sinus insculped in the protuberation of the Talus.

FF 3, two bunching parts of the Talus.

G 3, the inner side of the protuberation of the Talus crufted over with a gristle, joined to the inner ankle.

H 6, the outward sinus of the potuberation of the Talus covered over with a gristle, and receiving the inner ankle.

I 5. A rough sinus of the Talus, receiving a gristly ligament from the inner ankle.

K 6, a sinus of the Talus receiving a gristly ligament from the outward ankle.

LM 5, 6, two sinus in the hinder part of the Talus.

N 3, 4, 5, 6. the neck of the Talus or pastern bone.

O 3, 4, 5, 6. the head of the Talus going under the sinus of the boat-bone.

P 7, 8, 9. the head of the heel crufted over with a gristle, and going under the sinus of the Talus or the pastern bone.

Q 4. a large sinus of the Talus receiving the head of the heel. R 7, 8, 9. a sinus of the heel wherto the lower part of the head of the Talus is joined. S 4. the lower power of the head of the Talus going into the sinus of the heel. TT 4. a sharp sinus of the heel receiving a gristly ligament from the pastern bone. X Y Z 2. the place of the heel. Y Z 2. Y 8. Z 9. a proceffe of the heel made for the production of muscles. a b 7, 8, 9. from a to b the distance of the upper part of the heel. c 8, 9. the hinder part of the heel. d 2, 8. the inner side of the heel. e 8. the place where the tendons that run to the bottom of the foot are reflected. f 7, 8. the utter side of the heel. g 1, 7, 9. here the tendons of the 7 and 8 muscles of the foot are stretched out. h 7. the forepart of the heel which is joined to the pastern bone. i 7. that part of the heel which is joined to the Cube bone. k 11. the sinus of the boat bone receiving the head of the Talus. l m n 10. three surfaces of the boat bone lightly prominent, which are articulated to the bones of the wrist. o p 11. the upper part of the boat bone regarding the top of the foot. q r 10. and q 11. his lower part. q 10, 11. A sinus through which the sixt muscle of the foot is led. s t u 13. the plain surfaces of the three inner bones of the wrist whereby they are articulated to the boat bone. x 13. a shallow sinus of the Cube bone whereby it is articulated to the heel. a b 12. the place of the Cube bone to which that bone of the Afterwrist is joined which supporteth the last toe save one. y 12, 13. the place of the Cube bone where the third bone of the wrist is articulated. d 12, 13. that part of the Cube bone which respects the outside of the foot. e 12, 13. the surface of the Cube bone in the upper part of the foot. z 2, 13. that part of the Cube bone which regardeth the earth. 2, a sinus of the Cube

Cubebone at which the tendon of the seventh muscle of the foot is reflected. B 13. a proceſſe of the third bone of the wrift whereinto the liſt muscle of the foot is inserted. 12. the place of the inner bone of the wrift to which that bone of the Afterwrift which ſuſtaineth the great toe is coupled. 12. the place of the ſecond bone of the wrift whereto the bone of the Afterwrift that ſupporteth the fore Toe is articulated. 12. the place of the third bone of the wrift whereto that bone of the Afterwrift which ſupporteth the middle Toe is articulated. 1, 2. a ſmall bone whereby that bone of the Afterwrift which ſuſtaineth the little toe is joined unto the Cubebone. 1, 2 the diſtances betwixt the bones of the Afterwrift. 1, 2. the heads of the bones of the Afterwrift, which enter into the boſomes of the toes. 2, a proceſſe of the bone of the afterwrift wherein the tendon of the ſeventh muscle of the foot is implanted. 2, a proceſſe of the bone of the Afterwrift, which ſuſtaineth the little toe, which proceſſe receiveth the tendon of the eighth muscle of the foot: 1, 2. the three bones of the foretoe. 2, two ſeed bones placed under that bone of the afterwrift which ſuſtaineth the great toe. * 2 under X. a ſeed bone ſet to the ſecond joint of the great Toe. 1, 2. the *Talus* or paſtern. 1, 2. the Heel. 1, 2, the Boat-bone: 1, 2. the bones of the toes. 1, 2. two bones of the great toe, I, II, III, IV, V, 1. the five bones of the afterwrift.

The firſt and the greater of the *Oſſa innominata*, or nameles bones, ſuſtains the great toe; the leſſer and ſecond, the next toe thereto; the third and middle in bigneſſe, the middle toe. Theſe three bones are arched on their upper part, but ſomewhat hollowed below. They are knit to the three forementioned bones by *Synarthroſis*, of which they are received, but on the hind part with the boat-like bone which they receive. Now we muſt come to the bones of the ſecond rank, that is, of the *Pedium*, or back of the foot; theſe are five in number, bearing up the five bones of the toes. They are ſomewhat gibbous on the upper part, but hollow below; each of them hath two proceſſes at the end thereof, by the lower and firſt of which they receive the three nameleſs and Die-bone, but by the upper made into a round head, they are received of the firſt bones of the toes. Their connexions, whether with the toes, or bones of the inſtep, are by *Synarthroſis*. The ligaments as well proper as common are ſuch, as we ſaid of the former. The bones of the third order now remain to be ſpoken of which we ſaid, make the toes, and they are fourteen, two of the great toe, but three of each of the other toes. The firſt is ſomewhat longiſh, but the reſt are very ſhort, except that of the great toe, all of them on the upper ſide are round and convex, but on the lower ſomewhat hollow, and plain long-wiſe, that the tendons which bend them, may paſſe more ſtraightly and ſafely without inclining to either ſide, even to their furtheſt joints; although ſuch paſſages are much helped by the membranous & common ligament, which riſing from the ſides of theſe bones, involves theſe tendons, as we mentioned in the fingers. To conclude, each of theſe bones, the laſt excepted, have a double connexion by *Diarthroſis*, they are all unequall in their bigneſſe, that is, thick at their beginning (where they receive the heads of the precedent bones, upon which they move as a dore upon the hinges) and ſo they grow ſmaller towards the ends, but by their ends, they are received of the following bones: at their ends they riſe into two eminencies on their ſides, diſtinguiſhed by a cavity between them, through which occaſion they are far thicker at their ends, than in their middle. The Ligaments by which their connexions are faſtned, are ſuch as the former. The *Oſſa ſeſamoidea* or ſeed bones of the feet are like in number and ſite to theſe of the hands. But this is to be noted, that thoſe ſeed-bones which are in the firſt articulation are ſomewhat bigger than the reſt, and they are round and longiſh on the outſide, but ſmooth and hollow on the inſide, ſeated between two cavities, encompassed by three riſings, of which two are on the ſides, and the third in the miſt of the extremity of the firſt bone of the *Pedium*, which chiefly bears up the great toe. To conclude, before we come to ſpeak of the muſcles, we muſt obſerve that the foot was made for two commodities. The firſt is to ſtay and bear the whole body, when we ſtand, for which cauſe nature ſet not the great toe contrary to the other, as it placed the thumb on the hand. The other is for apprehenſion, or taking hold of, wherefore nature framed and made the foot, and theſe moveable and jointed in the toes, as in the fingers of the hand. Beſides alſo for that we muſt goe upon our feet, Nature hath made them in ſome places hollow on the lower ſide, and in other ſom plain in a triangular figure, that ſo our feet may carry us over every ſoil, plain, mountainous, equal and unequal, through all parts of the world.

The *Oſſa innominata* or nameleſs bones.

The bones of the foot or *Pedium*.

The bones of the toes.

The ſeed bones of the foot.

The twofold uſe of the feet.

CHAP. XXXIX.

Of the Muſcles moving the foot.



The muſcles of the Leg moving the foot are abſolutely nine, three in the forepart and ſix in the hind. Two of the three fore muſcles bend the foot, when they jointly perform their action, but when ſeverally, each draws it to his ſide; the third chiefly extends the Toes, for other whiles it ſeems by its ſlenderer and longer tendon (which exceeds not that bone of the *Pedium* which ſuſtains the little toe) to help alſo to bend the foot.

Their number.

Musculus Peroneus.

The first is called *Peroneus*, because it descends alongst the bone *Perone*; the other the *Tibialis anticus*; for that it descends along the *Os Tibiæ*, or bone of the leg. The third from its action is called the *Digitumtensor*, or Toe-stretcher. For their originall the *Peroneus* which seems to have two heads, descends from the upper appendix of the *Perone* or shin-bone by its first head, but by the other from the middle of the same bone from the fore side into the hind, as the superficies shews which passes between the fore and outward line of the said bone; but after it arrives at the lower and hinder appendix of the same bone, behind the outer ankle it produces two tendons, which by the guidance of the Ligaments as well proper, as common, goes, the thicker under the sole of the foot, ending in the *Die*-bone and that bone of the *Pedum* which sustains the great toe; the lesser goes on the outside to the *Die*-bone, and the last and least bone of the *Pedum* which bears up the little toe, sometimes a slender portion thereof is produced even to the side of the little Toe, extending it and drawing it from the rest. The *Tibialis anticus* or fore leg muscle proceeding from the upper and outer appendix of the Leg-bone descends above the surface of the same bone, which is between the fore and outer line to which it adheres, as also to that surface even to the midst, from which place it produces one tendon, which descending on the fore and lowest part, ends on the outside into two of the nameless bones, that is, into the first which is the thicker, and into the middlemost, but besides by a slender portion thereof it is extended into the first and greater bone of the *Pedum*, so to extend the great toe, drawing it inwards to the other foot. And this muscle with the precedent bends the foot, if they both perform their parts at once; but if severally, each draws the foot towards his side. The third which is the *Digitumtensor*, or Toe-stretcher, is twofold; the one takes its originall from the top of the leg, and running alongst the shin-bone, and passing under the ring, carries it self into the foot, in which it ends by five tendons going to all the joints of the Toes, and by a sixth at that bone of the *Pedum* which sustains the little toe, whereby (as we formerly said) it helps the bending of the foot. The other descends into the midst of the shin-bone, and somewhat fastned thereto, by one tendon passing under the ring it goes to the great Toe. But you must note that all these Tendons have nervous, ligamentous and fleshy fibers so separated from each other, that they can equally alone perform their function, as if they were more distinct muscles. And we must think the same of the rest which have distinct tendons presently from their fleshy part.

Tibialis anticus.

The Toe-stretcher is twofold.

The 6 hind muscles.

The six hind muscles follow, of which the two first are called the *Gemelli* or twins by reason of the similitude of their thicknesse, originall, insertion and action. The third is called the *Plantaris*, because it is spent upon the sole of the foot, as the *Palmaris* upon the palm of the hand. The fourth is termed the *Soleus* or sole muscle by reason of the resemblance it hath to the fish of that name. The fifth the *Tibialis posticus* or hind leg muscle which descends alongst the back part of the leg-bone. The sixth and last the *Digitumflexor* or Toe-bender, equivalent to the deep muscle of the hand; some make but one muscle of this and the *Tibialis posticus*, which produces three tendons; others had rather make three, as thus, that one should be the *Tibialis*, the other the bender of four Toes, the third the bender of the great Toe.

The two *Gemelli* or twin muscles.

Now for the two *Gemelli* or twins, the one is internall, the other externall; the internall passes forth from the root of the inner Condyle of the thigh; but the externall from the external Condyle; and from this their original presently becoming fleshy, especially on the outside, they meet together a little after in their fleshy parts, and with the *soleus* they make the thick and great tendon at the midst of the leg, which from thence is inserted into the back part of the heel; in this very tendon breed painfull kibes. The action thereof is, to help our going by putting forth the foot, whilst it draws the heel towards its originall.

In what place the kibes breed
The *Plantaris*.

The *Plantaris* the least and slenderest of them all, passes forth fleshy from the outward head of the leg-bone, and from thence the space of some four fingers breadth it ends in a strong and slender tendon, which it sends between the twin and sole muscles to the sole of the foot, there to produce a membrane which covers the sole of the foot, and a muscle equivalent to the upper bender of the Hand.

The *Soleus*.

The *Soleus*, or sole muscle, the thickest of them all, and seated under the twin muscles, descends from the commissure of the leg and shin-bones, and about the midst of the leg, after it hath mixed his tendon with that of the twin muscles, it runs into the foresaid place that it may extend the foot for the foresaid use.

The *Tibialis posticus*.

The *Tibialis posticus* descends from the hinder appendix of the leg and shin-bones, and adhering to them almost as far as they goe, by a strong tendon, being as it were bony at the end thereof, it is inserted into the Boat-like bone, and the two first nameless bones, so to help the oblique extension of the foot.

The *Digitumflexor* twofold.

The last being the *Digitumflexor* or Toe-bender is twofold, for one arises from the leg-bone, in that place where the *Popliteus* ends, and inserted into that same bone it goes even to the backside of the inner ankle & from thence into the joints of four of the toes. The other draws his original from almost the middle of the shin-bone, and somewhat inserted into it, it goes by the heel and pastern bone to the great toe, mixed with the precedent; their action is to bend the first joint of the Toes, rather by the force of the common ligament, than by the small portion of the tendon which ends there. But it is their action to bend the last dear tication of the Toes by their proper insertion.

CHAP. XL.

Of the muscles moving the Toes of the feet.

NOW follow the muscles moving the Toes; these are eight in number, one on the upper, and seven on the lower side. The first proceeds from the Pastern, heel and Die bones below the external ankle, or the ligament of these bones with the leg-bone, and obliquely stretched to the top of the foot is parted into five small tendons to the sides of the five toes, so to draw them outwards towards its original, whereupon it is called the *Abductor* of the Toes, and also *Pediosus*, because it is stretched over the *Pedium* or back of the foot.

The first of the seven of the lower side called the *flexor superior* or upper bender, arises from the heel and stretched along the foot under the strong membrane, (which from the heel is straitly fastned to the extremity of the bones of the *Pedium* to strengthen the parts contained under it) is inserted by four tendons, at the second joints of the four toes which it bends. Here you must note, that near the insertion thereof, this muscle divides it self, like that muscle of the hand which is called *sublimis*, that so it may give way to the deep, which (as we said) descends along the fingers, to which a certain common membranous ligament adjoins it self, which involves and fastens it to the bone all along the lower part of the fingers, even to the last dearticulation.

The second equivalent to that muscle of the hand which is called *Thenar*, seated on the inner side of the foot, arises from the inner and hollow part of the heel and pastern bones, and ends in the side, and inner part of the great toe, which it draws from the rest, inwards. This may be divided into two or three muscles, as the *Thenar* of the hand, to draw the great toe to the rest, as much as need requires, just as we said of the Hand. The third answerable to that of the hand which is named the *Hypothenar*, passes from the outer part of the heel, and ascending by the sides of the foot it is in like manner inserted into the side of the little Toe, so to draw it from the rest; to which same action a certain flesh contained under the sole of the feet may serve, which is stretched even to these Toes, that also it may serve to hollow the foot. The four *Lumbrici* or wormy muscles follow next, which from the membrane of the deep Toe-bender are inserted into the inner and side part of the four toes, so to draw them inwards, by a motion contrary to that which is performed by the *Pediosus*. The *Interosses* or bone-bound muscles of the *Pedium* or back of the foot, remain to be spoken of: These are eight in number, four above, and as many below, different in their original, insertion and action; for the upper, because they draw the foot outwards with the *pediosus*, arise from the fore and inner part of that bone of the *Pedium*, which bears up the little Toe (and so also the rest each in its order) and are inserted into the outward and fore part of the following bone. The lower on the contrary pass from the fore and outer part of that bone of the *Pedium*, which bears up the Great Toe (and so each of the rest in its order,) but are inserted into the inner and upper part of the following bone, so with the wormy muscles to draw it inwards, or to hollow the foot as the outwards, or to flat the foot, as we said of the *Interosses* of the hand.

Their number?

The *Abductor* of the toes, or *Pediosus*.
The *Flexor superior*.

The muscle equivalent to the *Thenar*.

The 4 *Lumbrici*.

The description of the upper and lower *Interosses*.

CHAP. XLI.

An Epitome or brief recitall of the bones in a mans body.

THE whole head which hath the least consists of 60 bones; but that which hath most of 63. that is, 14 of the *Cranium* or skull, 14 or 17 of the face, and 32 teeth; Of the bones of the scull there be 8 containing, and 6 contained; the containing are, the *Os frontis*, or Forehead bone, the *Nowle*-bone, the two bones of the *Sinciput*, the two stony bones, the *Wedgbone*, and the *Sive*-like or spongy bone. But the contained are six shut up in the cavity of the Ears, the *Anvil*, *Hammer* and *Sitrop*.

For the bones of the face, there are six within or about the orb of the Eye, that is, on each side three; two bones of the Nose, two lesser Jaw bones, and two bigger, which are always in beasts seen distinguished by a manifest difference, but it is so rare in men, that I have not found it as yet; therefore these only are distinguished by manifest difference, two which contain all the upper teeth, the two inner of the palate, the two of the lower Jaw in children; And last of all the *Os Cristæ*, whence the middle gristle or partition of the Nose arise.

The two and thirty teeth are equally distributed in the upper and lower Jaws; and of these there be eight shearers, four fangs, or Dog teeth, and twenty Grinders.

The bones of the Scull 14.

The bones of the face 15.

The teeth 32.

And

The bone
Hyoides,

And there is another bone at the root of the tongue called *Os Hyoides*, alwaies composed of three bones, sometimes of four.

The bones of
the spine 34.
2 Collar-
bones.

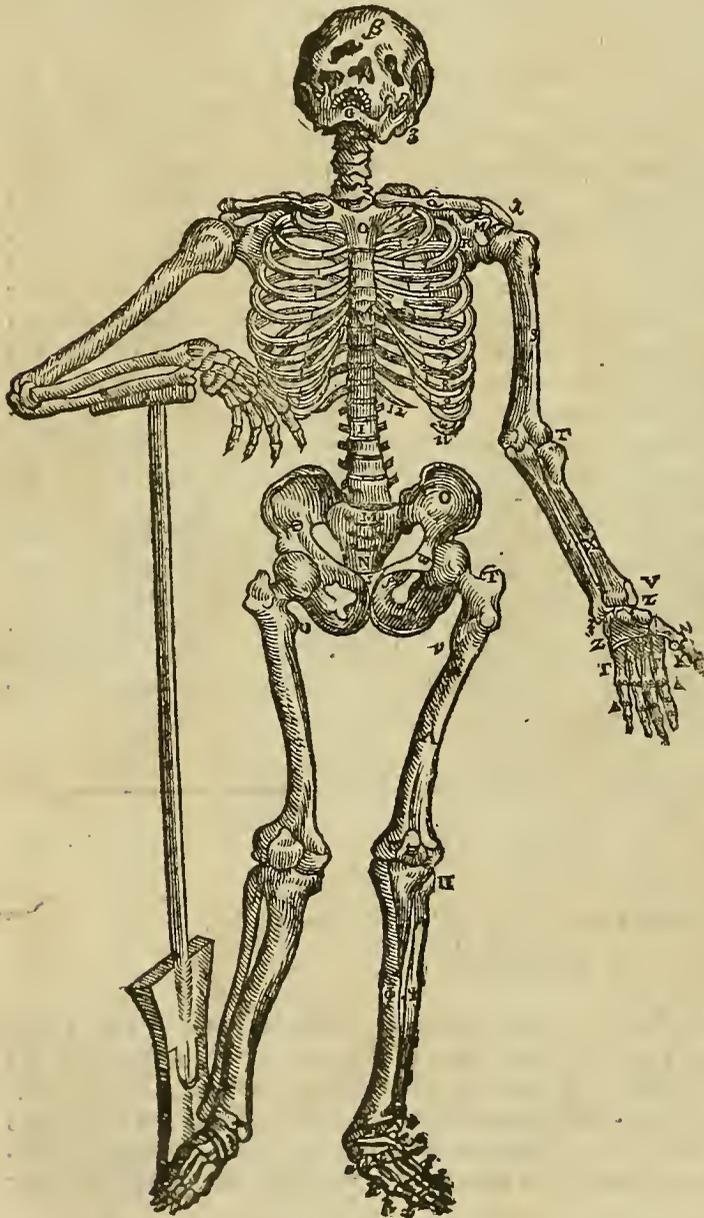
Now follow the bones of the Spine, or Back-bone, which are just four and thirty, that is, seven of the neck, twelve of the chest, five of the loins, six of the holy-bone; and four of the rump. Besides there are two bones of the throat, or Collar bones.

The ribs 24.
The bones of
the Sternon 3.
The bones of
the whole
arm 62.

The ribs are twenty four, that is, fourteen true and ten bastard ribs. The bones of the Sternon or Breast-bone most frequently three, otherwhiles seven, as sometimes in young bodies.

Hence coming to the Arms there are reckoned 62, beginning with the shoulder-blade; as there are two shoulder-blades, two Arm bones; four bones of the cubit; that is, two Ell bones and two Wands; sixteen of the Wrist, eight of the Afterwrist, and thirty of the fingers; into this number also come the *Sesamoidea* or seed bones, of which some are internall, and these alwaies twelve at the least, although sometimes there may be more found, a great part of which rather merit the name of gristles, than bones; there are others externall if we believe *Sylvius*.

The first sheweth the forepart of the Skeleton of a man, &c.



The Declaration of these three figures put into one.

- A 3. The Coronall Suture called in Greek *σφαιραια*.
- B 2 3. The suture like the letter λ, called *λαμβδαιδα*.
- C 2. The sagittall suture called *δελταζα*.
- D 2 3. The scale-like Conjunction called *λεπιδαιδα*.
- α 2 3. *Os verticis*, or *Syncipitis*, the bone of the Synciput, called *Os βρεγματιον*.
- ι 3. The forehead bone, that is, *μετωπον*.
- γ 2 3. The bone of the nowl or *iris*.
- δ 2 3. The bones of the temples or *υποταροι*.
- ε 3. An appendix in the temple bone like a Bodkin, *σπλαειδης*.
- ζ 1 2 3. A proceffe in the temple bone like the teat of a dug, called therefore *Mamillaris* and *μαστοιδης*.
- E 2 3. The wedge bone, *σφηνοειδης*.
- η 3. The stony part of the scul.
- θ 3. A proceffe of the wedg bone much like the wing of a Bat, and therefore called *ωτερυγιδης*.

The bones of
the whole leg
66.

Now remain the bones of the leg, which (if we reckon the *Ossa Ilium* on each side three, as in young bodies, it is fit they should) they are sixty six, besides the seed-bones, that is to say, two Haunch bones, two share bones, two Huckle bones, two thigh bones, two Whirlbones of the knees, four of the leg, that is, two leg bones, and two shin bones. Fourteen of the Instep, as two heel, two pastern, two boat-like, two Die, and six namelesse bones. Ten of the *Pedium* or back of the foot, that is, five in each foot; and twenty eight of the Toes: and as many seed bones in the feet, as the hands enjoy. But I have thought good to add these figures for the better understanding of what hath been spoken hereof.

The

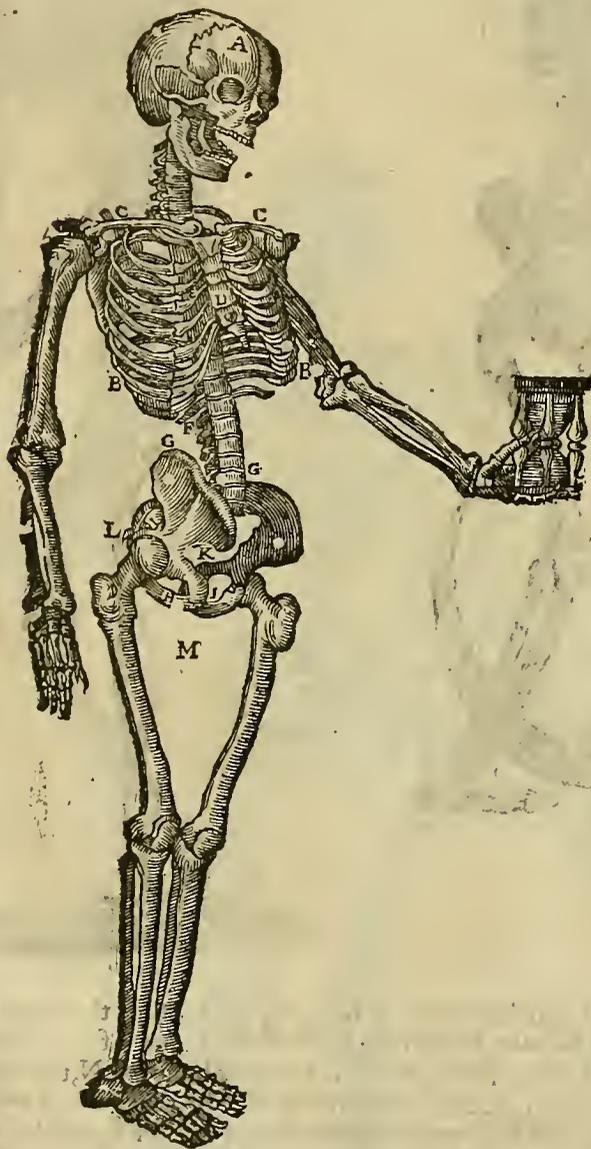
The 2 and 3 Figure sheweth the back side of the Sceleton,
and the laterall part of the Sceleton.



F 1, 2, 3. the yoaq bone ζυγάριον. G 1, 3. the lower jaw. I, K, L, M, N. 1, 2, 3. the back of the spine, ραχίς. From I to K, the neck, τράχηλος. From K to L, the Rack bones of the Chest. From L to M, the rack bones of the Loins. From M to N, the holy bone ἱερόν. N, the rump bone, ῥόκκος. O. 1, 3. the breast bone στήθιον. P 1, 3. the sword-like gristle of the breast, ξιφοειδής. Char. 1, 3. as far as to 12. in all three Tables, shew the twelve ribs of the Chest, πλεῖρα. Q I. the clavicles or collar bones, κλειδίαι. R, 1, 2, 3. the shoulder-blade, ὀμωπλάταις. λ, 1, 2, 3. The upper proceffe of the shoulder blade, or the top of the shoulder, called ἀκρομήμιον. μ, 1, 3. the lower proceffe of the shoulder blade, called ἀγχιωσθειδής. S 1, 2. the bone of the arm, called Humerus and ἄνω ὄμιον. T V 1, 2, 3. the cubit πύξος. X 1, 2, 3. the wand or the upper bone of the Cubit, called κερταίς. Y 1, 2, 3. the ell or lower bone of the Cubit, called πύξος. 1 3. the proceffe of the cubit, ἡλικεραίων. ξ 1 3. the proceffe like a bodkin or probe, called συλοειδής. ZZ. 1, 2, 3. the wrist κερταίς. ΓΓ 1, 3. the Afterwrist μετακέρταιον. Δ Δ Δ. 1. the fingers δάκτυλοι. Θ 1, 2, 3. the bones joined to the sides of the holy bone, on each side distinguished as it were into three parts. ο 1, 2, 3. the first part called the Hanch bone Os Ilium, λαγόνιον. π 1, 2, 3. the second part the bone of the Coxendix ἰσχίον. ρ 1, 2, 3. the third part the share bone, Os pubis, ἕβανος. σ 1, 2, 3. a gristle going between the conjunction of the share bones. Α 1, 2, 3. the thigh, μηρῶν. τ 1, 2, 3. the greater outward proceffe of the thigh called Rotator, περιστρεφτικὸν μέγας. υ 1, 2, 3. his lesser and inner proceffe. ζ 1, 2, 3. the whirlbone of the knee, Patella Rotutula, ἐπίμυλος. Π Ξ 1, 2, 3. the leg, κνήμη. Φ 1, 2, 3. the inner and greater bone of the leg, ὀστέον ἐντὸς. Ψ, 1, 2, 3. the utter and smaller bone of the leg, called the Brace bone, Fibula, ὑπερῶν. φ 1, 2, 3. the proceffe of the leg or the inner ankle called Malleolus internus. X, 1, 2. the proceffe of the brace of the outward ankle, both of them are called in Greek σφελόν. Ω 1, 2, 3. the bone called the cockall, Talus,

Talus, *balista*, *Os a'ε'ε'αλθ' .a, 2,* the Heel *Calx*, *π'ε'ρνα .b 1, 3.* the bone called *Os Naviculare*, *σκαριδ'ε .cc, 1, 2, 3.* the wrist of the foot called *Tarsus*, consisting of four bones, *ταρσ' . d, e, f, 1, 2, 3.* three inner bones of the wrist of the foot, called by some *σκαριδ'ε .g 1, 2, 3.* the utter bone of the wrist of the foot like a Die, *ωβουιδ'ε .hh 1, 2, 3.* the Afterwrist of the foot called *Pedum*, by some *μεταταρσ'ε .ii, 1, 2, 3.* the toes of the foot. *κ 1, 2, 3.* the seed bones of the foot, called *officula sesamina σποσμειδ'ε*.

This figure sheweth the Sceleton of the bones and gristles of a woman, that it may appear all her bones are in proportion lesser than the bones of a man. But in this figure only those parts are marked with letters wherin a woman differeth from a man in her bones and gristles.



- A, The sagittall future descending into the nose, and dividing the fore-head bone, which is sometimes found in women, very rarely in men, but alwaies in infants.
- BB, The Chest somewhat depressed before, because of the Paps.
- CC, the collar bones not so much crooked as in men, nor intorted so much upward.
- D, the breast bone perforated sometimes with a hole much like the form of a heart, through which veins do run outward, from the mammary veins unto the paps.
- E, the gristles of the ribs, which in women are somewhat bony, because of the weight of the Dugs.
- F, a part of the back reflected, or bent backward above the loins.
- GG, the compass of the hanch bones running more outward, for the womb to rest upon, when a woman is with child.
- HH, the lower processes of the share bones, bearing outward, that the cavity marked with K, might be the larger.
- I, the anterior commissure or conjunction of the share-bones filled up with a thick gristle, that in the birth they might better yeeld somewhat for natures necessity.
- K, a great and large cavity circumscribed by the bones of the coxendix and the Holy-bone.
- L, The rump or cœcyx, curved backward to give way in the time of the birth.
- M, the thigh bones by reason of the

largeness of the foresaid cavity, have a greater distance betwixt them above, whence also it is that womens thighs are thicker than mens.

CHAP. XLII.

An Epitome of the names and kinds of composure of the bones.

Because it is as necessary for a Chirurgion to know the manner of setting and repairing broken bones, as to put them in their places when they are dislocated, or out of joynt; but seeing neither of them can be understood when the naturall connexion of the bones is not knowne, I have thought it a worke worth my labour, briefly to set down, by what and how many means the bones are mutually knit and fastned together. The universall composure and structure of all the bones in a mans body is called by the Greeks *Sceletos*. But all these bones are composed after two sorts, that is, by *Arthron*, an Articulation or joint, and by *Symphysis* a naturall uniting or joining together.

What the *Sceletos* is.

The

There are many other kinds both of these sorts. For there are two kinds of Articulation, that is, *Diarthrosis*, or Dearticulation, and *Synarthrosis*, or Coarticulation; which differ as thus, Dearticulation is a composition of the bones with a manifest and visible motion; Coarticulation hath a motion of the bones, yet not so manifest, but more obscure. But these two do again admit a subdivision into other kinds. For *Diarthrosis* contains under it *Enarthrosis*, *Arthrodia*, and *Ginglymos*. Now *Enarthrosis* or Inarticulation is a kind of Dearticulation, in which a deep Cavity receives a thick and long head, such a composition hath the Thigh-bone with the Huckle-bone.

Arthrodia is when a lightly engraven cavity admits a small and short head; such a connexion is that of the arm-bone with the shoulder-blade; of the first *vertebra* with the second. The Greeks have distinguished by proper names these two kinds of Cavities and heads; For they call the thick and long head *Cephalé*, that is, a Head absolutely; but the lesser they term *Corone*, or *Coronon* which the Latines call *Capitulum*, a Little-head. But they call a deep Cavity *Cotyle*, and a superficial one *Glene*. The third sort called *Ginglymos*, is when the bones mutually receive and are received one of another; as when there is a cavity in one bone, which receives the head of the opposite bone, and also the same bone hath a head which may be received in the Cavity of the opposite bone; such a composition is in the Cubic knee, that is in the connexion of the Thigh-bone.

And thus much of Dearticulation and the three kinds thereof. *Synarthrosis* or Coarticulation, another kind of juncture, hath also three kinds thereof (*Gal. lib. de Ossibus*) to wit, *Sutura*, *Gomphosis* and *Harmonia*.

Suture is a composition of the bones after the manner of sowing things together, example whereof appears in the bones of the Skull. *Gomphosis* is when one bone is fastened in another as a pin is fastened in a hole, after which manner the teeth are fastened in their sockets in both the Jaws. *Harmony* is when the bones are composed by the interposition of a simple line, after which manner many bones of the nose and face are joined together.

Hitherto we have spoken of the first construction of the bones by articulation and the kinds thereof; now it follows we treat of *Symphysis*.

Symphysis, or growing together, as we formerly said, is nothing else, than naturall union of the bones; such union is made two manner of wayes, that is, either by interposition of no other thing; after which sort in success of time the bones of the lower Jaw grow together, which formerly in children were manifestly distinguished; or by the mediation of some *Medium*; but that happens three manner of wayes, by interposition of three severall *Media*, as first of a Gristle, which kind of union the Greeks call *Synchondrosis*, after which manner the Share-bones grow together and also some *Appendices* in young bodies; secondly, of a Ligament, and it is named by the Grecians *Syneurosis*, the Name of a Nerve being taken in the largest sense, for sometimes it is used for a tendon, otherwhiles for a Ligament, otherwhiles for a Nerve properly so called and which is the author of sense and motion. But this *Symphysis* or union hath place by *Syneurosis*, or interposition of a Nerve, in certain bones of the *Sternon* and Haunch.

Thirdly, the bones grow into one by interposition of flesh, called in Greek *Synsarcofis*; thus the flesh of the Gums fasten the teeth and makes them immoveable. But if some be less pleased with this division, by reason of the obscurities, in which it seems to be involved, this following expression comes into my mind, which I was first admonished of by *German Cortin* Doctor of Physick, which if you well observe it, is both blameless and more easie for your understanding.

An Epitome or brief recitall of all the Muscles of mans body.

As I have formerly reckoned up the bones, so here, I have decreed to recite the muscles of mans body. Wherefore in the face we first meet with the broad or skin muscle arising from the fleshy pannicle, and covering the whole neck and almost all the face. Then follow 4, pertaining to the upper eye-lids. In the Orbs of the eyes lye 14, that is 7, in each Orb, of which 4 are called right, two oblique, and one pyramidall. Then succeed 4 of the nose, two externall on each side one, and two internall, these draw it together and the other open it. After these come the ten muscles of the lower Jaw, of which two are called the *Crotaphite* or Temporall; two *Masseteres* or Grinders; two round (which seem to mee rather to pertain to the lips, than to this Jaw;) two little ones hid in the mouth, arising from the winged process of the wedg-bone; two openers of the mouth being nervous or tendinous in their midst. Then follow the 8 muscles of the lips, that is, 4 of the upper, and as many of the lower, shutting and opening the mouth. The tongue with his ten muscles is hid as it were in the den of the mouth. Wherefore the muscles of the whole face are 51. In the fore part of neck are found the muscles of the bone *Hyoides* and throttle; now 8 muscles hold the bone *Hyoides* as equally ballanced; of which there are 2 upper arising from the Chin; 2 on the sides from the proceffe *Styloides*, perforated in their midst, through which the 2 openers of the mouth in that part nervous do pass; 2 arise from the *Sternon*, and lastly 2 from the upper rib of the shoulder-blade to the *Coracoides*, which also in their midst are nervous, in which place the two *Massoidei* lye upon them.

2 Sorts of Articulation.
What *Diarthrosis* and *Synarthrosis* are.
3 Sorts of *Diarthrosis*.
What *Enarthrosis* is.

What *Arthrodia*.

What *Cephalé* is.

What *Corone* is.

What *Cotyle* is.

What *Glene* is.

What *Ginglymos*.

3 kinds of *Synarthrosis*.

What a *Suture* is.

What *Gomphosis* is.

What *Harmonia* is.

What *Symphysis* is.

Synchondrosis.

Syneurosis.
The things signified by the word Nerve.

Synsarcofis.

United mutually by *Symphysis* or union; by which they are so conjoined that there is no dissimilar, nor heterogenous body, at least which may be discerned, interposed between them. Such union appears in the two bones of the lower Jaw at the Chin, in the bones of the *Sternon*, the Hanch with the Huckle-bones, and the Share-bones between themselves; of this union there are no more kinds, for by this it cometh to pass, that the bones which were more and distinct meet together by interposition of one *Medium*, to wit, a Gristle, which now indeed is no Gristle, but is turned into a Bone.

The bones, which as pillars sustain the fabric of the whole body, are either

or Conjoined by that which they call *Arthrodia*, or Articulation, as when they so concur & are bound together, that some Heterogeneous substance may be noted berwixt them, but the bones thus composed are knit two wayes, that is,

either more loosely as by *Diarthrofis*, that is a kind of Articulation not very strait, as by which it might have opportunity to perform diverse motions: of this composure or Articulation of bones there are three kinds, as

or more straitly, as by *synarthrosis*, when the bones are more straitly knit so that they can perform no motions in the body. Of this Articulation there are also 3 kinds, that is,

Enarthrosis, when the head of a bone is wholly received in the cavity of another, and hid therein, as the Thigh-bone is joyned with the Huckle-bone.

Arthrodia, when in a lightly engraven and not much depressed cavity the head of another bone is not wholly hid, but only received in part thereof; so that unless nature had otherwise provided a sufficient receptacle for the head of this bone (as by the ligaments of the neighbouring Muscles) it would otherwise have been in perpetuall danger of dislocation. Thus the Arm-bone is fastened to the shoulder-blade.

Ginglymos, when the bones mutually receive each other, such like composition hath the Cubit and Arm-bone.

Gomphysis, as when one bone so receives another as a Pin is fastened in the hole made by a piercer, thus the teeth are fastened in the Jaws.

Sutura, like a Saw, or teeth of a combe; as the bones of the skull are mutually knit together, or as scales, or tiles are laid, after which manner the stony bones are fastened to these of the *Synciput*.

Harmonia, which is by interposition of a simple line, which parts bones abutting one upon another, as the bones of the Nose.

The 18. of the *Larinx*.

The Throttle composed of three gristles hath eighteen or twenty muscles, of which six or eight are common, and twelve proper; Of the common there are two above, two below, and two at the sides of the first gristle, to which we may add these two which serve for the opening of the *Epiglottis*, which are alwayes found in great four-footed beasts for to press down the *Epiglottis*.

The proper are twely, which almost all of them come from the second gristle, so to be inserted into the first and third, of which some are before, others behind the *Thyroides*. Besides these there are the *Mastoidei* which bend the head.

The head is moved by 14 Muscles.

But in the back part of the Neck there are twelve muscles also appointed for to move the head, so that in all there are fourteen muscles serving for the motion of the head, the two fore *Mastoidei*, and the twelve hind muscles; that is to say, the two *Splenii*, two *Complexi*, four Right, and so many oblique, which are very short, so that they pass not beyond the first and second *vertebra*.

The 8. muscles of the neck.

The Neck hath eight Muscles, of which two are called the Long, lying before upon the bodies of the *Vertebrae*; the two *Scaleni*, which are at the sides; the two *Spinati*, which run alongst the Spine; the two transverse, which go to the transverse process of the Chest.

The Muscles of the chest 81

The Chest hath 81 Muscles, of which some are on the fore part, some on the hind, others on the sides; they are all combined and coupled together except the *Midriffe*. Now of these there are the two *Subclavii*; the two great Saw-muscles which proceed from the basis of the shoulder-blade; the four little *Rhomboides* or square muscles, that is, two above, and two below; the two *Sacrolumbi*, the two binders of the Gristles within the Chest.

Besides there are twenty and two externall and as many internal Intercofall muscles, twenty four *Intercartilaginei*, that is, twelve externall and as many internal; so that the Intercofall, and *Intercartilaginei* are 68, which with the twelve before mentioned make the number of 80 Muscles. Add to these the *Midriffe* being without an associate, and you shall have the number formerly mentioned; to wit, 81. But also if you will add to these the Muscles of the lower belly, I will not much gainsay it, because by accident they help inspiration and expiration.

The 8. muscles of the lower belly.

Wherefore of the eight muscles of the *Epigastrium*, there are four oblique, of which two are descendent and so many ascendent; two right, to which you may add the two Assisting or

or Pyramidall muscles which come from the Iliac-bone, if it please you to separate them from the head of the right muscles.

There are six or eight muscles of the Loins, of which two bend the loins, which are the triangular; the two *Semispinati*; two *Sacri*; two are in the midst of the back, which for that cause we may call the *Rachitæ* or chin-muscles. Now, that hereafter we may severally and distinctly set down the muscles of the extreme parts, we will come to the privities.

The 6. or 8. of the loins.

Where for the use of the testicles there are two muscles called the *Cremasteres*, or Hanging muscles. At the root of the yard, or *Perinaeum*, there are four others, partly for the commodious passing of the urin and seed, and partly for erecting the yard. The *Sphincter* muscle is seated at the neck of the Bladder.

The two Cremasteres of the Testicles.

At the end of the right gut are three muscles, two *Levatores Ani*, or lifters up of the fundament, and one *Sphincter* or shutting muscle. Now let us prosecute the muscles of the extremities, or limbs. But it will be sufficient to mention only the muscles of one side, because seeing these parts of the body are double, those things which are said of the one may be applied to the other.

The three of the fundament.

Wherefore the muscles of the Arm, beginning with these of the shoulder-blade, at the least, are 42. for there are four of the shoulder-blade: of the Arm properly or particularly so called, seven or eight; and there are three, four or five proper muscles of the Cubit; that is, appointed for the performance of the motions thereof; in the inner part of the Cubit are seven, and as many in the outer; but those of the hand are reckoned thirteen at the least.

The muscles of the Arm in general 32.

The fourth of the shoulder-blade are the *Trapezius* resembling a Monks Cowl, which moves it upwards and downwards, and draws it backwards; the second is the *Levator*, or lifter-up; the third the great *Rhomboides* lying under the *Trapezius*. The fourth, the lesser saw muscle which is inserted into the *Coracoïdes*. The arm is moved forwards, backwards, upwards, downwards and circularly.

The Pectorall muscle arising from the Clavicle, Breast-bone and neighbouring ribs, draws it forwards; the *Humilis* or low muscle coming from the lower rib of the shoulder-blade draws it backwards; the *Deltoides* upwards; and the *Latissimus* downwards, and somewhat backwards. But the three seated about the shoulder-blade move it about, or circularly.

The *Epomis* or *Scapularis* upwards; the *Superscapularis*, which may seem two, backwards and downwards; the *Subscapularis* which is in the Cavities of the shoulderblade, forwards, so that by a certain vicissitude and succession of action they move it circularly. Two muscles bend the Cubit, the one named *Biceps* or two-headed, and the other *Brachialis* or the Arm muscle; but one, two or three muscles extend it; for if you have respect to the original, this muscle hath two or three heads, but one only insertion.

In the inside of the cubit are seven muscles, one *Palmaris*, two wrist benders; two *pronatores*, one square, another in some fort round; two finger benders, and one *Abductor* or Drawer aside. These fourteen internall and externall muscles of the Cubit, do not indeed move the Cubit, but only seated there move the wand and with it the hand. These are the thirteen muscles of the hand; the *Thenar* which may not only be divided into two, but into six, not only by the diverse actions it performs, but also by the branches divided by a manifest space between them; the second is called the *Hypothenar*, which lies under the little finger, as the *Thenar* doth under the thumb; the third is the *Abductor* of the thumb; then follow the four *Lumbrici* and six *Interosses*, although eight may be observed.

The whole leg hath at the least 50 muscles, for we reckon there are fourteen muscles in the thigh; there are eleven made for the use of the Leg; there are nine seated in the Leg, three before, and six behind, which serve for the use of the foot and toes; in the foot are seated sixteen. Therefore of the fourteen muscles serving the thigh two bend it, one called the *Lumbaris*, the other arising from the cavity of the Hanch bone; but the three which make the Buttocks and the *Triceps* or Three-headed muscle, (which if you please, you may divide into three) extend it. Besides these the four twin muscles, and two *Obturator*s, of which the one is internal, and the other external turn the thigh about. The leg hath eleven; that is, the Long, the membranous, the four *Postici* or hind muscles (three of which come from the Hucklebone, but the other from the commissure of the Share bone) the right, the two vast, the *Crureus* or Leg muscle, and the *Popliteus*, or ham muscle. These seated in the leg for the use of the foot and toes are three fore, and six hind muscles: two of the fore bend the foot, one of which is called the *Tibiæus anticus*, the other *Peroneus*, which you may divide into two. The third the bender of the toes, although it also partly bend the foot, to which also the bender of the thumb may be revoked. One of the hind is the Toe-bender, others extend the foot; and are in this order; two Twins, one *Plantaris*, one *Soleus*, one *Tibiæus posticus* and the great bender of the toes, to which may be revoked the bender of the thumb. Of the sixteen seated in the foot, one is above, seated on the back of the foot, which we call the *Abductor* of the Toes; another in the sole of the foot; to wit, the little bender of the Toes, which goes to the second joint of the Toes alongst the inside of the foot; the other lends his help to the great Toe, which you may call the *Abductor* of the thumb; another

The muscles of the leg in general 50.

ther is seated on the outside for the use of the little toe. To these are added the four *Lumbri*, besides the eight *Interossei*; or if you had rather, ten. And thus much may suffice for the enumeration of the muscles.

The Figure of the muscles when the skin with its veins, the fat, and all the fleshy membranes are taken away, that part of the fleshy membrane excepted, which takes upon it the nature of a muscle, as being conjoined with the muscles.



- a, the muscle of the forehead.
 b, the temporall muscle.
 c, the muscle shutting the eyelid.
 d, the muscle opening the wings of the nose.
 e, the fore part of the yolk-bone.
 f, the muscle of the upper lip tending to the nose.
 g, the beginning of the masseter or grinding muscle.
 h, the broad muscle consisting of a fleshy membrane.
 i, k, the beginning thereof which rises immediately from the collar-bone and the top of the shoulder.
 l, that part thereof which bends forwards to l.
 m, the muscle which lifts up the arm.
 n, the pectorall muscle.
 o, the membranous part of this muscle which is joined to the nervous part of the first muscle of the *Abdomen*, or belly.
 p, q, the fleshy portion thereof, from the 6 and 7 ribs, and the insertion

thereof. r the muscle drawing down the arm. s, the oblique descending muscle of the lower belly. t, t, t, the insertion of the greater saw muscle. u u. the *linea alba* or white line, at which the two oblique descendent muscles meet, covering the whole belly. x, the yard, the skin being taken away. y, the vessels of feed. z, the testicles wrapped in the fleshy membrane. a, the fore muscle bending the cubit. b, b, the hind muscle bending the cubit. c, the muscle extending the cubit. d, the two-headed muscle extending the wrist. e, the muscle producing the broad tendon on the back of the hand. f, his tendon. g, the muscle turning up the Wand. h, the upper muscle flattening the Wand. i, the second of the arm-benders, whose beginning is k, and tendon l. m, a portion of the muscle, whereof one part yeelds tendons to the wrist, the other to the thumb. n, the fleshless articulation of the thumb. o, a muscle inserted into the wrist, lying neer to the following muscle. p, a muscle divided into two tendons, the one whereof is inserted into the first joint of the thumb, the other into the following. q, the first muscle of the thigh, whose head is at r, and tendon at s, and insertion at x. y, the end of the second muscle of the thigh. z, the end of the third muscle of the thigh. 1, the sixth muscle of the leg; his beginning at 2, almost wholly membranous at 3. 4, the ninth muscle of the leg. 5, the eighth of the leg. 6, a portion of the sixth and seventh of the thigh. 7, the Glandules of the groins. 8, the eighth of the thigh. 9, the second of the leg. 10, the innermost of the ankle. 11, the sixth muscle of the foot, his originall 12, end 14. 15, the seventh of the foot. 16, the tendon of the muscle lifting up the great toe. 17, the muscles extending the four other toes. 18, the abductor of the great toe. 19, a transverse ligament. 20, a tendon of the ninth muscle of the foot. 21, the first muscle. 22, the fourth muscle of the foot. 23, the tendon of the third muscle. 24, a muscle bending the third bone of the four lesser toes.

THE SEVENTH BOOK Of Tumors against Nature in generall.

CHAP. I.

What a Tumour against Nature, vulgarly called an Impostume, is, and what be the differences thereof.



AN Impostume, commonly so called, is an affect against nature, composed and made of three kinds of diseases, Distemperature, ill Conformation, and Solution of Continuity, concurring to the hindering or hurting of the Action. An humor, or any other matter, answering in proportion to a humor, abolishing, weakning, or depraving of the office or function of that part or body in which it resides, causeth it. The differences of Impostumes are commonly drawn from five things; quantity, matter, accidents, the nature of the part, which they affect or possess; and lastly, their efficient causes. I have thought good for the better understanding of them, to describe them in this following Scheme.

What an Impostume vulgarly so called is.

The materiall causes of Impostumes, or unnatural tumors;

A Table of the differences of Tumors.

From their quantity, by reason whereof Impostumes are called

Great, which are comprehended under the generall name of Phlegmons, which happen in the fleshy parts, by *Galen, Lib. de tumor. contra naturam, & lib. 2. ad Glauconem.*
Indifferent, or of the middle sort, as Fellons.
Small, as those which *Avicen* calls *Bothores*, i. Pusshes and Pustules, all kind of Scabs and Leprosies; and lastly, all small breakings out.

From their accidents, as

Colour, from whence Impostumes are named white, red, pale, yellow, blew or black, and so of any other colour.
Pain, hardness, softness, and such like, from whence they are said to be painfull, not painfull, hard, soft, and so of the rest.

The differences of Impostumes are drawn principally from five things, that is,

From the matter, of which they are caused and made, which is either

Natural	} either	} Sanguin, from whence a true Phlegmon;	} either	} Choleric, frō whence a true Erysipelas.
} either,	} Melancholick, frō whence a perfect Scirrhus;	} of a sanguine humour,	} Carbuncles, Gangrenes, eating ulcers, Sphacels are caused,	
				or
} of a phlegmatick humor,	} Watery and stultent Impostumes, the Kings evil, knots and al phlegmatick swellings and excrescences.			
		} of a melancholick humor.	} The exquisite or perfect Scirrhus, hardnesses and all sorts of cancerous Tumors;	

From the condition and nature of the parts which they possess, from whence the *Ophthalmia*, is a Phlegmon of the eyes. *Parot* is a tumor near the ears. *Faryngchia* or a whitlow at the roots of the nails; and so of the rest.

From the efficient causes, or rather the manner of doing. For some impostumes are said to be made by defluxions, others by congestion, those are commonly hot, and the other commonly cold, as it shal more manifestly appear by the following chapter.

CHAP. II.

Of the generall causes of Tumors.

After what manner tumours against nature are chiefly made.



Here are two generall causes of Impostumes, Fluxion, and Congestion. Defluxions are occasioned, either by the part sending, or receiving; the part sending discharges it self of the humors, because the expulsive faculty resident in that part is provoked to expell them, moved thereto, either by the troublesomness of their quantity or quality. The part receiving draws, and receives occasion of heat, pain, weaknesse (whether naturall, or accidentall) opennesse of the passages, and lower situation.

Three causes of heat.

The causes of heat, in what part soever it be, are commonly three, as all immoderate motion (under which frictions are also contained,) externall heat, either from fire or sun, and the use of acrid meats and medicines.

Four causes of pain.

The causes of pain are four, the first is a sodain and violent invasion of some untemperate thing, by means of the four first qualities; the second is solution of continuity, by a wound, luxation, fracture, contusion, or distention; the third, is the exquisit sense of the part, for you feel no pain in cutting a bone, or exposing it to cold or heat; the fourth is, the attention, as it were, of the animall faculty; for the mind diverted from the actual cause of pain, is lesse troubled, or sensible of it.

Two causes of weaknesse.

A part is weak, either by its nature, or by some accident; by its nature, as the Glandules and the Emunctories of the principall parts; by accident, as if some distemper, bitter pain, or great defluxion have seized upon it, and wearied it, for so the strength is weakned, and the passages dilated. And the lownesse of site yeelds opportunity for the falling down of humors.

Two causes of congestion.

The causes of congestion are two principally, as the weaknesse of the concoctive facultie, which resides in the part, (by which the assimilation into the substance of the part of the nourishment flowing to it is frustrated) and the weaknesse of the expulsive faculty; for whilst the part cannot expell superfluities, their quantity continually encreases.

And thus oftentimes cold Impostumes, have their originall from a grosse and tough humor, and so are more difficult to cure.

Lastly, all the causes of Impostumes may be reduced to three; that is, the primitive, or externall; the antecedent, or internall; and the conjunct, or containing, as we will hereafter treat more at large.

CHAP. III.

The signes of Impostumes or Tumors in generall.

The principall signs of tumors are drawn from the essence of the part.



Before we undertake the cure of Tumors, it is expedient to know their kinds and differences, which knowledg must be drawn from their proper signs, the same way, as in other diseases. But because the proper and principall signs of tumors are drawn from the essence of the part they possesse, we must first know the parts, and then consider what their essence and composition are.

We are taught both by skill in Anatomy, and the observation of the deprived function, especially when the affected part is one of those which lie hid in the body; for we know whether or no, the externall parts are affected with a tumor against nature, by comparing that with his naturall which is contrary. For comparing the sound part with the diseased, we shall easily judge whether it be swollen, or no.

But because, it is not sufficient for a Chirurgeon only to know these generall signs (which are known even to the vulgar) he must attentively observe such as are more proper and neer. And these are drawn from the difference of the matter and humors, of which the tumors consist.

For this Galen teaches, that all differences of tumors arise from the nature and condition of the matter which flows down and generates the tumor; also they are known by such accidents as happen to them, as colour, heat, hardness, softness, pain, tension, resistance.

Wherefore pain, heat, rednesse, and tension indicate a sanguine humour; coldnesse, softnesse, and no great pain, phlegm; tension, hardness, the livid colour of the part, and a pricking pain by fits, melancholy; and yellowish and pale colour, biting pain without hardness of the part, choler.

And besides, Impostumes have their periods and exacerbations following the nature and motion of the humors of which they are generated. Wherefore by the motion and fits it will be no difficult matter to know the kind of the humor; for as in the spring, so in the morning the blood is in motion; as in the summer, so in the midst of the day, choler; as in Autumn, so in the evening, melancholy; as in Winter, so in the night the exacerbation of phlegm are most predominant. For Hippocrates and Galen teach, that the year hath circuits of diseases, so that the same proportion of the excess and motion of humors, which is in the four seasons of the year, is also in the four quarters of each day. Im-

Lib. 2. ad Glanc. & 13. methed.

The proper signs of a sanguine tumor, of a phlegmatick, of a melancholick, of a cholerick. The knowledg of tumors by their motion and exacerbation.

Lib. 2. Epidem.

Impostumes which are curable have four times, their beginning, encrease, state, and declination, and we must alter our medicines, according to the variety of these times. We know the beginning by the first swelling of the part; The encrease, when the swelling, pain, and other accidents do manifestly encrease, and enlarge themselves; the state, when the foresaid symptoms increase no more, but each of them, because at their height, remain in their state immoveable, unless the very matter of the tumor degenerate; and change it self into another kind of humor; The declination, when the swelling, pain, feaver, restlessness are lessened. And from hence the Chirurgeon may presage what the end of the tumor may be; for tumors are commonly terminated four manner of wayes, if so be that the motion of the humors causing them be not intercepted, or they without some manifest cause, do flow back into the body.

The beginning
of an impostume.
The encrease.
The state.

Therefore first they are terminated by insensible transpiration, or resolution; secondly, by suppuration when the matter is digested and ripened; thirdly, by induration, when it degenerates into a Scirrhus, the thinner part of the humor being dissolved; the fourth, which is the worst of all, by a corruption and Gangrene of the part, which is, when overcome with violence, or the abundance or quality of the humor, or both, it comes to that distemper, that it loses its proper action.

It is best to terminate a tumor by resolution; and the worst by corruption; suppuration and induration are between both, although that is far better than this. The signs by which the Chirurgeons may presage that an Impostume may be terminated by resolving, are the remission or slackening of the swelling, pain, pulsation, tension, heat, and all other accidents, and the unaccustomed liveliness and itching of the part; and hot Impostumes are commonly thus terminated, because the hot humor is easily resolved, by reason of its subtilty.

The signs of a tumor to be terminated by resolution.

Signs of suppuration are the intension or encrease of pain, heat, swelling, pulsation, and the feaver; for according to *Hippocrates*, pain and the feaver are greater when the matter is suppurating, than when it is suppurated.

The signs of suppuration.

The Chirurgeon must be very attentive to know and observe when suppuration is made; for the purulent matter oft-times lies hid (as *Hippocrates* saith) by reason of the thickness of the part lying above, or over it.

The signs of an Impostume degenerating into a Scirrhus hardness, are the diminution of the tumor, and hardness remaining in the part. The causes of the hardness not going away with the swelling, are the weakness of nature, the grossness and toughness of the humor, and unskilfulness of the Chirurgeon, who by too long using resolving things hath occasioned, that the more subtil part of the humor being dissolved, the rest of the grosser nature like earthy dregs remains concrete in the part. For so Potters vessels dried in the Sun grow hard. But the unskilfull Chirurgeon may occasion a Scirrhus hardness by another means; as by condensating the skin, and incrassating the humors, by too much use of repercussives. But you may perceive an Impostume to degenerate into a Gangrene thus, if the accidents of heat, redness, pulsation and tension shal be more intense, than they are wont to be in suppuration; if the pain presently cease without any manifest cause; if the part wax livid or black; and lastly, if it stink.

The signs and causes of a tumor terminated in a Scirrhus.

But we shall treat of this more at large when we come to treat of the Gangrene and *Sphacelus*. A sodain diminution of the tumor, and that without manifest cause, is a sign of the matter fallen black, and turned into the body again, which may be occasioned by the immoderate use of refrigerating things. And sometimes much flatulencie mixed with the matter, although there be no fault in those things which were applied.

The signs of a Gangrene at hand.

Feavers and many other malign Symptoms, as swooundings and convulsion, by translation of the matter to the noble parts, follow this flowing back of the humor into the body.

Of disappearance of a tumor, and the signs thereof.

CHAP. IV.

Of the Prognostiques in Impostumes.

Tumors arising from a melancholy, phlegmatick, grosse, tough, or viscous humor, aske a longer time for their cure, than those which are of bloud or cholér. And they are more difficultly cured which are of humors not naturall, than those which are of humors yet contained in the bounds of nature.

Cold tumors require a longer cure.

For those humors which are rebellious, offend rather in quality, than in quantity, and undergoe the divers forms of things dissenting from nature, which are joined by no similitude or affinity with things naturall, as suct, poultis, hony, the dregs of oil, and wine; yea, and of solid bodies, as stone, sand, coal, straws; and sometimes of living things, as Wormes, Serpents, and the like monsters.

Tumors made of matter not naturall, are more difficultly cured.

The tumors which possesse the inner parts, and noble entrails, are more dangerous and deadly, as also those which are in the joints, or neer to them. And these tumors which seise upon great vessels, as veins, arteries, and nerves, for fear of great effusion of blood,

Hippo. Aph. 8.
sect. 6.

wasting of the spirits and convulsion. So Impostumes of a monstrous bigness are often deadly by reason of the great resolution of the spirits caused by their opening. Those which degenerate into a *Scirrhus* are of long continuance and hard to cure, as also those which are in hydropick, leprous, scabby and corrupt bodies, for they often turn into malign and ill conditioned ulcers.

CHAP. V.

Of the generall cure of Tumors against Nature.

What must be considered in undertaking the cure of tumors.



Here be three things to be observed in cure of Impostumes. The first is the essence thereof; the second, the quality of the humor causing the Impostume; the third, the temper of the part affected. The first indication drawn from the essence, that is, from the greatnesse or smalnesse of the tumor, varies the manner of curing, for the medicines must be increased or diminished according to the greatnesse of the tumor. The second, taken from the nature of the humor also changes our counsell, for a *Phlegmon* must be otherwise cured than an *Erysipelas*, and an *Oidema* than a *Scirrhus*, and a simple tumor, otherwise than a compound. And also you must cure after another manner a tumor coming of an humor not natural, than that which is of a natural humor, and otherwise that which is made by congestion, than that which is made by defluxion. The third Indication is taken from the part in which the tumor resides; by the nature of the part we understand its temperature, conformation, site, faculty, and function.

What we must understand by the nature of the part.

The temperature indicates that some medicines are convenient for the fleshy parts, as those which are more moist; others for the nervous, as more drie; for you must apply some things to the eye, and others to the throat; one sort of things to these parts which by reason of their rarity are easily subject to defluxion, another to those parts which by their density are not obnoxious to it.

But we must have good regard to the site of the part, as if it have any connexion with the great vessels, and if it be fit to powre forth the matter and humor when it is suppurated.

What we must understand by the faculty of the part.

Galen by the name of Faculty understands the use and sence of the part. This hath a manifold indication in curing, for some parts are principall, as the Brain, Heart, and Liver; for their vertue is communicated to the whole body, by the nerves, arteries, and veins.

What we must consider in performing the cure.

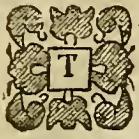
Others truly are not principall, but yet so necessary that none can live without them, as the stomach. Some are endued with a most quick sence, as the eye, the membranes, nerves, and tendons; wherefore they cannot indure acrid and biting medicines. Having called to mind these indications, the indication will be perfected by these three following intentions, as if we consider the humor flowing down, or which is ready to flow; the conjunct matter, that is, the humor impact in the part; the correction of accidents; yet so that we alwaies have care of that which is most urgent and of the cause. Therefore first repercussives must be applied for the antecedent matter, strong or weak, having regard to the tumor as it is then, only excepting six conditions of tumors; the first is, if the matter of the tumor be venenate: the second, if it be a criticall abscess: the third, if the defluxion be near the noble parts: the fourth, if the matter be grosse, tough, and viscid: the fifth, when the matter lies far in, that is, flows by the veins which lies more deep: the sixth, when it lies in the Glandules. But if the whole body be plethorick, a convenient diet, purging and Phlebotomie must be appointed, frictions and bathes must be used. Ill humors are amended by diet and purging. If the weakness of the part receiving draw on a defluxion, it must be strengthened.

What things disswade us from using repercussives.

If the part be inferior in its site, let the patient be so seated, or layed, that the part receiving, as much as may be, may be the higher. If pain be the cause of defluxion, we must asswage it by things mitigating it. If the thinnesse, or lightnesse of the humor cause defluxion, it must be inspissate by meats and medicines. But for the matter contained in the part, because it is against nature, it requires to be evacuate by resolving things, as cataplasmes, ointments, fomentations, cupping-glasses; or by evacuation, as by scarifying, or by suppurating things, as by ripening and opening the Impostume. Lastly, for the conjunct accidents, as the Fever, pain and such like, they must be mitigated by asswaging, mollifying and malaxing medicines, as I shall shew more at large hereafter.

CHAP. XXV.

Of the four principall and generall Tumors, and of other Impostumes which may be reduced to them.



The principall and chief Tumors which the abundance of humors generate, are four, a Phlegmon, Erysipelas, Oedema and Scirrhus: innumerable others may be reduced to these, distinguished by divers names according to the various condition of the efficient cause and parts receiving. Wherefore a Phygethbum, Phyma, Fellon, Carbuncle, inflammation of the eyes, Squincy, Bubo, and lastly, all sorts of hot and moist tumors may be reduced to a Phlegmon. The Herpes miliaris, the eating Herpes, Ringwormes and Tetter and all impostumes brought forth by choler, are contained under an Erysipelas. Atheromata, Steatomata, Melicerides, the Testudo, or Talpa, Ganglion, Knots, Kings-Evill, Wens, watery Ruptures, the Ascites and Leucophlegmatia may be reduced to an Oedema, as also all flatulent tumors, which the abundance of corrupt Plegm produces.

In the kindred of the Scirrhus are reckoned a Cancer, Leprosie, Warts, Corns, a Thymus, a Varix, Morphew, black and white, and other Impostumes arising from a Melancholy humor.

Now we will treat of these Tumors in particular, beginning with a Phlegmon.

What tumor may be reduced to a Phlegmon. Which to an Erysipelas. Which to an Oedema.

Which to a Scirrhus.

CHAP. VII.

Of a Phlegmon.



Phlegmon is a generall name for all Impostumes, which the abundance of inflamed blood produces. That is called a true Phlegmon, which is made of laudable blood, offending only in quantity. But a bastard Phlegmon, or a Phlegmonous Impostume hath some other, and proper name; as a Carbuncle, Fellon, Gangrene, Sphacel, and the like malign Pustules. So when there is a conflux of divers humors into one tumor, divers kinds of Phlegmonous Impostumes called by divers names, according to the more abundant humor, arise; as if a small portion of Phlegm shall be mixed with a greater quantity of blood, it shall be called an Oedematous Phlegmon; but if on the contrary, the quantity of phlegm be the greater, it shall be named a phlegmonous Oedema, and so of the rest; always naming the tumor, from that which is predominant in it.

What a true Phlegmon is? A Phlegmon one thing, and a Phlegmonous tumor another.

Therefore we must observe that all differences of such tumors arise from that, either because the blood causing it offends only in quantity; which if it do, it causes that tumor which is properly called a Phlegmon; if in quality, it makes a phlegmonous tumor, because the matter thereof is much departed from the goodness of blood.

But blood is said to offend in quantity, either by admixture of some other matter, as Phlegm, Choler, or Melancholy, from whence proceeds Oedematous, Erysipelous and Scirrhus Phlegmons; or by corruption of its proper substance, from whence Carbuncles, and all kinds of Gangrens; or by concretion, and when nature is disappointed of its attempted and hoped for suppuration, either by default of the air, or patient, or by the error of the Physician; and hence oft times happen Atheroma's, Steatoma's, and Melicerides. Although these things be set down by the Ancients, of the simple and similar matter of the true Phlegmon; yet you must know, that in truth there is no impostume, whose matter exquisitely shews the nature of one, and that simple humor without all admixture of any other matter; for all humors are mixed together with the blood, yet from the plenty of blood predominating, they are called Sanguine, as if they were of blood alone.

Wherefore if any tumors resemble the nature of one simple humor, truly they are not of any naturall humor, but from some humor which is corrupt, vitiated and offending in quality; for so blood by adustion degenerates into choler and melancholy.

Therefore a true Phlegmon is defined by Galen; a tumor against nature, of laudable blood, flowing into any part in too great a quantity.

This tumor though most commonly it be in the flesh, yet sometimes it happens in the bones, as Hippocrates and Galen witness.

A Phlegmon is made and generated thus: when blood flows into any part, in too great a quantity; first the greater veins and arteries of the affected part are filled, then the middle; and lastly, the smallest and capillary; so from those thus distended, the blood sweats out of the pores and small passages like dew; and with this the void spaces which are between the similar parts are first filled, & then with the same blood all the adjacent parts are filled, but especially the flesh, as that which is most fit to receive defluxions, by reason of the spongy rarity of its substance; but then the nerves, tendons, membranes, and ligaments, are likewise stuffed full; whereupon a Tumor must necessarily follow, by reason of the repletion which exceeds the bounds of nature; and from hence also are tension and resistance; and

Gal. lib. de u moribus, Cys. ad Glauc. Hippoc. lib. de vuln. cap. Gal. lib. de tumor. prater naturam

pain also happens at the same time, both by reason of the tension and preternaturall heat.

The cause of a bearing Pain in a Phlegmon.

And there is a manifest pulsation in the part, specially whilst it suppurates, because the veins, arteries, and nerves, are much, being they are not only heated within by the influx of the fervid humor, but pressed without by the adjacent parts. Therefore seeing the pain comes to all the foresaid parts because they are two immoderately heated and pressed, the arteries, which are in the perpetuall motion of their *syfsole* & *diastole*, whilst they are dilated, strike upon the other inflamed parts, whereupon proceeds that beating pain.

Hereunto add, the Arteries then filled with more copious and hot blood, have greater need to seek refrigeration by drawing in the encompassing Air; wherefore they must as of necessity, have a conflict with the neighbouring parts which are swollen and pained. Therefore from hence is that pulsation in a Phlegmon which is defined by *Galen*, an agitation of the arteries, painfull and sensible to the Patient himself; for otherwise as long as we are in health, we do not perceive the pulsation of the arteries.

Wherefore these two causes of pulsation, or a pulsifick pain in a phlegmon, are worthy to be observed, that is, the heat and abundance of blood, contained in the vessels and arteries (which more frequently than their wont incite the arteries to motion, that is, to their *syfsole* and *diastole*) and the compression and straitning of the said arteries, by reason of the repletion and distention of the adjacent parts, by whose occasion the parts afflicted and beaten by the trembling and frequent pulsation of arteries are in pain.

Hence they commonly say, that in the part affected with a Phlegmon, they feel as it were the sense or stroke of a Mallet or Hammer smiting upon it. But also besides this pulsation of the arteries, there is, as it were, another pulsation with itching from the humors whilst they putrefie, and suppurate, by the permixtion, motion, and agitation of vapours, thereupon arising.

The cause of heat in a Phlegmon is blood, which whilst it flows more plentifully into the part, is as it were troden or thrust down, and causes obstruction, from whence necessarily follows a prohibition of transpiration, and a putrefaction of the blood, by reason of the preternaturall heat. But the Phlegmon looks red by reason of the blood contained in it, because the humor predominant in the part shines through the skin.

Another kind of Pulsation in a Phlegmon.

CHAP. XXIII.

Of the causes and signes of a Phlegmon.

The causes of a Phlegmon are of three kinds; for some are primitive, some antecedent, and some conjunct. Primitive are falls, contusions, strains, immoderate labour, frictions, application of acrid ointments, burnings, long staying or labouring in the hot Sun, a diet unconsiderate, and which breeds much blood. The antecedent causes are, the great abundance of blood, too plentifully flowing in the veins. The conjunct, the collection or gathering together of blood impact in any part.

The signs of a Phlegmon are swelling, tension, resistance, feaverish heat, pain, pulsation, (especially while it suppurates) redness, and others, by which the abundance of blood is signified.

And a little Phlegmon is often terminated by resolution; but a great one by suppuration; and sometimes it ends in a Scirrhus, or a Tumor like a Scirrhus; but otherwhiles in a Gangren, that is, when the faculty, and native strength of the part affected, is overwhelmed by the greatness of the defluxion, as it is reported by *Galen*. The Chirurgeon ought to consider all these things, that he may apply and vary such medicines as are convenient for the nature of the Patient, and for the time and condition of the part affected.

The primitive causes of a Phlegmon.

The Antecedent and conjunct.

The signs of a Phlegmon.

Gal. l. de Tum.

CHAP. IX.

Of the cure of a true Phlegmon.

The Chirurgeon in the cure of a true Phlegmon must propose to himself four intentions. The first of Diet; This, because the Phlegmon is a hot affect and causes a feaver, must be ordained of refrigerative and humecting things, with the convenient use of the six things not naturall, that is, air, meat and drink, motion and rest, sleep and waking, repletion and inanition; and lastly, the passions of the mind. Therefore let him make choise of that air which is pure and cleer, not too moist, for fear of defluxion, but somewhat cool; let him command meats which are moderately cool and moist, shunning such as generate blood too plentifully, such will be broths not too fat, seasoned with a little Borage, Lettuce, Sorrell, and Succory: let him be forbidden the uses of all spices, and also of Garlick, and Onions, and all things which heat the blood, as are all fatty and sweet things, as those which easily take fire. Let the Patient drink small wine, and much allaied with water: or if the feaver be vehement, the water of the decoction of Licoris, Barly, sweet Almonds, or water and Sugar; alwayes having regard to the strength, age, and custome of the Patient.

What kind of diet must be prescribed in a Phlegmon.

For

For if he be of that age, or have so led his life, that he cannot want the use of wine, let him use it, but altogether moderately. Rest must be commanded; for all bodies wax hot by motion, but let him chiefly have a care that he do not exercise the part possessed by the phlegmon for fear of a new defluxion. Let his sleep be moderate, neither, if he have a full body, let him sleep by day, specially presently after meat. Let him have his belly soluble; if not by nature, then by art, as by the frequent use of glysters and suppositories. Let him avoid all vehement perturbations of mind, as hate, anger, brawling; let him wholly abstain from venery.

This manner of diet thus prescribed, we must come to the second scope, that is, the diversion of the defluxion, which is performed by taking away its cause, that is, the fulness and illness of the humors. Both which we may amend by purging and blood-letting, if the strength and age of the patient permit.

But if the part receiving be weak, it must be strengthened with those things which by their astringency amend the openness of the passages, the violence of the humor being drawn away by cupping-glasses, frictions, ligatures. But if pain trouble the part, which is often the occasion of defluxion, it must be mitigated by medicines asswaging pain.

The third scope is to overcome the conjunct cause. That we may attain to this, we must enter into the consideration of the tumor, according to its times, that is, the beginning, increase, state, and declination. For from hence the indications of variety of medicines must be drawn. For in the beginning we use repercussives, to drive away the matter of the Phlegmon flowing down, as the white of an Egge, Oxycrate, the juices or waters of Housleek, Plantain, Roses; Cataplasms of Henbane, Pomgranate, Pils, Balausties, Bole armenick, Terra sigillata, oil of Roses, Quinces, Mirtils, Poppies.

Of these simples variety of compound medicines arises. This may be the form of a Cataplasma. *Rx, far. hordei* ℥ iij, *succi semper vivi, plantag. an.* ℥ iij, *pul. malicorii, balaustiorum & rosar. an.* ℥ iij, *ol. mirtill. & rosar. an.* ℥ i. *fiat Cataplasma.* Another, *Rx, Plantag. solani, hyoscyam. an. m. ij. caudæ equin. tarsi barb. centinodæ. an. m. i. coquantur perfecte in oxycrato, pistentur, trajiciantur, addendo pulveris mirtill. nuc. cupressi. & ros. rub. an. ℥ iij. farin. fab. ℥ ij. olei rosar. & cydon. an. ℥ i β, mixe them and make a cataplasma to the form of a liquid pultis. And you may use this liniment, by dipping linnen clothes in it, and applying to the part; *Rx, ol. nymph. & rosar. an. ℥ iij. aq. ros. solani & plantag. an. ℥ iij, aceti ℥ iij, albumin. ovorum n. iij. fiat linimentum.* Also *ung. rosatum & ung. Album, camphor. Rasis* are good to apply to it, as in like manner, *Emp. Diacaltheos* dissolved in vinegar, and oil of Roses, and also *Populeon* may be used. In the increase you must have care of the humor flowing down, and of that which already impacted in the part, did formerly fall down. Therefore repercussives must be tempered and mixed with discussives medicines, but so that they may carry the chief sway, as *Rx, fol. malvæ, absinth. plantag. an. m. iij. coquantur in oxycrato, contundantur, trajectis add farinae fabarum & hordei an. ℥ i. pul. rosar. rub. & Absinth. an. ℥ i, ol. rosar. & chamem. an. ℥ i, fiat cataplasma ad formam pultis satis liquidæ.* Another, *Rx, farinae hord. ℥ iij, farinae sem. lini & fenugreci, an. ℥ i, coquantur in aqua communi, addendo sub finem pul. mirtillorum, rosarum & chamemeli an. ℥ β, axungie anseris & olei rosarum an. ℥ i, misce, fiat cataplasma.**

But in the state the repercussives, and discussives ought to be alike with some anodyne; or mitigating medicines, if it be painful, as *Rx, rad. Altheæ ℥ iiij, malvæ, parietar. ana m. ij, coquantur sub cineribus, addendo farin. fabarum & lentium an. ℥ ij, pulveris chamem. & meliloti an. ℥ β, olei chamem. & rosar. an. ℥ i. axungie gal. ℥ ij, fiat cataplasma.* Another, *Rx, micæ panis triticeæ aqua calidâ macerati ℥ β, pulveris rosar. rub. & absinth. ana ℥ vi, olei aneth. & mellis com. an. ℥ ij, misce omnia simul & fiat cataplasma ad formam pultis satis liquidæ; which is of chief use when there is pain.*

But when the violence of pain and other symptoms are asswaged, it is likely that the phlegmon is come to determination. Wherefore then we must use more powerfull and strong discussives, and only then beginning with the more gentle, lest the subtiler part of the humor being dissolved, the grosser, remaining in the part, should grow hard, as *Rx, mal. bismal. an. m. iij. coquantur, addendo farinae hordei ℥ ij, mellis com. ℥ i, ol. chamæ. & melilot. an. ℥ β, fiat cataplasma.* Or *Rx, radi cum Brion. & Cucumer. agrest. an. ℥ ij, florum chamem. & melilot. ana m. iij, coquantur in hydromelite addendo farinae, sem. lini & fenugrec. an. ℥ ij. ol. aneth. axungie anser. & anat. an. ℥ i. fiat Cataplasma.* And this plaister following may here find place.

Rx, Diachyl. mag. ℥ ij, Empl. de melilot. ℥ i, olei aneth. & chamemel. an. ℥ β, dissolve them all together and make a medicine for your use. Or Rx, Empl. de mucag. & oxycr. an. ℥ ij. Empl. Diachyl. Ireat. ℥ i, olei liliorum & chamemel. quantum satis est, and make thereof a soft emplaister.

The fourth scope of curing a Phlegmon consists in correction of the accidents which accompany it; of which pain is the principall.

Wherefore the Chirurgion must be diligent to asswage it; for besides, that it weakens the strength, and debilitates and depraves the function, it also causes defluxions by drawing the blood and spirits to the part affected.

According to the variety of pain there must be variety of medicines, as *Rx, micæ panis albi in lacte tepido macerati ℥ β, vitell. ovorum iij, ol. rosar. ℥ ij, croci ℥ β, fiat cataplasma.* Or *Rx, florum chamem. & melil. an. p. iij, farinae sem. lini. & fenugrec. an. ℥ i, fiat cataplasma pultis satis liquidæ.* Or *Rx, mucagin. rad. altheæ & fenugreci an. ℥ iij, ol. rosar. & aneth. an. ℥ i, farin. sem. lini. quantum satis, ut inde formetur cataplasma satis molle.*

How to diversify the defluxion of humors.

The pain must be asswaged.

When we must use repercussives.

What local medicines we must use in the increase.

What in the state.

What in the declination.

The correction of the accidents.

The dissimodities of pain. Medicines asswaging pain.

Narcotick medicines.

But if the pain remain, and yeeld not to these remedies, we must flie to stronger, making of narcoticks, or stupefactive, but with care lest we benum, or dead the part; as R \acute{e} , fol. hyoscyani & papaver. sub. cineribus coctorum an. \mathfrak{z} iij, adipis suilla & ol. ros. an. \mathfrak{z} i, croci \mathfrak{D} ij, fiat cataplasma: or R \acute{e} , fol. cicuta & solani furiosi. an. \mathfrak{z} iij, coquantur sub cineribus, pistentur, & trahantur addendo unguent. \mathfrak{z} opul. & ol. rosar. an. \mathfrak{z} i, farin. fænugræc. quantum satis erit ut inde formetur cataplasma ad formam pulvis liquidæ.

CHAP. X.

The cure of an ulcerated Phlegmon.

The signs of a Phlegmon turning to an Abscess.



Ut it often happens that the humor is so impact in the part, that it cannot be repressed, and so gross, that it cannot be discussed; which we may know by the greatness of the heat and swelling, by the bitterness of the pricking pain, the feaver, and pulsation, and heaviness.

Lib. 2 ad Glau. Cap. 7.

Wherefore laying aside all hope of discussing, we must come to the suppuratives. For which purpose Galen foments the swollen part with water, or oil being warm, or with both of them; and then applies this following cataplasim.

Suppurative medicines.

R \acute{e} , farine tric. vel nice panis \mathfrak{z} iij, ol. com. \mathfrak{z} iij. aquæ com. quantum sufficit, fiat cataplasma; Or R \acute{e} , rad. lilior. alb. & altheæ, an. \mathfrak{z} iij, fol. malvæ, parietar. & senecionis ana m. i. coquantur in hydromelite, pistentur trajectis adde farin. sem. lini \mathfrak{z} ij, axunigæ suilla, ol. liliorum an. \mathfrak{z} β , fiat cataplasma: Or R \acute{e} , malvæ, bisnalu. violar. an. m. i. caricarum ping. u. x. passul. \mathfrak{z} ij, coquantur in aq. com. tufis, & trajectis, adde mellis com. \mathfrak{z} ij, ung. basilicon. & butyri recent. ana \mathfrak{z} i, fiat cataplasma. You may profitably use for the same purpose Empl. Diachylon magnum, or Basilicon. Or R \acute{e} , Empl. Diachyl. Mag. \mathfrak{z} iij, ung. basilicon. \mathfrak{z} i. ol. liliorum \mathfrak{z} β . Of these mixed together make a medicine for the foresaid use.

The signs of pus or matter.

When the heat, pain, feaver, and other accidents shall remit, when the tumor hath a sharpe head, when by the pressing of your finger you find the humor to flow as it were to and fro, then you may know that it is ripe.

Wherefore without any further delay the tumor must be opened, lest the matter too long shut up, corrode the adjacent parts, and the ulcer become sinuous and fistulous.

For this usually happens, especially then, when the matter is venenate or malign, or when the swelling is near a joint, or at the fundamenn, or such like hot and moist places.

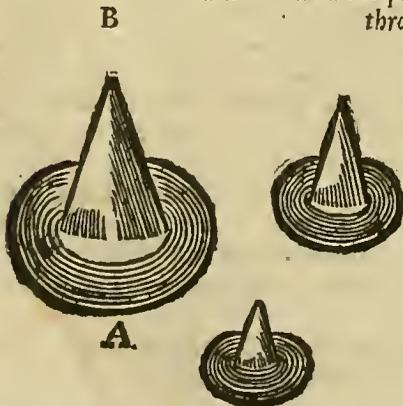
Hip. lib. de Fistula.

For by the decree of Hippocrates we should anticipate the maturation of such tumors by opening.

They may be opened with an incision knife or caustick, and that either actually or potentiall. For if the Patient shall be heartless and less confident, so that he either cannot, or will not indure any instrument, you must make way for the matter by a potentiall cautery. You may also do the business by another slight, as thus.

Thrust the point of a sharpe knife or lancet, through a brass counter that it may stand fast in the midst thereof; then cover it diligently with some Emplaster or Cataplasim, that neither the Patient nor standers by perceive the deceit: then laying on the plaister as that you would make a passage for the matter by that means, but when you have fitted the point to the part, where it is fit to open the tumor, so guide the Counter with your fingers, that you may presently make an impression into the Tumor, sufficient for excluding the matter. I have here expressed three delineations of such Instruments that you may use these, either bigger, lesser or indifferent, as occasion shall serve.

Counters with the points of Knives or Launces put through them.



A. shews the Counter or peece of Silver.
B. shews the point of the Lancet.

But there are seven things which must be diligently considered in opening all sorts of Inpostumes. The first is, that you put your knife to that part of the Abscess which is the softer, and yeelds to the impression of your fingers, and where it rises into a head, or point.

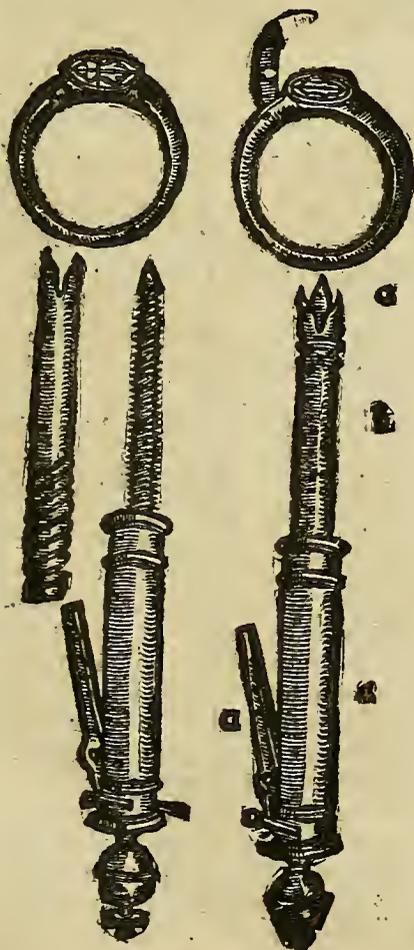
point. The second is, that you make choise of that place for dissection which is the lowest, that so the contained impuritie may the more readily flow out, and not stay in the passage. The third is, that it be made according to the wrinkles of the skin, and the right fibers of the Muscles lying next under the skin. The fourth is, that you turn your knife from the larger vessels and Nerves worth speaking of. The fifth is, that the matter contained in them be not evacuated too abundantly at once in great Abscesses, lest thereby the strength be dejected, the spirits being much wasted together with the unprofitable humor. The sixth is, that the affected part be handled as gently as you can. The seventh is, that after the opening when the matter is evacuated, the Abscess be cleansed, filled with flesh, and lastly, consolidated and cicatrized. But seeing that commonly after such sections some part of the Tumor remains, all the contained humor being not wholly suppurated, the Chirurgion may perceive that this is an implicate affect, that is, a Tumor and Ulcer. But the Cure thereof must be so, that you take away the Tumor before the Ulcer; for the Ulcer cannot be healed before the part be restored to its nature. Therefore the suppuratives formerly prescribed must be used, and the Ulcer must be dressed for two or three dayes with this following Medicine.

℞ Vitellum unius ovi, terebinth. Venet. & ol. Rosar. an. ℥ β, fiat medicamentum. Then you must seek to cleanse it by this following Medicine.

℞ Mellis rosar. ℥ i, Syrupi rosar. & tereb. Venet. an. ℥ i β, far. hordei ℥ ij, fiat medicamentum ad usum. For this very purpose there is a singular Deterfive made of *Appium* or Smallage of which this is the description.

℞ Succu appii, plantag. beton. an. ℥ i, Mellis commun. ℥ v, terebinth. Venet. ℥ iiij, farin. Hordei & Orobi, an. ℥ ij, pulveris Aloes, rad. Ireos florent. myrrh. an. ℥ i, coquatur mel. cum succis quibus consumptis addantur farine & pulveres, & misceantur omnia ad formam unguenti. But if you would cleanse it more powerfully, you may use *Vnguentum Apostolorum*, or *Vnguentum Aureum* and *Ægyptiacum* mixed according to the scope you conceive in your minds; when the Ulcer shall seem sufficiently clenfed, it shall be filled with flesh and cicatrized after the manner we shall declare in the proper treatise of the cure of Ulcers.

Other Instruments for opening Abscesses.



Rings in which little knives lyē hid, fit for to open Abscesses.

The Delineation of a Truske or hollow Instrument going with a spring.

- A. Shews the thicker pipe.
- B. Shews another which enters and is fastened in the other by a screw.
- C. The point of the Instrument looking out.
- D. The spring which forces the Instrument.

What the cure must be after the opening of the abscess

Deterfive Medicines; Vnguentum de Appio.

CHAP. XI.

Of feavers, and the cures of the se feavers which accompany Phlegmons.

The Feaver of
a Phlegmon.
What a Feaver
is.



Mongst the *Symptoms* which most usually accompany Phlegmons, and afflict all the body of the patient, Feavers are the chief; that is, hot, and dry distempers kindled in the heart, and thence by the Artery is sent over all the body; yet these which usually follow this kind of Tumors are *Ephemeræ*, that is, *Diary*, unputrid *Synochi*;

Of whose nature and order of cure I will here briefly relate what I have learnt from my Masters; that is, Doctors of Physick, as I have been conversant with them in the practise of my Art.

What an *Ephemeræ*, or *Diary* is.

The *Ephemeræ*, or *Diary* [that is, of one day] is a hot and dry distemperature kindled in the vitall spirits. It hath that name, because by its own nature it carries not above the space of one day or twenty four houres, by reason it is kindled in a subtile easily dissipable matter.

The causes thereof.

The efficient causes of this Feaver are wearines, hunger, and drunkenness, anger, fury, sorrow, watching, great & piercing cold, Aduotion, Bathes, and manner of living inclining more to heat than ordinary, applying, using or drinking of acrid medicines, as Poysons, or of hot meats, or drinks; to conclude, all the efficient causes common to all Feavers, putrefaction only excepted which properly appertains to putrid feavers.

Aphorism. 55.
lib. 4.

For a *Bubo* also, which is a *Phlegmon* of the Glandules, causes a *Diary*, as *Hippocrates* shews. All feavers proceeding from the Tumors of the Glandules are evill, the *Diary* excepted. Which *Aphorism* must be understood warily and with that distinction which *Galen* gives in his commentary, where he saith; It is only to be understood of Tumors rising in the Glandules without occasion, that is, without any evident and manifest cause; for otherwise Feavers that thence take their originall, though not *Diary*, yet are not all evill, as we learn by *Buboes* in Children, and the venereous *Buboes*, which happen without inflammation, or corruption of the liver; for such commonly have no malign Feaver accompanying them, which thing is worthy a Chirurgeons observation.

The signs of a *Diary*.

The common signs of a *Diary* are, a moderate and vaporous heat feeling gentle to the hand, a pulse swift and frequent, sometimes great and strong, as when the *Diary* is caused by anger; sometimes little; if the Feaver proceed from sorrow, hunger, cold, crudity; for other respects equall and ordinary.

Why in a *Diary* the urines like to these in health.

The most certain signs are, if the Feaver come upon one not by little and little but suddenly and that from some externall and evident cause, no loathing of meat, no causeless weariness, no deep sleep, yawning, great pain, restlessness, shaking nor cold going before, and lastly, no other troublesome symptome preceding. We here make no mention of the urine, because most frequently they resemble the urines of sound bodies; for in so short a time as *Diaries* endure, there cannot so great a perturbation be raised in the blood that there may be signes thereof found in the urine. A *Diary* is ended in one fit, which by the proper nature of this Feaver lasts but one day, although sometimes, otherwise it is extended to three, or four dayes space; and then it easily degenerates into a *Putrid*, especially any error of the Patient, Physitian, or those which attend him concurring therewith, or if the externall things be not rightly fitted.

The unputrid *Synochus*.

This Feaver is terminated either by insensible transpiration, or by the moisture of the skin, or by a sweat naturall, gentle, and not ill smelling; to this *Diary* we may refer the unputrid *Synochus* generated of blood not putrid, but only heated beyond measure. For usually there arises a great heat over all the body, by means of the blood immoderately heated; whence the veins become more tumid, the face appears fiery, the Eyes red and burning, the breath hot, and to conculde, the whole habit of the body more full, by reason of that ebullition of the blood, and the diffusion of the vapours thence arising over all the body: Whence it is, that this kind of *Synochus* may be called, a vaporous Feaver. To this Children are incident as also all sanguine bodies, which have no ill humors. The cure of this and the *Ephemeræ* or *Diary* is the same; because it may scarce seem different from the *Ephemeræ* in any other thing, than that it may be prolonged for three or four dayes. Wherefore whatsoever we shall say for the cure of the *Ephemeræ*, may be applied to the *Synochus*, blood-letting excepted, which in an unputrid *Synochus* is very necessary.

The cure of a *Diary* Feaver.

Now the cure of a *Diary* Feaver consists in the decent use of things not natural, contrary to the cause of the disease; wherefore bathes of warm and naturall water are very profitable; so that the Patient be not Plethorick, nor stult with excrements, nor obnoxious to catarrhes and defluxions, because a catarrh is easily caused and augmented by the humors diffused and dissolved by the heat of a bath; therefore in this case we must eschew frictions, and anointing with warm oil, which things notwithstanding are thought very usefull in these kinds of Feavers, especially when they have their originall from extreme labour, by astriction of the skin or a *Bubo*. Let this be a generall rule, that to every cause, whence this Feaver proceeded, you oppose the contrary for a remedy; as to labour, rest; to watching, sleep; to anger and sorrow, gratefull society of friends, and all things replenished

plentiful with plearant good will; and to a *Bubo*, the proper cure thereof.

Wine moderately tempered with water according to the custome of the sick patient, is good and profitable in all causes of this Feaver; except he be pained in his head, or that the Feaver drew its originall from anger, or a *Bubo*; for in this last case especially, the patient must abstain wholly from wine, untill the inflammation come to the state, and begins to decline. This kind of Feaver often troubles infants; and then you must prescribe such medicines to their Nurses, as if they were sick, that so by this means their milk may become medicinal. Also it will be good to put the Infant himself into a bath of naturall and warm water, and presently after the bath to anoint the ridge of the back and breast with oyl of Violets. But if a *Phlegmon* possess any inward part; or otherwise by its nature be great; or seated near any principall Bowel; so that it may continually send from it either a putrid matter or exhalation to the heart, and not only affect it by a quality or preternaturall heat by the continuity of the parts, thence will arise the putrid *Synochus*, if the blood by contagion putrefying in the greater vessels, consists of one equall mixture of the four humors. This Feaver is thus chiefly known, it hath no exacerbations, or remissions, but much less intermissions; it is extended beyond the space of twenty four houres, neither doth it then end in vomit, sweat, moisture, or by little and little by insensible transpiration; after the manner of intermitting Feavers, or Agues; but remains constant, untill it leaves the patient for altogether; it commonly happens not unless to these of a good temper and complexion, which abound with much blood, and that tempered by an equall mixture of the four humors. It commonly indures not long, because the blood by some peculiar putrefaction degenerating into cholera or Melancholy, will presently bring forth another kind of Feaver, to wit, a Tertian or continued Quartain.

The cure of this Feaver (as I have heard of most learned Physicians) chiefly consists in bloodletting. For by letting of blood the fulness is diminished, and therefore the obstruction is taken away, and lastly, the putrefaction. And seeing that in this kind of Feaver there is not only a fault of the matter, by the putrefaction of the blood, but also of the Temper by excess of heat; certainly Phlebotomy helps not only, as we said, the putrefaction, but also the hot distemper. For the blood in which all the heat of the creature is contained; whilst it is taken away, the acrid and fuliginous excrements exhale and vanish away with it, which kept in, encreased the Feaverish heat. Moreover, the veins, to shun emptiness, which nature abhors, are filled with much cold air in stead of the hot blood which was drawn away, which follows a cooling of the habit of the whole body; yea and many by means of Phlebotomy have their bellies loosed, and sweat; both which are much to be desired in this kind of Feaver.

This moved the ancient Physicians, to write, that we must draw blood in this disease, even to the fainting of the Patient.

Yet because thus, not a few have poured out their lives together with their blood, it will be better and safer to divide the evacuations; and draw so much blood as severall times, as the greatness of the disease shall require, and the strength of the Patient may bear.

When you have drawn blood, forthwith inject an emollient and refrigerative clyster; lest that the veins emptied by Phlebotomy may draw into them the impurity of the Guts; but these clysters which cool too much, rather bind the belly, than loose it. The following day the Morbifick matter must be partly evacuated by a gentle purge, as a bole of *Cassia*, or *Catholicon*; then must you appoint Syrups which have not only a refrigerative quality, but also to resist putrefaction, such as the Syrup of Lemmons, Berberries, of the Juice of Citrons, of Pomgranats, Sorrell and Vineger; let his diet be absolutely cooling and humecting, and also slender; for the native heat much debilitated by drawing of a great quantity of blood cannot equall a full diet. Therefore it shall suffice to feed the Patient with chicken and veal broths made with cooling herbs, as Sorrell, Lettuce, and Purslain. Let his drink be Barly water, Syrup of Violets mixed with some pretty quantity of boiled water, *Julepum Alexandrinum*, especially if he be troubled with scouring, or laske. But the Physician must chiefly have regard to the fourth day; for if then there appear any signs of concoction in the excrements, the *Crisis* must be expected on the eventh day, and that either by a looseness of the belly, or an abundance of urine, by vomits, sweats, or bleeding. Therefore we must then do nothing but commit the whole business to nature.

But for drinking cold water, which is so much commended by *Galen* in this kind of Feaver, it is not to be suffered before there appear signs of concoction; moreover in the declining of the disease the use of wine will not be unprofitable to help forwards sweats.

The use of wine in a Diet.

How a putrid *Synochus* is caused.

Phlebotomy necessary in a putrid *Synochus*.

What benefit we may reap by drawing blood even to fainting.

Why we must give a clyster presently after blood letting.

What Syrups profitable in this case. Why a slender Diet must be used after letting much blood.

When drinking of water is to be permitted in a putrid *Synochus*.

CHAP. XII.

Of an Erysipelas, or Inflammation.

The definition
of an Erysipe-
las.

Having declared the cure of a Phlegmon, caused by laudable blood, we must now treat of these tumors which acknowledge choler the materiall cause of their generation, by reason of that affinity which intercedes between Choler and Blood. Therefore the tumors caused by naturall Choler, are called *Erysipelata*, or Inflammations; these contain a great heat in them, which chiefly possesses the skin, as also oftentimes some portion of the flesh lying under it. For they are made by most thin and subtle blood (which upon any occasion of inflammation easily becomes cholerick) or by blood and choler, hotter than is requisit, and sometimes of choler mixed with an acrid serous humor.

Gal. Cap. 2. lib.
14. Meib. med.
Cy 2. ad Glau.

That which is made by sincere and pure choler, is called by *Galen*, a true and perfect *Erysipelas*. But there arise three differences of *Erysipelaes* by the admixture of choler with the three other kinds of humors. For if it being predominant be mixed with blood, it shall be termed *Erysipelas Phlegmonodes*; if with Phlegm, *Erysipelas adematodes*; if with Melancholy, *Erysipelas Scirrholes*. So that the former and substantive word shews the humor bearing dominion, but the latter or adjective that which is inferior in mixture. But if they concur in equall quantity, there will be thereupon made *Erysipelas Phlegmone*; *Erysipelas adema*, *Erysipelas Scirrhus*.

Two kinds of
Erysipelas.

Galen acknowledges two kinds of *Erysipelaes*, one simple and without an ulcer, the other ulcerated. For choler drawn & severed from the warmnes of the blood, running by its subtlety and acrimony unto the skin, ulcerates it; but restrained by the gentle heat of the blood, as a bridle, it is hindered from piercing to the top of the skin, and makes a tumor without an ulcer. But of unnaturall choler are caused many other kinds of cholerick tumors, as the *Herpes exedens*, and *Miliaris*, and lastly, all sorts of tumors which come between the *Herpes* and *Cancer*. You may know *Erysipelaes* chiefly by three signs, as by their colour, which is a yellowish red; by their quick sliding back into the body at the least compression of the skin (the cause of which is the subtlety of the humor and the outward site of it under the skin, whereupon by some an *Erysipelas* is called a Disease of the skin;) Lastly, by the number of the Symptoms, as heat, pulsation, pain. The heat of an *Erysipelas* is far greater than that of a Phlegmon, but the pulsation is much les; for as the heat of the blood is not so great, as that of choler, so it far exceeds choler, in quantity and thickness, which may cause compression and obstruction of the adjacent muscle.

Gal. lib. 2. ad
Glauc.

Hip. Apho. 79.
Sect. 7.
Aph. 25.
Sect. 16. Aph.
43. Sect. 3.

For Choler easily dissipable by reason of its subtlety quickly vanishes, neither doth it suffer it self to be long contained in the empty spaces between the muscles; neither doth an *Erysipelas* agree with a Phlegmon in the propriety of the pain. For that of an *Erysipelas* is pricking and biting without tension, or heaviness, yet the primitive, antecedent, and conjunct causes are alike of both the tumors. Although an *Erysipelas* may be incident to all parts, yet principally it assails the face, by reason of the rarity of the skin of that place, and the lightness of the cholerick humor flying upwards. It is ill when an *Erysipelas* comes upon a wound, or ulcer; and although it may come to suppuration, yet it is not good; for it shews that there is obstruction by the admixture of a gross humor, whence there is some danger of erosion in the parts next under the skin.

It is good when an *Erysipelas* comes from within outwards; but ill when from without it retires inward. But if an *Erysipelas* possess the womb it is deadly, and in like manner if it spread too far over the face, by reason of the sympathy of the membranes of the brain.

CHAP. XIII.

Of the cure of an Erysipelas.

Gal. 14.
Meibed.



Nor the cure of an *Erysipelas* we must procure two things, to wit, evacuation and refrigeration. But because there is more need of cooling, than in a Phlegmon, the chief scope must be for refrigeration. Which being done, the contained matter must be taken away and evacuated with moderately resolving medicines. We must do four things to attain unto these forementioned ends.

4 Things to be
performed
in cutting an
Erysipelas.

First of all we must appoint a convenient manner of Diet, in the use of the six things not naturall; that is, we must incaffate, refrigerate and moisten as much as the nature of the disease and patient will suffer, much more than in a Phlegmon; then we will evacuate the Antecedent matter, by opening a vein, and by medicines purging choler. And that by cutting the Cephalick vein, if there be a portion of the blood mixed with Choler, if the *Erysipelas* possess the face, and if it be spread much over it.

In what
Erysipelas it is
convenient to
let blood, in
what not.

But if it shall invade another part, although it shall proceed of pure choler, Phlebotomy will

will not be so necessary, because the blood which is as a bridle to the choler being taken away, there may be danger, lest it become more fierce; yet if the body be plethorick, it will be expedient to let blood, because this, as *Galen* teacheth, is oft times the cause of an *Erysipelas*. It will be expedient to give a clyster of refrigerating and humecting things before you open a vein; but it belongs to a learned and prudent Physitian to prescribe medicines, purging choler.

The third care must be taken for Topick, or locall medicines, which in the beginning and encrease must be cold and moist, without any either dryness or astringent, because the more acrid matter by use of astringent things being driven in, would ulcerate and fret the adjacent partick.

Galen and *Avicen* much commend this kind of remedy; Take fair water ℥vi, of the sharpest Vinegar ℥i, make an Oxycrate, in which you may wet linnen clothes and apply to the affected part and the circumjacent places, and renew them often. Or R̄, *Succi solani, plantag. & sempervivi, an. ℥ij, aceti ℥β, Mucaginis sem. Pylly ℥ij, succi hyoscyami ℥i, Misce.* But if the *Erysipelas* be upon the face, you must use the medicine following.

R̄, *Unguent. Roj. ℥iiij, succi plantagin. & sempervivi, an. ℥i, trochisc. de Camphora ℥β, aceti parum;* let them be mixed together and make a liniment. But if the heat and pain be intolerable, we must come to narcotick medicines. As R̄, *succi hyoscyami, solani, cicutæ, an. ℥i, album. ovorum n. ii, aceti ℥β, opii & Camphor. an. gra. 4, croci ℥β, Mucaginis sem. psyll. & semigr. extractæ in aq. ros. & plantag. an. ℥i, ol. de papav. ℥ij. fiat linimentum, addendo ung. refrigerantis Gal. camphor. q. satis sit.* Yet we must not use such like medicines too long, lest they cause an extinction of the native heat and mortification of the part.

Wheretore such Narcotick medicines must be used with regard of place, time and such other circumstances. Therefore we may three manner of wayes understand when to desist from using Narcotick or stupefactive medicines. The first is when the Patient in the affected part feels not so much heat, pricking and pain, as before; The second is when the part feels more gentle to the touch than before; The third when the fiery and pallid colour begins by little and little to waxe livid and black; for then must we abstain from Narcotick, and use resolving and strengthening things, whereby the part may be revived and strengthened by recalling the Native heat; As R̄, *Farinæ hordei & Orobi, an. ℥ij, farinæ sem. lini ℥i β, coquantur in Hydromelite vel oxycrato, addendo pulv. rosarum & chamemel. an. ℥β, ol. anethi & chamem. an. ℥i, fiat cataplasma.* Or you may use this following fomentation, R̄, *Rad. Altheæ ℥ij, fol. malvæ, bismal. pariet. absinthii, salviæ, an. m. i, flor. chamem. meliloti, rosar. rub. an. m. ij, coquantur in aquis partibus vini & aquæ, & fiat satus cum spongia.* After the fomentation you may apply an Emplaster of *Diachylon Ireatum*, or *Diapalma* dissolved in oil of chamomile and Melilote, and such other like. The fourth Intention which is of the correction of accidents, we will perform by these means which we mentioned in curing a Phlegmon, by varying the medicaments, according to the judgment of him which undertakes the cure.

What to pick medicines are fit to be used in the beginning of an *Erysipelas*;

What caution must be had in the use of narcotick medicines.

Resolving and strengthening medicines.

CHAP. XIII.

Of the Herpes; that is, Teaters, or Ringwormes, or such like.



Herpes is a tumor caused by pure choler separated from the rest of the humors, that is carried by its naturall lightness and tenuity even to the outer or scarce skin, and is diffused over the surface hereof. *Galen* makes three sorts of this tumor. For if perfect choler of an indifferent substance, that is, not very thick, cause this tumor, then the simple *Herpes* is generated, obtaining the name of the *Genus*; but if the humor be not so thin, but compounded with some small mixture of Phlegm, it will raise little blisters over the skin like to the seeds of Millet, whence it was that the Ancients called this Tumor the *Herpes Miliaris*. But if it have any admixture of Melancholy, it will be an *Herpes exedens*, terrible by reason of the erosion or eating into the skin and muscles lying under it.

These are absolutely three intentions of curing; The first is to appoint a Diet just like that we mentioned in the cure of an *Erysipelas*; The second is to evacuate the antecedent cause, by medicines purging the peccant humor, for which purpose oft-times clysters will suffice, especially if the patient be somewhat easie by nature, and if the urine flow according to your desire; for by this a great part of the humor may be carried into the bladder; The third shall be to take away the conjunct cause by locall medicines ordained for the swelling and ulcer: Therefore the Chirurgeon shall have regard to two things, that is, the resolving of the tumor, and the drying up of the ulcer; for every ulcer requires drying, which can never be attained unto, unless the swelling be taken away. Therefore because the chiefest care must be to take away the Tumor, which unless it be performed there can be no hope to heal the ulcer, he shall lay this kind of medicine to dissolve and dry, as R̄ *Ceruse & tuthie prepar. an. ℥i, ol. ros. & adipis capon. an. ℥ij, corticis pini usti, & loci, ℥β, cereæ quantum satis, fiat unguentum.* Or R̄, *Farin. hordei & lent. an. ℥ij, coquantur in decocto corticis*

What a *Herpes* is, what be the kinds thereof.

Gal. 2. ad Glauconem. What the *Herpes miliaris* is.

What the *exedens*.

Three intentions in curing *Herpes*.

A stile for healing ulcers conjoynd with tumors.

The force of
Unguentum
enulatum cum
Mercurio.
Medicines fit
for restraining
eating and
spreading
ulcers.

mali granati, balaust. plantag. addendo pulveris rosar. rub. absinth. an. ʒ β, olei Myrtillor. & mellis com. an. ʒ vi, fiat unguentum, ut artis est. But for an *Herpes Miliaris* these must chiefly be used, *Res. pulv. gallarum, malicuri, balaust. boli armeni an. ʒ i, aquæ ros. ʒ iij, aceti acerrimi ʒ i, axungie anjer. & olei Myrtillor. an. ʒ i β, terebinth. ʒ i, fiat unguentum ad usum.* I have often found most certain help in *unguentum enulatum cum Mercurio*, for it kills the pustules, and partly waists the humor contained in them. Yet if the ulcer, not yett neither yeelds, but every day diffuses it self further and further, you shall touch the edges and lips thereof with some acrid medicine, as *Aqua fortis*, oyl of Vitriole, or such like, for by this kind of remedy, I have oft times healed fretting ulcers, which seemed altogether incurable.

CHAP. XV.

Of Feavers, which happen upon Erysipelous Tumors.

A vulgar de-
scription of an
intermitting
Tertian feaver.



S Feavers sometimes happen upon Inflammations, and Erysipelaes, which favour of the humor whereof they proceed, that is, Choler. Therefore seeing it is peculiar to Choler, to move every third day, it is no marvail if great Inflammations bring with them Tertian Feavers, or Agues, which have their fit every third day; for it is called an Intermitting Tertian which comes every other day.

The causes of
Tertian fea-
vers.

The Primitive causes; in generall are strong exercises, especially in the hot Sun, the use of heating, and drying either meats or medicines, great abstinence joyned with great labour, care, sorrow; the antecedent causes are the plenty of choler in the body, an hot and dry disposition either of the whole body, or of the liver only: the conjunct cause is the putrefaction of the cholerick humor lying in some plenty without the greater vessels, in the habit of the body.

The signs of an
intermitting
Tertian.

The signs, a shaking or shivering like as when we have made water in a cold winter morning, a great pricking, stretching, or stiffness, as if there were pins thrust into us over all our bodies, by reason of the acrimony of the cholerick humor driven uncertainly and violently over all the body, and the sensible membranous and nervous particles at the beginning of the fit; then presently the heat becomes acrid, the Feaver kindled, like a fire in dry straw; the pulse is great, quick and equal; the tongue dry; the urine yellowish, red and thin. The Symptoms are watchings, thirst, talking idly, anger, disquietness and tossing the body at the least noise or whispering. These Feavers are terminated by great sweats. They are incident to cholerick young men, such as are lean, and in Summer; after the fit oft times follow cholerick vomiting and yellowish stools. After the fit there follows an absolute intermission retaining no reliques of the Feaver, untill the approach of the following fit, because all the cholerick matter by the force of that fit and nature is easily cast out of the body, by reason of its naturall levity and facility; whereas in Quotidians there is no such thing, as which after the fit always leave in the body a sense and feeling of a certain inequality by reason of the stubbornness of the Phlegmatick humor, and dulnes to motion. The fit commonly uses to endure 4, 5, or 6 houres, although at some time it may be extended to 8 or 10. This Feaver is ended at 7 fits, and usually is not dangerous, unless there be some error committed by the Physitian, Patient, or such as attend him. Tertians in summer are shorter, in winter longer.

The Sym-
tomes

Why Tertians
have an abso-
lute cessation
of the feaver at
the end of each
fit,

Wherefore the beginning of the fit is accompanied with stiffness, or stretching, the state with sweat, whereupon if the nose, lips or mouth break forth into pimples or scabs, it is a sign of the end of the Feaver, and of the power of nature which is able to drive the conjunct cause of the disease from the center to the habit of the body; yet these pimples appear not in the declining of all Tertians, but only then, when the cholerick humor causing the Feaver shall reside in the stomach, or is driven thither from some other part of the first region of the Liver. For hence the subtler portion thereof carryed by the continuation of the inner coat to the mouth and nose, by its acrimony easily causes pimples in these places. The cure is performed by Diet, and Pharmacy.

The diet of
such as have a
Tertian.

When such as
have a tertian
may use wine.

The time of
feeding the
patient.

Therefore let the Diet be so ordered for the six things not naturall, that it may incline to refrigeration and humectation, as much as the digestive faculty will permit, as Lettuce, Sorrel, Gourds, Cowcubers, Mallows, Barly Creanis, Wine much allaid with water, thin, small, and that sparingly and not before signs of concoction shall appear in the urine; for at the beginning he may not use wine, nor in the declining, but with these conditions, which we have prescribed.

But for the time of feeding the patient, on that day the fit is expected, he must eat nothing for three houres before the fit, lest the aguish heat lighting on such meats as yett crude, may corrupt and putrefie them; whence the matter of the Feaver may be increased, (because it is as proper to that heat to corrupt all things, as to the native to preserve and vindicate from putrefaction) the fit lengthened, and nature called away from the concoction and excretion of the Morbifick humor; yet we may temper the severity of this law by having regard to the strength of the patient; for it will be convenient to feed a weak patient not only before the fit, but also in the fit it self, but that only sparingly, lest the strength should be too much impaired.

Now

Now for Pharmacy; It must be considered, whether the strength of the Patient be sufficient, if the humors abound; for then you may prescribe *Diaprunum simplex*, *Cassia* newly extracted, the decoction of Violets, of Citrin Myrobalanes; Syrups of Violets, Roses, of Pomegranats and Vineger. But if the powers of the Patient languish, he must not only not be purged, but also must not draw blood too plentifully, because Cholerick men soon faint, by reason of the facile and easie dissipation of the subtle humors and spirits; besides such as are subject to tertian Feavers do not commonly abound with blood, unless it be with Cholerick blood, which must rather be rentied, or amended by cooling and humecting things, than evacuated. Yea verily, when it is both commodious and necessary to evacuate the body, it may be attempted with far more safety by such things as work by insensible transpiration, which provoke sweats, vomit or urine by reason of the subtlety of the Cholerick humor, than by any other. Also the frequent use of emollient glysters made with a decoction of Prunes, Jujubes, Violets, Bran and Barley, will profit much. If the Patient fall into a *Delirium* or talk idly by reason of the heat and dryness of the head, with a particular excess of the cholerick humor, the Head must be cooled by applying to the Temples and Forehead and putting into the Nose oyl of Violets, Roses, or womans milk. Let the feet and legs be bathed in fair and warm water, and the soles of the feet be anointed with oyl of Violets and such like.

When to
purge the
patient.

In the declining, a Bath made of the branches of Vines, the leaves of Willows, Lettuce and other refrigerating things boiled in fair water, may be profitably used three hours after meat eaten sparingly.

But I would have you so to understand the Declination or declining not of one particular fit, but of the disease in generall, that the humors already concocted, allured to the skin by the warmth of the bath, may more easily and readily breath forth: he which otherwise ordains a bath at the beginning of the disease, will cause a constipation in the skin and habit of the body, by drawing thither the humors peradventure tough and gross, no evacuation going before.

When the time
is fit to use a
Bath.

Also it will be good after generall purgations to cause sweat by drinking White wine thin and well tempered with water; but urine by a decoction of Smallage and Dill; Certainly sweat is very laudable in every putrid Feaver, because it evacuates the conjunct matter of the disease, but chiefly in a Tertian, by reason that choler by its inbred levity easily takes that way, and by its subtilty is easily resolved into sweat. But that the sweat may be laudable it is fit it be upon a criticall day, and be foresheved by signs of concoction agreeable to the time and manner of the disease. Sweats when as they flow more slowly are forwarded by things taken inwardly and applied outwardly; by things taken inwardly, as with white wine, with a decoction of Figs, Raisins stoned, grasse roots and the like opening things; but by things outwardly applied, and sponges dipped in a decoction of hot herbs (as Rosmary, Time, Lavander, Marjerom and the like) applied to the Groins, Armholes, and ridge of the back.

What kinds of
evacuati ons are
most fit in a
Tertian.

Sudorificks,

You may for the same purpose, fill two Swines bladders with the same decoction, or else stone bottles, and put them to the feet, sides, and between the thighs. Then let this be the bound of sweating, when the Patient begins to waxe cold; that is, when the sweat feels no more hot, but cold.

But by the consent of all, blood must not be letten after the third fit, but presently at the beginning of the Feaver, according to the opinion and prescription of *Galen*; for seeing this Feaver for the most part is terminated at seven fits, if you stay untill the third fit be past, the Feaver will now be come to its state; but *Hippocrates* forbids us to move any thing in the state, lest nature then busied in concocting the disease, be called from its begun enterprise.

When blood
must be let.

Aphor. 29.
Sect. 2.

CHAP. XVI.

of an Oedema or cold Phlegmatick Tumor.

Hitherto we have treated of hot Tumors, now we must speak of cold; Cold Tumors are only two, an *Oedema* and a *Scirrhus*; And for all that *Hippocrates* and the Ancients used the word *Oedema* for all sorts of Tumor, in generall; yet by *Galen* and these Physitians, which succeeded him, it hath been drawn from that large and general signification, to a more strait and speciall, only to design a certain species, or kind of Tumor.

Gal. lib. de tumo-
ra præter naturæ.

Wherefore an *Oedema* is a soft, laxe and painlesse Tumor, caused by collection of a Phlegmatick humor.

What an
Oedema is.

The Ancients made eight differences of Tumors proceeding of Phlegm: The first they termed a true and lawfull *Oedema* proceeding from naturall Phlegm; from unnaturall phlegm by admixtion of another humor they would have three sorts of Tumors to arise, as

The differ-
ences of Oedema.

that by mixture of blood, should be made an *Oedema Phlegmonodes*, and so of the rest.

Besides, when they perceived unnaturall Phlegm either puffed up by flatulency, or to flow with a waterish moisture, they called some *Oedemaes* flatulent, others waterish; but also when they saw this same Phlegm often to turn into a certain Plaister-like substance, they thought that hence proceeded another kind of *Oedema*, which they expressed one while by the name of *Atheroma*, another while by *Steatoma*, and sometimes by *Melicerides*, as lastly, they called that kind of *Oedema* which is caused by putrid and corrupt slegm, *Scrophule*. For we must observe that Phlegm sometimes is naturall, and offends only in quantity, whence the true *Oedema* proceeds; otherwhiles it is not naturall; and it becomes not naturall, either by admixtion of a strange substance, as bloud, Choler or Melancholy, whence arise the three kinds of *Oedema's* noted formerly by the way; or by the putridness and corruptions of its proper substance, whence the *Strumæ* and *Scrophule* proceed; or by concretion, whence kernels and all kinds of Wens, *Ganglia* and knots; or by resolution, whence all flatulent and waterish Tumors, as the *Hydrocele*, *Pneumatocèle* and all kinds of Dropsies.

By how many waies Phlegm becomes not naturall.

The Causes.

The causes of all *Oedema's* are the defluxion of a Phlegmatick or flatulent humor into any part, or the congestion of the same made by little and little in any part, by reason of the imbecillity thereof in concocting the nourishment, and expelling the excrement.

The signs.

The signs are a colour whitish and like unto the skin, a soft Tumor, rare and laxe by reason of the plentiful moisture with which it abounds, and without pain, by reason this humor inters no sense of heat nor manifest cold; when you press it with your finger the print thereof remains, because of the grossness of the humor and slowness to motion. *Oedema's* breed rather in winter than in summer, because winter is fitter to heap up Phlegm; they chiefly possess the Nervous and Glandulous parts, because they are bloudless, and so cold and more fit by reason of their looseness to receive a defluxion; for the same cause bodies full of ill humors, ancient, and not exercised, are chiefly troubled with this kind of Tumor.

The progno-
sticks.

How *Oedema's*
are terminated.

An *Oedema* is terminated sometimes by resolution, but oftner by concretion, seldomer by suppuration, by reason of the small quantity of heat in that humor.

A Symptomatically *Oedema*, as that which follows upon a Dropsie or Consumption, admits no cure unless the disease be first taken away.

The intentions
of curing *Oede-
ma's*.
The diet.

The generall cure is placed in two things, that is, in evacuation of the conjunct matter prohibiting the generation of the antecedent. We attaine to both chiefly by four means.

The first truly by ordaining a fit manner of living and prescribing moderation in the use of the six things not naturall. Wherefore we must make choise of such air as is hot, dry and subtile; we must prescribe wine of a middle nature for his drink; let the bread be well baked; let meats be appointed which may generate good bloud, and these rather roasted than boyled. Let all fruits be forbidden, as also broths and milk-meats; let him eat such fish as are taken in stony rivers; the Patient shall observe mediocrity in feeding, but principally sobriety in drinking, for fear of crudities; after meat let him use digestive powders, or common drige powder; if his belly be not naturally loose, let it be made so by art.

Exercise.

Let the Patient use exercise before meat, so by little and little to spend this humor, and restore the native heat. Let him sleep little, because much sleep breedeth cold humors; let him avoid grief and sadness. And if he be of a weak body, let him abstain from venery, lest by another weakning by the use of venery added to his present infirmity, he fall into an incurable coldness, from whence a greater measure of crudity will arise. Otherwise, if the body be strong and lusty, by such exercises and the moderate use of venery it will be the more dryed and heated.

What to be
observed in the
use of venery.
6. Epid. sect. 5.
sen. 23.

For so that sentence of *Hippocrates* is to be understood; That venery is a cure for Phlegmatick diseases, as *Galen* in his commentaries tels us. The Physician may perform the second intention by turning his counsell to that part, from whence the spring of this Phlegmatick humor flows. For if the infirmity arise from the stomach, or from any other part, the part from whence it comes must be strengthened; if from the whole habit of the body, let attenuating, penetrating and opening medicines be prescribed. We perform the third intention by evacuating the humor impact in the part with local medicines varied according to the four times of the Tumor.

Lib. 2 ad Glauc.
cap. 3.
A rowler.

For *Galen* in the beginning and encrease prescribeth a fomentation of *Oxycratum* used with a sponge. But if so be that the *Oedema* be upon the Arm or Leg, a repelling rowler is very good, that is, such an one as is brought from below upwards. So these medicines following are very fit for the same purpose, *Rx*, *Lixivii ex cineribus sarmentorum, & caulium*, an. ζ iiii, *Tartari & Aluminis* an. ζ β , *aceti* ζ ij, mixe all together and make a decoction, wherein wet sponges and foment the place. Also you may use the following Cataplasim, *Rx*, *farine hordei* ζ iiii, *coquantur in Lixivio communi, addendo pulveris nucis cupressi, corticum granatorum, balausti*. an. ζ i, *Myrrhe, Aloes, alum.* an. ζ β , *olei Myrtill.* ζ ij, *fiat Cataplasma*. In the state and declination you must use drying and resolving medicines, as *Rx*, *Nucum cupressi, granat. sumach. balausti*, an. ζ i, *Salvia, origan. calament. Hyssopi, melissæ* an. m. i, *absinthii, plantag. caudæ equ. tappi. barb. certinod.* an. m. ss. *alum. tartar. & salis com.* an. ζ i, *coquantur cum lixivio*; foment it with a sponge, then presently apply this following Cataplasim. *Rx*, *Rad.*

Brionie

Bronia ꝛ ij, *absinth.* *plantag.* *centin.* *chamem.* *meliloti.* *peleg. an. m. ss.* *coquantur in hydromelite,* *pi-*
stentur, *trajiciantur,* *addendo pulveris ros. rub. chamem. melil. an* ꝛ i, *fiat Cataplasma.*

Lastly, you may here with good success use resolving emplaisters and ointments, first, heating or chafing the part by friction or fomentations, as well moist as dry; otherwise emplaisters will scarcely do their duty, by reason of the great coldness of the part, being not sufficient of it self to assimilate the nourishment, or to expell the superfluous and unprofitable humor. Let a fomentation be made with white Wine, in which Sage, Rosemary, Time, Lavander, Chamomile and Melilote flowers, red Roses, Orris roots, *Stachas* and such like have been boyled, with a little Vinegar added thereunto. Quench hot bricks in the same decoction, and apply them wrapped in linnen clothes to the affected part, for so a vapour will breath forth which hath an attenuating, piercing, resolving and strengthening faculty. But you may in stead of the bricks fitly apply Hogs or Oxe bladders, filled half full with the foresaid decoction, and that hot. The frictions must be made of hot linnen clothes, for so the native heat together with the bloud and spirits is recalled to the part, and fuliginous humors contained under the skin are resolved, whereby the strength of the part is in some part recovered.

What caution
to be had in
application of
Emplaisters.

CHAP. XVII.

Of the cure of flatulent and waterish Tumors.

Formerly declared that not only flatulent and waterish Tumors were comprehended under this word *Oedema*, but also such as are bred of congealed Phlegm, as *Atheromata*, *Steatomata* and *Melicerides*. Flatulent or windy Tumors are caused by vapour and wind kept in or contained sometimes under the skin, somewhiles under the membranes, as the *Periosteum* and *Pericranium*, whereupon insues cruell torment by reason of the distention of these parts which are endued with most exquisite sense. Sometimes the Entrails, as the stomach and Guts are swollen and stretched out with wind, as in a Tympany.

In what places
flatulencies
may be gather-
ed.

They in this differ from a true and legitimate *Oedema*, that when you lay your finger upon them and take it off again, there remains no sign of the pressure thereof, because they are distent by vapour and not by humor, for the vapour being pressed returns speedily again, as you may perceive by balls or bladders filled with wind.

In what flatu-
lent tumors
differ from a
true *Oedema*.

The cause of such Tumors is the weaknes of the native heat, not being able easily to resolve and waste the Phlegm by which the windy Tumors are raised, for so the morning Sun (which in some sort resembles our native heat) cannot resolve the mists dispersed in the air; which at noon it easily resolves into pure air. Also after the same manner our weaker heat stirs up vapours from that Phlegm it could not dissolve, which vapours are the matter of inflammations, or swellings. But oft times although the native heat be sufficiently powerfull, yet because the humor lyeth deep, or is kept by the thicknes of some membrane, tendon or Ligament, the stirred up vapour cannot exhale, whereby it comes to pass, that increased by little and little it causes a Tumor.

The causes of
flatulent Tu-
mors.

The signs of such a Tumor are a certain renitency or resistance perceived by pressing it with your finger, and sometimes a noise as if you smite upon a drum, especially if much wind be contained therein, such as are often gathered together in the hollownes of the belly, and in the spaces between the larger muscles. The Tumor is neither red nor hot, but rather cold and white as in an *Oedema*. It often possesseth the joints, and especially the knees, and it is very difficult to be resolved. If such flatulency be gathered together in the Guts, it causeth the wind Colick, in which sometimes the distention is so great that death ensues by reason of the renting or tearing the coats of the Guts.

The signs of
such Tumors.

CHAP. XVIII.

Of the cure of a flatulent and waterish Tumor.

WE shall chiefly and principally cure flatulent and waterish tumors by three means. First, by the same diet which we prescribed in an *Oedema*; then by strengthening the parts appointed for concoction, as the stomach and Liver, chiefly by the temperate use of Aromatick things, as *Diacuminum*, *Diacalamentha*, *Aromaticum*, *Caryophyl-
latum*, *Aromaticum Rosatum*, and the like, to be prescribed according to good liking of the Physitian which oversees the cure; lastly, by taking away of the conjunct matter by hot, drying and attenuating medicines which they call Carminative, that so the part being rarified the humor and flatulency therein contained may be discussed and dissipated. But remedies of this nature must be varied according to the variety of the parts; for some things are fit to be applied to the stomach, others to the Guts, others to the joints, and others to the fleshy parts; for the Colick you must inject carminative glysters, let resolving *Sacculi* or Bags be applied, and cupping-glasses fastened to the Navel; if an outward part be affected

Diet
Things
strengthening
the parts.

Medicines eva-
cuating the
conjunct mat-
ter.

affected, we use fomentations, liniments, chiefly if pain torment; as also Cataplasmes and Emplaisters, as *Rx Florum chamem. melil. rorismarini, rosar. rub. an. p. j. absinthii j. hyssopi, an. m.* let them be boiled in Lye, adding a little vineger for a fomentation to be used with sponges.

Galens fomen-
tation.

Galens foment the part with Rose-vinegar and a little salt put thereto, and would have a sponge dipped therein to lye somewhat long upon the part. *Rx Olei chamem. aneth. rut. & liliorum, an. ℥β, cera albæ ℥vj. aq. vitæ ℥ij,* let them all be mixed together and make a liniment, with which anoint the part after the fomentation. *Rx Farinæ fabar. orobi, an. ℥iij, coquantur in decocto pulegii, origani, calamenth. salviæ, addita pulverem chamem. & melilot. an. m. β, fursur. farinæ fab. & orobi, an. ℥ij, coquantur cum lixivio communi, addendo terebinth. ℥iij, oleor. aneth. & rut. an. ℥ij.* make an emplaister for the foresaid use.

The emplaister of *Vigo* with Mercury, and without, is very good for the same purpose. But you must note, that such medicines must be applied to the part actually hot, and the same heat must be contained and renewed by putting about it linnen clothes, bricks, bottles and such like hot things.

Corroborating
medicines.

The Humor and flatulency which were kept shut up in the part being resolved, the part must be strengthened, lest now and then it receive or generate the like matter. That may be done by the following fomentation and cataplasme. *Rx Nucum cupressi, corticum granat. sumach. berberis, balauft. an. ℥j. caudæ equin. arnogloss. tursi barb. absinth. salviæ, rorisim. lavendul. an. m. ss. flor. chamem. melil. rosar. anthos, an. p. j. alum. salis com. an. ℥j,* bulliant omnia in aquis partibus aquæ fabrorum & vini austeri, make bags for a fomentation, or use the decoction for the same purpose with a sponge. *Rx Farinæ fab. hordei & lupin. an. ℥ij. terebinth. com. ℥iij. pulver. radicis ireos, mastic. an. ℥β, mellis com. ℥ijβ,* of the foresaid decoction as much as shall suffice, so to make a cataplasme to the form of a poultis liquid enough, let it be applied hot to the affected part having used the fomentation before.

The signs of a
waterish tu-
mor.

The signs of a waterish tumor are the same as of a flatulent; but over and besides it shines, and at the pressing with your fingers, there is heard a noise or murmur as of a bladder half filled with water.

Why a water-
ish tumor must
be opened
with an instru-
ment.

Therefore the waterish tumor if it shal not yeeld to the forementioned resolving medicines, the way must be opened with an incision knife, after the same manner, as we mentioned in a Phlegmon. For oftentimes this kind of remedy must be necessarily used, not only by reason of the contumacie of the humor which gives no place to the resolving medicines, but also because it is shut up in its proper cist or bag, the thicknesse of which frustrates the force of the resolving medicines, neither suffers it to penetrate into the humor. As I some years agoe found by experience in a maid of 7 years old; which troubled with a *Hydrocele* or waterish rupture, to whom when I had rashly applyed to dissolve it resolving medicines of all sorts, at length I was forc't to open it with my knife; not only to evacuate the contained matter, but also that I might pluck out the bag, which unlesse it were cut up by the root, would be a mean to cause a relapse. *John Altine* Doctor of Physick called me to this businesse. *James Guilemeau* the Kings Chirurgon oversaw the cure.

A History.

CHAP. XIX.

Of an Atheroma, Steatoma, and Meliceris.



In what an
Atheroma,
Steatoma, and
Meliceris dif-
fer.

Although these tumors may be thought comprehended under one *genus* with other *Oedematous* tumors, yet they differ as thus; that is, their matter is shut up in its bladder or bag, as it were in a peculiar cell. But their difference amongst themselves is thus; the matter of the *Steatoma*, as the name signifieth, is like unto Tallow [for *Steiris* in Greek signifieth Tallow, or seam] yet it oft-times is found stuffed with other divers hard bodies, stony, bony or callous like unto the claws of an hen. For *Philoxenus* reports that he sometimes saw flies in a *Steatoma* at the opening thereof, and such other like things wholly dissenting from the common matter of Tumors. The matter contained in an *Atheroma* is like to pap, with which they feed little Children. A *Meliceris* contains matter resembling honey in colour and consistence; these tumors appear and rise without any inflammation going before them. Thus you shal know these tumors; a *Steatoma* is harder than the other two, neither yeelds it to the pressure of your finger, but when it once yeelds, it doth not speedily and easily return to its former figure, because the matter is more gross; it is of the same colour as the skin, without pain, and of a longish figure. The *Meliceris* yeelds to the touch, as being a loose and soft body, and as it is easily disposed and diffused, so it quickly returns to its former place and tumor. It differs from the *Atheroma* in figure and substance. For it is more globous and of a subtler and more shining matter, besides also it takes up a large space, and is more obsequious to the touch, and for the rest, without pain. As for the manuell operation of the Chirurgon in their cure, it seems to be of no great consequence of what sort the matter is, whether resembling tallow, honey, or pap, for there is one simple manner of operation, which is, that you pluck away the contained humor, as also the receptacle in which it is contained. Yet you must note such tumors, sometimes as it were hanging in the surface of the skin, are easily to be moved this way, and

Of Chirurgery
to be used to
these tumors.

and that way; but other some again deeper fastned firmly cohere with the adjacent bodies, and these require an exquisit hand and also industry for fear of a great flux of blood and convulsion by cutting a vein. There are many other kinds of tumors, as the *Testudo* or Mole, the *Nata*, the *Glandula*, *Nodus*, *Botium*, *Lupia*, which as in matter (for they are all of a thick, clammy and viscous Phlegmatick humor) so also in kind they agree with an *Atheroma*, *Steatoma*, and *Meliceris*. But also in these for the most part, when they are opened, you may see bodies of all sorts far different from the common matter of tumors, as stones, chalk, sand, coals, snails, straws; or awnes of corn, hey, horn, hairs, flesh both hard and spongeous; gristles, bones, whole creatures as well living as dead.

The generation of which things (by the corruption and alteration of humors) shall not make us much to admire it, if we consider, that as nature of all the seeds and elements of the whole great world, hath made man the Microcosme or little world, that he might be, as it were, the lively Image of that greater world; so in him, it being never idle in us, would have all the kinds of all motions and actions to shew themselves, as long as matter for generation is not wanting. But because there is little, or rather no mention of these tumors amongst the ancients, we will briefly shew the opinions of the later writers concerning them.

Now they say, the *Testudo* is a tumor contrary to nature, soft, diffused, or vaulted, or arched like a Tortois, sometimes it arises in the head in form of a Mole, and then it is called a Mole.

The *Nata* is a great and fleshy tumor, not in shape unlike a Melon, or rather the flesh of a mans buttocks, whence it may seem to have had the name, unless we had rather say it had it, because it more usually breeds upon the buttocks, than upon any other part of the body.

The *Glandula* takes its denomination from an Acorn, called *Glans* in Latine, the which it somewhat resembles in the compasse and form of the tumor; or else because it most commonly breeds in the Glandules, or Emunctories of mans body.

The *Nodus* or knot, is a round tumor, hard and immoveable, named from a rope tied on a knot.

Guido Cauliacensis affirms knots commonly to grow in nervous bodies; but at this time they more usually arise on the bones of such as have the French disease.

What the cause may be, that we sometimes find *infesta* in these Tumors.

What the *Testudo*, or *Talpatria* is.

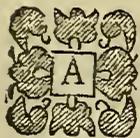
What the *Nata* is.

What a *Gandula*.

What *Nodus*.

CHAP. XX.

Of the cure of *Lupia*, that is, *Wens*, or *Ganglions*.



Wen or *Ganglion* is a tumor sometimes hard, sometimes soft, yet alwaies round, using to breed in dry, hard, and nervous parts. And seeing that some of the tumors mentioned before in the former Chapter, stick immoveable to the part to which they grow, because they are contained in no cist, or bag; other some are moved up and down by the touch of your fingers, because they are contained in a bag or bladder, it commonly comes to passe that *Wens* have their bladder wherein to contain them, and therefore we think fit, the rather more freely, and particularly to treat of their cure, because they are more difficultly cured, especially where they are inveterate and of long standing.

The primitive causes of these are dull blows, fallings from high places, strains, and other such like occasions. But the antecedent and conjunct causes are the same with those of an *Atheroma*, *Meliceris* and *Steatoma*.

The description formerly set down, will furnish you with the signs by which you may know when they are present; certainly from very small beginnings they grow by little and little to a great bigness, in the space of six or seven yeers, some of them yeeld much to the touch, and almost all of them are without pain.

You may hinder such as are beginning and first growing, from encrease by somewhat a strong and frequent rubbing with your fingers. For so their bag or bladder, together with the skin wax thin, and the contained humor grows hot, is attenuated and resolved. But if so you nothing prevail, you must lie upon them with your whole hand, or a flatted peece of wood as heavy as you can, untill such time as the cist or bag be broken by your impression; Then apply and strongly bind unto it a plate of lead, rubbed over with *Quick-silver*; for I have many times found by experience, that it hath a wonderfull force to resolve and waist the subject humor. But if the *Wen* be in such a place in which you can make no strong impression, as in the face, chest, belly, & throat, let there be applied an emplaister which hath a resolving force, such as this following hath; *Re gummi ammon. bdelii, galban. an. ℥iij. liquefiant in aceto, & trajiciantur per setaceum, addendo olei liliorum & lauri, an. ℥j. aqu. vite parum, pulveris ireos, salis ammon. sulphur. vivi, vitrioli romani, an. ℥β.* let them be all incorporated together, and make an Emplaister according to Art. But if the tumor cannot be thus resolved, it must be opened with a knife or cautery. And after the *Eschar* is removed, and the bag waisted by *Egyptiacum*, *Mercury*, and the like, the ulcer must be cleansed, replenished with flesh, and cicatrized.

What a *Ganglion* is.

The causes.

Signes.

Their cure at the beginning.

Plates of lead rubbed with *Quick silver*. A resolving plaister. Things to waist or consume the bag.

Some-

The manner
to take away
Wens.

Sometimes Wens grow to so great a masse, that they cannot be cured by the described remedies, wherefore they must be taken away by the root, by your hand and instrument, if so be that there be no danger by reason of their greatnes, and so that they adhere not too closely to the adjacent parts, and if they be not too nigh to the greater veins and arteries; for it will be better in such a cause to let them alone. This shall be your way to cut them off, or take them away. A small incision must be made, even to the bladder, or bag, by which thrust in a probe of a fingers thickness, hollowed in the midst, round at the end, and as long as need shall require; then draw it many times about between the skin & the bag, even to the root of the Wen, that so the skin may be divided long waies, then it will be requisite to make another incision overthwart, so that they may intersect each other like a cross; then presently draw the skin from the bladder, from the corners of the Wen, towards the root, and that with your finger covered with a fine linnen cloth, or else with a Razor if need require.

But you must observe that in a Wen there are alwaies certain vessels, which are small in the beginning, but much increased in proccesse of time, according to the encrease of the Wen, whereof they are as it were the roots; wherefore if any *Hemorrhagie* or flux of blood happen, let it be stopped by binding the vessels at their heads and roots, or make a strait ligature at the roots of the Wen, with a peece of whipcord, or with a many times doubled thred, and let the ends hang forth until it fall away of its own accord. Neither will it be sufficient to have cut away all this tumor, but also it will be fit to cut away a portion of the skin, wherewith the tumor was covered, and only to leave so much as shall suffice to cover the part, then with a needle and thred draw together the lips of the incision, but in the interim let tents be put into the bottome of the ulcer untill it be perfectly cleansed, and the rest of the cure be workmanlike performed, even to the cicatrizing thereof.

A History.

The Chirurgeon *Collo* and I using this method, in the presence of Master *Dr. Violanius* the Kings Physitian, took away a Wen from *Martiall Colard*, the Major of *Burbon*; it hanged at his neck, as big as a mans head, and it weighed eight pounds; which made it so troublesome and burdnesome to him, that he was forced to carry it bound up in a towell, as in a scrip.

What Wens to
be cured by
ligature.
Which dange-
rous to cure.

Verily if these kind of tumors have a slender root and broad top, they must be straitly tied and so cut off. But it is very difficult and full of dangerous chance to take away such Wens as are seated in the neck, neer unto the Jugular veins, these under the Arm-holes, in the groins, and such as are under the ham; by reason of the deadly force of such symptoms, as may thence arise. We can only conjecture, not certainly say, what kind of matter may be contained in them. We can only know of what sort it is, when by incision it is presented to our sight. Yet in such as are very hard and do much resist the touch, there are often found matters, which in consistence may be resembled to little stones or pibles.

A History.

The matter of
a Wen is some-
times taken for
a *Cancer*.
Another
History.

I being on a time called to open the body of a great Lady, found in one of her breasts a body which might equal the bigness of an Hens egg, hard, and compact like a rough pible; it was held, whilst she lived, both by the Physitians and Chirurgeons, to be a *Cancer*, because this hardness was very painfull to her, when it was but gently pressed down.

How you may
know a Wen
from a *Cancer*.

But also some few yeers ago, I being called to the cure of a very honest woman, which was troubled with the same disease, strongly withstood the Physitians and Chirurgeons affirming it to be a *Cancer*, for the tumor had taken no deep root, the habit of the part was not changed from the native colour, the veins about it were not swollen, neither was there any other convincing sign of a *Cancer*. For this same woman had her courses at their due and usuall time, and was well liking, and had a good colour in her face and body, was free from all sort of pain, unlesse when you pressed down the part affected. Besides thence forward the tumor grew not at all; no other evill accident befel her, yea verily she lives merrily, and well both in body and mind.

CHAP. XXI.

Of a Ganglion more particularly so called.

What a *Gan-
gion* properly
to called is.
The causes.



Here are also certain small tumors of the kind of *Lupie* or Wens, which grow on divers parts of the body, but chiefly on the wrists of the hands, and ankles of the feet, being called by a more particular name *Ganglia*; they appear on the top of the skin, neither do they ever lie deep. The cause of them is either the imbecillity of a nerve or tendon got by wresting, extension, a blow, labour, or other such like cause. Through which occasion the alimentary juice which flowed to these parts, seeing it can neither be concocted, nor assimilated into the proper substance, is converted into an humor of the like nature cold, and gross, which in continuance of time heaping it self up by little and little about the fibers, and the very substance of the tendon, concretes into a tumor.

What *Ganglia*
may not be
cured with iron
Instruments.

It is not fit to use any iron instrument to these *Ganglia* which possess the tendons and joints, but only apply *Ammoniacum* and *Galbanum* dissolved in Vinegar and *Aqua vite*: as *Re-
gum*

gummi ammon. & sagapeni in aqua vite dissolutorum, an. ℥j. coquantur super cineres calidos ad formam emplastri, sub finem adde sulphuris vivi subtiliter pulverisati ℥ss, fiat empl. ad usum. Also the Emplaster of *Vigo* with double Mercury would be good for the same purpose.

The tumor softned by these remedies, must be wrought, rubbed, or pressed, so long, untill the bladder or bag be broken under your fingers, which I have divers times done; then it will be expedient presently to apply and bind hard thereunto a plate of lead rubbed with Quick-silver, which may waist and consume the remainder of the tumor.

Sometimes there are *Ganglia* seen hanging by a small root, as it were a string; wherefore they must be tied with a string at the root, and every day twitched harder and harder, till such time as they fall off. The rest of the cure may be easily performed by the common rules of Art.

CHAP. XXII.

Of the Strumæ or Scrophulæ, that is, the Kings-evil.



The *Scrophulæ* are œdematous tumors arising in the glandulous parts, as the breasts, armholes, groins, but chiefly in the glandules of the neck. They appear either one or many, according to the quantity of that matter from whence they proceed, commonly contained in their proper cyst, or bag, as *Atheromæs*, *Steatomæs*, and *Melicrides* are.

They are made of a grosse, cold, viscid, and phlegmatick matter with some admixture of melancholy. They differ from other glandulous tumors; first in number, for most usually there appear many of them united together, springing from somewhat a deeper root than glandulous tumors doe; some of them are moveable, other some woven with the neighbouring nerves, remaining unremovable.

Gangliæ appear fewer in number, and are without pain; but *Scrophulæ* oftentimes are painful, especially when they wax hot by putrefaction; so that sometimes they degenerate into cancerous ulcers, not to be touched by instruments nor acrid medicines.

Phlegmatick, melancholick, and gluttonous persons, and such as are accustomed to feed on cold and moist nourishments, as fish and cold water, and lead a sedentarie and idle life, are subject to the *Scrophulæ*. They are cured by a most slender diet, for so the native heat by want of nourishment turned upon the material cause of such like tumors, waists it.

And they are cured by purging of the superfluous humors, and also by application of emollient resolving, and suppurating topick medicines, after this following manner. *R. Mucaginis alth. fenugr. & ficuum ping. an. ℥ij, olei liliorum, & chamem. an. ℥j, pinguedinis anseris & axungie porci ℥ss, Terebinth. Ven. ℥ss, ammoniaci, & galbani in aceto dissolutorum an. ℥j. cera nova quantum satis, fiat cerotum secundum artem ad modum diachyli magni.*

The ointment for the French disease, and the Emplaster of *Vigo* with Mercury, are excellent for this purpose, especially if we continue so long untill the Patient come to Salivation, for so nature will disburden it self of the humor, generating the *Scrophulæ*, which I have sometimes tried with happy successe. *R. Emplastri diachyl. alb. & mag. ceroti asopi descriptionis Philagrii, an. ℥ij. Terebinth. claræ ℥j. olei liliorum parum, fiat emplastrum satis molle.* But if the *Scrophulæ* cannot by this means be resolved, but as it oftentimes happens, tend to suppuration, you must use suppuratives, as *R. rad. alth. & liliorum, an. ℥iij. coquantur in aqua communi, pistentur, trajectis adde capitum alliorum sub cineribus coctorum ℥iij, olei liliorum, & ping. anseris & anat. an. ℥ss, farinae seminis lini quantum satis, formetur cataplasma.*

Here we must admonish the Chirurgeon, that he open not the *Scrophulæ* before that all the contained humor be fully and perfectly turned into pus or matter; otherwise the residue of the humor will remain crude, and will scarce in a long time be brought to maturation; which precept must be principally observed in the *Scrophulæ*, and also sometimes in other abscesses, which come to suppuration. For we must not as soon as any portion of the contained humors appears converted into pus, procure and hasten the apercion. For that portion of the suppurated humor, causes the rest sooner to turn into pus, which you may observe in inanimate bodies. For fruits which begin to perish and rot, unless we presently cut away the putrefying part, the residue quickly becomes rotten; there is also another reason; The native heat is the efficient cause of suppuration; it therefore (the sore being opened) diminished and weakened by reason of the dissipation of the spirits, evacuated together with the humor, will cause the remaining portion of the humor not to suppurate, or that very hardly, and with much difficulty. Yet if the tumified part be subject, by its own nature, to corruption and putrefaction, as the fundament; if the contained matter be malign, or critical, it will be far better to hasten the apercion.

There is also another way of curing the *Scrophulæ*, which is performed by the hand. For such as are in the neck; and have no deep roots, by making incision through the skin, are pulled and cut away from these parts with which they were intangled. But in the performance of this work, we take speciall care, that we doe not violate or hurt with our instrument, the jugular veins, the sleepey arteries, or recurrent nerves. If at any time there be dan-

What the
Scrophulæ or
Kings-evil is.

Their material
cause.
How they dif-
fer from other
glandulous
tumors.

Their cure by
diet.

Emollient and
resolving me-
dicines.

Suppuratives.

A note to be
observed in
opening *Scro-
phulous* tumors.

Naturall heat
the cause of
suppurations.

The Chirurgi-
call manner of
curing *Scro-
phulæ*.

ger of any great efflux of blood, after they are plucked from the skin, they must be tied at their roots, by thrusting through a needle and thred, and then binding the thred strait on both sides, that so bound they fall off by themselves by little and little without any danger. The remainder of the cure may be performed according to the common rules of Art.

CHAP. XXIII.

Of the Feaver which happens upon an œdematous Tumor.

How an intermitting Quotidian happens upon œdematous tumors. The cause of a Quotidian feaver.



Having shewed all the differences of œdematous tumors, it remains that we briefly treat of the Symptomatical feaver, which is sometimes seen to happen upon them. This therefore retaining the motion of the humor by which it is made, is commonly of their kind, which they name Intermitting Quotidians. Now the fit of a Quotidian comes every day, and in that repetition continues the space of eighteen hours; the residue of the day it hath manifest intermission.

The primitive causes of this feaver are, the coldnesse and humidity of the air encompassing us, the long use of cold meats and drinks, and of all such things as are easily corrupted, as Summer fruits, crude fishes, and lastly, the omission of our accustomed exercise.

The antecedent causes are a great repletion of tumors, and these especially phlegmatick. The conjunct cause, is phlegm putrefying in the habit of the body, and first region thereof without the greater veins.

The Signs.

The signs of this feaver are drawn from three things; as first naturall; for this Feaver or Ague chiefly seizes upon these which are of a cold and moist temper, as Old-men, Women, Children, Eunuches, because they have abundance of phlegm; and it invades Old-men by its own nature, because their native heat being weak, they cannot convert their meats, then taken in a small quantity, into laudable blood, and the substance of the parts. But it takes children by accident, not of its self, and the own nature, for children are hot and moist; but by reason of their voracity, or greediness, and their violent, inordinate, and continuall motion after their plentiful feeding, they heap up a great quantity of crude humors fit matter for this feaver; whereby it comes to passe, that fat children are chiefly troubled with this kind of feaver, because they have the passages of their bodies strait and stopped, or because they are subject to Worms, they are troubled with pain, by corruption of their meat; whence ariseth a hot distemper by putrefaction, and the elevation of putrid vapors, by which the heart being molested, is easily taken by this kind of feaver.

How children come to be subject to Quotidian feavers.

From things not naturall, the signs of this feaver are thus drawn. It chiefly takes one in Winter, and the Spring, in a cold and moist Region, in a sedentary and idle life, by the use of meats, not only cold and moist, but also hot and dry, if they be devoured in such plenty, that they overwhelm the native heat.

How phlegmatick humors happen to be generated by hot and dry meats.

For thus wine, although it be by faculty and nature, hot, and dry, yet taken too immoderately, it accumulates phlegmatick humors, and causes cold diseases. Therefore drunkenness, gluttony, crudity, bathes and exercises presently after meat, being they draw the meats as yet crude into the body and veins; and to conclude, all things causing much phlegm in us, may beget a Quotidian feaver. But by things contrary to nature, because this feaver usually follows cold diseases, the Center, Circumference, and Habit of the body being refrigerated.

The symptoms of Quotidians.

The symptoms of this feaver are, the pain of the mouth of the stomach, because that phlegm is commonly heaped up in this place, whence follows a vomiting, or casting up of phlegm; the face looks pale, and the mouth is moist, without any thirst, oftentimes in the fit it self; because the stomach flowing with phlegm, the watery and thinner portion thereof continually flows up into the mouth and tongue, by the contiunity of the inner coat of the ventricle common to the gullet and mouth.

The manner of the pulse and hearin a Quotidian.

It takes one with coldness of the extreme parts, a small and deep pulse, which notwithstanding in the vigour of the fit, becomes more strong, great, full, and quick. Just after the same manner, as the heat of this feaver at the first touch appears mild, gentle, moist and vaporous; but at the length it is felt more acrid, no otherwise than fire kindled in green wood, which is small, weak, and smoakie at the first; but at the length when the moisture being overcome, doth no more hinder its action, it burns and flames freely.

Critical sweats The urin.

The Patients are freed from their fits with small sweats, which at the first fits break forth very sparingly, but more plentifully when the *Crisis* is at hand; the urin at the first is pale and thick, and sometimes thin, that is, when there is obstruction. But when the matter is concoct, as in the state, it is red; if at the beginning of the fit they cast up any quantity of phlegm by vomit, and that fit be terminated in a plentiful sweat, it shews the feaver will not long last; for it argues the strength of nature, the yeelding and tenuitie of the matter flying up, and the excretion of the conjunct cause of the feaver.

Why Quotidians are oftentimes long. Into what diseases a Quotidian usually changes.

A Quotidian feaver is commonly long, because the phlegmatick humor being cold, and moist by nature, is heavy and unapt for motion: neither is it without fear of a greater disease, because oftentimes it changes into a burning, or quartain feaver, especially if it be bred

of salt Phlegme, for saltneis hath affinity with bitterneis, wherefore by aduſtion it eaſily degenerates into it, ſo that, it need not ſeem very ſtrange, if ſalt phlegm by aduſtion turn into choler, or melancholy. Thoſe who recover of a Quotidian feaver, have their digeſtive faculty very weak; wherefore they muſt not be nourished with ſtore of meats, nor with ſuch as are hard to digeſt. In a Quotidian the whole body is filled with crude humors, whereby it comes to paſſe that this Feaver oft-times laſts ſixty daies. But have a care, you be not deceived, and take a double tertian for a Quotidian, becauſe it takes the Patient every day as a Quotidian doth. Verily it will be very eaſie to diſtinguiſh theſe Feavers by the kind of the humor, and the propriety of the ſymptomes and accidents; beſide, Quotidians commonly take one in the evening, or the miſt of the night, as then when our bodies are refrigerated by the coldneſs of the air cauſed by the abſence of the Sun. Wherefore then the cold humors are moved in us, which were bridled a little before by the preſence and heat of the Sun. But on the contrary, double tertians take one about noon. The ſhortneſs and gentleneſs of the fit, the plentiful ſweat breaking forth, the matter being concocted, cauſes us to think the Quotidian ſhort and ſalutary.

The cure is performed by two means; to wit, Diet, and Pharmacy. Let the Diet be ſlender and attenuating, let the patient breath in a cleer air moderately hot and dry; let his meats be bread well baked, cock or chicken broths in which have been boiled the roots of Parsly, Sorrell and the like.

Neither at ſometimes will the uſe of hot meats, as thoſe which are ſpiced and ſalted, be unprofitable, eſpecially to ſuch as have their ſtomach and liver much cooled. Let him eat Chickens, Mutton, Partridge and ſmall birds, river fiſhes and ſuch as live in ſtony waters fryed or boiled, rear eggs and ſuch like. Theſe fruits are alſo good for him, Raiſons, ſtewed Prunes, Almonds and Dates. Let his drink be ſmall white wine mixed with boiled water. Moderate exerciſes will be good, as alſo frictions of the whole body: ſleep taken at a fitting time, and proportioned to waking, ſo that the time of ſleep fall not upon the time of the fit; for then it hurts very much; for calling the heat to the inner parts, it doubles the raging of the feaveriſh heat inwardly in the bowels.

For the paſſions of the mind, the patient muſt be merry, and comforted with a hope ſhortly to recover his health. It ſeems not amiſſe to ſome, at the coming of the fit to put the feet and legs into hot water, in which Chamomill, Dill, Melilot, Marjerom, Sage, and Roſemary have been boiled.

The medicines ſhall be ſuch ſyrups as are called digeſtive and aperitive, as ſyrup of Wormwood, Mints, of the five opening roots, *Oxymel* with a decoction of Chamomill, Calamint, Melilot, Dill, and the like, or with common decoctions. The Purgatives ſhall be *Diaphanicon*, *Electuarium Diacarthami*, *Hiera picra*, Agarick, Turbith, of which you ſhall make potions with the water of Mints, Balm, Hyſſop, Sage, Fennell, Endive or the like, *Pillule aureæ* are alſo good. Theſe purgatives ſhall ſometimes be given in form of a bole with ſugar, as the Phyſitian being preſent ſhall think moſt fit and agreeable to the nature of the Patient.

About the ſtate of the diſeaſe, you muſt have a care of the ſtomach and principally of the mouth thereof, as being the chief ſeat of phlegm; wherefore it will be good to anoint it every other day with oil of Chamomill mixed with a little white wine, as alſo to unlade it by taking a vomit of the juice of Radish, and much *Oxymel*, or with the decoction of the ſeeds and roots of *Aſarum* and Chamomill; and ſyrup of vinegar will be very good, eſpecially at the beginning of the fit, when nature and the humors begin to move; for an inveterate Quotidian, though you can cure it by no other remedy, nothing is thought to conduce ſo much as one dram of old Treacle taken with ſugar in form of a bole, or to drink it diſſolved in *Aqua vite*.

CHAP. XXIV.

Of a Scirrhus, or an hard tumor proceeding of Melancholy.

Having ſhewed the nature of tumors cauſed by blood, choler and phlegm, it remains we ſpeak of theſe, which are bred of a melancholick humor; of theſe there are ſaid to be four differences. The firſt is of a true and legitimate *Scirrhus*, that is, of an hard tumor endued with little ſenſe, and ſo commonly without pain, generated of a naturall melancholick humor. The ſecond is, of an illegitimate *Scirrhus*, that is of an hard tumor inſenſible; and without pain, of a Melancholick humor concrete by too much reſolving and refrigerating. The third is of a cancrus *Scirrhus* bred by the corruption and aduſtion of the Melancholick humor. The fourth of a phlegmonous, *Eryſpelous* or *Oedematous Scirrhus*, cauſed by Melancholy mixed with ſome other humor. The cauſe of all theſe kinds of Tumors is a groſſe, tough and tenacious humor concrete in any part. But the generation of ſuch an humor in the body happens either of an ill and irregular diet, or of the unnaturall affects

How to diſtinguiſh a quotidian from a double tertian.

Diet.

When the uſe of ſpiced and ſalted meats are fit.

When ſleep is hurtfull.

Medicines.

Care muſt be had of the ſtomach Vomits.

The uſe of Treacle in an inveterate quotidian.

What a true and legitimate *Scirrhus* is. What an illegitimate *Scirrhus* is.

The Signs.

of the liver or spleen, as obstruction; or by suppression of the *Hæmorrhoids* or Courses. The signs are hardness, renitency, a blackish colour, and a dilation of the veins of the affected part with blackishness, by reason of the abundance of the gross humor. The illegitimate or bastard *Scirrhus* which is wholly without pain and sense, and also the cancerous admit no cure, and the true legitimate scarce yeeld to any. Those which are brought to suppuration, easily turn into Cancers and fistulaes; these tumors though in the beginning they appear little, yet in process of time they grow to a great bigness.

Prognostick.

CHAP. XXV.

Of the cure of a Scirrhus.

Diet.



He Cure of a *Scirrhus* chiefly consists of three heads. First, The Physician shall prescribe a convenient diet, that is sober and moderate in feeding, tending to humidity, and indifferent heat; for his manner of life, let it be quiet and free from all perturbation of anger, grief and sadness, as also abhorring the use of venery. The second is placed in the evacuation of the antecedent matter, as by Phlebotomy, if need require, and by purging, by procuring the *Hæmorrhoids* in men, and the courses in women; let purgations be prescribed of *Diacatholicon*, *Hiera*, *diarsenna*, *polypody*, *Epythymum* according to the mind of the learned Physician. The third consists in the convenient use of Topick medicines, that is, emollient at the beginning, and then presently resolving, or rather such as are mixed both of resolving and emollient faculties, as *Galen* teaches; for by the use of only emollient things there is danger of putrefaction and a *Cancer*, and only of resolving there is fear of concretion, the subtiler part being resolved, and the grosser subsiding.

Lib. 2. ad Glauconem.

Emollients.

The emollient shall be thus: *R Rad. alb. lib. s. rad. liliorum ℥iij. coquantur in aqua com. pistentur, trajiciantur per setaceum, addendo olei chamæ. & lilior. an. ℥ij. aspi humide ℥ss. emplastri diachyl. alb. cum oleo liliorum dissoluti ℥iij, ceræ albæ quantum sit satis, fiat cerotum.* Or *R gummi ammoniaci, galb. bdellii, styracis liquidæ in aceto dissolutorum, an. ℥j, diachyl. mag. ℥jss, olei liliorum, & unguis anseris, an. ℥j. ceroti aspi. descriptione Philagr. ℥ij. liquecant omnia simul, ceræ quantum sit satis, ut inde fiat cerotum satis molle.* When you have sufficiently used emollient things, fume the tumor with strong Vinegar and *Aqua vitæ* poured upon a piece of a Millstone, flint or brick heated very hot; for the so mollified humor will be rarified, attenuated and resolved; then some while after renew your emollients, and then again apply your resolvers to wast that which remains, which could not be performed together and at once; for thus *Galen* healed a *Scirrhus* in *Cercilus* his son. Goats dung is very good to discusse *Scirrhus* tumors; but the Emplaster of *Vigo* with a double quantity of Mercury is effectual above the rest, as that which mollifies, resolves and wasts all tumors of this kind.

Lib. 2. ad Glau.
The efficacy of
the Empl. of
Vigo with
Mercury.

CHAP. XXVI.

Of a Cancer already generated.

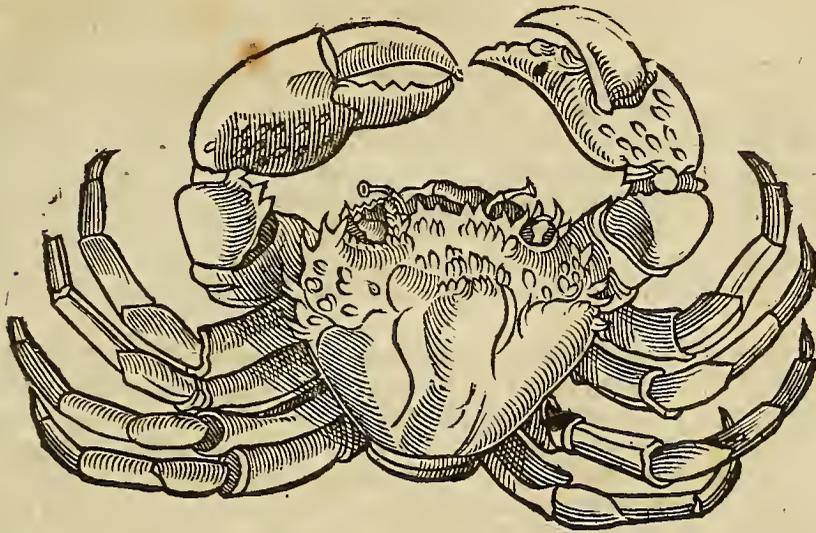
What a Cancer is.



Cancer is an hard tumor rough and unequal, round, immoveable, of an ash or livid colour, horrid by reason of the veins on every side, swollen with black blood, and spread abroad to the similitude of the stretched out legs and claws of a Crab. It is a tumor hard to be known at the first, as that which scarce equals the bigness of a Chick, or *Cicer*, after a little time it will come to the greatnesse of a Hasell nut, unless peradventure provoked by somewhat too acrid medicins it sodainly encrease being grown bigger, according to the measure of the encrease it torments the patient with pricking pain, with acrid heat, the grosse blood residing in the veins growing hot, and inferring a sense like the pricking of needles, from which notwithstanding the Patient hath oft-times some rest. But because this kind of tumor by the veins extended and spread about it like claws and feet, being of a livid and ash colour, associated with a roughness of the skin and tenacity of the humor, represents, as it were, the toothed claws of the Crab, therefore I thought it not amisse here to insert the Figure of the Crab, that so the reason both of the name and thing might be more perspicuous.

The nature of
the pain.
The reason of
the name.

The figure of the Crab, called Cancer in Latin.



CHAP. XXVII.

Of the causes, kinds, and prognosticks of a Cancer.



Here we acknowledge two causes of a *Cancer*, the antecedent, and conjunct. The antecedent cause depends upon the default of irregular diet, generating and heaping up grosse and feculent blood; by the morbifick affection of the Liver disposed to the generation of that blood; by the infirmity or weakness of the spleen in attracting and purging the blood; by the suppression of the Courses or Hemorrhoids, or any such accustomed evacuation. The conjunct cause is that gross and melancholick humor sticking and shut in the affected part as in a strait. That melancholick blood which is more mild, and less malign, only increased by a degree of more fervid heat, breeds a not ulcerated *Cancer*, but the more malign and acrid causes, an ulcerated. For so the humor which generated Carbuncles, when it hath acquired great heat, acrimony, and malignity, corrodes, and ulcerates the part upon which it alights. A *Cancer* is made more fierce and raging by meats inflaming the blood, by perturbations of the mind, anger, heat, and medicines too acrid, oily, and emplastick, unfitly applied, both for time and place.

Amongst the sorts or kinds of *Cancers*, there be two chiefly eminent, that is, the ulcerated or manifest *Cancer*, and the not ulcerated or occult. But of *Cancers* some possess the internall parts, as the Guts, Womb, Fundament; others the externall, as the Breasts; also there is a recent, or late bred *Cancer*, and also an inveterate one. There is one small, another great, one raging and malign, another more mild. Every *Cancer* is held almost incurable, or very difficult to be cured, for it is a disease altogether malign, to wit, a particular Leprosie. Therefore saith *Aetius*, a *Cancer* is not easily staid untill it hath eaten even to the innermost of the part which it possesses. It invades women more frequently than men, and those parts which are lax, rare, fungous, and glandulous, and therefore opportune to receive a defluxion of a grosse humor; such are the breasts and all the emunctories of the noble parts. When it possesses the breasts, it often causes inflammation to the armpits, and sends the swelling ever to the glandules thereof; whereupon the Patients do complain that a pricking pain, even pierces to their hearts. But this same pain also runs to the clavicles, and even to the inner side of the shoulder-blades and shoulders. When it is increased, and covers the noble parts, it admits no cure but by the hand; but in decayed bodies, whose strength fail, especially if the *Cancers* be inveterate, we must not attempt the cure, neither with instrument, nor with fire, neither by too acrid medicines, as potentiall cauteries: but we must only seek to keep them from growing more violent, and from spreading further, by gentle medicines, and a palliative cure. For thus many troubled with a *Cancer*, have attained even to old age. Therefore *Hippocrates* admonishes us, that it is better not to cure occult, or hidden *Cancers*; for the Patients cured (saith he) do quickly die, but such as are not cured live longer.

The causes of a *Cancer*.

The causes of a not ulcerated *Cancer*.

The sorts and differences of *Cancers*.

Aetius lib. 6.
The parts most subject to *Cancers*.

What *Cancers* one must not undertake truly to cure.

CHAP. XXVIII.

Of the Cure of a Cancer beginning, and not yet ulcerated.



Cancer beginning is oft hindered from encreasing, before it fasten its roots, but when it hath once encreased, it admits no cure but by iron, as that which contemns, by reason of the malignity & contumacy, the force of all medicines. Galen affirms, he cured a Cancer not ulcerated.

Lib. 2. ad Glau.

Now that cure is performed by medicines, purging melancholy, by Phlebotomy, when the strength and age of the Patient may well endure it, by shunning all things which may breed ill and fæulent blood. The distemper of the Liver must first be corrected, the Spleen next, as also the part affected; in men the Hæmorrhoides, in women their Courses must be procured.

Diet.

Therefore thick and muddy wines, vinegar, brown bread, cold herbs, old cheese, old and salted flesh, beef, venison, goat, hare, garlick, onions and mustard; and lastly all acrid, acid and other salt things, which may by any means incrassate the blood, and inflame the humors, must be eschewed. A cooling and humecting diet must be prescribed; fasting eschewed, as also watchings, immoderate labours, sorrow, cares, and mournings; let him use ptisans; and in his broths boil Mallows, Spinage, Lettuce, Sorrell, Purslain, Succory, Hops, Violets, Borrage and the four cold seeds. But let him feed on Mutton, Veal, Kid, Capon, Pullet, young Hares, Partridges, Fishes of stony rivers, rear Eggs; and use white wine but moderately for his drink.

How to handle the cancerous part.
Antidotes.
Asses milk.

The part affected with the Cancer must be gently handled, and not overburdened by over hard or heavy things, or by too solid or fat Emplaisters; on the contrary gentle and mitigating medicines must be used; applying also at certain times such things as resist venome or poyson, as Treacle and Mithridate. Asses milk is exceeding fit to assuage the acrimony of the cancerous humor. Therefore it must not only be taken inwardly, but also applied outwardly to the cancerous ulcer, making thereof a fomentation.

CHAP. XXIX.

Of the cure of an ulcerated Cancer.

The Signs.



AN Ulcerated Cancer hath many signs common with that which is not ulcerated, as the roundness of the tumor, the inequality, roughness, and pain; to the judgment of the eye, the tumor seems soft, but it is hard to the touch; the Ulcer is filthy, with lips, thick, swollen, hard, knotty, turned out, and standing up, having a horrid aspect, and casting forth ichorous, filthy, and carion-like filth, sometimes black, sometimes mixed with rotten filth, and otherwhiles with much blood. This kind of ulcer is malign, rebellious, and untractable, as that which contemns mild remedies, and becomes more fierce, by acrid and strong; the pain, fever, and all the symptoms being increased, from whence the powers are dejected, the wasting and consumption of the body follows and lastly death. Yet if it be small, and in a part which may suffer amputation, the body being first purged, and blood drawn, the strength of the Patient not disswading, it will be convenient to use the hand, and to take hold of, and cut away whatsoever is corrupt, even to the quick, that no fear of contagion may remain, or be left behind. The amputation finished, the blood must not be presently stopped, but permitted to flow out in some measure, yea verily pressed forth all about it, that so the veins swollen with black and melancholy blood may be disburdened. When you have taken a sufficient quantity of blood, the place must be seared with an actual cautery. For that will strengthen the part affected, draw forth the venenate quality, and also stay the defluxion. Then must you apply mitigating medicines, and procure the falling away of the Eschar. To conclude, that which remains, must be performed according to the cure of other ulcers. Now we know and understand that all the Cancer is cut away, and all the malignity thereof extinct, when the ulcer casts forth laudable matter, when that good flesh begins to grow by little and little, like to the grains of a Pomegranat, the pricking pain, and all the symptoms being asswaged. Yet the cure of an ulcerated Cancer which shall possess the lips may be more happily and mildly performed, no caustick medicine being applied after section, so also that scarce any deformity will be left, when it is cicatrized. Which new and never formerly tried, or written of way, as far as I know, I found and performed in a man of fifty years old. Doctor John Altine, a most learned Physician being called to Counsell, James Guillemeau, and Master Eustachius the Kings Chirurgeons, and John Le Jeune the Duke of Guise his most worthy Chirurgeon being present.

How & where a Cancer may be cut away.
What to be observed in cutting away a Cancer.
The benefit of applying a cautery after amputation of the Cancer.

Signs that a Cancer is well taken away.

The way is this; The Cancer must be thrust through the lips on both sides, above and below

below with a needle and thred, that so you may rule and govern the *Cancer* with your left hand, by the benefit of the thred (lest any portion thereof should scape the instrument in cutting) and then with your Siziers in the right hand, you may cut it off all at once; yet it must be so done, that some substance of the inner part of the lip, which is next to the teeth may remain, (if so be that the *Cancer* be not grown quite through) which may serve as it were for a foundation to generate flesh to fill up the hollownes again. Then when it hath bled sufficiently, the sides and brinks of the wound must be scarified on the right and left sides, within, and without, with somewhat a deep scarification, that so (when we would draw together the sides and lips of the wound, by that manner of stitching, which is used in an hare lip) we may have the flesh more pliant and tractable to the needle and thred. The residue of the cure must be performed just after the same manner as we use in hare lips; of which we shall treat hereafter.

A new and observable way of taking away a *Cancer* from the lip.

CHAP. XXX.

Of the Topicke medicines to be applied to an ulcerated, and not ulcerated *Cancer*.



At the beginning use repercussive medicines, such as are the juices of Nightshade, Plantain, Henbane, Lettuce, Sorrell, Houfeleek; Water Lentill or Ducks meat, Knotgrasse, Pomegranates, and the like. Also *oleum rosarum omphacinum*, the powders of Sumach, Berberies, Litharge, Ceruse, Burnt-lead, Tutia, Quicksilver, and the like. Of which you may compose Fomentations, Liniments, Ointments, Cataplasmes, Emplaisters. *Emplastrum Diacalcitheos* dissolved with juice of Nightshade, and oil of Roses is very fit for not ulcerated *Cancers*. *Pompholix*, or Tutia, washed in juice of Nightshade, or Plantain, is very good for ulcerated *Cancers*. Besides this following medicine is very commendable.

Repelling medicines.

Rx Lytharg. & cerus. an. ʒj, terantur in mortario plumb. cum oleo rosar. donec reducantur ad consistentiam linimenti vel unguenti; and there may be use of a resolving and repercussive ointment, as *Rx plumbi usti loti, pomphol. thuris, an. ʒijʒ, absinth. pontic. ʒʒ, olei rosarum ʒiij, ceræ ʒvj, succi solani, quantum sufficit ad unguenti crassitudinem.* They very much commend *Theodorickes Emplaister* to asswage the pain of ulcerated *Cancers*.

Rx olei ros. ceræ alb. an. ʒijʒ, succi granat. & solani, an. ʒij, cerusæ lotæ ʒj, plumbi usti, loti, & tuthiæ prepar. an. ʒʒ, thuris, mastich. an. ʒij, fiat empl. molle. This following ointment I have often used with good successe,

Theodorickes Emplaister.

Rx Theriac. veter. ʒj, succi cancerorum ʒʒ, succi lactucæ & olei rosar. an. ʒijʒ, vitel. ovorum sub cinerib. coct. ij, camphor. ʒʒ. pistentur omnia in mortario plumb. & fiat unguentum.

Rx Spum. argent. axungia porci recentis, ceræ alb. an. ʒʒ, olei boni ʒvij, vitel. ovorum assat. iij, fiat unguent. servetur usui. And when you will use it, mix it with a little ointment of Roses. I have also mitigated great pain by applying Leaches to an un ulcerated *Cancer*, in that part where the torment was most vehement, by disburdening the part of some portion of the malign humor; which same thing I have done by application of yong Whelps, or Kitlings, or Pidgeons, or Chickens cut long waies, and presently applied to the ulcer, and now and then changed as soon as their heat seems dissolved; and others applied for the naturall heat in an anodyne or mitigating medicine. *John Baptista Theodosius* in his Epistles, writes, that a cataplasme of the herb *Erysimum* or Cadlock, being beaten, is very good to be applied to a *Cancer* not ulcerated; but if the *Cancer* be ulcerated, he boils this same herb in *Hydromel*, and so by injections and lotions clenfes the ulcer, and mitigates the pain. If the *Cancer* affect the womb, the patient feels the pricking of the pain in the groins above the *pecten*, and in the Kidneyes, and is often troubled with a difficulty of making water; but when it is ulcerated it poures forth filth or matter exceeding stinking and carion-like, and that in great plenty; the filthy vapour of which carryed up to the heart and brain causes often fwounding. Now to mitigate the pains of such like places, the following medicines are of good use.

Leaches.

The application of Whelps, Chickens, &c.

Epist. 21.
The estate of *Erysimum*.
The signs of the *Cancer* in the womb.

Rx Mucag. semin. lini; sænigr. extract. in aqua rosar. & plantaginis quod satis est; Of this being warm make a fomentation.

Rx Rad. Athæ ʒʒ. coquatur in hydromelite, pistetur & trājiciatur, addendo olei rosar. parum, fiat Cataplasma. Also you shall make divers pessaries according to the different kinds of pain; also make injections of the juice of Plantain, Knotgrasse, Lettuce, Purslain mixed together, and agitated or laboured in a leaden mortar with a little oil of Roses; for this kind of medicine is commended by *Galen* in every kind of ulcerated *Cancers*. Also this following water is very profitable, and often approved by me. *Rx Stercoris bubuli ʒiij, herbæ Roberti, plantag. sempervivi, hysciami, portulac. lactuc. endiv. an. m. j. canros fluviatiles, num. xij.* let them be all beaten together and distilled in a leaden Alembick, keep the liquor for use and with it make often injection into the part; or if the site of the part will permit, let the cancerous ulcers be washed therewith, and pledgets of lint steeped therein, be applyed and renewed

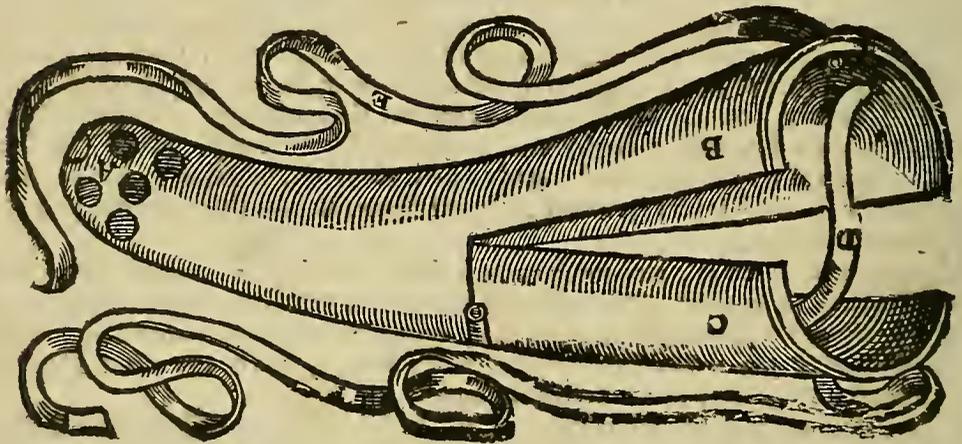
Lib. 9. Simplic.

Lib. 4. de comp.
med. secundum
gen.

ever and anon; for so the acrimony and force of the inflammation is retunded, and the pain asswaged. *Galen* beats into powder river Crabs burnt; the powder mixed with ointment of *Roses* is most profitably applied upon lint to cancerous ulcers.

It will be very convenient to put into the neck of the womb the following instrument made of Gold or Silver, whereby the cancerous filth may have free and safe passage forth, and the filthy and putredinous vapors may more easily breath forth. Therefore let it be hollow quite through, some five or six fingers long, and about the bigness of ones thumb, at the upper end, perforated with many holes whereby the filth may have passage forth. Let the outer or lower end be some two fingers thick in the circumference, make it with a neat spring, that may hold that end open more, or less, according to the Physitians mind; let there be two strings or laces put unto it, by which being tyed before and behind to the rowler, with which the woman shall girt her loins, the Device may be kept from falling, as you may see in the following figure.

A Vent made like a Pessary for the womb affected
with a cancerous ulcer.



- A. Shews the upper end perforated with five or six holes.
B. The lower end.
C. That part of the end which is opened by the spring, which is marked with the Letter D.
EE. The strings or laces.

Lib. 6. simp.
Plates of Lead.

A History.

Neither is that remedy for not ulcerated *Cancers* to be contemned, which consists of a plate of lead besmeared with *Quick-silver*; for *Galen* himself testifies that lead is a good medicine for malign and inveterate ulcers. But *Guido Cauliacensis* is a witness of ancient credit and learning, that such plates of lead rubbed over with *Quick-silver*, to such malign ulcers as contemn the force of other medicines, are as it were *Antidotes*, to waite and overcome their malignity and evill nature. This kind of remedy, when it was prescribed by that most excellent Physitian *Hollerius*, who commanded me to apply it to the Lady of *Montigni* Maid of Honour to the Queen mother, troubled with a *Cancer* in her left brest, which equalled the bigness of a *Wallnut*, did not truly thoroughly heal it, yet notwithstanding kept it from further growth. Wherefore at the length growing weary of it, when she had committed herself to a certain Physitian boldly promising her quick help, she tryed with losse of her life, how dangerous, and disadvantageous the cure of a *Cancer* was, which is undertaken according to the manner of healing other ulcers; for this Physitian, when he had cast away this our medicine, and had begun the cure with mollifying, heating and attractive things, the pain, inflammation and all the other symptomes encreasing the tumor grew to that bignesse, that being the humor drawn thither could not be contained in the part it self, it stretched the brest forth so much, that it broke it in the middle, just as a *Pomgranat* cleaves when it comes to its full maturity; whereupon an immoderate flux of blood following, for staying whereof he was forc't to strew caustick powders thereon; but by this means the inflammation and pain becoming more raging, and swoundings coming upon her, she poor Soul in stead of her promised health, yeilded up her ghost in the Physitians bosome.

CHAP. XXXI.

Of the Feaver which happeneth in Scirrhus Tumors.

Such a Feaver is a Quartain, or certainly coming near unto the nature of a Quartain, by reason of the nature of the Melancholick humor of which it is bred. For this shut up in a certain feat in which it makes the tumor, by communication of putrid vapours heats the heart above measure, & enflames the humors contained therein, whence arises a Feaver. Now therefore a quartain is a Feaver coming every fourth day, and having two dayes intermission.

The primitive causes thereof are these things which increase Melancholick humors in the body, such as the long eating of pulse, of course and burnt bread, of salt flesh and fish, of gross meats, as Beef, Goat, Venison, old Hares, old Cheese, Cabbage, thick and muddy wines and other such things of the same kind.

The antecedent causes are a heaped up plenty of Melancholick humors abounding over all the body. But the conjunct causes are Melancholick humors putrefying without the greater vessels, in the small veins and habit of the body.

We may gather the signs of a Quartain feaver from things which they call naturall, not naturall, and against nature; from things naturall, for a cold and dry temper, old age, cold and fat men, having their veins small, and lying hid, their spleen swollen and weak, are usually troubled with quartain Feavers.

Of things not naturall; this Feaver, or Ague is frequent in Autumne, not only because, for that it is cold and dry, it is fit to heap up Melancholick humors; but chiefly by reason that the humors by the heat of the preceding Summer are easily converted into adust Melancholy, whence far worse and more dangerous quartains arise, than of the simple Melancholick humor; to conclude, through any cold or dry season in a region cold and dry, men that have the like Temper easily fall into quartains; if to these painfull kind of life full of danger and sorrow doth accrew.

Of things contrary to nature; because the fits take one with painfull shaking, inferring as it were the sense of breaking or shaking the bones; further it taketh one every fourth day with an itching over the whole body, and oft-times with a thin skurfe and pustules, especially on the legs; the pulse at the beginning is little, slow, and deep, and the urine also is then white and waterish, inclining to somewhat a dark colour.

In the declination when the matter is concocted the urine becomes black, not occasioned by any malign Symptome or preternaturall excess of heat, (for so it should be deadly) but by excretion of the conjunct matter. The fit of the Quartain continues 24 houres, but the intermission is 48 houres. It often takes its originall from an obstruction, pain, and Scirrhus of the Spleen, and of the suppression of the courses and Hæmorrhoides.

Quartains taken in the Summer are for the most part short, but in the Autumn long, especially such as continue till Winter. Those which come by succession of any disease of the Liver, Spleen, or any other precedent disease are worse than such as are bred of themselves, and commonly end in a Dropsie. But those which happen without the fault of any bowels, and to such a patient, as will be governed by the Physician in his Diet, infer no greater harm, but free him from more grievous and long diseases, as Melancholy, the Falling sickness, Convulsions, Madness, because the Melancholy humor, the author of such diseases is expelled every fourth day by the force of the fit of the Quartain.

A Quartain Feaver, if there be no error committed, commonly exceeds not a year, for otherwise some Quartains have been found to last to the twelfth year according to the opinion of Avicen: the Quartain beginning in Autumn is oft-times ended in the following spring; the Quartain which is caused by adust blood, or choler, or Salt flegm, is more easily and sooner cured, than that which proceeds from an adust Melancholy humor; because the Melancholy humor, terrestriall of its own nature, and harder to be dissolved than any other humor, is again made by adustion (the subtiler parts being dissolved and the grosser subsiding) more stubborn, gross, malign, and acrid. The cure is wholly absolved by two means, that is, by Diet and medicines. The diet ought to be prescribed contrary to the cause of the Feaver in the use of the six things not naturall, as much as lyes in our power. Wherefore the Patient shall eschew Swines flesh, flatulent, viscid and glutinous meats, fenny fowls, salt meats and Venison, and all things of hard digestion. The use of white wine indifferent hot and thin, is convenient to attenuate and incide the gross humor, and to move urine and sweat; yea verily at the beginning of the fit a draught of such wine will cause vomiting, which is a thing of so great moment, that by this one remedy many have been cured. Yet if we may take occasion and opportunity to provoke vomit there is no time thought fitter for that purpose than presently after meat; for then it is the sooner provoked, the fibers of the stomach being humected and relaxed, and the stomach is sooner turned to vomiting, whereupon follows a more plentiful, happy & easie evacuation of the Phlegmaticke and Cholerick humor, and less troublesome to nature: and of all the cru-

Why a quartain happens upon scirrhus tumors.

The signs.

Why they are frequent in Autumne.

Prognostick.

From what diseases a quartain frees one.

Diet.

How much vomiting prevails to cure a quartain.

dities with which the mouth of the ventricle abounds in a Quartane, by reason of the more copious afflux of the Melancholick humor, which by his qualities cold and dry, disturbs all the actions and naturall faculties. Moreover exercises and frictions are good before meat; such passions of the mind as are contrary to the cause from which this Feaver takes his originall, are fit to be cherished by the patient; as Laughter, Jestings, Musick, and all such like things full of pleasure and mirth. At the beginning the patient must be gently handled and dealt withall, and we must abstain from all very strong medicines untill such time, as the disease hath been of some continuance. For this humor, contumacious at the beginning when as yet nature hath attempted nothing, is again made more stubborn, terrestriall and dry, by the almost fiery heat of acrid medicines. If the body abound with blood, some part thereof must be taken away by opening the Median or Basilik vein of the left arm, with this caution, that if it appear more gross and black, we suffer it to flow more plentifully; if more thin, and tintured with a laudable red colour that we presently stay it. The matter of this feaver must be ripened, concocted and diminished with the Syrups of *Ephithimum*, of *Scolopendrium*, of Mayden hair, Agrimony, with the waters of Hops, Bugloss, Borage and the like. I sincerely protest, next unto God, I have cured very many quartains by giving a portion of a little Treakle dissolved in about some two ounces of *Aqua vita*, also sometimes by two or three grains of Musk dissolved in Muskadine, given at the beginning of a particular fit towards the generall declination of the disease, after generall purgations the humor and body being prepared, and the powers strong; And certainly an inveterate Quartain can scarce ever bee discussed unless the body be much heated with meats and medicines. Therefore it is not altogether to be disproved which many say, that they have driven away a quartain by taking a draught of wine every day as soon as they came forth of their bed, in which some leaves of Sage had been infused all the night. Also it is good a little before the fit to anoint all the spine of the back with oyls heating all the nervous parts, such as are the oyl of Rue, Walnuts, of the Peppers, mixing therewith a little *Aqua vite*, but for this purpose the oyl of *Castoreum* which hath been boyled in an apple of *Coloquintida*, the Kernels taken out, upon hot coles to the consumption of the half part, mixing therewith some little quantity of the powders of Pepper, Pelitory of *Spain* and *Euphorbium*, is excellent. Certainly such like Inunctions are good not only to mitigate the vehemency of the terrible shaking, but also to provoke sweats; for because by their humid heat they discuss this humor being dull and rebellious to the expulsive faculty, for the Melancholy is as it were the dross and mud of the blood. Therefore if on the contrary the Quartain Feaver shall be caused by adust choler wee must hope for and expect a cure by refrigerating and humective medicines, such as Sorrell, Lettuce, Purslane, broths of the decoction of Cowcumbers, Gourds, Mellons and Pompions. For in this case if any use hot medicines, he shall make this humor most obstinate by the resolving of the subtiler parts. Thus *Trallianus* boasts that he hath cured these kinds of Quartane Feaver by the only use of refrigerating *Epithemae*s being often repeated a little before the beginning of the fit. And this is the sum of the Cure of true and legitimate intermitting Feavers. That is, of those which are caused by one simple humor, whereby the Cure of those which they call bastard intermitting Feavers, may be easily gathered and understood; as which are bred by a humor impure and not of one kind, but mixt or composed by admixture of some other matter; for example, according to the mixture of divers humors Phlegmatick and cholericke, the medicines must also be mixt, as if it were a confused kind of Feaver of a *Quotidian* and *Tertian*; it must be cured by a medicine composed of things evacuating flegm and choler.

Medicines.

What quartains must be cured with refrigerating things.

What bastard Agues are, and how they must be cured.

CHAP. XXXII.

Of an Aneurisma, that is, the dilatation, or springing of an Artery, Vein, or Sinew.

What it is.

An *Aneurisma* is a soft tumor yeelding to the touch, made by the blood and spirit powred forth under the flesh and Muscles, by the dilatation or relaxation of an Artery. Yet the Author of the definitions seems to call any dilatation of any venous vessell by the name of an *Aneurisma*. *Galen* calls an *Aneurisma* an opening made of the *Anastomasis*, of an Artery. Also an *Aneurisma* is made when an Artery that is wounded closeth too slowly, the substance which is above it being in the mean time agglutinated, filled with flesh and cicatrized, which doth not seldome happen in opening of Arteries unskilfully performed and negligently cured; therefore *Aneurismae* are absolutely made by the *Anastomasis*, springing, breaking, *Erosion*, and wounding of the Arteries. These happen in all parts of the body, but more frequently in the throat, especially in women after a painfull travail. For when as they more strongly strive to hold their breath, for the more powerfull expulsion of the birth, it happens that the Artery is dilated and broken, whence follows an effusion of blood and spirits under the skin. The signs are, a swelling one while great, another small, with a pulsation and a colour not varying from the native constitution of the skin. It is a soft tumor, and so yeelding to the impression

In what parts they chiefly happen.

of the fingers that if it peradventure be small, it wholly vanisheth, the Arterious blood and spirits flying back into the body of the Artery, but presently as soon as you take your fingers away, they return again with like celerity. Some *Aneurismaes* do not only when they are pressed, but also of themselves make a sensible hissing, if you lay your ear near to them, by reason of the motion of the vitall spirit rushing with great violence through the straitness of the passage.

Wherefore in *Aneurismaes* in which there is a great rupture of the Artery, such a noise is not heard, because the spirit is carryed through a larger passage. Great *Aneurismaes* under the Arm pits, in the Groins and other part wherein there are large vessels, admit no cure, because so great an eruption of blood and spirit often follows upon such an incision, that death prevents both Art and Cure. Which I observed a few years ago in a certain Priest of Saint Andrews of the Arches, Mr. John Maillet, dwelling with a chief President Christopher de Thou. Who having an *Aneurisma* at the setting on of the shoulder about the bigness of a Wall-nut, I charged him, he should not let it be opened, for if he did it would bring him into manifest danger of his life, and that it would be more safe for him to break the violence thereof with double clothes steeped in the juyce of Night-shade & Houfseek, with new and whey cheefe mixt therewith: Or with *Vnguentum de Bolo* or *Emplastrum contra rupturam* and such other refrigerating and astringent medicines, if he would lay upon it a thin plate of Lead, and would use shorter breeches that his doublet might serve to hold it too, to which he might fasten his breeches in stead of a swath, & in the mean time he should eschew all things which attenuate and inflame the blood, but especially he should keep himself from all great straining of his voice. Although he had used his diet for a yeer, yet he could not so handle the matter but that the tumor increased, which he observing goes to a Barber, who supposing the tumor to be of the kind of vulgar impostumes, applies to it in the Evening a Caustick causing an Eschar so to open it. In the Morning such an abundance of blood flowed forth from the tumor being opened, that he therewith astonished, implores all possible ayd, and bids that I should be called to stay this his great bleeding, and he repented that he had not followed my directions. Wherefore I am called, but when I was scarce over the threshold, he gave up his ghost with his blood. Wherefore I diligently admonish the young Chirurgion that he do not rashly open *Aneurismaes* unless they be smal in an ignoble part, and not indued with large vessels, but rather let him perform the cure after this manner. Cut the skin which lyes over it untill the Artery appear, and then separate it with your knife from the particles about it, then thrust a blunt and crooked needle with a thred in it under it, bind it, then cut it off and so expect the falling off of the thred of it self while nature covers the orifices of the cut Artery with new flesh, then the residue of the cure may be performed after the manner of simple wounds. The *Aneurismaes* which happen in the internall parts are incurable. Such as frequently happen to those who have often had the unctio and sweat for the cure of the French disease, because the blood being so attenuated and heated therewith that it cannot be contained in the receptacles of the Artery, it distends it to that largeness as to hold a mans Fist; Which I have observed in the dead body of a certain Taylor, who by an *Aneurisma* of the Arterious vein suddenly whilst he was playing at Tennis fell down dead, the vessel being broken: his body being opened I found a great quantity of blood powred forth into the capacity of the Chest, but the body of the Artery was dilated to that largeness I formerly mentioned, and the inner coat thereof was bony. For which cause within a while after I shewed it to the great admiration of the beholders in the Physicians School whilst I publicly dissected a body there; the whilst he lived said he felt a beating and a great heat over all his body by the force of the pulsation of all the Arteries, by occasion whereof he often swooned. Doctor Sylvius the Kings professor of Physick at that time forbad him the use of Wine, and wished him to use boyled water for his drink, and Curds and new Cheeses for his meat, and to apply them in form of Cataplasms upon the grieved and swoln part. At night he used a ptisan of Barly meal and Poppy-seeds, and was purged now and then with a Clyster of refrigerating and emollient things, or with Cassia alone, by which medicines he said he found himself much better. The cause of such a bony constitution of the Arteries by *Aneurismaes* is, for that the hot and fervid blood first dilates the Coats of an Artery, then breaks them; which when it happens, it then borrows from the neighbouring bodies a fit matter to restore the loosed continuity thereof.

This matter whilst by little and little it is dryed and hardened, it degenerates into a gristly or else a bony substance, just by the force of the same materiall and efficient causes, by which stones are generated in the reins and bladder. For the more terrestriall portion of the blood is dryed and condensed by the power of the unnaturall heat contained in the part affected with an *Aneurisma*; whereby it comes to pass that the substance added to the dilated and broken Artery is turned into a body of a bony consistence. In which the singular providence of nature, the handmaid of God is shewed, as that which, as it were by making and opposing a new wall or bank, would hinder and break the violence of the raging blood swelling with the abundance of the vitall spirits; unless any had rather to refer the cause of that hardness to the continuall application of refrigerating and astringent medicines

Prognostick

A History

Aneurismaes must not rashly be opened

How they must be cured.

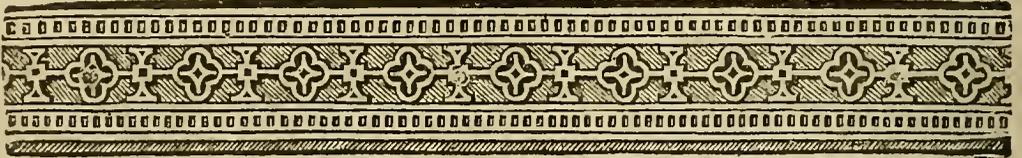
These of the inward parts incurable.

A History

Lib. 4. Cap. ult.
de prof. ex pul-
su.
A Caution in
the knowing of
Aneurismaes.

medicines. Which have power to condensate and harden, as may not obscurely be gathered by the writings of *Galen*. But beware you be not deceived by the forementioned signs; for sometimes in large *Aneurismaes* you can perceive no pulsation, neither can you force the blood into the Artery by the pressure of your fingers, either because the quantity of such blood is greater than which can be contained in the ancient receptacles of the Artery, or because it is condensate and concrete into clods, whereupon wanting the benefit of ventilation from the heart, it presently putrefies; Thence ensue great pain, a Gangren, and mortification of the part, and lastly the death of the Creature.

The End of the Seventh Book.



O F
PARTICULAR
TUMORS
AGAINST NATURE.

THE EIGHT BOOK.

The Preface.

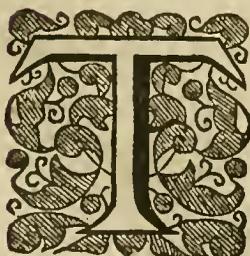
Because the Cure of diseases must be varied according to the variety of the temper, not only of the body in generall, but also of each part thereof; the strength; figure, form, site, and sense thereof being taken into consideration: I think it worth my pains, having already spoken of Tumors in generall, if I shall treat of them in particular which affect each part of the body, beginning with those which assail the head. Therefore the Tumor either affects the whole head, or else only some particle thereof, as the Eyes, Ears, Nose, Gums and the like. Let the *Hydrocephalos*, and *Physocephalos* be examples of those tumors which possess the whole head.

CHAP. I.

Of an Hydrocephalos or watry tumor which commonly affects the heads of Infants.

What it is.

The causes.



The Greeks call this disease *Hydrocephalos*, as it were a Dropsie of the Head, by a waterish humor; being a disease almost peculiar to Infants newly born. It hath for an externall cause the violent compression of the head by the hand of the Midwife or otherwise at the birth, or by a fall, contusion and the like. For hence comes a breaking of a vein, or Artery, and an effusion of the blood under the skin. Which by corruption becoming whayish, lastly degenerateth into a certain waterish humor. It hath also an inward cause, which is the abundance of serous and acrid blood, which by its tenuity and heat

Differences by reason of place.

sweats through the pores of the vessels, sometimes between the Musculous skin of the head and the *Pericranium*, sometimes between the *Pericranium* and the skull, and sometimes between the skull and the membrane called *Dura mater*, and otherwhiles in the ventricles of the brain.

The signs of it, contained in the space between the Musculous skin and the *Pericranium*, are a manifest tumor without pain, soft, and much yeelding to the pressure of the fingers. The Signs when it remaineth between the *Pericranium* and the skull, are for the most part like the forenamed, unless it be that the Tumor is a little harder, and not so yeelding to the finger; by reason of the parts between it and the finger; And also there is somewhat more sense of pain. But when it is in the space between the skull and *Dura mater*, or in the ventricles of the Brain or the whole substance thereof, there is a dulness of the senses as of the sight and hearing; the tumor doth not yeeld to the touch, unless you use strong impression, for then it sinketh somewhat down, especially in infants newly born; who have their skulls almost as soft as waxe, and the junctures of their Sutures laxe, both by nature, as also by accident, by reason of the humor contained therein moistening and relaxing all the adjacent parts; the humor contained here lifts up the skull somewhat more high, especially at the meetings of the Sutures, which you may thus know, because the Tumor being pressed, the humor flies back into the secret passage of the Brain.

Signe.

To conclude, the pain is more vehement, the whole head more swollen, the forehead stands somewhat further out, the eye is fixt and immoveable, and also weeps by reason of the ferous humor sweating out of the brain.

Vesalius writes that he saw a girl of two yeers old, whose head was thicker than any mans head by this kind of Tumor, and the skull not bony, but membranous, as it useth to be in abortive births, and that there was nine pound of water ran out of it.

A History.

Abucrafis tels that he saw a child whose head grew every day bigger by reason of the watery moisture contained therein, till at length the tumor became so great, that his neck could not bear it neither standing nor sitting, so that he died in a short time. I have observed and had in cure four children troubled with this disease, one of which being dissected after it died, had a brain no bigger than a Tennis Ball. But of a Tumor and humor contained within under the *Cranium*, or Skull, I have seen none recover, but they are easily healed of an external Tumor.

Therefore whether the humor lye under the *Pericranium*, or under the musculous skin of the head, it must first be assayed with resolving medicines, but if it cannot be thus overcome, you must make an incision, taking heed of the Temporall Muscle, and thence press out all the humor, whether it resemble the washing of flesh newly killed, or blackish blood, or congealed or knotted blood, as when the tumor hath been caused by contusion; then the wound must be filled with dry lint, and covered with double boulders, and lastly, bound with a fitting ligature.

CHAP. XI.

Of a Polypus being an eating disease in the Nose.



The Polypus is a Tumor of the Nose against nature, commonly arising from the *Oethmoides* or spongy bone. It is so called, because it resembles the feet of a Sea Polypus in figure, and the flesh thereof in consistence. This Tumor stops the Nose, intercepting and hindering the liberty of speaking and blowing the Nose. *Celsus* saith the Polypus is a caruncle of excrecence, one while white, another while reddish, which adheres to the bone of the Nose, and sometimes fills the Nostrils hanging towards the lips, sometimes it descends back through that hole, by which the spirit descends from the Nose to the throttle; it grows so that it may be seen behind the *Vulva*, and often strangles a man by stopping his breath. There are five kinds thereof, the first is, a soft membrane, long and thin like the relaxed and depressed *Vulva*, hanging from the middle gristle of the nose, being filled with a Phlegmatick and viscid humor. This in expiration hangs out of the nose, but is drawn in and hid by inspiration; it makes one snaffle in their speech and snort in their sleep. The second hath hard flesh, bred of Melancholy blood without adustion, which obstructing the nostrils intercepts the respiration made by that part. The third, is flesh hanging from the Gristle, round, and soft, being the off-spring of Phlegmatick blood. The fourth is an hard Tumor, like flesh, which when it is touched yeelds a sound like a stone; it is generated of Melancholy blood dried, being somewhat of the nature of a *Scirrhus* confirmed and without pain.

The reason of the name.

Lib. 6. Cap. 8.

The differences hereof.

The fifth is as it were composed of many cancerous ulcers spread over the transverse surface of the gristle.

Of all these sorts of Polypi some are not ulcerated, others ulcerated, which send forth a stinking and strong smelling filth. Such of them as are painfull, hard, resisting, and which have a livid, or leaden color, must not be touched with the hand, because they favour of the Nature of a Cancer, as into which they oft degenerate; yet by reason of the pain which oppresses more violently, you may use the Anodyne medicines formerly described in a Cancer, such as this following.

Which of these admit no manual operation.

Rc Olei de vitell. ovorum ℥ ij, *Lytharg. auri*, & *Tuthie præp. an.* ℥ i, *succi plat. solani an.* ℥ i β, *Lapid. hematit.* & *camphoræ, an.* ℥ β. Let them be wrought a long time in a leaden mortar, and so make a medicine to be put into the nostrills. Those which are soft, loose and without

An Anodyne.

out

out pain, are sometimes curable, being plucked away with an instrument made for that purpose, or else wasted by actuall cauteries put in through a pipe, so that they touch not the sound part; or by potentiall cauteries, as *Egyptiacum* composed of equall parts of all the simples with vitrioll which hath a faculty to waste such like flesh. *Aqua fortis* and oyl of vitrioll have the same faculty, for these take away a *Polypus* by the roots; for if any part thereof remain it will breed again. But Cauteries and acrid medicines must be put into the nostrills with this Caution, that in the mean time cold repelling and astringent medicines be applyed to the nose and parts about it to asswage the pain, and hinder the inflammation. Such as are *Vnguentum de bolo*, and *Vnguentum nutritum*, whites of Eggs beat with Rose leaves, and many other things of the like nature.

CHAP. III.

Of the Parotides, that is, Certain swellings about the Ears.

What it is.

The differenc-
ces.
Their signs and
Symptomes.



The *Parotis* is a Tumor against nature, affecting the Glandules and those parts seated behind and about the Ears, which are called the Emunctories of the brain; for these because they are loose and spongy, are fit to receive the excrements thereof. Of these some are criticall, the matter of the disease somewhat digested being sent thither by the force of nature Others Symptomatically, the excrements of the brain increased in quantity or quality rushing thither of their own accord. Such abscesses often have great inflammation joyned with them, because the biting humor which flows thither is more vitiated in quality than in quantity. Besides also they often cause great pain, by reason of the distention of the parts indued with most exquisite sense, as also by reason of a Nerve of the fifth Conjugation spread over these parts; as also of the neighbouring membranes of the brain, by which means the patient is troubled with the Head-ach and all his face becomes swoln. Yet many times this kind of Tumor useth to be raised by a tough, viscous, and gross humor.

Prognostick.

This disease doth more grievously afflict young men than old; it commonly brings a Feaver and watching: It is difficult to be cured, especially when it is caused by a gross, tough, and viscid humor, sent thither by the *Crisis*.

The cure.

Lib. 3. de comp.
med. sec. Locos.
Hip. aph. 21.
lib. 1.

The cure must be performed by diet, which must be contrary to the quality of the humor in the temper and consistence of the meats. If the inflammation and redness be great, which indicate abundance of blood, Phlebotomy will be profitable, yea very necessary. But here we must not use the like judgment in application of locall medicines as we do in other tumors, as *Galen* admonisheth us; that is, we must not use repercutives at the beginning, especially if the abscess be criticall; for so we should infringe or foreslow the endeavors of nature forcibly freeing it self from the morbidique matter. But we must much less repell or drive it back if the matter which hath flowed thither be venenate, for so the reflow thereof to the noble parts would prove mortall. Wherefore the Chirurgeon shall rather assist nature in attracting and drawing forth that humor. Yet if the defluxion shall be so violent, if the pain so fierce that thence there may be fear of watchings and a Feaver, which may deject the powers, *Galen* thinks it will be expedient with many resolving medicines to mix some repelling. Wherefore at the beginning let such a Cataplasme be applyed.

Gentle resolving
medicines.

Rx. Far. bord. & sem. lin. ana ℥ ij, coquantur cum mulso. aut decocto cham. addendo but. recen. & olei cham. ana ℥ i, fiat cataplasma. And the following oyntment will also be good.

Rx. But. recen. ℥ ij; olei cham. & lilior. an. ℥ i, unguen. de Althea ℥ β, cer. e parum: make an oyntment to be applyed with moist and greasie wooll, to mitigate the pain: also somewhat more strong discussing and resolving medicines will be profitable, as:

Stronger re-
solvents.

Rx. Rad. Althee & bryon. an. ℥ ij, fol. ratae, puleg. orig. an. m. j, flo. chamem. melil. an. p. j, coquantur in hydromelite, pistentur, trajiciantur, addendo farin. fenugrac. orobi. an. ℥ i, pul. Ireos, cham. melilot. an. ℥ ij, olei aneth. rutac. an. ℥ i, fiat cataplasma. But if you determine to resolve it any more, you may use *Emplastrum Oxycroceum* & *Melilot-Plaister*. If the humor doth there concrete and grow hard, you must betake you to the medicines which were prescribed in the Chapter of the *Scirrhus*; but if it tend to suppuration, you shall apply the following medicine.

A Ripening
medicines.

Rx. Rad. liliorum & ceparum sub cineribus cocti. an. ℥ iij, Vitell. ovor. num. ij. axung. suilla & unguen. basilicon, an. ℥ i; sari. sem. lini ℥ i β, fiat Cataplasma. But if the matter do so require, let the tumor be opened as we have formerly prescribed.

C H A P. IIII.

Of the Epulis, or overgrowing of the flesh of the Gums.



The *Epulis* is a fleshy excrecence of the Gums between the teeth, which is by little and little oft-times encreased to the bigness of an Egge, so that it both hinders the speech and eating; it casts forth salivous and stinking filth, and not seldome degenerates into a *Cancer*, which you may understand by the propriety of the colour, pain and other accidents; for then you must by no means touch it with your hand. But that which doth not torment the Patient with pain, may be pluckt away; and let this be the manner thereof.

Let it be tyed with a double thred, which must be straiter twitched untill such time as it fall off; when it shall fall away, the place must be burnt with a cautery put through a trunk or pipe, or with *Aqua fortis*, or oyl of *Vitrioll*, but with great care that the sound parts adjoining thereto be not hurt, for if so be that it be not burnt, it usually returns.

I have often by this means taken away such large tumors of this kind, that they hung out of the mouth in no small bigness, to the great disfiguring of the face, which when as no Chirurgeon durst touch, because the flesh looked livid, I ventured upon because they were free from pain; and by taking them away and cauterizing the place, I perfectly healed them; not truly sodainly, and at once; for although I burnt the place after dissection; yet nevertheless they sprung up again, because a certain portion of the bone and sockets in which the Teeth stand fastened, were become rotten. I have often observed such like flesh by continuance of time to have turned into a gristly and bony substance. Wherefore the cure must be begun as speedily as may be; for being but little, and having fastened no deep roots, it is more easily taken away, being then only filled with a viscid humor, which in success of time is hardered, and makes the taking away thereof more difficult.

What it is.

The Symp-
tomes.The Chirurge-
call cure.Why the cure
must not be
deferred.

C H A P. V.

Of the Ranula.



Here is oft-times a tumor under the tongue, which takes away the liberty of pronuntiation or speech; wherefore the Greeks call it *Batrachium*, the Latins *Ranula*, because such as have this disease of the tongue, seem to express their minds by croaking rather than by speaking.

It is caused by the falling down of a cold, moist, gross, tough, viscid and phlegmatick matter, from the brain upon the tongue, which matter in colour and consistence resembles the white of an egge, yet sometimes it looks of a citrin or yellowish colour.

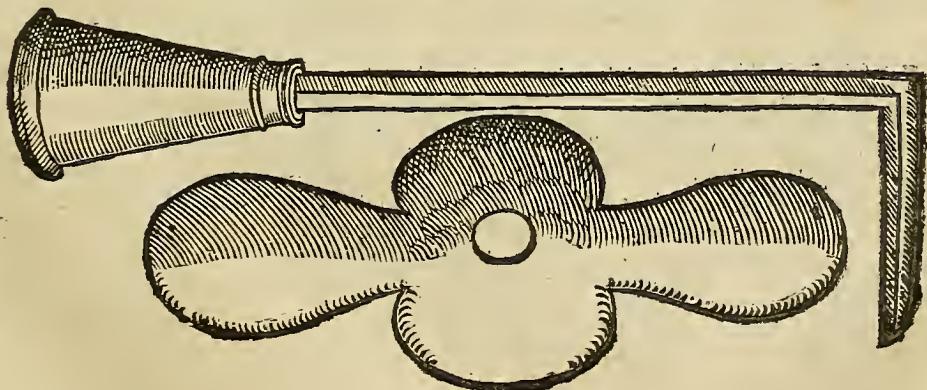
That you may safely perform the cure, you must open the Tumor rather with a cautery of hot Iron, than with a Knife, for otherwise it wil return again. The manner of opening of it must be thus. You shall get a bended hollow and perforated iron plate with a hole in the midst, and making the Patient to hold open his mouth, you shall so fit it, that the hole may be upon the part which must be opened. Then there you must open it with an hot Iron, for so you shall hurt no part of the mouth which is whole; but when you are ready to burn it, by thrusting your thumb under the Patients Chin, you may somewhat elevate the Tumor whereby you may open it with more certainty; when it is opened you must thrust out the matter contained therein, and then wash the Patients mouth with some barley water, hony, and Sugar of Roses; for so the ulcer will be safely and quickly healed.

The Reason
why it is so
called.

The Cause.

The Cure.

The delineation of the Iron plate and crooked actuall Cautery.



CHAP. VI.

Of the swelling of the Glandules, or Almonds of the throat.

Why the Glandules are called Almonds. Their use.



Nature at the jaws near the roots of the Tongue, hath placed two Glandules opposite to one another; in figure and magnitude like to Almonds, whence also they have their name; their office is to receive the spittle falling down from the brain, both lest that the too violent falling down of the humor should hinder the tongue in speaking, as also that the tongue might alwayes have moisture, as it were laid up in store, lest by continuall speaking, it should grow dry and fail. For thus this spittle being consumed by feaverish heats, the Patients are scarce able to speak, unless they first moisten their tongue by much washing of their mouth.

The Cause of their tumor.

These Glandules because they are seated in a hot and moist place, are very subject to inflammations; for there flows into these oft-times together with the blood, a great quantity of crude, phlegmatick and viscous humors, whence arises a tumor; which is not seldome occasioned by drinking much and that vaporous wine, by too much Gluttony, and staying abroad in the open air.

Symptoms.

Swallowing is painfull and troublesome to the Patient, and commonly he hath a Feaver. Oft-times the neighbouring Muscles of the throttle and neck are so swoln together with these Glandules, (that as it usually happens in the *Squinzy*) the passage of the breath and air is stopped, and the Patient strangled.

Cure.

We resist this imminent danger by purging and blood-letting, by applying Cupping-Glasses to the Neck and shoulders, by frictions and ligatures of the extreme parts, and by washing and gargling the mouth and throat with astringent Gargarisms. But if they come to suppuration, you must with your incision Knife make way for the evacuation of the Pus, or Matter; but if on the contrary, these things performed according to art, defluxion be increased, and there is present danger of death by stopping and intercepting the breath, for the shunning so great and imminent danger, the top or upper part of the *Aspera arteria*, or Weazon must be opened, in that place where it uses to stand most out; and it may be done so much the safer, because the jugular veins, and arteries are furthest distant from this place, and for that this place hath commonly little flesh upon it. And that the incision may be the fittier made, the Patient must be wished to bend his head back, that so the Artery may be the more easily come to by the instrument; then you shall make an incision overthwart way with a crooked knife between two rings (not hurting nor touching the gristly substance) that is to say, the membrane which tyes together the gristly rings being only cut; you shall then judg that you have made the incision large enough, when you shall perceive the breath to break out by the wound; the wound must be kept open so long, untill the danger of suffocation be past; and then it must be sowed up not touching the gristle: But if the lips of the wound shall be hard and callous; they must be lightly scarified, that so they may become bloody for their easier agglutination and union, as we shall shew more at large in the cure of Hare lips. I have had many in cure, who have recovered, that have had their Weazon together with the gristly rings thereof cut with a great wound, as we shall note when we shall come to treat of the cure of the wounds of that part.

Extreme diseases must have extreme remedies.

How you must open the Weazon.

CHAP. VII.

Of the inflammation and relaxation in the Vvula or Columella.

What the Vvula is, and what the use thereof.



The Vvula is a little body, spongy and somewhat sharpened to the form of a Pine apple, hanging even down from the upper and inner part of the palat, so to break the force of the Air drawn in, in breathing, and carryed to the Lungs, and to be as a quill to form and tune the voyce. It often grows above measure by receiving moisture falling down from the brain, becoming sharpe by little and little from a broader and more swoln Basis. Which thing causes many Symptoms; for by the continuall irritation of the distilling humor the Cough is caused, which also hinders the sleep and intercepts the liberty of speech; but also by hindering respiration the Patients cannot sleep unless with open mouth: they are exercised with a vain endeavouring to swallow (having as it were a morsell sticking in their jaws) and are in danger of being strangled.

The Cause of the swelling thereof.

Symptoms.

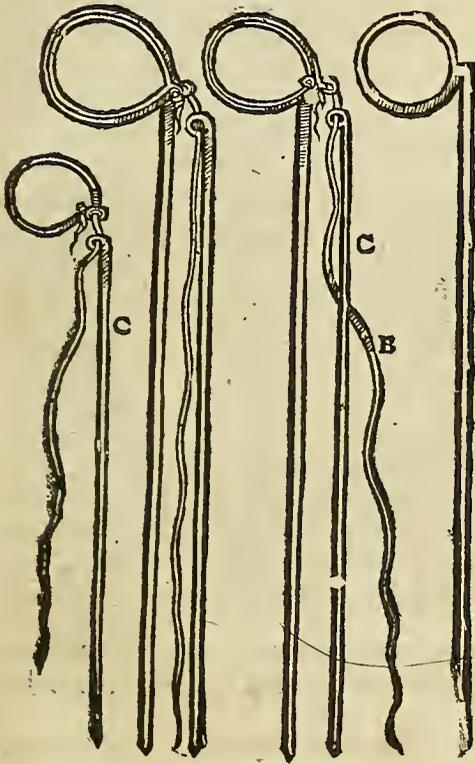
The Cure.

This disease must be resisted and assailed by purging, bleeding, Cupping, taking of Clysters, using astringent Gargles, and a convenient diet; but if it cannot thus be overcome, the cure must be tryed by a caustick of *Aqua fortis*, which I have divers times done with good success. But if it cannot be so done, it will be better to put to your hand, than through idleness to suffer the patient to remain in imminent and deadly danger of strangling; yet in this there must very great caution be used; for the Chirurgion shall not judg the Vvula fit to be touched with an instrument or caustick, which is swoln with much inflamed, or black blood after the manner of a *Cancer*; but he shall boldly put to his hand if it be longish, grow small

The cure by Chirurgery.

finall by little and little into a sharpe, loote and tort point; if it be neither exceeding red, neither swolne with too much blood, but whitish and without pain. Therefore that you may more easily and safely cut away, that which redounds and is superfluous, desire the Patient to sit in a light place, and hold his mouth open; then take hold of the top of the *Vvula* with your fizers, & cut away as much thereof as shall be thought unprofitable. Otherwise you shall bind it with the instrument here-under described; the invention of this instrument is to be ascribed to *Honoratus Tastellanus* that diligent and learned man, the Kings Physitian ordinary, and the chief Physitan of the Queen mother; Which also may be use in binding of *Polypi* and warts in the neck of the womb.

The Delineation of constrictory rings fit to twitch, or bind the Columella, with a twisted thred.

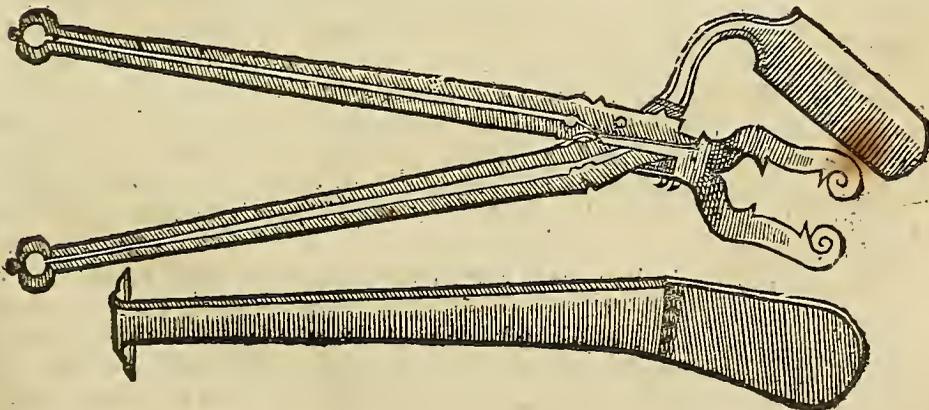


A. Shews the ring whose upper part is somewhat hollow.

B. A double waxed thred, which is couched in the hollownes of the ring, and hath a running, or loofekoot upon it.

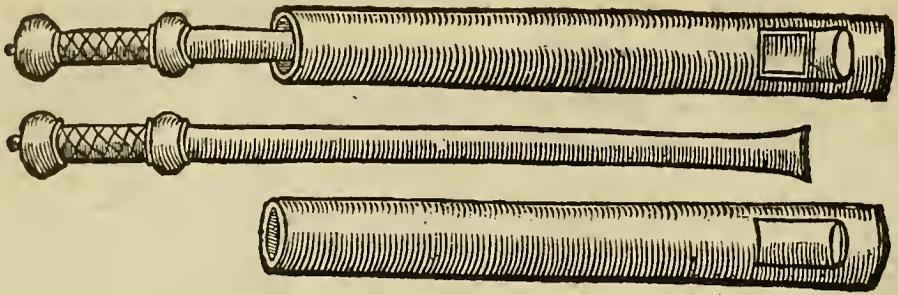
An iron rod, into the eye whereof the fore-mentioned double thred is put, and it is to twitch the *Columella* when as much thereof is taken hold of, as is unprofitable, and so to take it away without any flux of blood. When you would straiten the thred, draw it again through this iron rod, and so strain it as much as you shall think good, letting the end of the thred, hang out of the mouth. But every day it must be twitched harder than other, untill it fall away by means thereof, and so the part and patient be restored to health. I have delineated three of these instruments, that you may use which you will, as occasion shall be offered.

A Figure of the Speculum oris, by which the mouth is held and kept open whilst the Chirurgeon is busied in the cutting away or binding the Vvula.



But if an eating ulcer shall associate this relaxation of the *Vvula*, together with a flux of blood, then it must be burnt and seared with an hot iron, so thrust into a Trunk, or Pipe with an hole in it, that so no sound part of the mouth may be offended therewith.

A hollow Trunk with a hole in the side, with the hot iron inserted, or put therein.



CHAP. VIII.

Of the Angina, or Squinzy.

What it is.

The differences.

The first kind.

The Symptoms.



The Squinancy, or Squinzy, is a swelling of the jaws, which hinders the entering of the ambient air into the weazon, and the vapours and the spirit from passage forth, and the meat also from being swallowed. There are three differences thereof. The first torments the patient with great pain, no swelling being outwardly apparent, by reason the Morbifick humor lyes hid behind the almonds or Glandules at the *Vertebrae* of the neck, so that it cannot be perceived, unless you hold down the tongue with a spatula or the *Speculum oris*, for so you may see the redness and tumor there lying hid. The Patient cannot draw his breath, nor swallow down meat, nor drink; his tongue, (like a Gray-hounds after a course) hangs out of his mouth, and he holds his mouth open that so he may the more easily draw his breath; to conclude, his voyce is as it were drowned in his jaws and nose; he cannot lye upon his back, but lying is forced to sit, so to breath more freely: and because the passage is stopt, the drink flies out at his nose; the eyes are fiery and swollen, and standing out of their orb. Those which are thus affected are often sodainly suffocated, a foam rising about their mouths.

The second kind.

The second difference is said to be that, in which the tumor appears inwardly, but little or scarce any thing at all outwardly, the tongue, Glandules, and jaws appearing somewhat swollen.

The third.

The third being least dangerous of them all, causes a great swelling outwardly, but little inwardly.

The Causes.

The Causes are either internall, or externall. The externall are a stroak, splinter or the like thing sticking in the Throat, or the excess of extreme cold, or heat. The internall causes are a more plentiful defluxion of the humors either from the whole body of the brain, which participate of the nature either of blood, choler or flegm, but seldome of Melancholy. The signs by which the kind and commixture may be known, have been declared in the generall treatise of tumors. The Squinzy is more dangerous, by how much the humor is less apparent within and without. That is less dangerous which shews it self outwardly, because such an one shuts not up the wayes of the meat, nor breath. Some dye of a Squinzy in twelve houres, other in two, four or seven dayes. Those (saith Hippocrates) which scape the Squinzy, the disease passes to the lungs, and they dye within seven dayes; but if they scape these dayes, they are suppurated; but also oftentimes this kind of disease is terminated by disappearing, that is, by an obscure reflux of the humor into some noble part, as into the Lungs (whence the *Empyema* proceeds) and into other principall parts, whose violating brings inevitable death; sometimes by resolution, otherwise by suppuration.

Hip. sect. 3.
prog. 2. A.
phor. 10. sect. 5

The way of resolution is the more to be desired; it happens when the matter is small, and that subtle, especially if the Physitian shall draw blood by opening a vein, and the Patient use fitting Gargarisms. A Criticall Squinzy divers times proves deadly by reason of the great falling down of the humor upon the throttle, by which the passage of the breath is sodainly shut up. Broths must be used made with Capons, and Veal seasoned with Lettuce, Purslain, Sorrell, and the cold feeds.

Dieti

If the Patient shall be somewhat weak, let him have potched Egges, and Barly Creams, the Barly being somewhat boyled with Raisons in water and Sugar, and other meats of this kind. Let him be forbidden wine, in stead whereof he may use *Hydromelita*, and *Hydrofachara* that is, drinks made of water and Hony, or water and Sugar as also the Syrups of dried Roses, of Violets, Sorrell and Lemmons, and others of this kind. Let him avoid too much sleep. But in the mean time the Physitian must be carefull of all, because this disease

dicuate is of their kind, which brook no delays. Wherefore let the *Basilica* be presently opened, on that side the tumor is the greater; then within a short time after the same day, for evacuation of the conjunct matter, let the vein under the tongue be opened; let cupping-Glasses be applied, sometimes with scarification, sometimes without, to the neck and shoulders, and let frictions and painfull ligatures be used to the extreme parts. But let the humor impact in the part be drawn away by clysters and sharp suppositories. Whilst the matter is in defluxion, let the mouth without delay be washed with astringent gargarismes to hinder the defluxion of the humor, lest by its sodain falling down it kill the Patient, as it often happens, all the Physicians care and diligence notwithstanding. Therefore let the mouth be frequently washed with Oxycrate, or such a gargarism: R. Pomorum silvest. nu. iiij, sumach, Rosar. rub. an. m. ss. berber. ʒ ij, let them be all boyled with sufficient quantity of water to the consumption of the half, adding thereunto of the wine of soure Pomgranats, ʒ iiij, of *Diamoron* ʒ ij, let it be a little more boyled and make a gargle according to Art. And there may be other Gargarismes made of the waters of Plantain, Night-shade, Verjuice, Julep of Roses and the like. But if the matter of the defluxion shall be Phlegmatick, Alum, Pomgranat pill, Cypres nuts, and a little Vineger may be safely added. But on the contrary, repercussives must not be outwardly applyed, but rather Lenities, whereby the externall parts may be relaxed and rarified, and so the way be open either for the diffusing or resolving the portion of the humor. You shall know the humor to begin to be resolved, if the Feaver leave the Patient, if he swallow, speak and breath more freely, if he sleep quietly, and the pain begin to be much asswaged. Therefore then natures endeavour must be helped by applying resolved medicines, or else by using suppuratives inwardly and outwardly, if the matter seem to turn into Pus. Therefore let gargarismes be made of the roots of March-Mallows, Figs, Jujubes, damask Prunes, Dates, perfectly boyled in water. The like benefit may be had by Gargarismes of Cows milk with Sugar, by oyl of sweet Almonds, or Violets warm, for such things help forward supuration and assuage pain; let suppurating cataplasms be applyed outwardly to the neck and throat, and the parts be wrapped with wooll moistened with oyl of Lillies. When the Physitian shall perceive that the humor is perfectly turned into pus, let the patients mouth be opened with the *Speculum oris*, and the abscess opened with a crooked and long incision knife; then let the mouth be now and then washed with cleansing gargles; as R. *Aque bordei lib. ss. mellis ros. & syr. rosar. sic. au. ʒ i, fiat gargarisma.* Also the use of *ænomel*, that is, wine and Hony, will be fit for this purpose. The ulcer being clenfed by these means, let it be cicatrized with a little roch-Alum added to the former gargarismes.

Cure.

Repelling
Gargat. fms.Ripening
Gargarismes.Detergent
Gargarismes.

The Figure of an incision knife opened out of the haft, which serves for a sheath thereto.



CHAP. IX.

Of the Bronchocele, or Rupture of the throat.

That which the French call *Goetra*, that the Greeks call *Bronchocele*, the Latins *Gutturis Hernia*, that is, the Rupture of the throat. For it is a round tumor of the throat, the matter whereof coming from within outwards, is contained between the skin and weazon; it proceeds in women from the same cause as an *Aneurisma*.

But this generall name of *Bronchocele* undergoes many differences; for sometimes it retains the nature of *Melicerides*, other whiles of *Steatoma's*, *Atheoroma's* or *Aneurisma's*, in some there is found a fleshy substance having some small pain; some of these are small, others so great, that they seem almost to cover all the throat; some have a Cist, or bag, others have no such thing; all how many so ever they be, and what end they shall have, may be known by their proper signs; these which shall be curable, may be opened with an actuall or potentiall cautery, or with an incision knife. Hence if it be possible, let the matter be presently evacuated, but if it cannot be done at once, let it be performed at divers times, and discussed by fit remedies, and lastly, let the ulcer be consolidated and cicatrized.

The reason of
the name.

The differences.

The Cures.

CHAP. X.

Of the Pleurisie.

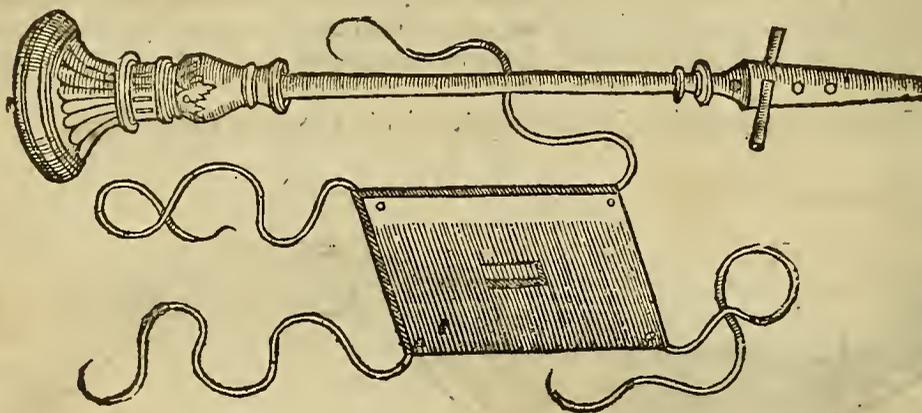
What it is.

Of a Pleurisie coming to sup-
puration.Of the change thereof into an
Empyema.Of the aperition of the side in
an *Empyema*.

The Pleurisie is an inflammation of the membrane, investing the ribs, caused by subtile and choleric blood, springing upwards with great violence from the hollow vein into the *Azygos*, and thence into the intercostall veins, and is at length powred forth into the emptie spaces of the intercostall muscles, and the mentioned membrane. Being contained there, if it tend to suppuration, it commonly infers a pricking pain, a Feaver and difficulty of breathing. This suppurated blood is purged and evacuated one while by the mouth; the Lungs sucking it, and so casting it into the Weazon, and so into the mouth, otherwhiles by urine, and sometimes by stool.

But. if nature being too weak, cannot expectorate the purulent blood poured forth into the capacity of the chest, the disease is turned into an *Empyema*, wherefore the Chirurgion must then be called, who beginning to reckon from below upwards, may make a vent between the third and fourth true and legitimate ribs; and that must be done either with an actual or potentiall cautery, or with a sharpe knife drawn upwards, towards the back, but not downwards, lest the vessels should be violated which are disseminated under the rib. This aperition may be safely and easily performed by this actuall cautery; it is perforated with four holes, through one whereof there is a pin put higher or lower according to the depth and manner of your incision: then the point thereof is thrust through a plate of Iron perforated also in the midst, into the part designed by the Physitian, lest the wavering hand might peradventure touch, and so hurt the other parts not to be medled withall. This same plate must be somewhat hollowed, that so it might be more easily fitted to the gibbous side, and bound by the corners on the contrary side with four strings. Wherefore I have thought good here to express the figures thereof.

The Figure of an actuall cautery with its plate fit to be used in a Pleurisie.



But if the patient shall have a large body, Chest and ribs, you may divide and perforate the ribs themselves with a Trepan; howsoever the aperition be made, the *pus* or matter must be evacuated by little and little at severall times; and the capacity of the Chest cleaned from the purulent matter by a detergent injection of vj ounces of Barley water, and ζ ij . honey of Roses, and other the like things mentioned at large in our cure of wounds.

CHAP. XI.

Of the Dropsie.

What the
Dropsie is.The differ-
ences thereof.

The Dropsie is a Tumor against nature by the abundance of waterish humor, or flatulencies, or Phlegm, gathered one while in all the habit of the body, otherwhiles in some part, and that especially in the capacity of the belly between the *Peritonæum* and entrails. From this distinction of places and matters there arise divers kinds of Dropsies. First, that Dropsie which fills that space of the belly, is either moist or dry. The moist is called the *Ascites*, by reason of the similitude it hath with a leather bottle, or *Borachio*, because the waterish humor is contained in that capacity, as it were in such a vessell.

The dry is called the *Tympanites*, or Tympany, by reason the belly swollen with wind sounds like a *Tympanum*, that is, a Drum. But when the whole habit of the body is distended with

with a phlegmatick humor, it is called *Anasarca* or *Leucophlegmatia*. In this last kind of Dropsie the lower parts first swell, as which by reason of their site are more subject to receive defluxions, and more remote from the fountain of the native heat; wherefore if you presse them down the print of your finger will remain sometime after; the patients face will become pale and puffed up, whereby it may be distinguished from the two other kinds of Dropsie. For in them first the belly, then by a certain consequence the thighs and feet do swell. There are besides also particular Dropsies, contained in the strait bounds of certain places, such are the *Hydrocephalos* in the head; the *Bronchocele* in the throat; the *Pleurocele* in the Chest; the *Hydrocele* in the *Scrotum*, or Cod; and so of the rest. Yet they all arise from the same cause; that is, the weaknes or defect of the altering or concocting faculties, especially of the liver, which hath been caused by a *Scirrhus*, or any kind of great distemper, chiefly cold, whether it happen primarily, or secondarily by reason of some hot distemper dissipating the native and inbred heat, such a Dropsie is incurable; or else it comes by consent of some other higher or lower part; for if in the Lungs, Midriff, or Reins there be any distemper, or disease bred, it is easily communicated to the gibbous part of the Liver, by the branches of the hollow vein, which run thither. But if the mischief proceed from the Spleen, Stomach, Mesentery Guts, especially the *jejunum* and *Ileum*, it creeps into the hollow side of the liver by the meseraick veins, and other branches of the *Vena porta* or Gate vein. For thus such as are troubled with the *Asthma*, Ptsick, Spleen, Jaundise, and also the Phrensie, fall into a Dropsie.

The Symptoms.

The Causes.

How divers diseases turn into Dropsies.

Lastly, all such as have the menstruall or hæmorrhoidall blood suppressed or too immoderately flowing contrary to their custome, either overwhelms, diminisheth or extinguisheth the native heat; no otherwise than fire, which is suffocated by too great a quantity of wood; or dieth and is extinguished for want thereof. We must look for the same from the excrements of the belly or bladder, cast forth either too sparingly or too immoderately: Or by too large quantity of meats too cold and rashly devoured without any order; To conclude, by every default of externall causes, through which occasion, error may happen in diet or exercise.

The *Ascites* is distinguished from the two other kinds of Dropsies, both by the magnitude of the efficient cause, as also by the violence of the Symptoms, as the dejected appetite, thirst, and swelling of the *Abdomen*. And also when the body is moved or turned upon either side, you may hear a sound as of the jogging of water in a vessell half full. Lastly, the humor is diversly driven upwards or downwards, according to the turning of the body and compression of the *Abdomen*; It also causeth various Symptoms by pressure of the parts to which it floweth. For it causeth difficulty of breathing and the cough by pressing the Midriffe; by sweating through into the capacity of the Chest it causeth like Symptoms as the *Empyema*. Besides also the patients often seem, as it were, by the ebbing and flowing of the waterish humor, one while to be carried to the skies, and another while to be drowned in the water, which I have learnt not by reading of any author, but by the report of the patients themselves. But if these waterish humors be fallen down to the lower parts, they suppress the excrements of the guts and bladder by pressing and straitning the passages. When the patient lies on his back the tumor seems lesse, because it is spread on both sides; On the contrary when he stands or sits, it seems greater, for that all the humor is forced or driven into the lower belly, whence he feels a heaviness in the *Pecten* or share. The upper parts of the body fall away by defect of the blood fit for nourishment in quality and consistence, but the lower parts swell by the flowing down of the serous and waterish humor to them. The pulse is little, quick, and hard with tention.

The signs of an Ascites.

The Symptoms.

This disease is of the kind of Chronicall or long diseases; wherefore it is scarce, or never cured, especially in those who have it from their mothers womb, who have the Action of their stomach depraved, and those who are cachectick, old; and lastly, all such as have the naturall faculty languishing and faulty.

Prognosticks.

On the contrary, young and strong men, especially if they have no fever, and finally all who can endure labour, and those exercises which are fit for curing this disease, easily recover, principally if they use a Physitian before the water which is gathered together do putrefie and infect the bowels by its contagion.

CHAP. XII.

Of the cure of the Dropsie.

The beginning of the cure must be with gentle and mild medicines; neither must we come to a *Paracentesis* unless we have formely used and tried these. Therefore it shal be the part of the Physitian to prescribe a drying diet, and such medicines as carry away water, both by stool and urine. *Hippocrates* ordains this powder for Hydropick persons. *Rx* *Canthar. ablati* capitib. & *aliis* ʒβ. *Comburentur in furno, & fiat pulvis*; of which administer two grains in white wine, for nature helped by this, and the like remedies hath not seldome been seen to have cured the Dropsie.

Hip. lib. 4 de acut. & lib. de intern.

Bus

But that we may hasten the cure, it will be available to stir up the native heat of the part by application of those medicines which have a discussing force; as bags, baths, ointments, and Emplaisters. Let bags be made of dry and harsh Bran, Oats, Salt, Sulphur, being made hot, or for want of them, of Sander, or Ashes often heated.

Bags.

Baths.

Liniments.

Emplaisters.

Vesicatories.

The more effectually baths are salt, nitrous, and sulphurous waters, whether by nature or art, that is, prepared by the dissolution of salt, niter, and Sulphur; to which if Rue, Marjoram, the leaves of Fennell, and tops of Dill, or *Stachus*, and the like be added, the business will goe better forwards. Let the ointments be made of the oyl of Rue, Dill, Baies, and Squills, in which some *Euphorbium*, Pellitory of *Spain*, or Pepper have been boiled. Let plaisters be made of Frankincense, Myrrh, Turpentine, *Costus*, Bayberries, English galengall, hony, the dung of Oxen, Pigeons, Goats, Horses, and the like, which also may be applied by themselves. If the disease continue, we must come to *Sinapismes* and *Phanigmes*, that is, to rubrifying and vesicatory medicines. When the blisters are raised, they must be anointed again, that so the water may by little and little flow so long untill all the humor be exhausted, and the patient restored to health.

Gal. lib. de facult. natur. 1.

Galen writes, the Husbandmen in *Asia*, when they carried wheat out of the Country into the city in *Cars*, when they wil steal away and not be taken, hide some stone jugs fill'd with water in the midst of the wheat; for that will draw the moisture through the jugs into it self, and encrease both the quantity and weight. When certain pragmaticall Physitians had read this, they thought that wheat had force to draw out the water, so that if any sick of the Dropsie should be buried in a heap of wheat, it would draw out all the water.

Divers opinions of *Paracentesis*, or opening of the belly. Reasons against it.

But if the Physitian shall profit nothing by these means, he must come to the exquisitly chief remedy, that is, to *Paracentesis*. Of which because the opinions of the ancient Physitians have been divers, we will produce and explain them.

Those therefore which disallow *Paracentesis*, conclude it dangerous for three reasons. The first is because by pouring out the contained water, together with it, you dissipate and resolve the spirits, and consequently the naturall, vitall, and animall faculties. Another opinion is, because the Liver wanting the water by which formerly it was born up; thence forward hanging down by its weight, depresseth and draweth downwards the midriff and the whole Chest, whence a dry cough, and a difficulty of breathing proceed. The third is, because the substance of the *Peritonæum*, as that which is nervous, cannot be pricked or cut without danger, neither can that which is pricked or cut be easily agglutinated and united, by reason of the spermatick and bloudlesse nature thereof. *Erasistratus* moved by these reasons condemned *Paracentesis* as deadly: also he perswaded that it was unprofitable for these following reasons, *viz.* because the water powred forth, doth not take away with it the cause of the Dropsie, and the distemper and hardness of the Liver, and of the other bowels, whereby it comes to pass that by breeding new waters they may easily again fall into the Dropsie. And then the feaver, thirst, the hot and drie distemper of the bowels, all which were mitigated by the touch of the included water, are aggravated by the absence thereof, being powred forth: which thing seemeth to have moved *Avicen* and *Gordonius* that he said none; the other said very few lived after the *Paracentesis*; but the refutation of all such reasons is very easie.

Erasistratus his Reasons against it.

Reasons for it.

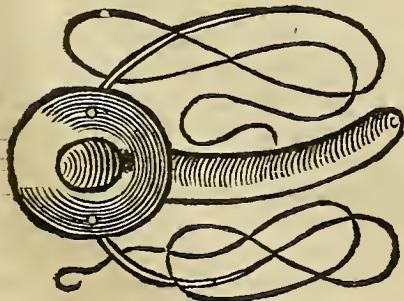
For, for the first *Galen* infers, that harmful dissipation of spirits, and resolving the faculties happens, when the *Paracentesis* is not diligently, and artificially performed. As in which the water is presently powred forth; truly if that reason have any validity, Phlebotomy must seem to be removed far from the number of wholsome remedies, as whereby the blood is poured forth, which hath far more pure and subtil spirits, than those which are said to be diffused and mixed with the Dropsie waters. But that danger which the second reason threatens shall easily be avoided; the patient being desired to lie upon his back in his bed, for so the Liver will not hang down. But for the third reason, the fear of pricking the *Peritonæum*, is childish: for those evils which follow upon wounds of the nervous parts, happen by reason of the exquisit sense of the part, which in the *Peritonæum* ill affected & altered by the contained water, is either none or very smal. But reason and experience teach many nervous parts, also the very membranes themselves being far removed from a fleshy substance, being wounded admit cure; certainly much more the *Peritonæum*, as that which adheres so straitly to the muscles of the *Abdomen*, that the dissector cannot separate it from the flesh, but with much labor. But the reason which seems to argue the unprofitableness of the *Paracentesis* is refuted by the authority of *Celsus*. I, saith he, am not ignorant that *Erasistratus* did not like *Paracentesis*; for he thought the Dropsie to be a disease of the Liver, and so that it must be cured, and that the water was in vain let forth, which the Liver being vitiated, might grow again. But first this is not the fault of this bowel alone, and then although the water had his originall from the Liver, yet unless the water which stayeth there contrary to nature being evacuated, it hurteth both the Liver, and the rest of the inner parts, whilst it either encreaseth their hardness, or at the least keepeth it hard, and yet notwithstanding it is fit the body be cured. And although the once letting forth of the humor profit nothing, yet it makes way for medicines, which while it was there contained, it hindered. But this serous, salt, and corrupt humor is so far from being able to mitigate

Lib. 3. cap. 21.

mitigate a fever and thirst, that on the contrary it increaseth them. And also it augmenteth the cold distemper, whilst by its abundance it overwhelms and extinguisheth the native heat. But the authority of *Celius Aurelianus* that most noble Physitian, though a Methodist, may satisfie *Avicen* and *Gordonius*. They, saith he, which dare avouch that all such as have the water let out by opening their belly have died, do lie; for we have seen many recover by this kind of remedy: but if any died, it happened either by the default of the flow or negligent administration of the *Paracentesis*. I will add this one thing which may take all error of controversies: we unwisely doubt of the remedy when the patient is brought to that necessity, that we can only help him by that means. Now must we shew how the belly ought to be opened. If the Dropfie happen by fault of the Liver, the section must be made on the left side; but if of the Spleen, in the right: for if the patient should lie upon the side which is opened, the pain of the wound would continually trouble him, and the water running into that part where the section is, would continually drop; whence would follow a dissolution of the faculties. The Section must be made three fingers breadth below the Navell, to wit, at the side of the right muscle, but not upon that which they call the *Linea Alba*; neither upon the nervous parts of the rest of the muscles of the *Epigastrium*; that so we may prevent pain and difficulty of healing. Therefore we must have a care that the patient lie upon his right side, if the incision be made in the left, or on the left, if on the right. Then the Chirurgeon both with his own hand, as also with the hand of his servant assisting him, must take up the skin of the belly, with the fleshy pannicle lying under it, and separate them from the rest; then let him dividethem so separated with a Section even to the flesh lying under them, which being done, let him force as much as hee can the divided skin upwards towards the stomach, that when the wound, which must presently be made in the flesh lying there-under, shall be consolidated, the skin by its falling therein, may serve for that purpose: then therefore let him divide the musculous flesh and *Peritoneum* with a small wound, not hurting the Gall or Guts.

Then put into the wound a trunk, or golden, or silver crooked pipe, of the thickness of a Goose's-quill, and of the length of some halfe finger. Let that part of it which goes into the capacity of the belly have something a broad head, and that perforated with two small holes, by which a string being fastened, it may be bound so about the body, that it cannot be moved, unless at the Chirurgeons pleasure. Let a sponge be put into the pipe, which may receive the dropping humor: and let it be taken out when you would evacuate the water: but let it not be poured out all together, but by little and little for fear of dissipation of the spirits, and resolution of the faculties, which I once saw happen to one sick of the Dropfie. He being impatient of the disease and cure thereof, thrust a Bodkin into his belly, and did much rejoyce at the pouring forth of the water, as if he had been freed from the humor and the disease, but died within a few houres, because the force of the water running forth, could by no means be staid, for the incision was not artificially made. But it will not be sufficient to have made way for the humor by the means aforementioned, but also the external orifice of the pipe must be stopped & strengthened by double cloaths, and a strong ligature, lest any of the water flow forth against our wils. But we must note that the pipe is not to be drawn out of the wound, before as much water shall be issued forth as we desire, and the tumor requireth; for once drawn forth, it cannot easily be put in again, and without force and pain be fitted to the lips of the wound, because the skin and fleshy pannicle cover it by their falling into the wound of the flesh or muscle. But whilst the water is in evacuation, we must have a diligent care of feeding the patient, as also of his strength, for if that fail, and he seem to be debilitated, the effusion of the water must be staid for some daies, which at the length performed according to our desire, the wound must be so consolidated that the Chirurgeon beware it degenerate not into a *Fistula*.

The figure of a Pipe in form of a Quill, to evacuate the water in Dropsies.



usually cure after this maner. *Rx sterc. anser. ʒij, dissolve it in ʒiij, vini alb. coletur: make a Potion, and let it be given two houres before meat.*

*Lib. de morb.,
Cb. cap. de
Hydrope.*

The places of the aperition must be divers, according to the parts chiefly affected.

The manner of making aperition.

A History.

A caution for taking out the pipe.

Another manner of evacuating the water after the aperition.

A medicine for the Jaundise.

CHAP. XIII.

Of the tumor and relaxation of the Navell.

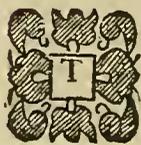
The divers
causes thereof.

The *Exomphalos* or swelling of the Navel, is caused by the *Peritonæum*, either relaxed or broken: for by this occasion oft-times the guts, and oft-times the kall, fall into the seat of the Navell, and sometimes superfluous flesh is there generated; otherwise this tumor is as an *Aneurisma* by too great a quantity of blood poured forth in that place: otherwise by a flatulent matter, and sometimes by a waterish humor. If the humor be occasioned by the kall, the part it self will retain his proper colour, that is, the colour of the skin; the tumor will be soft and almost without pain, and which will reside without noise, either by the pressure of your fingers, or of it self when the Patient lieth on his back; but tumor caused by the guts, is more unequal, and when it is forced in by the pressure of your fingers, there is such a noise heard, as in the *Exterocele*; but if the tumor proceed of superfluous flesh it will be harder and more stubborn, not easily retiring into the body, although the patient lie upon his back, and you presse it with your fingers.

Signs hereof
occasioned by
the kall.By the guts.
By flesh.By wind.
By a waterish
humor.
By bruised
blood.
Which may be
cured by Chi-
rurgery, which
nor.
The cure by
Chirurgery.

The tumor is softer which proceeds of wind, but which will not retire into the body, & sounds under your nail like a taber. If the swelling be caused by a waterish humor, it hath all things common with the flatulent tumor, except that it is not so visible, and without noise. If it be from effusion of blood, it is of a livid colour, but if the effused blood shall be arteriall, then there are the signs of an *Aneurisma*. Wherefore when the tumor is caused by the guts, kall, wind or a waterish humor, it is cured by Chirurgery: but not if it proceed from a fleshy excrescence or suffusion of blood. The tumor of the navell proceeding from the kall and guts, the Patient must lie upon his back to be cured, and then the kall, and guts, must with your fingers be forced into their due place: then the skin with which the tumor is circumscribed must be taken up with your fingers, and thrust through with a needle, drawing after it a double twined and strong thred, then it must be scarified about the sides, that so it may be the easier agglutinated. Then must it be thrust through with a needle three or four times, according to the manner and condition of the distention and tumor. And so twitch it strongly with a thred, that the skin which is so bound may at length fall off together with the ligatures. But also you may cut off the skin so distended even to the ligature, and then cicatrize it, as shall be fit. A flatulent tumor of the navell shall be cured with the same remedies, as we shall hereafter mention in the cure of a windy rupture, but the watery may be poued forth by making a small incision. And the wound shall be kept open, so long, untill all the water be drained forth.

CHAP. XIII.

Of the Tumors of the Groins and Cods called *Herniæ*, that is, Ruptures.These are
only 3. sorts
of Ruptures.

The ancient Physicians have made many kinds of Ruptures, yet indeed there are only three to be called by that name, that is, the *Intestinalis*, or that of the guts, the *Zybalis*, or that of the kall, and that which is mixed of them both. The other kinds of Ruptures have come into this order, rather by similitude, than any truth of the thing: for in them the gut or kall doe not forsake their places.

Bubonocele.
Enterocele and
*Epiplocele.**Hydrocele.*
*Physocele.**Sarcocele.*
Cirsocele.

The Causes.

The Signs.

The Greeks have given to all these severall names, both from the seat of the tumor, as also from their matter. For thus they have called an unperfect rupture which descends not beyond the Groins, nor falls down into the cods, *Bubonocele*: but the compleat which penetrates into the cod, if it be by falling down of the gut, *Enterocele*: if from the kall, *Epiplocele*: if from them both together, they name it *Enteroepiplocele*: but if the tumor proceed from a waterish humor, they term it *Hydrocele*: if from wind, *Physocele*; if from both, *Hydrophysocele*; if a fleshy excrescence shall grow about the testicle, or in the substance thereof, it is named *Sarcocele*. If the veins interwoven, and divaricated divers wayes shall be swollen in the cod and testicles, the tumor obtains the name of a *Cirsocele*. But if the humors shall be shut up or sent thither, the name is imposed upon the tumor, from the predominant humor, as we have noted in the beginning of our Tractate of Tumors. The causes are many, as all too violent motions, a stroak, a fall from a high place, vomiting, a cough, leaping, riding upon a trotting horse, the sounding of trumpets, or sackbuts, the carrying, or lifting up of a heavy burden, racking, also the too immoderate use of viscid and flatulent meats; for all such things may either relax or break the *Peritonæum*, as that which is a thin and extended membrane. The signs of a *Bubonocele* are a round tumor in the groin, which pressed, is easily forced in. The signs of an *Enterocele* are a hard tumor in the cod, which forced, returneth back and departeth with a certain murrur and pain; but the tumor proceeding of the kall, is lax and feels soft like wool, and which is more difficultly forced in,

in, than that which proceeds from the guts, but yet without murmuring and pain: for the substance of the guts, seeing it is one, and continued to it self, they doe not only mutually succeed each other, but by a certain consequence doe, as in a dance draw each other, so to avoid distention, which in their membranous body cannot be without pain, by reason of their change of place from that which is naturall, into that against nature: none of all which can befall the kall, seeing it is a stupid body, and almost without sense, heavy, dull, and immoveable. The signs that the *Peritonæum* is broken, are the sudden increase of the tumor, and a sharp and cutting pain; for when the *Peritonæum* is only relaxed, the tumor groweth by little and little, and so consequently with small pain; yet such pain returns so often, as the tumor is renewed by the falling down of the gut, or kall, which happens not the *Peritonæum* being broken: for the way being once open, and passable to the falling body, the tumor is renewed without any distention, and so without any pain to speak of. The rest of the signs shall be handled in their places. Sometimes it happens that the guts, and kall, do firmly adhere to the proceffe of the *Peritonæum*, that they cannot be driven back into their proper feat. This stubborn adhesion happens by the intervention of the viscid matter, or by means of some excoriation caused by the rude hand of a Chirurgion, in too violently forcing of the gut, or kall, into their place. But also, too long stay of the gut in the cod, and the neglect of wearing a Trusse, may give occasion to such adhesion. A perfect and inveterate rupture by the breaking of the proceffe of the *Peritonæum* in men of full growth, never, or very seldome admits of cure. But you must note, that by great ruptures of the *Peritonæum*, the guts may fall into the cod, to the bigness of a mans head, without much pain and danger of life, because the excrements, as they may easily enter, by reason of the largeness of the place and rupture, so also they may easily return.

What rupture is incurable.

CHAP. XV.

Of the cure of Ruptures.

Because children are very subject to Ruptures, but those truly not fleshy or various, but watry, windy, and especially of the guts, by reason of continuall and painfull crying and coughing: Therefore in the first place we will treat of their cure. Wherefore the Chirurgion, called to restore the gut which is fallen down, shall place the child, either on a table, or in a bed; so that his head shall be low, but his buttocks and thighe higher; then shall he force with his hands by little and little, and gently, the gut into his proper place; and shall foment the groin with the astringent fomentation, described in the falling down of the womb. Then let him apply this remedy. *℞* *Præscript. decoctionis quantum sufficit, farinæ hordei & fabarum, an. ℥j, pulver. Aloes, Mastiches, Myrtyll. & Sarcoco. an. ℥ss, Boli Armeni ℥ij.* Let them be incorporated and made a cataplasme according to Art. For the same purpose he may apply *Emplastrum contra Rupturam*: but the chief of the cure consists in folded clothes, and trusses, and ligatures artificially made, that the restored gut may be contained in its place, for which purpose he shall keep the child seated in his cradle for 30 or 40 dayes, as we mentioned before; and keep him from crying, shouting, and coughing. *Actius* bids steep paper 3 dayes in water, and apply it made into a ball to the groin, the gut being first put up; for that remedy by 3 days adhesion will keep it from falling down. But it will be, as I suppose, more effectually, if the paper be steeped not in common, but in the astringent water, described in the falling down of the womb. Truly I have healed many by the help of such remedies, and have delivered them from the hands of Gelders, which are greedy of childrens testicles, by reason of the great gain they receive from thence. They by a crafty cozenage, perswade the Parents, that the falling down of the gut into the cod, is incurable: which thing notwithstanding experience convinceth to be false, if so be the cure be performed according to the forementioned manner, when the *Peritonæum* is only relaxed, and not broken: for the proceffe thereof by which the gut doth fall as in a steep way, in progress of time and age is straitned and knit together, whilst also in the mean time the guts grow thicker.

A certain Chirurgion who deserveth credit, hath told me that he hath cured many children as thus: He beats a loadstone into fine powder, and gives it in pap, and then he anoints with hony the groin, by which the gut came out, and then strewed it over with fine filings of iron. He administered this kind of remedy for ten or twelve dayes: The part, for other things being bound up with a ligature and trusse as was fitting. The efficacy of this remedy seemeth to consist in this; that the loadstone by a natural desire of drawing the iron which is strewed upon the groin, joins to it the fleshy and fatty particles interposed between them, by a certain violent impetuosity, which on every side pressing and bending the looseness of the *Peritonæum*, yea verily adjoining themselves to it, in proceffe of time by a firm adhesion intercept the passage and falling down of the gut or kall; which may seem no more abhorring from reason, than that we behold the loadstone it self through the thickness of a table, to draw iron after it any way. The same Chirurgion affirmed, that he frequently and happily used the following medicine. He burnt into ashes in an oven red snails; shut up in an earthen pot, and gave the powder of them to little children in pap, but to those which were bigger, in broth.

To what ruptures children are subject.

An astringent cataplasme.

Ser. l. cap. 24.

The craft and covetousness of Gelders.

Another way to cure ruptures.

The reason of this cure.

Another medicine.

But

A notable
History.

But we must despair of nothing in this disease, for the cure may happily proceed in men of full growth, as of fortie year old, who have filled the three dimenſions of the body, as this following relation teſtifies.

There was a certain Priest in the Parish of *St. Andrews*, called *John Moret*, whose office it was to sing an Epistle with a loud voice as often as the solemnity of the day, and the thing required. Wherefore seeing he was troubled with the *Enterocoele*, he came to me, requiring help, saying, he was troubled with a grievous pain, especially then, when he stretched his voice in the Epistle.

When I had seen the bigness of the *Enterocoele*, I perswaded him to get another to serve in his place; so having gotten leave of *M. Curio* Clerk, and Deacon of Divinity, he committed himself unto me: I handled him according unto Art, and commanded him he should never go without a Trusse; and he followed my directions. When I met him some five or six years after, I asked him how he did, he answered very well, for he was wholly freed from the disease with which he was formerly troubled; which I could not perswade my self of, before that I had found that he had told me the truth, by the diligent observation of his genitals. But some six months after, he dying of a Pleurisie. I came to *Curio's* house where he died, and desired leave to open his body, that I might observe whether nature had done any thing at all in the passage through which the gut fell down: I call God to witness, that I found a certain fatty substance about the proceſſe of the *Peritonæum* about the bigness of a little egg, and it did stick so hard to that place, that I could scarce pull it away without the rending of the neighbouring parts. And this was the speedy cause of his cure. But it is most worthy of observation, and admiration, that Nature but a little helped by Art, healeth diseases which are thought incurable. The chief of the cure consists in this, that wee firmly stay the gut in its place, after the same manner as these two figures shew.

We must never
despair in dis-
eases if so be
nature be affo-
ciated by art.

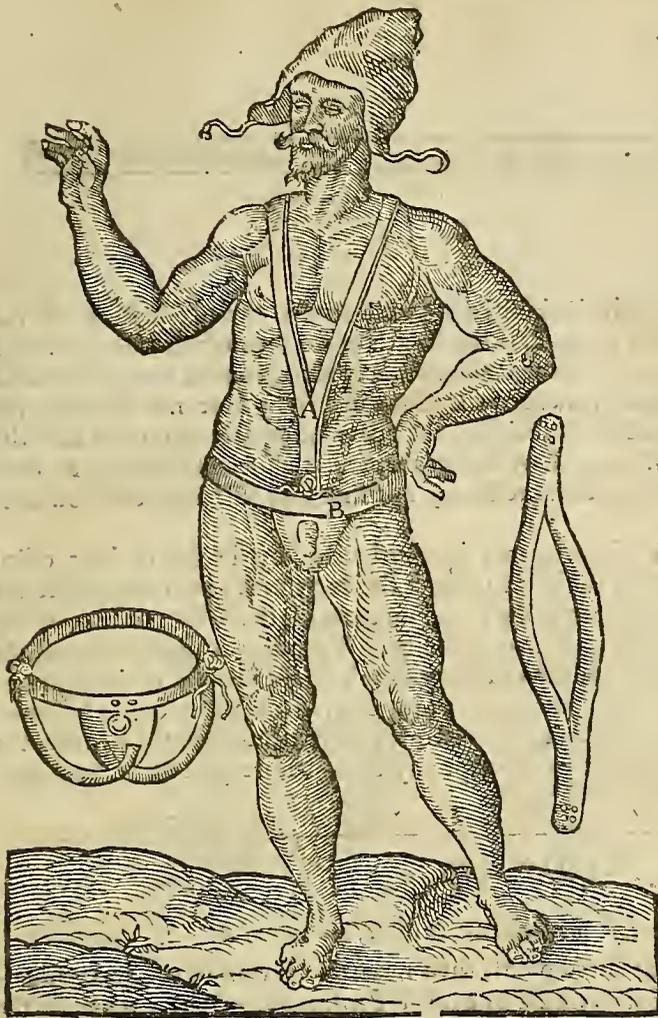


The figure of a man broken on one side, wearing a Trusse, whose bolster must have three Tuberosities, two on the upper, and one on the lower part; and there must be a hollownes between them in the midst, that they may not too straitly press the shankone, and so cause pain. The manner of such a Trusse, I found out not long agoe, and it seemed better and safer than the rest for to hinder the falling down of the gut and kall.

- A. Shews the shoulderband which is tied before and behind to the girdle of the Trusse.
B. The Trusse.
C. The Cavity left in the midst of the Tuberosities.

In the mean time we must not omit diet. We must forbid the use of all things, which may either relax, dilate, or break the proceſſe of the *Peritonæum*, of which I have already treated sufficiently. Sometimes, but especially in old men, the guts cannot be restored into their place, by reason of the quantity of the excrements hardned in them: In this case they must not be too violently forced, but the patient must be kept in his bed, and lying with this head low, and his knees higher up; let the following Cataplasmes be applied.

Another



Another Figure of a man having a Rupture on both sides, shewing by what means, what kind of Trusse; and what shoulder-band he must be bound on each groin.

- A. Sheweth the shoulder-band divided in the midst for the putting through of the head.
 B. The Truss, with two bolsters, between which is a hole for putting through the yard. The form of both bolsters ought to be the same with the former.

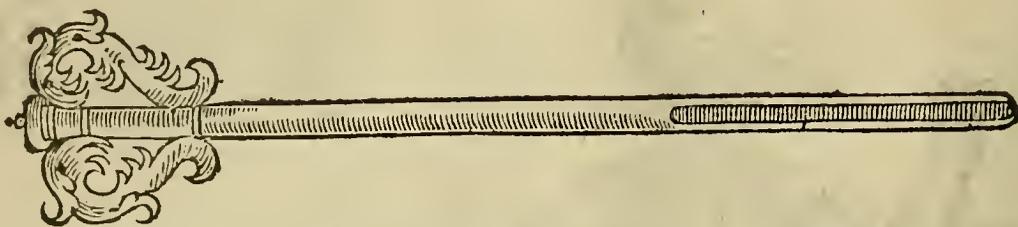
R rad. alb. & lil. ana ℥ij. seminis lini & sanagr. an. ℥β. fol. malva, viol. & pariet. an. m. β. Let them be boiled in fair water, afterwards beaten, and drawn through a searse, adding thereto of new butter without salt, and oil of Lillies, as much as shall suffice. Make a cataplasme in the form of a liquid pultis. Let it be applied hot to the cod, and bottome of the belly; by the help of this remedy when it had been applied all night, the guts have not seldome been seen of themselves, without the hand of a Chirurgion, to have returned into their proper place. The windiness being resolved, which hindered the going back of the excrements into another gut, whereby they might be evacuated and expelled. But if the excrements will not goe back thus, the flatulencies, yet resisting and undiscussed, an emollient and carminative clyster is to be admitted, with a little Chymicall oyl of Turpentine, Dill, Juniper or Fennill. Clysters of Muscadine, oyl of Wallnuts, and *Aqua vite*, and a small quantity of any the aforesaid oyls, are good for the same purpose.

A Cataplasme to soften the excrements;

Chymicall oyl;

It often happens that the guts cannot yet be restored, because the process of the *Peritoneum* is not wide enough. For when the excrements are fallen down with the gut into the cod; they grow hard by little and little, and encrease by the access of flatulencies caused by resolution, which cause such a tumor as cannot be put up through that hole, by which a little before it fell down: whereby it happens that by putrefaction of the matter there contained, come inflammations, and a new access of pain; and lastly, a vomiting and evacuation of the excrements by the mouth being hindered from the other passage of the fundament. They vulgarly call this affect *Miserere mei*. That you may help this symptome, you must rather assay extreme remedies, than suffer the patient to die by so filthy and loathsome a death. And we must cure it by Chirurgery after this manner following. We wil bind the patient lying on his back, upon a table or bench; then presently make an incision in the upper part of the cod, not touching the substance of the guts; then we must have a silver Cane, or Pipe, of the hickness of a Goose quill, round, and gibbous in one part thereof, but somewhat hollowed in the other, as is shewed by this following Figure.

The Figure of the Pipe or Cane.



We must put it into the place of the incision, and put it under the production of the *Peritonæum* being cut together with the cod, all the length of the production, that so with a sharp knife we may divide the process of the *Peritonæum*, according to that cavity separated from the guts there contained, by the benefit of the Cane in a right line not hurting the guts. When you have made an indifferent incision, the guts must gently be put up into the belly with your fingers, and then so much of the cut *Peritonæum* must be sowed up, as shall seem sufficient, that by that passage made more strait, nothing may fall into the cod after it is cicatrized.

But if there be such abundance of excrements hardened, either by the stay or heat of inflammation, that that incision is not sufficient to force the excrements into their place, the incision must be made longer, your Cane being thrust up towards the belly: so that it may be sufficient for the free regress of the guts into the belly. Then sow it up as is fit, and the way will be shut up against the falling down of the gut or käll; the process of the *Peritonæum* being made more strait, by reason of the future; for the rest, the wound shall be cured according to Art. But before you undertake this work, consider diligently whether the strength of the Patient be sufficient, neither attempt any thing before you have foretold, and declared the danger to the Patients friends.

CHAP. XVI.

Of the golden Ligature, or the *Punctus Aureus*, as they call it.

The Chirurgi-
call cure by
the golden Tie.

IF the Rupture will not be cured by all these means, by reason of the great solution of the continuity of the relax'd or broken *Peritonæum*, and the patient by the consent of his friends there present, is ready to undergoe the danger in hope of recovery; the cure shall be attempted by that which they call the *Punctus Aureus*, or Golden tie.

For which purpose a Chirurgion which hath a skilful and sure hand, is to be employed. He shall make an incision about the share bone, into which he shall thrust a Probe like to the Cane, a little before described; and thrust it long wayes under the process of the *Peritonæum*, and by lifting it up, separate it from the adjoining fibrous, and nervous bodies, to which it adheres; then presently draw aside the spermatick vessels, with the *Cremaster*, or hanging muscle of the testicle; which being done, he shall draw aside the proceffe it self, alone by it self: And he shall take as much thereof, as is too lax, with small and gentle mullets, perforated in the midst, and shal with a needle, having five or six threds, thrust it through as neer as he can to the spermatick vessels, and *Cremaster* muscles. But the needle also must bee drawn again in to the midst of the remnant of the process, taking up with it the lips of the wound; then the thred must be tied on a strait knot, and so much thereof must be left after the section, as may be sufficient to hang out of the wound. This thred will of it self be dissolved by little and little by putrefaction: neither must it be drawn out before that nature shall regenerate and restore flesh into the place of the ligature, otherwise all our labour shall be spent in vain.

And lastly, let the wound be clenfed, filled with flesh, and cicatrized, whose callous hardness may withstand the falling of the gut or käll.

Another man-
ner thereof.

There are some Chirurgions who would perform this golden ligature after another manner. They cut the skin above the share bone where the falling down commonly is, even to the process of the *Peritonæum*, and they wrap once or twice about it, being uncovered, a small golden wire, and only straiten the passage as much as may suffice to amend the looseness of this process, leaving the spermatick vessels at liberty; then they twist the ends of the wire twice or thrice with small mullets, and cut off the remnant thereof; that which remains after the cutting, they turn in, lest with the sharpness it should prick the flesh growing upon it. Then leaving the golden wire there, they cure the wound like to other simple wounds, and they keep the patient some fifteen or twenty daies in his bed, with his knees something higher, and his head something lower.

Many are healed by this means; others have fallen again into the disease by reason of the ill twisting of the wire.

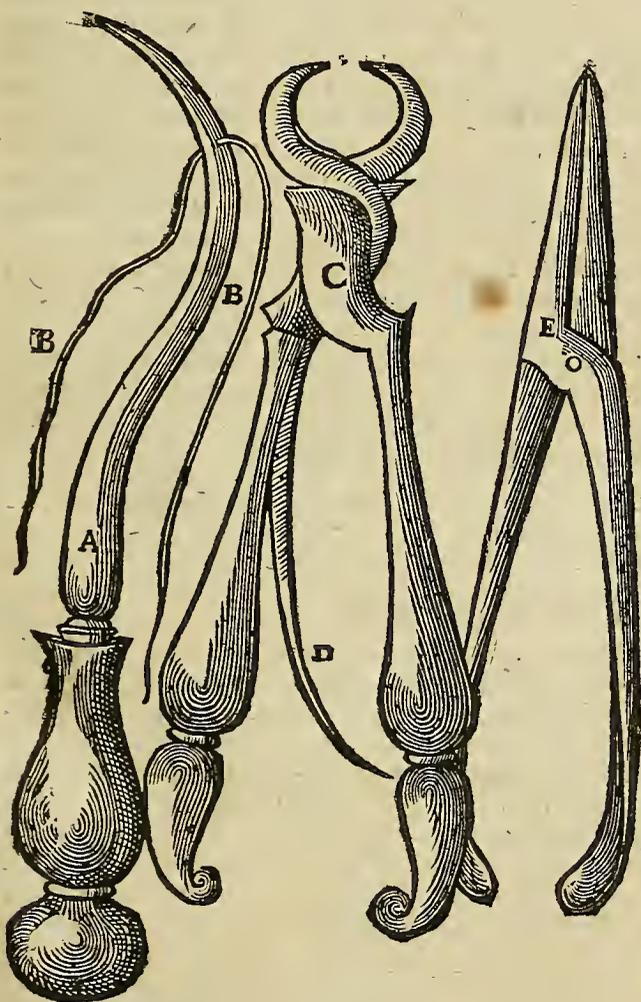
There

There is also another manner of this golden tie, which I judge more quick and safe, even for that there is no externall body left in that part after the cure. Wherefore they wrap a leaden wire in stead of the golden, which comes but once about the process of the *Peritonæum*; then they twine it as much as need requires; that is, not too loosly, lest it should leave way for the falling down of the body, neither too straitly, lest a Gangrene should come by hindring the passage of the spirits and nourishment. The ends thereof are suffered to hang out; when in process of time, this contraction of the *Peritonæum* seems callous, then the wire is untwisted and gently drawn out. And the rest of the cure performed according to Art. But let not the Chirurgeon thrust himself upon his work rashly, without the advice of the Physitian, for it diverse times comes to pass, that the testicles are not as yet fallen down into the cod by the too great sluggishness of nature, in some of a pretty growth, but remains long in the groins, causing a tumor with pain, which thing may make a good Chirurgeon believe that it is an *Enterocèle*. Therefore whilst he labors by repelling medicines and trusses to force back this tumor, he encrease the pain, and hinders the falling down of the testicles into the cod. I observed this not long agoe in a Boy, which an unskilful Chirurgeon had long, and grievously troubled, as if he had had a rupture: for when I had observed that there was but one stone in the cod, and knew the boy was never gelt, I bid them cast away the plaisters and trusses, and wisht his parents that they should suffer him to run and leap, that so the idling stone might be drawn into the cod, which thing by little and little, and without pain, had the event, as I foretold.

The third manner thereof.

A thing to be noted.

A History.



A. Shewes a crooked needle, having an eye not far from the point, through which you may put the golden wire.

B. B. The golden wire put through the eye of the needle.

C. The mullets or Pincers, to cut away the wast or superfluous ends of the wire.

D. The spring of the mullets.

E. The mullets to twist the ends of the wire together.

That the reason of this affect may be understood, we must know a man differs from a woman, only in efficacy of heat; but it is the nature of strong heat to drive forth, as of cold to keep in. Hence it is that the stones in men hang forth in the cod, but in women they lie hid in the lower belly. Therefore it happens that in some males more cold by nature, the testicles are shut up some certain time, untill at length they are forc't down into the cod by youthfull heat. But that we may return to our former treatise of the cod, although that way of curing ruptures wants not pain and danger, yet it is safer than that which is performed by gelding, which by the cruelty thereof exposes the patient to manifest danger of death. For the gelders whilst they fear lest when the cure is finished, the relaxation may remain, pull with violence the process of the *Peritonæum* from the parts to which it adheres,

adheres, and together with it a nerve of the sixth conjugation which runs to the stones; they offer the same violence to the spermatick vessels; by which things ensue great pain, convulsion, efflux of blood, inflammation, putrefaction, and lastly, death, as I have observed in many whom I have dissected, having died a few daies after their gelding. Although some escape these dangers, yet they are deprived of the faculty of generation for all their life after, for performance whereof, nature hath bestowed the testicles, as parts principally necessary for the conservation of mankind. Through which occasion *Galen* hath not feared to prefer them before the heart; because the heart is the beginning of life, but the testicles of a better life; for it is far more noble to live well, than simply and absolutely to live; therefore Eunuches degenerate into a womanish nature, for they remain without beards, their voice is weak, their courage fails them, and they turn cowards; and seeing they are unfit for all humane actions, their life cannot but be miserable. Wherefore I will never subscribe to the cutting out of the stones, unless a *Sarcocele* or Gangrene invade them. But that the way of performing the *Punctus aureus* may be better known, I have thought good here to set the instruments, by which this operation is performed, before your view.

Another more easie and safe way to restore the gut and kall.

Lib. 3. cap. 33.

Theodorick and Guido have invented another way of performing this operation. They put back into their places the gut and kall being fallen down, the patient being so placed, that his thighs are high and his head is somewhat low; then they draw aside the lower portion of the production of the *Peritonæum*, and also the spermatick vessels, and cremaster muscle to the *Ischium*; then by applying a caustick fitted to the age and disease, they burn the other part of the process, directly perpendicular to the share bone, where the gut did fall down. Then they pull off the eschar thus made with a knife even to the quick, then they apply another caustick in the same place, which may go even to the bone, then procure the falling of this eschar made on the foresaid process. And afterwards they heal the ulcer which remains, which presently contracting somewhat a thick *Callus*, so keeps up the guts and kall, that it binds them from falling down into the cod. This way of restoring the gut and kall, though it be safer and more facile; yet the Chirurgeon must not attempt it, if the guts or kall stick so fast, agglutinated to the process of the *Peritonæum*, that they cannot be severed, nor put back into their places (for from the guts so burnt and violated, greater mischief would ensue) if by the broken and too much dilated process, the bodies thereby restrained, make an exceeding great tumor by their falling down; if the testicle yet lying in the groin as in a *Bubonocoele*, a kind of *Enterocoele*, being not yet descended into the *Scrotum* or cod; if the patients be not come to such age as they can keep themselves from stirring, or hold their excrements whiles the operation is performed.

CHAP. XVIII.

Of the cure of other kinds of Ruptures.



H*pilocoele* is the falling down of the kall into the groin, or cod, it hath the same causes as an *Enterocoele*. The signs have been explained. It is not so dangerous, nor infers a consequence of so many cvill symptomes, as the *Enterocoele* doth, yet the cure is the same with the other.

H*ydrocoele* is a waterish tumor in the cod; which is gathered by little and little between the membranes encompassing the testicles, especially the *Dartes & Erythroides*; it may be called a particular dropsie, for it proceeds from the same causes, but chiefly from the defect of native heat. The signs are a tumor encreasing slowly without much pain, heavy, and almost of a glassie clearness, which you may perceive by holding a candle on the other side, by pressing the cod above, the water flows down, and by pressing it below, it rises upwards, unless peradventure in too great a quantity it fills up the whole capacity of the cod, yet it can never be forced or put up into the belly as the kall or guts may, for oft-times it is contained in a cyst or bag; it is distinguished from a *Sarcocele*, by the smoothness and equality thereof. The cure must first be tried with resolving, drying and discussing medicines, repeated often before, and in the Chapter of the dropsie; this which follows I have often tried and with good success.

R *Vng. comitissæ, & desiccæ. rub. an. ʒij. malaxentur simul*, and make a medicine for your ease. The water by this kind of remedy is digested and resolved, or rather dried up, especially if it be not in too great quantity. But if the swelling, by reason of the great quantity of water, will not yeeld to those remedies, there is need of Chirurgery; the cod and membranes wherein the water is contained, must be thrust through with a Seton, that is, with a large three-square pointed needle, thred with a skean of silk; you must thrust your needle presently through the holes of the mullets made for that purpose, not touching the substance of the Testicles. The skean of thred must be left there, or removed twice

Lib. de arte medica.

Lib. de sem.

What a Hydrocoele is.

The signs.

The Cures

A medicine to draw forth the contained matter.

or thrice a day, that the humor may drop down, and be evacuated by little and little. But if the pain be more vehement by reason of the Seton, and inflammation come upon it, it must be taken away, and neglecting the proper cure of the disease, we must resist the symptoms.

Some Practitioners use not a Seton, but with a Razor, or incision knife, they open the lower part of the cod, making an incision some half fingers breadth long, penetrating even to the contained water; alwaies leaving untouched the substance of the testicles and vessels, and they keep the wound open, untill all the water seems evacuated; truly by this only way the cure of a watery rupture whose matter is contained in a cyst, is safe, and to be expected; as we have said in our Treatise of Tumors in generall.

The *Pneumatocele*, is a flatulent tumor in the cod, generated by the imbecillity of heat residing in the part.

It is known by the roundness, lenity, renitency and shining. It is cured by prescribing a convenient diet, by the application of medicines which resolve and discusse flatulencies, as the seeds of Annis, Fennell, Fænugreek, *Agnus Castus*, Rue, *Origanum*, other things set down by *Avicen* in his Treatise of Ruptures. I have often used with good success for this purpose, *Emplastrum Vigonis cum Mercurio*; and *Emplastrum Diacaltheos*, dissolved in some good wine, as Muscadine, with oyl of Bayes.

A *Sarcocele* is a tumor against nature, which is generated about the stones by a scirrhous flesh. Grosse and viscid humors breed such kind of flesh, which the part could not overcome and assimilate to it self; whence this over-abundance of flesh proceeds like as Warts do. *Varices*, or swollen veins often associate this tumor; and it increases with pain. It is known by the hardness, asperity, inequality, and roughness. It cannot be cured but by amputation or cutting it away; but you must diligently observe, that the flesh be not grown too high, and have already seized upon the groin, for so nothing can be attempted without the danger of life.

But if any may think, that he in such a case may somewhat ease the patient by the cutting away of some portion of this same soft flesh, he is deceived. For a *Fungus* will grow, if the least portion thereof be but left, being an evil cure worse than the former; but if the tumor be either small or indifferent, the Chirurgion taking the whole tumor, that is, the testicle tumified through the whole substance, with the process encompassing it, and adhering thereto on every side, and make an incision in the cod, even to the tumor; then separate all the tumid body, that is, the testicle from the cod; then let him thrust a needle with a strong thred in it, through the midst of the process, above the region of the swollen testicle; and then presently let him thrust it the second time through the same part of the process; then shall both the ends of the thred be tied on a knot, the other middle portion of the *Peritonæum* being comprehended in the same knot. This being done, he must cut away the whole process with the testicle comprehended therein. But the ends of the thred, with which the upper part of the process was bound, must be suffered to hang some length out of the wound, or incision of the cod. Then a repercussive medicine shall be applied to the wound, and the neighbouring parts with a convenient ligature. And the cure must be performed as we have formerly mentioned.

The *Cirsocele* is a tumor of veins dilated, and woven with a various and mutuall implication about the testicle and cod, and swelling with a grosse and melancholy blood. The causes are the same as those of the *Varices*. But the signs are manifest.

To heal this tumor, you must make an incision in the cod, the breadth of two fingers to the *Varix*. Then you must put under the varicous vein, a needle having a double thred in it, as high as you can, that you may bind the roots thereof: then let the needle be again put after the same manner about the lower part of the same vein, leaving the space of two fingers between the ligatures. But before you bind the thred of this lowest ligature, the *Varix* must be opened in the midst, almost after the same manner as you open a vein in the arm to let blood: That so this grosse blood causing a tumor in the cod, may be evacuated as is usually done in the cure of the *varices*. The wound that remains shall be cured by the rules of Art after the manner of other wounds: Leaving the threds in it, which presently fall away of themselves. To conclude then, it being grown callous, especially in the upper part thereof, where the vein was bound, it must be cicatrized, for so afterwards the blood cannot be strained or run that way.

Hernia Humoralis is a tumor generated by the confused mixture of many humors in the cod, or between the tunicles which involve the testicles, often also in the proper substance of the testicles. It hath like causes, signs and cure as other tumors. While the cure is in hand, rest, trusses, and fit rowlers to sustain and bear up the testicles, are to be used.

What a *Pneumatocele* is.

The Cure.

What a *Sarcocele* is.

The Signs.
Prognosticks.

The Cure.

What a *Cirsocele* is.

The Cure.

Hernia Humoralis.

CHAP. XVIII.

Of the falling down of the Fundament.

The causes.



When the muscle called the *Sphincter* which ingirts the Fundament is relaxed, then it comes to passe that it cannot sustain the right gut. This disease is very frequent to Children by reason of the too much humidity of the belly; which falling down upon that muscle mollifieth and relaxeth it or presseth it down by an unaccustomed weight, so that the muscles called *Levatores Ani*, or the lifters up of the Fundament, are not sufficient to bear up any longer. A great bloody flux gives occasion to this effect. A strong endeavour to expell hard excrements, the *Hæmorrhoids*, which suppressed do over-load the right gut, but flowing relax it: Cold, as in those which go without breeches in winter, or sit a long time upon a cold stone, a stroak or fall upon the holy-bone, a palsie of nerves which go from the Holy-bone to the muscles the lifters up of the fundament: the weight of the stone being in the bladder.

The cure.

That this disease may be healed, we must forbid the Patient too much drinking, too often eating of broth, and from feeding on cold fruits. For locall medicines the part must be fomented with an astringent decoction made of the rinds of Pomegranats, galls, myrtles, knotgrasse, shepherds purse, cypress nuts, alum, and common salt boiled in smiths water or red wine. After the fomentation, let the gut be anointed with oyl of Roses or myrtles, and then let it be gently put by little and little into its place, charging the child if he can understand your meaning, to hold his breath. When the gut shall be restored, the part must be diligently wiped lest the gut fall down again by reason of the slipperiness of the uncti-on. Then let the powder prescribed for the falling down of the womb be put into the fundament as far as you can: Then you must straitly bind the loins with a swath, to the midst whereof behind let another be fastned which may be tied at the *Pubes* coming along the *Perineum*, so to hold up the fundament; the better to contain it in its place, a sponge dipt in the astringent decoction. The patient if he be of sufficient age to have care of himself, shall be wished when he goes to stool that he sit upon two pieces of wood being set some inch a sunder, lest by his straining he thrust forth the gut together with the excrement; but if he can do it standing, he shall never by straining thrust forth the gut.

Hippocrates his cure.

But if the gut cannot by the prescribed means be restored to its place, *Hippocrates* bids that the Patient hanging by the heels be shaken, for so the gut by that shaking will return to his place: but the same *Hippocrates* wisheth to anoint the fundament, because that remedy having a drying faculty, hath also power to resolve the flatulent humors without any acrimony, by reason of which the gut was the less able to be contained in his place.

CHAP. XIX.

Of the Paronychia.

What the Paronychia is.



The *Paronychia* or *Panaris* is a tumor in the ends of the fingers, with great inflammation, coming of a malign and venomous humor, which from the bones, by the *Periosteum* is communicated to the tendons and nerves of that part which it affecteth, whereof cruell symptoms do follow, as pulsi-que pain, a fever, restlessness, so that the affected through impatience of the pain are variously agitated like those tormented with Carbuncles: for which cause *Guido* and *Johannes de Vigo* judge this disease to be mortall; wherefore you must provide a skilfull Physitian for the cure of this disease, which may appoint convenient diet, purging and blood-letting. In the mean time the Chirurgeon shall make way for the virulent and venenate matter, by making incision in the inner part of the finger, even to the bone alongst the first joint thereof; for *Vigo* saith there is not a presenter remedy, if so be that it be quickly done and before the maturation of the matter; for it vindicates the finger from the corruption of the bone and nerves, and asswages pain, which I have often and happily tried immediately at the beginning, before the perfect impression of the virulencie.

Lib. cap. 4. tract.

But the wound being made you must suffer it to bleed well, then presently let him dip his finger in strong and warm vinegar, in which some treacle being dissolved may draw forth the virulencie. But to appease the pain, the same remedies must be applyed to the affected part as are used in Carbuncles, as the leaves of Sorrell, Henbane, Hemlock, Mandrake roasted under the Embers and beaten in a Morter with new *Vnguentum Populeon*, or oyl of Roses or new butter without salt: for such like medicines also helpe forward suppuration: whilst by their coldness, they repress the extraneous heat affecting the part; and so strengthen the native heat being the author of suppuration: which reason moved the ancient Physitians to use such medicines in a Carbuncle: but if by reason of the fearfulness of the patient, or unskilfulness of the Chirurgeon,

no incision being made, a Gangren and Sphacel shall possess the part, it remains that you cut off with your cutting mullets as much of the part as shall be corrupt, and perform the rest of the cure according to Art. Yet it doth not seldome happen that there may be no need to cut off such a finger, because it being corrupted together with the bone by little and little dissolve into a purulent or rather sanious or much stinking filth. But in this affect there is often caused an Eschar by the aduision of putredinous heat, and superfluous flesh indued with most exquisite sense groweth underneath it, which must in like manner be cut off with the Mullets that the part may receive comfort, the pain being asswaged by the copious effusion of blood.

CHAP. XX.

Of the swelling of the Knees.



After long and dangerous diseases there oftentimes arise Tumors in the knees, and also in Plethorick bodies and such as have evill juyce after labours and exercise. This kind of disease is frequent because the humor easily falls into the part which hath been heated by labour. But if such tumors follow long diseases, they are dangerous and difficult to cure, and therefore not to be neglected, for bitter pain accompanieth them, because the humor falling thither distends the Membranes, which being many involve the part; besides that this humor participateth of a certain virulent and maligna quality whether it be cold or hot, when it hath settled into those parts, being such as we find in the pains of the joynts, and in the bitings of venomous creatures.

For the cure if the tumor be caused by blood, let a slender and a refrigerating diet be appointed, and phlebotomy for the revulsion of the antecedent cause; divers locall medicines shall be used according to the variety of the four times. But for to asswage the pain, *Anodyne*, or mitigating medicines shall be appointed: of all which we have sufficiently treated in the Chapter of the cure of a Phlegmon.

And because these parts are of exact sense, if there be necessity to open the tumor, yet must we not do it rashly or unconsiderately, for fear of pain and evill accidents.

This kind of tumor is oft-times raised by wind contained there; in which case the Chirurgion must be very provident, that he be not deceived with the shew of flowing of the humor, which he seems to perceive by the pressure of his fingers, as if there were matter and humor contained therein, and so be brought to open the tumor. For the wind breaking forth in stead of the humor, causeth evill symptoms by reason of the section rashly made in a part so sensible.

But if waterish humors shall tumefie the part, the body shall first be purged with medicines purging flegm: And then inciding, attenuating, rarifying, discussing and very drying locall medicines shall be used.

Of which we have abundantly spoken in the Chapter of the *Oedema*. Yet this humor divers times lyes deep between the whirl bone and the joint, which causeth it that it can be discussed and resolved by reason of the weakness of the part and defect of heat, so that the adventitious humor often moves and excludes the bones from their seat. As I have observed it to have happened to many.

In which cause Irrigations of red wine falling something high, whereby the force of the medicine may enter and more easily penetrate, are much commended.

CHAP. XXI.

Of the Dracunculus.



Cannot chuse, but explain in this place those things which may be spoken of that kind of tumor against nature, which by the ancients is called *Dracunculus*. The matter & reason of these hath been variously handled by divers Authors, so that hitherto we have nothing written of them to which we may by right and with good reason adhere as a firm foundation of their essence.

For first, for *Galens* opinion, *Lib. 6. de Loc. affect. cap. 3.* The generation, saith he, of those hairs which are evacuated by the urine is worthy no less admiration than the *Dracunculi*, which as they say, in a certain place of *Arabia* breed in the legs of men being of a nervous nature and like worms in colour and thickness.

Therefore seeing I have heard many who have said they have seen them, but I my self never saw them, I cannot conjecture any thing exactly neither of their originall nor essence.

Paulus Aegineta writes that the *Dracunculi* are bred in *India*, and the higher parts of *Aegypt*, like worms in the musculous parts of mans body, that is, the arms, thighs, and legs, and also creep by the intercostall muscles in children with a manifest motion.

But whether they be creatures indeed, or only have the shape of creatures, they must be cured with a hot fomentation, by which the *Dracunculus* raised to a just tumor, may put forth it self, and be pluckt away peece-meal with the fingers: also suppurating Cataplasms

*Gal. com ad sent.
I ser. 4. lib.
6. Epid. Gal.
Com. ad sent. 67e
sect. 2. prog.*

The Cures

It is not as yet
sufficiently
known what
Dracunculi are

Lib. 4. cap. ult.

The cure out
of *Aegineta*

may

may be applyed, composed of water, hony, wheat and barley meal.

Cap. 21. lib. 4.
sent. 3. tract. 3.

Avicen being various, having no certainty whereon to rest, inclineth one while to this, and another while to that opinion: for now he speaketh of the *Dracunculi* as of creatures, then presently of a matter and humor shut up in a certain place; for the rest he rightly delivers the cure and essence of this disease, as we shall afterwards shew.

Lib. 14. cap. ult.

Actius saith, the *Dracunculi* are like worms, and that they are found sometimes great, sometimes small, and that their generation is not unlike to that of flat worms, which are bred in the guts, for they move under the skin, without any trouble, but in process of time, the place becomes suppurate about the end of the *Dracunculus*. The skin openeth, and the head thereof is thrust forth.

The Cure out
of *Actius*.

But if the *Dracunculus* be pulled it causeth great grief; especially if it be broken by too violent pulling. For that which is left causeth most vehement pain. Wherefore that the creature may not run back, the arm must be bound with a strong thred, and this must be done every day, that the *Dracunculus* going forward by little and little, may be intercepted by this binding, but not broken off.

The place must be bathed with *Aqua Mulsa* and oyl in which wormwood or southernwood hath been boyled, or some other of those medicines which are prescribed for the worms of the belly.

But if the *Dracunculus* going forward of its one accord, may be easily drawn forth, we must do nothing else: but if it be turned to suppuration we must not leave off the Cataplasms, the *Aqua Mulsa* and anointing with oyl: It was usuall with him after the taking away of the Cataplasms, to apply *Emplastrum e Baccis Lauri*: but when it is come to suppuration the skin must be opened long wayes, and the *Dracunculus* so laid open must be taken away, but the skin must be filled with lint, and the rest of the suppurative cure used, so that the creature being suppurated and drawn forth, the wound may be incarnated and cicatrized.

Tractat. 7.
cap. 34.
The cure out of
Rhasis.

Rhasis writeth, that when the part is lifted up into a blister, and the vein hastneth its egress, it is good for the Patient to drink the first day half a dram of *Aloes*, the next day a whole dram, the third day two drams; and in like manner the place affected must be fomented with *Aloes*, for so that which lies hid will break forth: that which shall come forth must be rolled in a pipe of lead, which may equal the weight of a dram so that it may hang down, for the vein drawn by the weight will come more forth; and when that which shall come forth is grown much and long, it must be cut off, but not by the root, but so that a portion thereof may remain and hang forth, to which the leaden pipe may be fastened, for otherwise it would withdraw it self into its skin and its lurking hole, and so cause a putrid and malign ulcer.

Therefore we must gently meet with this disease, and the vein must be drawn by little and little out of the body untill it be all come forth that no worse thing happen: but if by chance it shall happen that as much of the vein as shall be come forth shall be cut off by the roots, then the Ulcer must be opened long wayes with an incision knife, and that so that whatsoever remains thereof may be wholly taken away. Then for some dayes the part must be anointed with butter untill whatsoever of such a substance adheres, being consumed with putrefaction shall flow away. Then the Ulcer must be cured with sarcotick things.

His opinion of
them.

Therefore *Rhasis* thus in the same text expresseth the same thing by divers names, and armed with Iron and Lead, he comes to the cure thereof, as if he meant to encounter with some fierce beast.

Soranus his o-
pinion.

Soranus the Physitian, who lived in the times of *Galen*, was of a quite contrary opinion, as *Paulus Aegineta* in the place being before cited, relates of him; as who denies the *Dracunculus* to be a living creature, but only a condensation of a certain small nerve, which seems both to the Physitians and Patients to have some motion under the skin.

Wherefore *Soranus* seems to have come neerer the truth than the rest, but yet not so, as thoroughly to understand, and know the essence of this disease, as we shall demonstrate hereafter.

Epist. 2. lib. 7.

Manardus writes, that the *Dracunculi* are generated of evill and unlaudable blood, gross, hot, and melancholick, or of adust phlegm very much dried.

Gorræus a most learned Physitian of our time, *Lib. de Definitionib. medic.* denies any of our Physitians to be able to say any thing of the *Dracunculi*, because it is a disease so unfrequent in these our regions, that it is scarce ever met withall in practice.

The Author of the Introduction, and Medicinall definitions, defines the *Dracunculus* to be a disease very like the *Varices*; then causing great pain, when increasing by little, and little, it begins to be moved: Therefore to be cured after the same manner, and by the same method of Section and incision, as the *Varices* are. Which thing chiefly seems to have moved *Guido* to refer this kind of disease to the *Varices* in his Tractate of Impostumes, because it hath the same cause, and is healed with the same remedy as the *Varices*.

But seeing that divers names have been imposed upon this disease by severall writers, yet they have all expressed it by the name of a vein, for it is called by *Avicen* and *Guido*, *Vena Meden*, because it is a disease frequent in the City *Medina*: by *Albucaasis*, *vena civilis*. *Haliabas* hath

hath called it *vena famosa*; others have called it *Vena Cruris* or the leg vein. Truly the contrariety of so many opinions repugnant not only amongst themselves, but also with themselves, easily argueth how little certainty they had of the essence of this disease, who have written of it unto us: To which also this may be added, that none of the latter Physicians have written any things thereof. For although *Jacobus Dalechampius* a man most conversant in every part of Physick, hath written much of this matter in his book of the French Surgery which he set forth some years ago: Yet he hath left us no amplier testimony of his industry, than that he was very diligent in collecting the writings of the Ancients concerning this thing, interposing no judgment of his own, the better to assure us of a thing so controverted.

But my modesty cannot so contain me, but that I shall chuse rather to undergoe the censure of being thought too daring, than (as much as in me lyeth) to suffer this question of the *Dracunculi* to remain longer ambiguous and undecided. Therefore for the present, I will thus order it, that refuting the opinions of the Ancients I may strengthen by certain reasons, my opinion of the essence and cure of this disease.

For first, that *Dracunculi* are no living things, nor like unto worms, nor of like generation as the flat worms of the belly, which was the opinion of *Aetius*, is easie to disprove both by his writings, as also by reason it self. For he writes that the broad worm which he calls *Tenia*, is as it were a certain *Metamorphosis* or transmutation of the inner tunicle of the small guts into a quick living and movable body.

But no man ever said, neither will he confess that the *Dracunculi* hath the materiall causes of their beginning from the Tunicle of the vein, in which they are closed, or from the fibers of a nervous body, to which often they are adjoined; but much less from the skin under which they lye, may they draw their materiall causes of their originall.

Moreover, neither can there be any generation of worms, nor of any other living creatures whatsoever, who have their originall from putrefaction, unless by the Corruption of some matter, of whose better and more benign part, nature by the force of the vitall heat, produceth some animate body, as *Aristotle* teacheth. Wherefore to produce this effect, it is fit the matter should have such a disposition to putrefaction as is required for the generation of such a creature as they would make the *Dracunculus* to be: It is fit the helping causes should coucur as assistants to the principals in the action. And it is meet the place should be opportune or fit.

But there may be many causes found which may give life to the *Dracunculi*, for by the common consent of all those who have written of them, their generation proceeds from an humor melancholick, terrestriall and gross, which by its qualities both by the first coldness and dryness, as also by the second, that is Acidity, is not only thought most unfit of all others for putrefaction, but also is judged to resist putrefaction, as that which is caused by heat and superfluous heat humidity. Besides if the materiall cause of this disease should be from an humor putrefying and turning by putrefaction into some living creature, it was fit there should be stench also, as being an unseparable accident of putrefaction, for thus the excrements in the guts of which the worms are generated, do smell or stink.

Therefore that which exhales from their bodies which are troubled with the *Dracunculi*, should be stinking, as it happens to those sick of the *Pthiriasis* or *Lowse-evill*. But none of those who have delivered the accidents or symptomes of the *Dracunculi* are found to have made mention hereof. But for the efficient cause whereby so great heat may be raised in the places next under the skin, by the efficacy whereof such a creature may be formed of a matter melancholick and most unapt to putrefie, as they make the *Dracunculus* to be who faine our bodies to be fruitfull monsters; especially seeing the surface of the body is continually ventilated by the small Arteries spread under the skin, as also by the benefit of insensible transpiration, and breathed with the coolness of the air incompassing us. But now the materiall and efficient causes being defective, or certainly very weak, for the generation of so laborious an effect; what coadjutory cause can yeeld assistance? Can the humidity of meats? for those bodies which are fed with warm and moist meats, as milk, Cheese, Summer fruits, usually breed worms, as we are taught by experience in children.

But on the contrary *Avicen* in the place before cited writeth, that meats of a hot and dry temper chiefly breed this kind of disease, and that it is not so frequent to moist bodies and such as are accustomed to the Bath, moist meats and wine moderately taken. But whether may the condition of the air of those regions in which it is as it were, an Endemiall disease, confer any thing to the generation of such creatures? Certainly for this purpose a cloudy, warm and thick air, such as useth to be at the beginning of the Spring when all the places resound with frogs, toads and the like creatures breed of putrefaction.

But on the contrary *Jacobus Dalechampius* by the opinion of all the Physicians that have written of the *Dracunculi*, writes that this disease breeds in the dry and Sun burnt regions of *India* and *Arabia*; but if at the least that part of our body which is next under the skin should have any opportunity to ingender and nourish such creatures, they may be judged to have written that the *Dracunculus* is a living creature with some probability. But if there be no opportunity for generation in that place, nor capacity for the nourishment of such like

Aetius opinion
confuted.
Tract. 3. sermo
I cap. 40.

4. Meteorologi

Naturall Me-
lancholick hu-
mors is most
unapt to pu-
trifie.
Stink an unse-
parable com-
panion to
putrefaction;

What things
usually breed
worms.

Cap. 83. Chir.
Gallic.

creatures as in the guts, if that region of the body be breathed upon with no warmth and smothering heat, if it be defiled with none of those gross excrements, as the guts usually are, but only by the subtiler exhalation, which have an easie and insensible transpiration by the pores of the skin, which may seem to be a just cause of so monstrous and prodigious an effect: but we shall little profit with these engines of reason unless we cast down at once all the Bulwarkes, with which this old opinion of the *Dracunculi* may stand and be defended.

For first they say, why have the ancients expressed this kind of disease by the name of a living thing, that is, of a *Dracunculus* or little Serpent? I answer, because in Physick names are often imposed upon diseases rather by similitude than from the truth of the thing; for the confirmation whereof, the examples of three diseases may suffice, that of the *Cancer*, *Polypus*, and *Elephas*. For these have those names not because any Crab, Polypus, or living Elephant may breed in the Body by such like diseases, but because this by its propagation into the adjacent parts represents the feet and claws of a Crab; the other represents the flesh of the Sea-Polypus in its substance; and the third because such as have the Leprosie have their skin wrinckled, rough, and horrid with scales and knots, as the skin of a living Elephant. So truly this disease of which we now enquire seems by good right to have deserved the name *Dracunculus*, because in its whole conformation, colour, quality and production into length and thickness it expresseth the image of a Serpent. But whence, will they say, (if it be without life) is that manifest motion in the matter? We reply that the humor the cause of this disease is subtil and hot, and so runs with violence into the part whence it may seem to move. But when the *Dracunculi* are separated, why do they put their heads as it were out of their holes? We answer, in this the Ancients have been very much deceived, because after the suppuration the ulcer being opened, some nervous body being laid bare, thrust forth and subjected it self to the sight, which by the convulsive and shaking motion might expresse the crooked creeping of a Serpent. But they will say, pain happens not unless to things indued with sense & life, but this *Dracunculus* when he is drawn too violently, especially if he be broken, thereby will cause extream pain: We do answer, that the conclusion doth not follow & is of no consequence, for these pains happen not unless when the unprovident Surgeon draws or puls in stead of the *Dracunculus* some nervous or membranous body swollen and repleat with an adust humor, whence there cannot but be great pain that part being puld which is the author of sense. But it is childish to say that the *Dracunculus* feels, for that it causeth sharp pains to the living body in which it is. Therefore that at last we may determin something of the nature, essence and generation of these *Dracunculi*, I dare boldly affirm it is nothing else but a tumor and abscess bred from the heat of the blood in a venenate kind. Such blood driven by the expulsive faculty through the veins to the Externall parts, especially the limits, that is, the Arms and Legs, causeth a tumor round and long often stretched from the joynt of the shoulder even to the wrist, or from the groin even to one of the Ankles with tension, heat, renitency, pricking pain, and a fever. But this tumor is some while stretched forth streight, otherwhiles into oblique and crooked tumors, which hath been the cause that many taken with this kind of disease, and having their limbs so infolded as with the twinings of a Serpent, would say they had a Serpent. I have thus much to say of the *Dracunculi*, especially of those of our own country.

The Cure.

For the cure, it is not unlike to the cure of a Phlegmon arising from a defluxion, for here also in like manner the remedies must be varied according to the four times of the disease, and the same rule of diet, phlebotomy and purging must be observed, which is before prescribed in the cure of a Phlegmon.

The mention of the *Dracunculi* calls to my memory another kind of Abscess, altogether as rare. This our French men name *Cridones*, I think a *Crimibus*. i. from hayrs: it chiefly troubles children and pricks their backs like thorns. They toss up and down being not able to take any rest. This disease ariseth from small hairs which are scarce of a pins length, but those thick & strong. It is cured with a fomentation of water more than warm, after which you must presently apply an oyntment made of hony and wheaten flower; for so these hairs lying under the skin are allured and drawn forth; and being thus drawn, they must be plucked out with small mullets. I imagine this kind of disease was not known to the ancient Physicians.

The End of the Eighth Book.

Why they are called *Dracunculi*.

So the *Malum pilare* in *Aristotle cap. 81. lib. 7. hist. animal.*

OF WOUNDS IN GENERALL.

THE NINTH BOOK.

CHAP. I.

What a wound is, what the kinds and differences thereof are, and from whence they may be drawn, or derived.



Wound is a solution of Continuity, caused by a stroak, fall, or bite, newly done, bloody and with putrefaction and filth. They also call it a new simple ulcer; for the solution of continuity happens to all parts of the body; but according to the diversity of parts, it hath divers names amongst the Greeks. For in the flesh it is called *Helcos*, in the bone *Catagma*, in the nerve *Spasma*, in the ligament *Thlasma*, in the vessels *Apospasma*, in the Muscles *Regma*; and that solution of continuity, which happens in the vessels, their mouths being open; is termed *Anastomasis*, that which happens by erosion, *Aneurosis*; that which is

generated by sweating out and transcolation, *Diapedesis*. That these may be the more easily understood, I have thought good to describe them in the following table.

What a Wound properly is.

Divers appellations of wounds according to the varieties of the parts.

A Table of the differences of Wounds.

The differences of wounds are drawn or taken

From the nature of the parts in which they are made or happen. But these parts are

Either similar, and these,

Or Organical, and these either

- Either soft, as the
 - Glandules,
 - Flesh, Fat,
 - Marrow.
- Or hard, as
 - A Bone,
 - A Gristle.
- Or of a middle consistence, as the
 - Membranes,
 - Ligaments,
 - Fibers, Vessels,
 - Nerves, Veins,
 - Arteries.
- Principall, as the
 - Brain, Heart,
 - Liver, to which some add the Womb and Testicles.
- Or serving the principall, as
 - The Weason,
 - Lungs, gullet,
 - Stomach, Guts,
 - Bladder.
- Or neither
 - The Ears, Nose,
 - Feet, hands, and other of the same kind.

from

From their proper essence, from whence they are called,	Simple wounds Or compound,	When there is no complication of any other disease or symptome besides.
		When there is a complication of some one or more diseases, which unlesse they be taken away, wee must not hope for to cure the wound.
From their quantity according to which they are called,	Great, Indifferent, Little,	Long, Broad, Deep.
		Short, Narrow, Superficiary.
From their figure, according to which they are named,	Streight, Oblique, Cornered.	

CHAP. II.

Of the causes of Wounds.

Divers denominations from their causes.



ALL things which may outwardly assail the body with force and violence, may be counted the causes of wounds; which are called green, and properly bloody. These things are either animate, or inanimate. The animate, as the bitings, and prickings of beasts. The Inanimate, as the stroak of an arrow, sword, club, gun, stone, a dagger, and all such like things.

From the variety of such like causes, they have divers names: for those which are made by sharp and pricking things are called punctures: those caused by cutting things, are called wounds or gashes: and those which are made by heavy and obtuse things are named Contusions, or wounds with contusions.

CHAP. III.

Of the signs of Wounds.

A caution for making reports of Wounds.



Wounds are first known by sight, and by the signs drawn from thence. The Chirurgeon ought first and chiefly, to consider, what wounds are curable, and what not; what wounds will scarce admit of cure, and what may be easily cured; for it is not the part of a prudent Chirurgeon, to promise cure in a deadly or dangerous and difficult wound; lest he may seem to have killed him, whom not the insufficiency of the Art, but the greatnesse of the wound hath slain.

But when the wound is dangerous, but yet without despair of recovery, it belongs to him to admonish the Patients friends which are by, of the present danger, and doubtfull state of the wound, that if Art shall be overcome by the greatnesse thereof, he shall not be thought ignorant of the Art, neither to have deceived them.

A Jugling cheating Chirurgeon.

But as this is the part and duty of a good and prudent Chirurgeon, so it is the trick of a cheating and jugling knave, to enlarge small wounds, that so he may seem to have done a great cure, when it is nothing so.

But it is agreeable to reason, that the Chirurgeon professing the disease easie to be cured, will think himself in credit bound by such promises and his duty, and therefore seek all means for the quick recovery of the Patient; lest that which was of its own nature smal, may by his negligence become great. Therefore it is expedient, he should know what wounds are to be accounted great.

Lib. 4. Meth. cap. 6. 1.

Wounds are called great out of three respects,

This (as Galen saith) is three ways to be known; The first is by the magnitude and principality of the part affected; for thus the wounds of the Brain, Heart, and of the greater vessels, though small of themselves, yet are thought great. Then from the greatnesse of the solution of continuity; for which cause wounds may be judged great, in which much of the substance of the part is lost in every dimension, though the part be one of these which are accounted servile. Then from the malignity; through which occasion the wounds of the joints are accounted great, because for the most part, they are ill conditioned.

CHAP. IIII.

Of Prognosticks to be made in Wounds.

Those Wounds are thought dangerous, wherein any large nerve, vein, or Artery are hurt. From the first there is fear of convulsion, but from the other large effusion of the veinous, or arterious blood, whence the powers are debilitated; also these are judged evil, which art upon the arm pits, groins, lesks, joynts and between the fingers; and likewise those which hurt the head or tail of a Muscle. They are less dangerous of all other which wound only the fleshy substance. But they are deadly which are inflicted upon the Bladder, Brain, Heart, Liver, Lungs, Stomach and small guts. But if any Bone, Gristle, Nerve or portion of the cheek or prepuce, shall be cut away, they cannot be restored. Contused wounds are more difficult to cure, than those which are only from a simple solution of continuity; for before you must think to heal them up, you must suppurate and cleanse them; which cannot be done in a short time. Wounds which are round and circular are so much the worse; for there can be no unity unlesse by an angle, that is, a meeting together of two lines, which can have no place in round wounds, because a circular figure consists of one oblique line. Besides, wounds are by so much thought the greater, by how much their extremis and lips are the further disjoyned, which happens to round Wounds. Contrary to these are cornered wounds or such as are made alongst the fibers, as such as may be easily healed.

Wounds may be more easily healed in young men, than in old, because in them nature is more vigorous, and there is a greater plenty of fruitfull, or good blood, by which the losse of the flesh may be the better and more readily restored, which is slowlier done in an old body, by reason their blood is smaller in quantity and more dry, and the strength of nature more languid.

Wounds received in the Spring, are not altogether so difficult to heal as those taken in Winter or Summer. For all excess of heat and cold is hurtfull to them, it is ill for a convulsion to happen upon a Wound, for it is a sign that some Nervous body is hurt; the braine suffering together therewith, as that which is the originall of the Nerves. A Tumor coming upon great Wounds is good; for it shews the force of nature is able to expell that which is harmfull, and to ease the wounded part. The organicall parts wholly cut off cannot again be united: because a vitall part once severed and plucked from the trunk of the body cannot any more receive influence from the heart as from a root without which there can be no life. The loosened continuity of the Nerves, Veins, Arteries, and also the bones, is sometimes restored, not truly, and as they say, according to the first intention, but by the second, that is, by reposition of the like, but not of the same substance. The first intention takes place in the fleshy parts by converting the Alimentary blood into the proper substance of the wounded part. But the second, in the spermatique parts in which the lost substance may be repaired by interposition of some heterogeneous body, which nature, diligent for its own preservation, substitutes in place of that which is lost: for thus the body, which restores and agglutinates, is no bone but a *Callus*, whose originall matter is from an humor somewhat grosser than that, from whence the bones have their originall and beginning.

This humor, when it shall come to the place of the fracture, agglutinates the ends of the bones together, which otherwise could never be so knit by reason of their hardness. The bones of children are more easily and speedily united by reason of the pliantness of their soft and tender substance. Lastly we must here admonish the Chirurgion; that small Wounds and such as no Artisan will judg deadly, do divers times kill by reason of a certain occult and ill disposition of the wounded, and incompassing bodies; for which cause we read it observed by *Hippocrates*, that it is not sufficient for the Physitian to performe his duty, but also externall things must be rightly prepared, and fitted.

CHAP. V.

Of the Cure of Wounds in generall.

The Chirurgion ought for the right cure of wounds to propose unto himselfe the common and generall indication: that is, the uniting of the divided parts, which indication in such a case is thought upon and known even by the vulgar: for that which is disjoyned desires to be united, because union is contrary to division. But by what means such union may be procured, is only known to the skilfull Artisan. Therefore we attain unto this chief and principall Indication by the benefit of nature as it were the chief Agent, and the work of the Chirurgion as the servant of nature. And unless nature shall be strong, the Chirurgion shall never attain to his conceived, and wished for end: therefore that he may attain hereto, he must performe five things; the first is, that if there be any strange bodies, as peeces of Wood, Iron, Bones, bruised flesh, congealed blood, or the like, whether they have come from without, or from within the body, and shall be by accident fastened or stuck in the wound, he must take them away, for otherwise there is no union to be expected.

What wounds are dangerous.

What least dangerous.
What deadly.
Hip. aphor. 19. Lib. 6.

Why round Wounds are difficult to heal.

Hip. lib. de ulcer. Hip. aph. 66. lib. 5.

What a *Callus* is and whence it proceeds.

Small and contemptible Wounds often prove mortall.

Aphor. 1. se. 1.

The generall Indication of Wounds.

Five things necessary for uniting wounds.

Another is, that he join together the lips of the Wound; for they cannot otherwise be agglutinated and united. The third is, that he keep close together the joined lips. The fourth, that he preserve the temper of the wounded part, for the distemper remaining, it is impossible to restore it to its unity. The fifth is, that he correct the accidents, if any shall happen, because these urging, the Physitian is often forced to change the order of the cure.

All strange and externall bodies must be taken away, as speedily as is possible, because they hinder the action of nature intending unity, especially if they press or prick any Nervous body, or Tendon, whence pain or an Abscess may breed in any principall part, or other serving the principall.

Yet if by the quick and too hasty taking forth of such like bodies there be fear of cruell pain or great effusion of blood, it will be far better to commit the whole work to nature than to exasperate the Wound by too violent hastening.

For nature by little and little will exclude, as contrary to it, or else together with the Pus, what strange body soever shall be contained in the wounded part. But if there shall be danger in delay, it will be fit the Chirurgeon fall to work quickly, safely, and as mildly as the thing will suffer: for effusion of blood, swooning, convulsion and other horrid symptoms, follow upon the too rough and boystrous handling of Wounds, whereby the Patient shall be brought into greater danger than by the Wound it self.

Therefore he may pull out the strange bodies, either with his fingers, or with instruments, fit for that purpose: but they are sometimes more easily and sometimes more hardly pulled forth, according as the body infixed is either hard or easie to be found or pulled out. Which thing happens according to the variety of the figure of such like bodies, according to the condition of the part it self, soft, hard, or deep, in which these bodies are fastened more straitly or more loosely: and then for fear of inferring any worse harm, as the breaking of some Vessell: but how we may perform this first intention, and also the expression of the instruments necessary for this purpose, shall be shown in the particular treaties of Wounds made by Gun-shot, Arrows and the like.

But the Surgeon shal attain to the second and third scope of curing Wounds by two and the same means, that is, by ligatures & sutures: which notwithstanding before he use he must well observe whether there be any great flux of blood present, for he shall stop it if it be too violent; but provoke it, if too slow, (unless by chance it shall be powred out into any capacity or belly) that so the part freed from the superfluous quantity of blood may be less subject to inflammation. Therefore the lips of the Wound shall be put together, and shall be kept so joined by suture and ligatures: Not truly of all, but only of those which both by their nature, and magnitude, as also by the condition of the parts in which they are, are worthy and capable of both the remedies. For a simple and small solution of continuity, stands only in need of the Ligature which we call incarnative, especially, if it be in the Arms or Legs, but that which divides the Muscles tranversly, stands in need of both Suture and Ligature; that so the lips which are somewhat far distant from each other, and as it were drawn towards their beginning, and ends may be conjoyned.

If any portion of a fleshy substance by reason of some great cut shall hang down, it must necessarily be adjoyned and kept in the place by Suture. The more notable and large Wounds of all the parts, stand in need of Suture, which do not easily admit a Ligature, by reason of the figure and site of the part in which they are, as the Ears, Nose, Hairy-scalp, Eye-lids, lips, Belly and Throat.

There are three sorts of Ligatures, by the joint consent of all the Ancients. They commonly call the first, a Glutinative, or Incarnative; the second Expulsive, the third Retentive. The Glutinative or Incarnative is fit for simple, green and yet bloody Wounds. This consists of two ends, and must so be drawn, that beginning on the contrary part of the Wound, we may so go upwards, partly crossing it, and going downwards again, we may closely joyn together the lips of the Wound. But let the Ligature be neither too strait, lest it may cause inflammation or pain; nor too loose, lest it be of no use, and may not well contain it.

The Expulsive Ligature is fit for sanious and fistulous Ulcers, to press out the filth contained in them. This is performed with one Rowler, having one simple head; the beginning of binding must be taken from the botome of the Sinus, or bosome thereof; and there it must be bound more straihgty, and so by little and little going higher, you must remit some thing of that rigour, even to the mouth of the Ulcer, that so (as we have said) the sanious matter may be pressed forth.

The Retentive Ligature is fit for such parts as cannot suffer strait binding, such are the Throat, Belly, as also all parts oppressed with pain; For the part vexed with pain, abhorreth binding. The use thereof, is to hold to locall Medicines. It is performed with a Rowler, which consists some wiles of one, some whiles of more heads. All these Rowlers ought to be of linnen, and such as is neither too new, nor too old, neither too course, nor too fine. Their breadth must be proportionable to the parts to which they shal be applyed; the indication of their largeness, being taken from their magnitude, figure and site. As we shall shew more at large in our Tractates of Fractures and Dislocations.

Ligatures and Sutures for to conjoyn and hold together the lips of wounds.

Three sorts of Ligatures. What an incarnative Ligature is.

What an expulsive.

What the retentive.

What the rowlers must be made of.

The Chirurgeon shall perform the first scope of curing Wounds, which is of preserving the temper of the Wounded part, by appointing a good order of diet by the Prescript of a Physitian, by using universall and locall Medicines. A slender, cold and moist Diet must be observed, untill that time be passed, wherein the Patient may be safe and free from accidents which are usually feared. Therefore let him be fed sparingly, especially if he be plethorick; he shall abstain from salt and spiced flesh, and also from Wine; If he shall be of a choleric or sanguine nature: In stead of Wine he shall use the decoction of Barly or Liquorice, or Water and Sugar. He shall keep himself quiet; for rest is (in *Celsus* opinion) the very best Medicine. He shall avoid Venery, Contentions, Brawls, Anger, and other perturbations of the mind. When he shall seem to be past danger, it will be time to fall by little and little to his accustomed manner and diet of life. Universall remedies are Phlebotomies and purging, which have force to divert and hinder the defluxion, whereby the temper of the part might be in danger of change.

For Phlebotomy it is not alwayes necessary, as in small Wounds and bodies, which are neither troubled with ill humors, or Plethorick: But it is only required in great Wounds, where there is fear of defluxion, pain, *Delirium*, Raving and unquietness; and lastly in a body that is Plethorick, and when the joynts, tendons, or nerves are wounded. Gentle purgations must be appointed, because the humors are moved and intraged by stronger; whence there is danger of defluxion and inflammation: wherefore nothing is to be attempted in this case, without the advice of a Physitian.

The Topick and particular Medicines are Agglutinative, which ought to be indued with a drying and astringive quality, whereby they may hold together the lips of the Wound, and drive away defluxion, having alwayes regard to the nature of the part and the greatness of the disease. The Simple Medicines are *Olibanum*, *Aloes*, *Sarcocolla*, *Bole-Armenick*, *Terra sigillata*, *Sanguis Draconis*, Common and Venice, Turpentine, Gum, *Elemmi*, Plantane, Horse-tail, the greater Comfery, *Parina Volatilis* and many other things of this kind, which we shall speak of hereafter in our Antidotary.

The fifth scope of healing Wounds, is the correction of those Symptomes or Accidents which are accustomed to follow Wounds, which thing verily makes the Chirurgeon have much to do; For he is often forced to omit the proper cure of the disease, so to resist the accidents and symptomes, as bleeding, pain, inflammation, a fever, convulsion, palsie, talking idly, or distraction, and the like. Of which we shall treat briefly and particularly, after we have first spoken of Sutures as much as we shall think fitting for this place.

CHAP. VI.

Of Sutures.

When Wounds are made alongst the thighes, legs, and arms, they may easily want Sutures, because the solution of continuity is easily restored by Ligatures, but when they are made overthwart, they require a Suture, because the flesh and all such like parts, being cut are drawn towards the sound parts; whereby it comes to pass that they part the further each from other; wherefore that they may be joynd and so kept, they must be sowed, and if the Wound be deep, you must take up much flesh with your needle; for if you only take hold of the upper part, the Wound is only superficially healed: but the matter shut up, and gathered together in the bottome of the Wound, will cause abscesses and hollow Ulcers: Wherefore now we must treat of making of Sutures.

The first, called *Interpunctus*, leaves the distance of a fingers breadth, and therefore is fit for the green Wounds of the fleshy parts, which cannot be cured with a Ligature, and in which no heterogeneous or strange body remains; It is performed after this manner. You must have a smooth needle with a thred in it, having a three square point, that so it may the better enter the skin, with the head of it somewhat hollowed, that the thred may lie therein; for so the needle will the better go through. You must also have a little pipe with a hole or window in the end, which you must hold and thrust against the lip of the Wound, that it be not moved to the one side or other, whilst you thrust through the needle: And that we may see through that Window when the needle is thrust through, and also draw it together with the thred, and withall hold the lip of the Wound in more firmly, that it follow not at the drawing forth of the needle and thred. Having thus pierced the lips of the Wound, tie a knot, neer to which cut off the thred; lest that if any of it be left below the knot, it may so stick to the Emplasters that it cannot be plucked and separated from them without pain, when they are taken off. But you must note the first stitch must be thrust through the midst of the Wound, and then the second must be in that space which is between the midst and one of the ends; but when you have made your stitches, the lips of the Wound must not be too closely joined, but a little space must be left open between them, that the matter may have free passage forth, and inflammation and pain may be avoided: otherwise if they shall be closely joined together without any distance between, a tumor after arising when the matter shall come to suppuration, the lips will

Why and how the temper of the wounded part must be preserved.

In what wounds bloodletting is not necessary.

What medicines are to be judged agglutinative.

What wounds stand in no need of a suture.

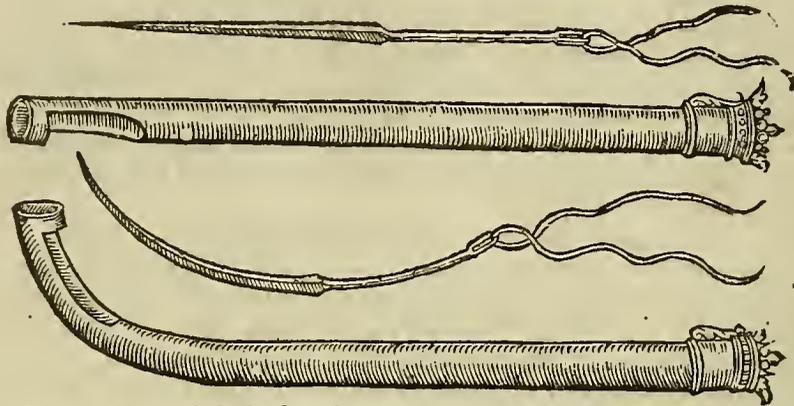
The first manner of suture.

The form of your needle.

The form of the pipe with a window in it.

be so much distended that they may easily be broken by the stiffness of the thred. But you must neither take hold of too much nor too little flesh with your needle, for too little will not hold, and too much causeth pain and inflammation. And besides leaves an ill favoured scar. Yet in deep wounds, such as are those which are made in the thicker muscles, the needle must be thrust home, that so it may comprehend more of the fleshy substance; lest the thred drawn away by the weight of the flesh not taken hold of, may be broken. But oft-times wounds are seen made in such places as it would be needfull, the Chirurgion should have a crooked needle and pipe, otherwise the Suture will not succeed according to his desire. Wherefore I have thought good to set forth both their figures, that you may use either as occasion shall serve.

The Figure of Pipes with fenestels in them, and Needles fit for Sutures.



The 2. means of Suture.

The second Suture is made just after the same manner as the Skinner sows their fells or furs. And the guts must be sowed with this kind of Suture, (if they shall be at any time wounded) that the excrements come not forth by the wound.

The third manner of Suture.

The third Suture is made by one or more needles having thred in them, thrust through the wound, the thred being wrapped to and again at the head and the point of the needle, as boyes use to fasten their needle, for fear of losing it, in their caps, or clothes. This kind of Suture is fit in the curing and healing of Hare-lips, as we shall shew you hereafter expressed by a Figure.

The 4. kind of Suture termed *Gastroraphia*.

The fourth kind of Suture is termed *Gastroraphia*, invented for the restoring and uniting the great Muscles of the *Epigastrium*, or lower belly, cut with a great wound together with the *Peritoneum* lying under them. The manner whereof we shall shew in due place.

The 5. kind called the Dry Suture.

The fifth kind is called the dry Suture, which we use only in the wounds of the face, which also we will describe in its proper place.

CHAP. VII.

Of the flux of blood, which usually happens in Wounds.

The signs of blood flowing from an artery.



Oft-times great bleeding follows upon wounds, by reason of some vessel cut, broken, or torn, which there is need to heal and help diligently, because the blood is the treasure of nature, without which life cannot consist. The blood which floweth from an Artery, is thus known. It is more subtile, it runs forth as it were leaping, by reason of the vitall spirit contained together with it in the Arteries. On the contrary that which floweth from a Vein is more gross, black, and slow. Now there are many wayes of stanching blood.

The first way of staying bleeding.

The first and most usuall is that, by which the lips of the Wound are closed, and unless it be somewhat deep, are contained by Medicines which have an astringent, cooling, drying, and glutinous faculty; As *terre sigill. Boli Armeni*, ana $\zeta\beta$, *Thuris*, *Mastichis*, *Myrrha*, *Aloes*, ana ζij , *Farinae volat. molend.* ζij , *Fiat pulvis qui albumine ovi excipitur.* Or *Rx. Thuris & Aloes, ana partes equales.* Let them be mixt with the white of an Egge, and the down of a hare, and let the pledgets be dipped in these Medicines, as well those which are put unto the Wound as those which are applyed about it. Then let the Wound be bound up with a double clop and fit Ligature, and the part be so seated as may seem the least troublesome and most free from pain.

The 2. manner of stanching it.

But if the blood cannot be stayed by this means, when you have taken off all that covereth it, you shall press the Wound and the orifice of the Vessell with your thumb, so long untill the blood shall be concrete about it, into so thick a clot as may stop the passage.

The 3. way by binding of the vessels.

But if it cannot be thus stayed, then the Suture (if any be) must be opened, and the mouth of the Vessell towards the originall or root, must be taken hold of, and bound with your needle and thred, with as great a portion of the flesh as the condition of the part will permit. For thus I have staid great bleedings, even in the amputation of members, as I shall shew in fit place. To perform this work, we are often forced to divide the skin which

which covereth the wounded vessell. For if the Jugular vein, or Artery be cut, it will contract and with draw it self upwards and downwards. Then the skin it self must be laid open under which it lyeth, and thrusting a needle and thred under it, it must be bound as I have often done. But before you loose the knot, it is fit the flesh should be grown up, that it may stop the mouth of the vessell, lest it should then bleed.

An admonition

But if the condition of the part shall be such as may forbid this comprehension; and binding of the vessell, we must come to *Escharoticks*, such as are the powder of burnt *Vitriol*, the powder of Mercury, with a small quantity of burnt Allum; and *Causticks* which cause an *Eschar*. The falling away of which must be left to nature, and not procured by art, lest it should fall away before that the orifice of the vessell shall be stoped with the flesh, or clotted blood.

The 4 way by Escharoticks.

But sometimes it happens that the Chirurgeon is forced wholly to cut off the vessell it self, that thus the ends of the cut vessell withdrawing themselves, and shrincking upwards and downwards, being hidden by the quantity of the adjacent and incompassing parts, the flux of the blood, which was before not to be staid, may be stoped with lesse labour. Yet this is an extream remedy and not to be used, unlessse you have in vain attempted the former.

The 5 way by cutting off the vessels.

CHAP. VIII.

Of the pain which happens upon wounds.



He pains which follow upon wounds ought to be quickly asswaged, because nothing so quickly dejects the powers, and it alwayes causes a defluxion, of how good soever a habit and temper the body be of; for Nature ready to yeeld assistance to the wounded part, alwayes sends more humors to it, than are needfull for the nourishment thereof, whereby it comes to passe that the defluxion is easily increased, either by the quantity, or quality, or by both.

Pain weakeneth the body, and causes defluxions.

Therefore to take away this pain, the author of defluxion, let such medicines be applyed to the part as have a repelling and mitigating faculty; as R. *Olei Myrtili, & Rosarum, ana* ℥ ij, *Cera alb.* ℥ i, *Farinae hordei*, ℥ ss, *Boli armeni, & terra sigillat. ana* ℥ vj, Melt the Wax in the oyls, then incorporate all the rest, and according to Art, make a medicine to be applyed about the part: or R. *Emplast. Diacalcith.* ℥ iv, *Ole. Rosar. & aceti, ana* ℥ ss, *liquifiant simul*, and let a medicine be made for the fore mentioned use. Irrigations of oyl of Roses and Myrtiles, with the white of an Egge, or a whole Egge added thereto, may serve for lenitives, if there be no great inflammation; Rowlers and double cloaths moystened in Oxycrate, will be also convenient for the same purpose. But the force of such medicines must be often renewed, for when they are dryed, they augment the pain. But if the pain yeeld not to these, we must come to narcotick Medicines, such as are the Oyl of Poppy, of Mandrake, a cataplasim of Henbane and Sorrell, adding thereto Mallows and Marsh-mallows, of which we spoke formerly in treating of a Phlegmon.

Divers antidynes or medicines to asswage pain.

Lastly, we must give heed to the cause of the pain, to the kind and nature of the humor that flows down, and to the way which nature affects: for according to the variety of these things, the Medicines must be varied, as if heat cause pain, it will be asswaged by application of cooling things; and the like reason observed in the contrary; if Nature intend suppuration, you must help forwards its indeavours with suppurating medicines.

CHAP. IX.

Of Convulsion by reason of a Wound.



Convulsion is an unvoluntary contraction of the Muscles (as of parts movable at our pleasure) towards their originall, that is, the Brain and Spinal Marrow, for by this the convulsed member or the whole body (if the convulsion be universall) cannot be moved at our pleasure. Yet motion is not lost in a Convulsion as it is in a Palsie, but it is only depraved: and because sometimes the Convulsion possesseth the whole body, otherwhiles some part thereof, you must note that there are three kinds of Convulsions in generall.

What a Convulsion is.

The first is called by the Greeks *Tetanos*, when as the whole body grows stiffe like a stake that it cannot be moved any way.

Three kinds of an universall Convulsion.

The second is called *Opi sphotonos*, which is when the whole body is drawn backwards.

The third is termed *Emprosphotonos* which is when the whole body is bended or crooked forwards. A particular Convulsion is, when as the Muscle of the Eye, Tongue, and the like parts which is furnished with a Nerve, is taken with a Convulsion. Repletion or Inanition, Sympathy or consent of pain cause a Convulsion. Abundance of humors cause Repletion, dulling the body by immoderate eating and drinking, and omission of exercise, or any accustomed evacuation, as suppression of the Hemorrhoides, and courses: for hence are such like excrementitious humors drawn into the Nerves, with which they being replete and filled, are dilated more than is fit, whence necessarily becoming

Three causes of a Convulsion. Causes of Repletion.

more short, they suffer Convulsion. Examples whereof appear in Leather and Lute or Viol-strings, which swoln with moisture in a wet season are broken by repletion.

Causes of Inanition.

Immoderate vomitings, fluxes, bleedings, cause Inanition or Emptiness, wherefore a Convulsion caused by a wound, is deadly: as also by burning feavers. For by these and the like causes, the inbred & primogeneous humidity of the Nerves is wasted, so that they are contracted like leather which is shrunk up, by being held too neer the fire, or as fiddle strings which dried with Summers heat, are broken with violence, such a convulsion is incurable: For it is better a Feaver follow a Convulsion, than a Convulsion a Feaver; as we are taught by Hippocrates, so that such a Feaver be proportionall to the strength of the convulsifick cause, and the Convulsion proceed from Repletion; for the abundant and gross humor causing the Convulsion is digested and wasted by the feaverish heat.

Causes of convulsion by consent of pain.

The causes of a convulsion by reason of pain, are either the puncture of a Nerve, whether it be by a thing animal, as by the biting of a venemous beast; or by a thing inanimate, as by the prick of a needle, thorn or pen-knife; or great & piercing cold, which is hurtfull to the wounds, principally of the nervous parts; whereby it comes to pass, that by causing great and bitter pain in the nerves they are contracted towards their original, that is, the Brain, as if they would crave succour from their parents in their distressed estate. Besides also, an ill vapour carried to the brain from some putrefaction so vellicateth it, that contracting it self, it also contracteth together with it all the Nerves and Muscles, as we see it happeneth in those which have the falling sickness. By which it appears that not only the brain it self suffereth together with the Nerves, but also the Nerves with the Brain. The signs of a Convulsion are difficult, painfull and depraved motions, either of some part or of the whole body, turning aside of the Eyes and whole Face, a contraction of the Lips, a drawing in of the Cheeks, as if one laughed, and an univerfall sweat.

Signs of a convulsion.

CHAP. X.

The cure of a Convulsion.

The cause of a Convulsion by Repletion.
The cure of



He cure of a Convulsion, is to be varied according to the variety of the convulsive cause, for that which proceeds from Repletion must be otherwise cured, than that which is caused by an Inanition; and that which proceeds of pain, otherwise than either of them. For that which is caused by repletion is cured by discussing and evacuating medicines: as by diet conveniently appointed, by purging, bleeding, digestive locall Medicines, exercise, frictions, sulphurous baths and other things (appointed by the prescription of some learned Physitian which shall oversee the cure, which may consume the superfluous and excrementitious humors that possess the substance of the Nerves, and habit of the body. The locall remedies are Oyls, Unguents and Liniments, with which the Neck, back-bone and all the contracted parts shall be anointed. The Oyls are, the oyl of Foxes, Bayes, Cammomill, Worms, Turpentine, of *Costus*, of *Castoreum*: The Oyntments are *Vnguentum Arragon*, *Agrippæ*, *de Althæa*, *Martiatum*. This may be the form of a Liniment; R. *Olei chamem. & Laurin. ana* ℥ ij, *Olei Vulp.* ℥ i, *Vnguenti de Althæa & Marti. an.* ℥ β, *Axungie vulpæ,* ℥ i, *Aque vitæ,* ℥ i β, *Cere quantum sufficit.* Make a Liniment for your use, or R. *Olei Lumbric. de Spica & de Castoreo, an.* ℥ iij, *Axung. hum.* ℥ i, *Sulphuris vivi,* ℥. β. *Cere quantum sufficit.* Make a Liniment, or R. *Vnguenti Martiati, & Agrip. an.* ℥ iij. *Olei de Terebinth.* ℥ i β, *Olei Salvia,* ℥ β, *Aque vitæ* ℥ i, *Cere* ℥ i β, *fiat linimentum.* But this disease is cured by slender diet, and sweating with the Decoctions of *Guaiacum*, because by these remedies the gross, tough, and viscid excrements, which are in fault, are digested.

The cure of a Convulsion caused by inanition.

A Convulsion proceeding of Inanition is to be cured by the use of those things, which do wholesomly and moderately nourish. And therefore you must prescribe a diet consisting of meats full of a good nourishment, as broaths and cullices of Capons, Pigeons, Veal, & Mutton, boyling therein Violet and Mallow leaves. Conserves must be ordained, which may strengthen the debilitated powers, and humect the habit of the body, such as are the Conserves of Bugloss, Violets, Borage and water Lillies. The following broath will be profitable, R. *Lactuce, Buglos. & portul. an* M i, *quatuor seminum frigid. major. an.* ℥ β, *seminis Barberis* ℥ i. Let them all be boyled with a chicken, and let him take the broath every morning. If thirst oppresse him, the following Julep will be good. R. *Aque rosar.* ℥ iv, *Aque viol.* ℥ β, *Saccari albisimi* ℥ vi, *fiat Julep, utatur in siti.* If the Patient be bound in his body, emollient and humecting Clysters shall be appointed, made of the decoction of a sheeps head and feet, Mallows, Marsh Mallows, Pellitory of the wall, Violet leaves, and other things of the like faculty; or that the remedy may be more ready and quickly made: let the Clysters be of Oyl and Milk. Topick remedies shall be Liniments and Baths. Let this be the example of a Liniment. R. *Olei Viol. & Amygdal. dulc. an.* ℥ ij, *Olei Lilior. & Lumbric. an.* ℥ i, *Axungie porci recentis,* ℥ iij, *Cere novæ quantum sufficit, fiat Linimentum,* with which let the whole spine and part affected be anointed: This shall be the form of an emollient and humecting bath. R. *Fol. Malvæ, Bis Malvæ, Pariet. ana* M vi, *Seminis Lini & fenug. ana* ℥ β, *Caquantur in aqua communi, addendo Olei Lilior. ℥ viij.* Make a Bath: into which let the Patient enter when it is warm. When he shall come forth of the Bath, let him be dried with

An Emollient Liniment for any Convulsion

An Emollient and humecting Bath.

with warm clothes, or rest in his bed avoiding sweat. But if the patient be able to undergo the charge, it will be good to ordain a bath of milk, or oyl alone, or of them equally mixt together.

CHAP. XI.

Of the cure of a Convulsion, by sympathy and pain.



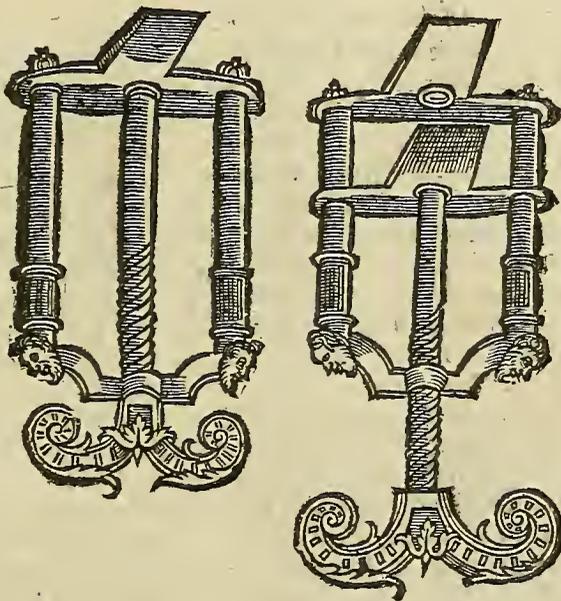
Convulsion which is caused both by consent of pain and Communication of the affect, is cured by remedies which are contrary to the dolorifick cause. For thus if it proceed from a puncture or venemous bite, the wound must be dilated and enlarged by cutting the skin, that so the venenate matter may flow forth more freely, for which purpose also medicines which are of a thin and liquid consistence, but of a drying and digestive faculty shall be powred in, to call forth and dissolve the virulency, as Treacle and Mithridate, dissolved in *Aqua vita*, with a little of some mercuriall powder: for this is a noble antidote. Also cupping glasses and scarifications will be good. Lastly, the condition of all dolorifick causes, shall be oppugned by ths opposition of contrary remedies, as if pain by reason of a pricked nerve or tendon, shall cause a Convulsion, it must presently be resisted by proper remedies, as oyl of Turpentine, of *Euphorbium*, mixt with *Aqua vita*, and also with other remedies appropriated to punctures of the nerves. If the pain proceed from excess of cold, because cold is hurtfull to the brain, the spinall marrow, and nerves; the patient shall be placed in a hot air, such as that of a hot-house, or stove, all the spine of his back and convulsed parts, must be anointed with the hot liniments above mentioned: for that is much better, than suddenly to expose him from the conceived convulsifick cause to a most hot fire or warm Bath. In the mean time the Chirurgion must take diligent heed, that as soon as the signs of the Convulsion to come, or already present, or at hand, do shew themselves, that he put a stick between the patients teeth, lest they be fast locked by the pertinacious contraction of the Jaws: for many in such a case have bit off their tongues, for which purpose he shall be provided of an instrument called *Speculum Oris*, which may be dilated and contracted according to your mind by the means of a screw, as the figures underneath demonstrate, the one presenting it open and somewhat twined up, and the other as it is shut.

The Cure of a Convulsion by a puncture, or bite.

A worthy *Alexipharmacum* or Antidote.

You must hinder the locking of the teeth.

The Figure of a *Speculum Oris*, to open the teeth when they are locked or held fast together.



CHAP. XII.

Of the Palsie.



The Palsie is the resolving or mollification of the nerves, with privation of sense and motion, not truly of the whole body, but of the one part thereof, as of the right or left side. And such is properly named the Palsie: for otherwise and less properly the resolution of some one member is also called the Palsie: for when the whole body is resolved, it is an Apoplexy. Therefore the Palsie sometimes takes half the body, otherwhiles the upper parts which are between the navell and the head, otherwhiles

What a Palsie is. The difference, ces thereof.

therwhiles the lower which are from the navell to the feet; sometimes the tongue, gullet, bladder, yard, eyes; and lastly, any of the particles of the body.

How it differs
from a Con-
vulsion.

It differs from a Convulsion in its whole nature. For in a convulsion, there is a contention and contraction of the part, but in this a resolving and relaxation thereof: besides, it commonly happeneth that the sense is either abolished or very dull, which usually remains perfect in a Convulsion. There are some which have a pricking, and as it were great pain in the part.

The causes.

The causes are internall or externall, the internall are humors obstructing one of the ventricles of the brain, or one side of the spinall marrow, so that the animall faculty, the worker of sense and motion, can not by the nerves come to the part to perform its action. The externall causes are a fall, blow, and the like injuries, by which oft-times the joints are dislocated, the spinall marrow wrested aside, and constrictions and compressions of the *Vertebrae* arise, which are causes that the animall spirit cannot come to the Organs in its whole substance. But it is easy by skill in Anatomy perfectly to understand by the resolved part the seat of the morbidick cause, for when there is a Palsie properly so called, that is, when the right or left side is wholly seized upon, then you may know that the obstruction is in the brain, or spinall marrow; but if the parts of the head being untoucht, either of the sides being wholly resolved, the fault remains in the originall of the spinall marrow; if the armes be taken with this disease, we may certainly think that the matter of the disease lies hid in the fifth, sixth, and seventh *Vertebra* of the neck. But if the lower members languish, we must judge the Paralytick cause to be contained in the *Vertebrae* of the loins and holy bone. Which thing the Chirurgion must diligently observe that he may alwaies have recourse to the originall of the disease. The Palsie which proceeds from a nerve cut, or exceedingly bruised, is incurable, because the way to the part by that means is shut against the animall spirit. Old men scarce or never recover of the Palsie, because their native heat is languid, and they are oppressed with abundance of excrementitious humors; neither doth an inveterate Palsie which hath long possessed the part, neither that which succeeds an Apoplexy, yeeld us any better hope of cure. It is good for a fever to come upon a Palsie, for it makes the dissipation of the resolving and relaxing humor, to be hoped for. When the member affected with the palsie, is much wasted, and the opposite on the contrary, much encreased in quantity, heat and colour, it is ill: for this is a signe of the extreame weakness of the afflicted part, which suffers it self to be defrauded of its nourishment, all the provision flowing to the sound or opposite side.

It is good for a
feaver to hap-
pen upon a
palsie.

CHAP. XIII.

Of the cure of the Palsie.



IN the cure of the Palsie we must not attempt any thing, unless we have first used generall remedies, diet and purging; all which care lyeth upon the learned and prudent Physitian. The Decoction of *Guaiacum* is very fit for this purpose, for it procures sweat and attenuates, digests and drieth up all the humidity which relaxeth the nerves: but when sweat doth not flow it shall not be

The decoction
of *Guaiacum* is
good for a
palsie.
Things actual-
ly hor good for
to be applied
to paralytick
members.

unprofitable to put about the resolved members, bricks heated red hot in the fire and quenched in a decoction of Wine, Vinegar, and resolving herbs, or also stone bottles, or Ox and Swine bladders, half filled with the same decoction; for such heat which is actually resuscitateth and strengthneth the heat of the part, which in this disease is commonly very languid: Then the patient shall go into a bathing-tub, which is vaulted or covered over just as we have described in our Treatise of Baths; that so he may receive the vapour of the following decoction. *R. fol. Salviae, Lavend. Lauri major. Absinth. Thym. Angelicae, Ruta, ana M.ß. Florum Chamem. Melil. Anethi, Anthos. ana P ij. Baccar. Laur. & Inniper. Conguassatar. ana ʒ j. Caryophyl. ʒ ij. Aquae fontanae & Vini albi, ana lbiv.* Let them be all put in the vessel mentioned in the Treatise lately described for use. The patient shall keep himselfe in that Bathing-tub, as long as his strength will give him leave, then let him be put into his bed well covered, where he shall sweat again, be dried and rest. Then let him be presently anointed with the following ointment, which *Leonellus Faventius* much commends, *R. Olei Laurini & de Terebinth. ana ʒ iij. Olei Nardini & petrolei, ana ʒ j. Vini malvatici, ʒ iv. Aqua vitæ ʒ ij. Pyrethri, Piperis, Sinap. Granor. Junip. Gummi hederae, anacard. Ladani puri, an. ʒ iß. Terantur & misceantur omnia cum Oleis & Vino: bulliant in vase duplici usque ad Vini consumptionem, facta forti expressione, adde Galbani, Bdellii, Euphorbii, Myrrhae, Castorei, adipis ursi, Anatis, Ciconiae, an. ʒ ij.* Make an ointment in form of a liniment, adding a little wax if need shall require. Or you shall use the following remedy approved by many Physitians. *R. Myrrhae & Aloes, Spicae nardi, Sanguinis draconis, thuris, cpeponacis, Bdellii, Carpobalsami, anomi, sarcocollae, croci, mastic. gummi arabici, styrac. liquidæ, ladani, castorei, ana ʒ ij. Moschi, ʒ j. Aqua vitæ, ʒ j. Terebinthinae venetæ, ad pondus omnium, pulverabuntur pulverisanda & gummi eliquabuntur cum aqua vitæ & aceti tantillo.* And let them all be put in fit vessels, that may be distilled in *Balneo Mariae*, and let the spine of the back, and paralytick limbs be anointed with the liquor which comes from thence. I have often tried the force of this following Medicine. *R. rad. Angel. Ireos. floren. gentian. cyperi, ana ʒ j. Calami aromat. Ci-*

Leon. Faventius
his ointment.

An approved
ointment for
the palsie.

nam. Caryophil. nucis Mosch. macis, ana ℥ij. Salvie major. Inæ arthriticæ, Lavend. rorism. sat. reia, pulleg. calament. mentastri, ana M β. florum chamem. melil. hyperic. anthos, stæchad. ana P j. Conciſa omnia contundantur. & in Aqua vit. & Vini malvat. an. ℥ij. infundantur. And let them be distilled in Balneo Mariæ, like the former let the affected parts be moistned with the distilled liquor, of which also you may give the patient a spoon full to drink in the morning with some Sugar. For thus the stomach will be heated, and much phlegm contained therein as the fuel of this disease, will be consumed.

You must also appoint exercises of the affected parts, and frequent and hard frictions, with hot linnen clothes, that the native heat may be recalled and the excrements contained in the parts digested: you may also use the Chymicall oyls of Rosemary, Tyme, Lavander, Cloves, Nutmegs; and lastly, of all spices, the manner of extracting whereof we shall hereafter declare in a peculiar Treatise.

A distill'd wa-
ter good to
wash them
outwardly, &
to drink in-
wardly.

Exercises and
frictions.
Chymical oyls;

CHAP. XIV.

Of Sowning.



Sowning is a sodain and pertinacious defect of all the powers, but especially the virall; in this the patients lie without motion and sense, so that the Ancients thought that it differed from death only in continuance of time. The cause of sowning, which happens to those that are wounded is bleeding, which causeth a dissipation of the spirits: or fear, which causeth a sodain and joint retirement of the spirits to the heart. Whence follows an intermission of the proper duty, as also of the rest of the faculties, whilst they being thus troubled, are at a stand. Also Sowning happens by a putrid and venenate vapour, carried to the heart by the arteries, and to the brain by the nerves; by which you may gather, that all sowning happens by three causes. The first is, by dissipation of the spirits and native heat, as in great bleeding. And then by the oppression of these spirits by obstruction, or compression, as in fear, or tumult; for thus the spirits fly back hastily from the surface and habit of the body, unto the heart and center. Lastly, by corruption, as in bodies filled with humours, and in poysonous wounds. The signs of sowning are paleness, a dewy and sodain sweat arising, the failing of the pulse, a sodain falling of the body upon the ground without sense and motion, a coldness possessing the whole body, so that the patient may seem rather dead, than alive. For many of these who fall into a sown die unless they have present help.

Therefore you shall help them, if when they are ready to fall, you sprinkle much cold water in their face, if that the sowning happen by dissipation of the spirits, or if they shall be set with their faces upwards, upon a bed or on the ground, as gently as may be; and if you give them bread dipped in wine to hold and chew in their mouths. But if it be caused by a putrid vapour and poysonous air, you shall give them a little Michridate or Treacle in Aqua vitæ with a spoon, as I usually do to those which have the plague, or any part affected with a Gangrene, or spacell. But if the patients cannot be raised out of their sownes, by reason of the pertinacious oppression and compression of the spirits about the heart, you must give them all such things as have power to diffuse, call forth and resuscitate the spirits, such as are, strong wines to drink, sweet perfumes to smell: You must call them by their own name loud in their eare, and you must pluck them somewhat hard by the hairs of the Temples, and neck. Also rub the temples, nostrils, wrists and palms of the hands with Aqua vitæ, wherein Cloves, Nutmegs, and Ginger have been steeped.

What sowning
is.

Three causes
of sowning.

The cure of
sowning caused
by dissipation
of spirits.

The cure of
sowning caused
by a venenate
air.

The cure of
sowning caused
by oppression
& obstruction.

CHAP. XV.

Of Delirium (i.) *Raving, Talking idly or Doting.*

Doting or talking idly, here is used for a symptome which commonly happeneth in feavers caused by a wound, and inflammation; and it is a perturbation of the phantasie, and function of the mind, not long induring. Wherefore such a doting happens upon wounds, by reason of vehement pain, and a feaver, when as the nervous parts as the joints, stomach, and midriffe, shall be violated.

For the Ancients did therefore call the Midriffe *Phrena*, because when this is hurt, as if the mind it self were hurt, a certain phrensie ensues; that is, a perturbation of the animall faculty, which is employed in ratiocination; by reason of the community which the *Diaphragma* hath with the brain, by the nerves, sent from the sixth conjugation, which are carried to the stomach. Therefore doting happens by too much much bleeding, which causeth a dissipation of the spirits, whereby it happens that the motions and thoughts of the mind erre, as we see it happens to those who have bled much in the amputation of a member. And it happens by the puncture of a venenous beast, or from seed retained or corrupted in the womb, or from a Gangrene or Sphacel, from a venenate and putrid air carried up to the brain, or from a sodain tumult & fear. Lastly, what things soever with any distemper especially hot, do hurt and debilitate the mind. These may cause doting by the afflux

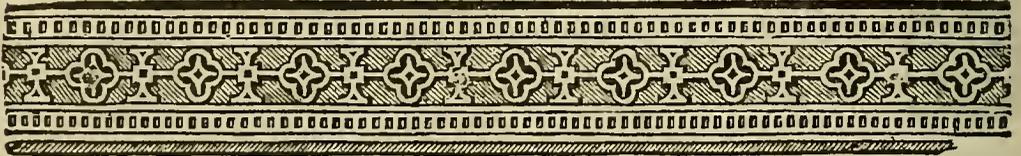
What a sympto-
maticall
Delirium is.
The causes
thereof.

Why the brain
suffers with the
midriffe.

The Cure
of

of humors, specially cholerick, by dissipation, oppression or corruption of the spirits. Therefore if it shall proceed from the inflammation of the brain, and *Meninges* or membranes thereof; after purging and blood-letting by the prescription of a Physitian, the hair being shaved or cut off, the head shall be fomented with rose vinegar, and then an Emplaister of *Diacalcitheos* dissolved in oyl and vinegar of Roses, shall be laid thereupon. Sleep shall be procured with Barly creams, wherein the seeds of white Poppy have been boiled, with broths made of the decoction of the cold seeds of Lettuce, Purslain, Sorrell, and such like. Cold things shall be applied to his nostrills, as the seeds of Poppy gently beaten with Rose water and a little vinegar. Let him have merry and pleasant companions that may divert his mind from all cogitation of sorrowful things, and may ease and free him of cares, and with their sweet intreaties may bring him to himself again. But if it happen by default of the spirits, you must seek remedy from these things which have been set down in the Chapter of Sowning.

The End of the Ninth Book.



OF THE GREENE AND BLOODY VVOVND OF EACH PART.

THE TENTH BOOK.

CHAP. I.

Of the kinds or differences of a broken skull.



Now that we have briefly treated of wounds in generall, that is, of their differences, signs, causes, prognosticks and cure, and also shewed the reason of the accidents and symptoms which usually follow and accompany them, it remains that we treat of them as they are incident to each part, because the cure of wounds must be diversly performed according to the diversity of the parts. Now we will begin with the wounds of the head. Therefore the head hath the hairy scalp lightly bruised without any wound, otherwhiles it is wounded without a Contusion, and sometimes it is both contused and wounded: but a fracture made in the skull, is sometimes superficially, sometimes it descends even to the *Diploe*, sometimes it penetrates through the 2 Tables, and the *Meninges* into the very substance of the brain; besides, the brain is oft-times moved and shaken with breaking of the internall veins, and divers symptoms happen when there appears no wound at all in the head: of all and every of which we will speak in order, and add their cure, especially according to the opinion of the divine *Hippocrates*. He in his Book of the wounds of the head, seems to have made 4 or 5 kinds of fractures of the skull. The first is called a fissure or fracture, the 2 a contusion or collision, the 3 is termed *Effractura*, the 4 is named *Sedes*, or a seat; the 5 (if you please to add it) you may call a Counterfissure, or as the interpreter of *Paulus* calls it, a *Resonitus*. As when the bone is cleft on the contrary side, to that which received the stroke. There are many differences of these 5 kinds of a broken skull. For some fractures are great, some small, and others indifferent; some run out to a greater length or breadth; others are more contracted; some reside only in the superficies; others descend to the *Diploe*, or else pierce through both the Tables of the skull; some run in a right line, others in an oblique and circular; some are complicated amongst themselves, as a fissure is necessarily and alwaies accompanied with a Collision or Contusion; and others are associated with divers accidents, as pain, heat, swelling, bleeding and the like. Sometimes the skull is so broken, that the membrane lying under it, is pressed with shivers of the bone, as with pricking needles. Somewhiles none of the bones falls off. All which differences are diligently to be observed, because they force us to vary the cure, and therefore for the help of memory, I have thought good to describe them in the following Table.

The differences of a broken head.

The kinds of a broken Skull out of *Hippocrates*.

Differences from their quantity. Differences from their figure. From their complication.

A Table of the fractures of the Skull.

Either manifest, and apparent, that is } To your sight, } To your feeling, } Or instrument.

On the side, as for example, when the right side of the bone of the forehead is stricken, the left is cleft.

In the same bone, and that two manner of wayes, as

Or from above to below, as when not the first Table which received the blow is cleft, but that which is under it.

Keep their naturall figure and site touching each other, whence proceeds that fracture of the skull which is called a fissure, which is

Or obscure and not manifest, when as not the part which received the blow is wounded, but the contrary thereto, and that happens either

In divers bones, to wit in such men as want sutures, or have them very close, or disposed otherwaies then is fit, and this opposition is either

From the right side to the left, and so on the contrary, as when the right Bregma is struck, and the left cleft.

From before to behind, and the contrary, as when the forehead is smitten, the nowle is cleft.

Or between both, that is, the obscure and manifest, as that which is termed a Capillary fissure, and is manifested by smearing it over with oyl, and writing ink.

Wholly, so that the particles of the broken bone removed from their seat, and falling down, press the membrane, whence proceeds that kind of effracture which retains a kind of attrition, when as the bone struck upon is broken as it were into many fragments, shivers and scales, either apparent, or hid in the sound bone, so that it is pressed down.

Or in some sort, as when the broken bone is in some part separated, but in others adheres to the whole bone, whence another kind of effracture arises; you may call it Arched, when as the bone so swells up, that it leaves an empty space below.

Or lose their site, and that either

Or by incision of a sharp, or cutting thing, but that incision is made, either by

Succission, when the bone is so cut, that in some part it yet adheres to the sound bone. Rescission, when the fragment falls down wholly broken off. Or Seat, when the mark of the weapon remains imprinted in the wound that the wound is of no more length nor breadth than the weapon fell upon.

Another

Another Table of the differences of a fractured Skull.

		Simple, as when they are found solitary and by themselves.
The differences of fractures common to these of all other parts are drawn, either from	Their nature, according to which fractures are call'd,	Compound and that either
		Mutually with themselves, as a contusion, or collision with incision, a fissure with an effracture. Or with other symptomes, as swelling, pain, heat, bleeding, convulsion and the like.
	Their Quantity, whence they are called, great, indifferent and small, according to the tripla dimension of length, breadth and profunditie.	
	Their figure, from whence they are called	Right, Oblique, Transverse, Round, Triangular.
	Their site, whence they are termed on the fore or back, or the right or left, or the upper or lower part, or superfiary and profound.	
	The part, whence it is called a Fracture of the Forehead, Nowl, Bregma, and Stony bones; and hence it is judged, what may be deadly or hopefull of recovery, easie or difficult to cure.	

CHAP. I I.

Of the causes and signs of a broken Skull.

The causes of a broken Skull are externall, as a fall, a blow or stroak with any kind of weapon, sharp, obtuse, heavy, hard, the bitings of Beasts and many other things of the like kind. But the signs by which we come to know that the Skull is broken, are of two kinds; for some of them are found out by the reasoning and discourse of the mind, other by the sense, as those which lay open the wound to the ey & hand.

The Rationall signs shew by these things which have happened upon the thing it self, whether it be, and of what sort it is. For you may know the skull is broken, if the Patient shall fall down with the stroak, or if he shall fall headlong from a high place upon some hard thing. If for sometime after the stroak, he shall lie without speaking, sight and hearing, if he shall have felt and feel much pain, so that he is often forced to put his hand to the Wound. But also the weapon is to be considered, that is, whether if it be heavy, obtuse, pricking or sharp. Also we must consider with what and how great strength the stroak was given, and with how great anger and from what distance the weapon fell. Also he must consider whether the Patient received the blow; with his head unarmed and naked; whether he fell into a fown presently after the blow; whether when he came to him self, he was in his right senses; whether his eyes were blinded, whether he were troubled with a giddiness or dizines, and whether he bled at the nose, mouth, ears, or eyes, and lastly whether he vomited. For Hippocrates wriees, that those who have their brain cut, must necessarily have a fever and vomiting of choler to ensue thereupon, which Galen confirming in his Commentary saith, that the same happens also when the Wound comes to the Membranes of the brain.

Also a dull sound as from a broken vessell coming from the skull, (the hairy scalp and Pericranium being taken off) and it being lightly smitten upon with an Iron probe, is said to be a sign of a fracture thereof, as it is recorded by Paulus Aegineta. Truly all these signs make a great conjecture or rather assuredness that the skull is wounded, and the brain hurt, as which cannot happen unless the bone be broken, as Celsus hath written. Yet many have had their skulls broken, who had no such sign immediately after the blow; but this is very seldome. But I do not think fit amongst so many signs, here to omit that which is set down by Guido. If any (saith he) will know in what place the skull is broke, let the Patient hold fast between his fore teeth, one end of a lute string or thread, and the Chirurgion hold the other in his hand; then let him lightly touch or play upon the string with his fingers; for in the very instant of the sound or stroke, the Patient will be certainly admonished, or perfectly perceive the part of the skull that is broken, and as overcome and forc'd by

The externall causes.

Rationall causes.

Aphor. 50. sec. 6.

Lib. 8. cap. 4.

by this sense of pain, will by lifting up his hand make demonstration thereof. As yet I have not been able to find the truth hereof by experience, although I have made tryall of it in many. Wherefore I cannot say any thing certainly of this sign, as neither of that which is mentioned by *Hippocrates* in *Coais Pres.* In such as you doubt, whether the bones of the skull be broken, or not, you must judg by giving them the stalk of the *Asphodill*, to chaw on both sides of their jaws, but so that you bid them withall observe, whether they perceive any bone to crackle, or make a noise in their heads, for these which are broken seem to make a noise.

But passing over these things, now let us come to these signs, which may be obvious to our senses.

Hippocrates
and *Guidoes*
conjecturall
signs of a bro-
ken skull.

CHAP. III.

Of the signs of a broken skull, which are manifest to our sense.

THese signs are here said to be manifest to sense, which when the bone is bared, manifest the wound to our eyes, fingers and probe. But if the hairs stand upon one end in the wound, you may know the bone is broke, because the hair which yeelds to the violence of the blow, cannot be so cut, the bone which resists the stroak being not violated, as it is observed by *Hippocrates*; wherefore we may by the sight of this one thing, before any inspection of the wound it self, suspect by a probable conjecture, that the skull is broken, and perswade the beholders or standers by so much.

Moreover we may, before we have cut the skin across, or laid bare the bone, give a guess by our feeling, whether the skull be broken, or no, if we by pressing down our fingers neer the wound shall perceive the bone either to stand up, or be pressed down otherwise than it should naturally be.

The skin being cut crosswise and the bone laid bare, if the fracture be not obvious to the eye, you must try with your probe, which must neither be too thin nor too sharp, lest by falling into some naturall cranies, it may cause us to suspect without any cause that the bone is broken; neither let it be too thick, lest the little clifts may deceive you. If when your probe comes to the bone, it meets with nothing but that which is smooth and slippery, it is a sign that it is whole.

But on the contrary if you find it any thing rough, specially where there is no suture, it shews the bone is broken. But let the Chirurgeon consider, that the fractures are not seldom upon the sutures; and that the sutures have not alwayes one and their naturall site; as also it often comes to pass that the broken cleft, or cut bone can neither be perceived by your sight, nor instrument; wherefore if you think there is any such thing, by the rationall signs above mentioned; anoint the place with writing Inke, and oyl, and so you shall find the crack or clift, by the means we shall shew you hereafter.

When you are certain of the fracture, then you must diligently consider the greatness of the disease, and apply medicines speedily. Verily when a fracture chanceth to light upon any suture, the disease is hard to be known, unless the fracture be very great, because the sutures by their clifts and roughness resemble fractures; wherefore *Hippocrates* saith that he was deceived by them. Now having briefly delivered the differences and signs of a broken skull, it is time to come to the severall kinds thereof, with a Fissure.

Sensible signs
of a broken
skull before
the dividing of
the skin.
*Lib. de vulner.
cap.*

What a probe
must be used in
searching for a
fracture.

*Lib. 5 Epid. in
Autonomus of
Omithun Hippo-
crates was de-
ceived by the
sutures;*

CHAP. IIII.

Of a Fissure, being the first kind of a broken Skull.

TH the Chirurgeon by the forementioned signs shall know that the skull is broken, or cracked, and if the wound made in the musculous skin shall not be thought sufficient for ordering the fissure, then must he shave off the hair, and cut with a razour, or incision knife, the musculous skin with the *Pericranium* lying under it, in a triangular or quadrangular figure to a proportionable bigness, alwayes shunning as much as in him lyes, the sutures and temples; neither must he fear any harm to ensue hereof; for it is far better to bare the bone by cutting the skin, then to suffer the kind & nature of the fracture to remain unknown, by a too religious preservation of the skin; for the skin is cured without any great ado, though pluckt off to no purpose.

For it is much more expedient (in *Hippocrates* opinion) to cure diseases safely and securely, though not speedily, than to do it in a shorter time with fear of relapse and greater inconveniencies. Let this dissection be made with a razour, or sharp knife, and if there be any wound made in the skin by the weapon, let one of your incisions be made agreeable thereto.

A Razour, or Incision Knife.



A 2

Now

Upon what
occasion the
hairy scalp
must be cut

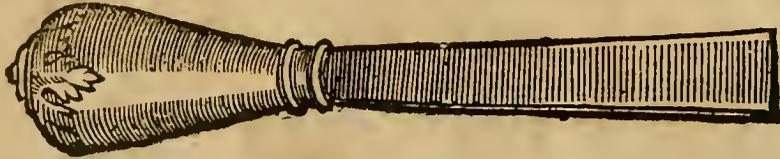
Celsus.

Hippocrates;

The manner
how to pull
the hairy scalp
from the bro-
ken skull.

Now therefore the Musculous skin together with the *Pericranium* must be divided and cut with a sharpe razour pressed and guided with a strong and stedy hand; then it must be so pluckt from the bone, or skull lying under it, that none thereof remain upon the bone; for if it should be rent or torn with the Trepan, it would cause vehement pain with inflammations. You must begin to pull it back at the corners of the lines crossing each other with right angles, with this Chissell whose figure you see here expressed.

A Chissell or Instrument to pull back or separate the Pericranium from the skull.



Then you must fill all the wound with bouldsters of fine soft lint, that for the lips may be kept further a sunder. But you shall apply upon it medicines fit to stanch blood. But if it come so to pass that the blood flows forth so violently, that it can be stayed by no means, the vessell it self must be bound, after this manner.

The manner
to bind a ves-
sell in case of
roo much
blee ding.

First thrust through the musculous skin on the outside with a needle and thred, then thrust the needle back again; then tye the thred on a knot on the outside, but first put some lint rolled up to the bigness of a Goose quill between the thred and the hairy scalp on both sides thereof, lest the strait twitching of of the thred which may serve to stay the bleeding, may cut and tear the skin, or cause pain: then must you raise his head somewhat higher.

A History.

I have lately tried, and performed this upon a certain Coach-man, who thrown from the Coach upon his head on a pavement of free stone, exceedingly bruised the hind part of the *Bregma*, for which cause it was fit to open the musculous skin, with a cross incision, both that the congealed blood might be pressed out, as also that the fracture (if there were any) might be observed. But an Artery being cut in performance hereof, when as the Chirurgion who was there present could not stay the blood leaping out with violence; and the Coachman already had lost so great a quantity thereof, that his strength was so much decayed, that he could not stir himself in his bed, or scarce speak: I being called, shewed them by experience, that whereas astringent medicines were used before to no purpose, it was better to stay the bleeding by binding the vessell, than to let the Patient dye for a childish fear of pricking him.

A way to find
a fracture in
the skull,
when it pre-
sents not it
self to the
view at the
first.

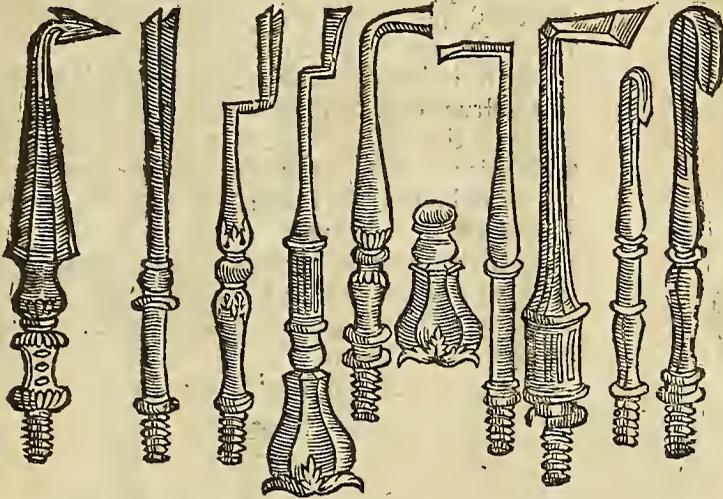
But that we may return to our former matter, the Chirurgion shall the next day consider with what kind of fracture the bone is hurt; and if no signs of hurt appear to the eyes, nor be perceived with your fingers and probe, yet some of the rationally signs may cause one to have a conjecture that there is a fracture: Then you must anoint as we told you before, the bared done with writing Ink, and a little oyl of Roses; that the cleft or crack may be dyed or coloured therewith, if that there be any there. Then the next dressing you must dry the bone with a linnen cloth, and scrape off the Ink, and oyl, with scraping Instruments made for the purpose; if any part thereof shall be sunk into the bone; for if there be any crack, it will be black; Wherefore you must continue scraping untill no sign of the fissure remain, or else untill you come even to the *Dura Mater*. But that he may be more certain whether the fissure pierce through both the Tables of the skull, he must bid the Patient, that stopping his nose and mouth, he strive to breath with a great indeavour. For then bloody matter or *Sanies* will sweat through the fissure: For the breath driven forth of the chest, and prohibited passage forth, swells and lifts up the substance of the brain, and the *Meninges*, whereupon that frothy humidity and *Sanies* sweats forth. Therefore then the bone must be cut even to the *Dura Mater*, with *Radula* and other scraping Instruments, fit for that purpose, yet so as you hurt not the membrane; but if the fissure shall be somewhat long, it will not be convenient to follow it all the extent thereof: for nature will repair and restore the remnant of the fissure by generating a *Callus*; besides also the Chirurgion according to *Celsus* opinion must take away as little of the bone as he can, because there is nothing so fit to cover the brain, as the skull. Therefore it shall suffice to make a passage, whereby the blood and *Sanies* may pass and be drawn forth, lest that matter being suppressed may corrupt the bone, and cause an inflammation in the brain. But the broken bone must be taken forth within three dayes if it be possible, especially in Summer, for fear of inflammation. Yet I have often taken forth with a Trepan and with Scrapers the bones of the skull, after the seventeenth day, both in Winter and Summer; and that with happy success. Which I have the rather noted, lest any should at any time, suffer the wounded to be left destitute of remedy: for it is better to try a doubtfull remedy than none: Yet the By-standers shall be admonished and told of the danger, for many more dye who have not the broken bones of the skull taken out, than those that have.

A sign that
both the Ta-
bles are bro-
ken.

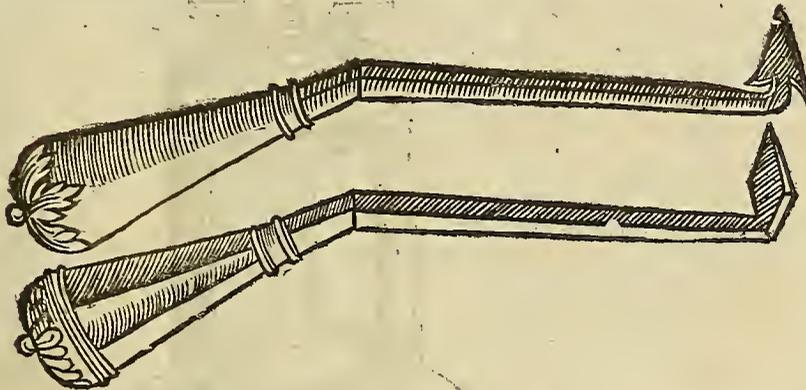
You may use
the Trepan
after the tenth
day.

But the Instruments, with which the wounded or cleft bones may be cut out are called *Scalpri* or *Radulae*, of which I have caused divers sorts to be here decyphered, that every one might take his choice, according to his mind, and as shall be best for his purpose. But all of them may be scrued into one handle, the figure whereof I have exhibited.

Radulae or *Scalpri*, (i) *Shavers or Scrapers*.



Radulae of another form, for the better cutting of the greater bones.



To conclude, when the skull shall be wounded or broken with a simple fissure, the Chirurgion must think he hath done sufficient to the Patient, and in his Art, if he shall divide the bone and dilate the fissure or cleft with the described Instruments, though he have used no Trepan, although the fissure pierce through both the Tables. But if it doth not exceed the first Table, you must stay your scrapers as soon as you come to the second, according to the opinion of *Paulus*: but if the bone shall be broken & shivered into many peeces, they shall be taken forth with fit Instruments, using also a Trepan if need shall require, after the same manner as we shall shew you hereafter.

It is sufficient in a simple fissure to dilate it with your *Scalpri* only and not to Trepan it.

CHAP. V.

Of a Contusion, which is the second sort of fracture.

AN *Ecchymosis*, that is, effusion of blood, presently concreting under the musculous skin, without any wound, is oft caused by a violent contusion. This Contusion if it shall be great, so that the skin be divided from the skull, it is expedient, that you may make an incision, whereby the blood may be evacuated and emptied. For in this case you must wholly desist from suppurative medicines (which otherwise would be of good use in a fleshy part) by reason that all the moist things are hurtfull to the bones, as shall be shown hereafter.

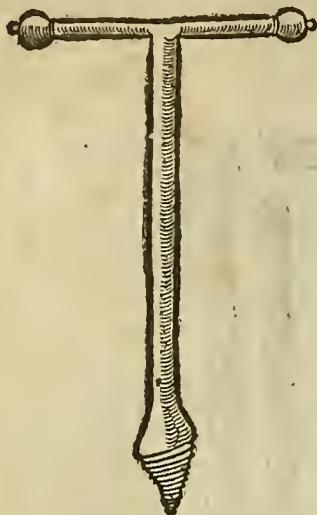
What an *Ecchymosis* is.

Such like Contusions more frequently happen in children, being easily perceived by the softness, and inundation of the contused part: forth of which oft-times when I have opened them with my incision knife, serous, clotted and blackish blood hath issued. The residue of the cure is perfected by moderate compression of the part, and drying medicines. Moreover the skull of a child, may be pressed down, by a great contusion, even as we see it happens in thin vessels of brass, lead, or pewter, for oft-times by the pressure of your finger, they are so dented in, that the print thereof remains; yet sometimes they fly back of themselves, and again acquire their former plainness and equability, which also happens in the bones of children, women and such as are soft, humid, & phlegmatick. But if the bones do not spring back of themselves, you must apply a cupping-glass with a great flame; withall command the Patient, to force his breath up as powerfully as he can, keeping his mouth and nose

How a contusion of the skull must be cured.

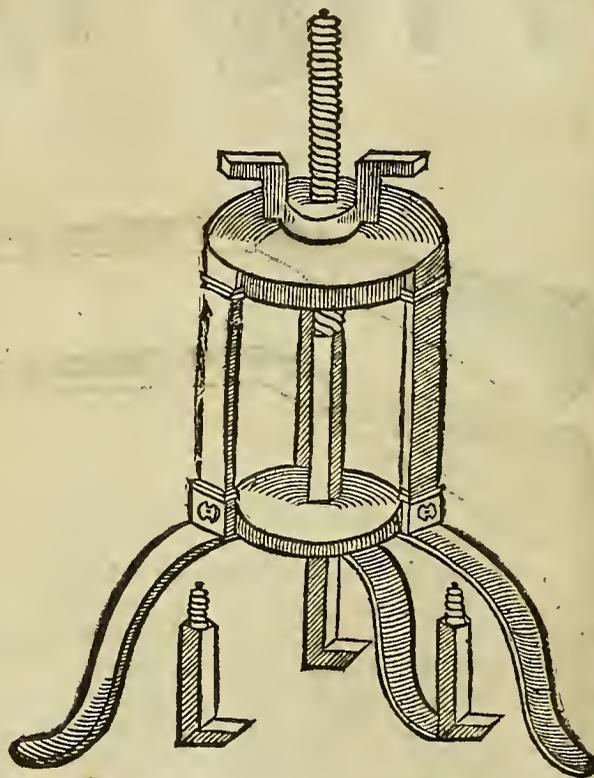
Different cures of a depressed skull.

close shut; for thus there will be hope, to restore the depressed bone to its place, by the spirits forc'd upwards to the brain and skull, by the powerfull attraction of the cupping-glass. But if so be that the bone cannot by this means be restored, then you must make an incision in the skin, and fasten such a Trepan, as you see here delineated, into the depressed, or settled part of the bone, and so pull it directly upwards, just as we see Coopers raise the staves of their cask, when they are sunk too much in.



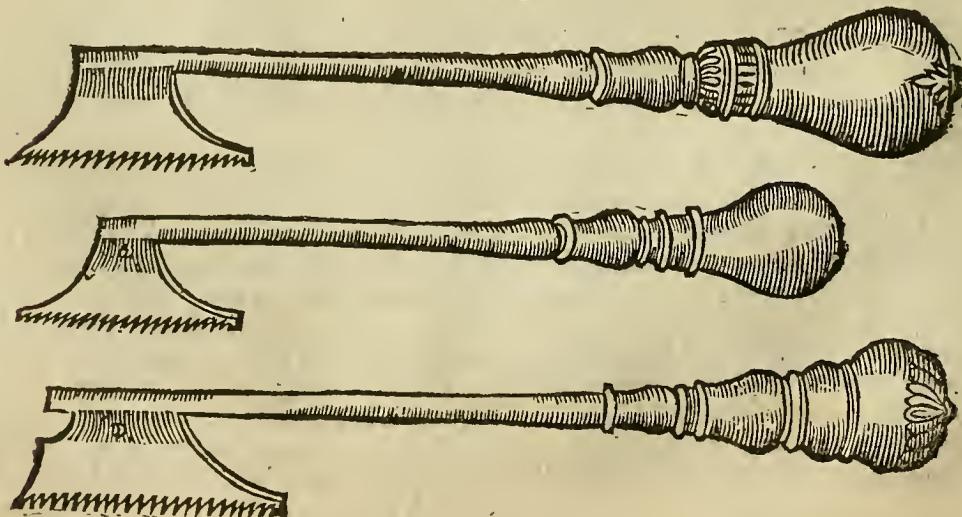
But if the bone shall be too strong, thick, and dense, so that this Instrument will not serve to pluck it forth; then you must perforate the skull, in the very center of the depression, and with this threefold Instrument, or Levatory put into the hole, lift up and restore the bone to its naturall site; for this same Instrument is of strength sufficient for that purpose. It is made with three feet, that so it may be applyed to any part of the head which is round; but divers heads may be fitted to the end thereof according as the business shall require, as the figure here placed doth shew.

A three footed Levatory.



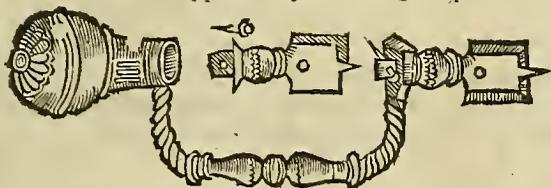
But if at any time it comes to pass, that the bone is not totally broken or depressed, but only on one side; it will be fit, so to lift it up, as also to make a vent for the issuing out of the filth, to divide the skull with little saws like these, which yee see here expressed; for thus so much of the bone, as shall be thought needfull, may be cut off without compression, neither will there be any danger of hurting the brain or membrane with the broken bone.

The figures of Saws fit to divide the skull.

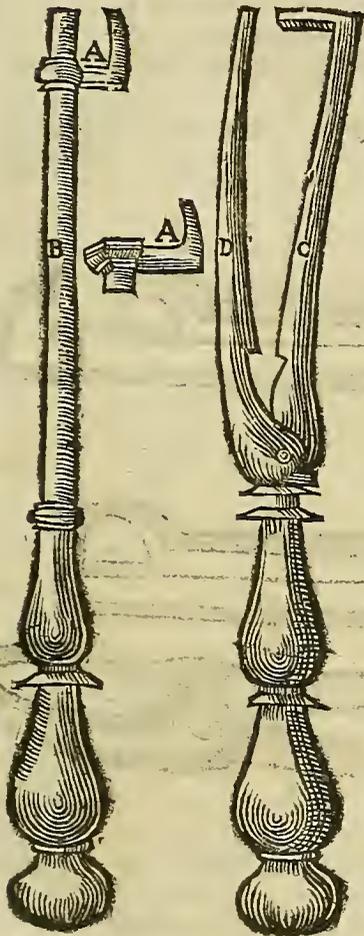


But if by such signs as are present, and shall appear, we perceive or judge that the contusion goes but to the second Table, or scarce so far; the baring or taking away of the bone, must go no further than the contusion reaches; for that will be sufficient to eschew and divert inflammations and divers other symptoms. And this shall be done with a scaling or Desquamatory Trepan, (as they term it) with which you may easily take up as much of the bone, as you shall think expedient: And I have here given you the figure thereof.

A Desquamatory or Scaling Trepan.



A delineation of other Levatories.



A A. Shews the point or tongue of the Levatory, which must be somewhat dull, that so it may be the more gently and easily put between the Dura Mater and the skull, and this part thereof may be lifted up so much by the head or handle taken in your hand, as the necessity of the present operation shall require.

B. Intimates the body of the Levatory, which must be four square, lest the point, or tongue put thereon should not stand fast, but the end of this Body must rest upon the sound bone, as on a sure foundation.

The use thereof is, thus; put the point or tongue under the broken or depressed bone, then lift the handle up with your hand, that so the depressed bone may be elevated.

C. Shews the first Arm of the other Levatory, whose crooked end must be gently put under the depressed bone.

D. Shews the other Arm, which must rest on the sound bone, that by the firm standing thereof, it may lift up the depressed bone.

CHAP. VI.

Of an Effraction, depression of the bone, being the third kind of Fracture.

BEfore I come to speak of an Effraction, I think it not amiss to crave pardon of the courteous and understanding Reader, for this reason especially, that as in the former Chapter, when I had determined and appointed to speak of a Contusion, I inserted many things of a Depression; so also in this chapter of an Effraction, I intend to intermingle something of a Contusion; we do not this

through any ignorance of the thing it self; for we know that it is called a Contusion, when the bone is depressed and crushed, but falls not down. But an Effraction is when the bone falls down and is broken by a most violent blow. But it can scarce come to pass, but that the things themselves must be confounded and mixt, both as they are done; and also when they are spoken of: so that you shall scarce see a Contusion without an Effraction, or this without that. Therefore the bones are often broken off and driven down with great and forcible blows, with clubs whether round or square, or by falling from a high place directly down, more or lesse according to the force of the blow, kind of weapon, and condition of the part receiving the same: Wherefore you must be provided with diversity of remedies and instruments to encounter therewith. Wherefore admit the bone is pressed down, and shivered into many pieces, now for that these splinters need not be taken out with a Trepan, you may do the business with Levatories made and neatly fashioned for that purpose; such as these, which are here exprest.

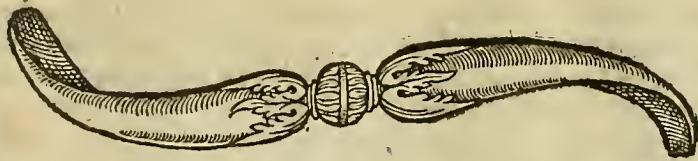
What a contusion is.

What an Effraction is.

The cause of Effractions.

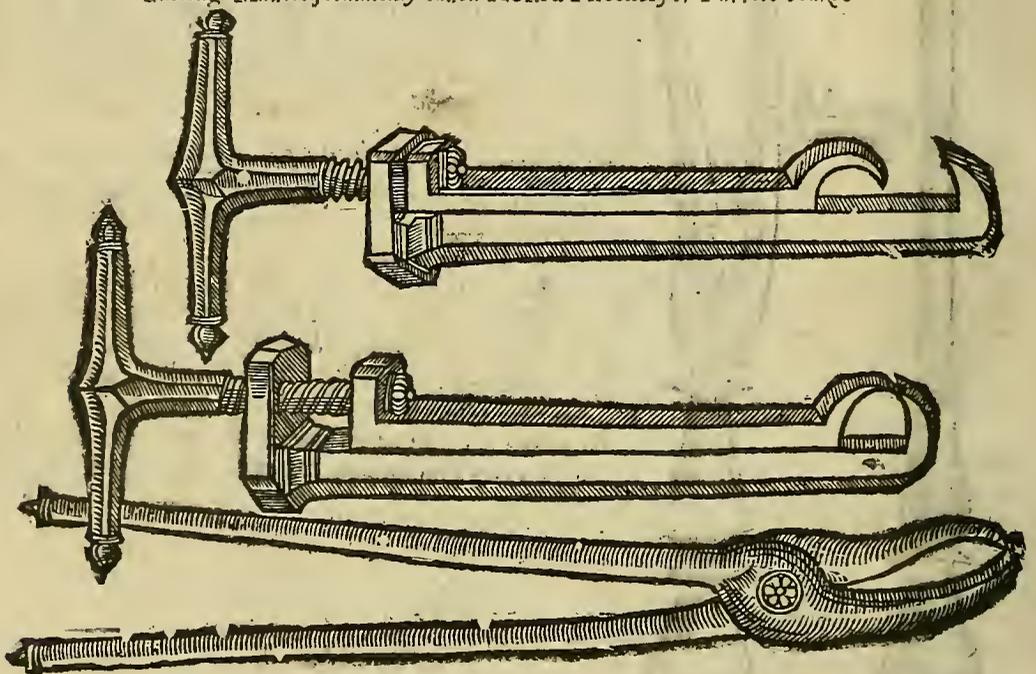
The cures

A Levatorie.



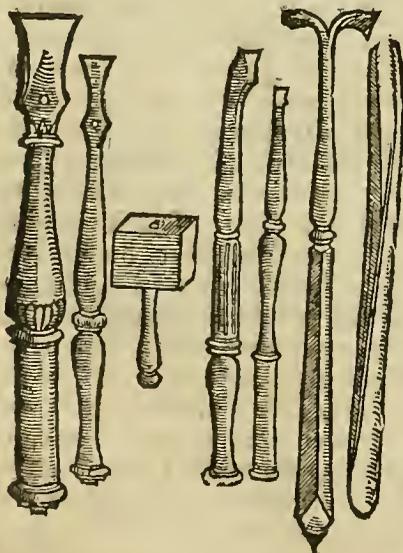
But we must have special care, lest that in pulling and taking out of these scales and splinters, we hurt the membranes. These scales are sometimes very rough and prickly, so that they cannot touch the *Meninges* without offence; but somewhiles the business is so intricate, that they cannot be taken out unless by enlarging the fracture. Wherefore in this case, if there be a space so large, as that the ends of these mallets may enter, you may easily shear off so much of the bone as shall be necessary and requisite for the taking away of these scales, without any assistance of the Trepan, which I have done very often and with good success; for the operation performed by these mallets is far more speedy and safe, than that with the Trepan; and in the performance of every operation, the chief commendation is given to safeness and celerity.

Cutting Mallets, commonly called *Rostra Psittaci*, or *Parrots beaks*.



Moreover I have thought good here to give you the figures of chissels, scrapers, pincers, together with a leaden mallet, because such instruments are not only very necessary to take forth the scales of bones which are broken, but also to plain and smooth those which remain whole.

The Figures of Scrapers, Pincers, a leaden mallet, &c.



But here you must note, that a Trepan, nor Levatorie, must never be applied to a bone quite broken, lest the membranes lying under it be hurt by the compression thereof. Therefore you must apply them to a sound bone, but as near as you can to the fracture, so that you take away as little of the skull as is possible, lest the brain despoiled of its bony cover; take some harm thereby. Neither effractions, nor yet fissures, if they be of some length; must be followed to their ends, but think your self well, if you have made a passage for the issuing forth of the *Sanies* or filth, & have drawn forth that bone, which pricked the membranes. For nature is accustomed by generating a *Callus* to soulder, or unite the bones of the skull, as it also doth thereof the other parts; as we have read it written by *Hippocrates* and *Galen*; for which purpose it hath by singular providence replenished both the tables of the skull, with a certain alimentary and bloody matter, that with this as with marrow it might repair the loss and defect of the bone.

The

The truth hereof was lately manifested in the servant of Master *Grolo*, who had an Effraction on the coronall bone, by a grievous blow, given him with the foot of a Mule; which when I understood, I divided the musculous skin with a three cornered section in that place, with an intent to apply a Trepan there; wherefore the day following, the bone being bored, and when I thought to draw it forth, yea verily endeavoured to pluck it forth, being already divided with the Trepan, I perceived a fearefull production of an Effraction; by the moveableness of the bone shaking under my hand; for it reached from the midst of the forehead, to the lesser corner of the eye. Wherefore omitting both my determination and endeavour to pull it forth, I thought I should do sufficiently for the patient, if I should only raise up the bone which was depressed; for so it did not trouble the *Crassa meninx* by pressing it, and the matter, and filth, were let forth by a passage made with a saw. So that in conclusion, he recovered perfectly, but that he lost one of his eyes which was adjoining to the fracture.

A History.

CHAP. VII.

Of a Seat, being the fourth kind of a broken Scull.

Hippocrates calls a Seat that kind of Fracture of the scull, when the weapon so falls upon the scull, that the fracture retaining the print thereof, is neither stretched forth any further, nor contracted to any lesse space.

What a Seat is;

And seeing there be many forms hereof, they all whether they shall be superficial, or shall pierce even to the *Diploe*, or else pass through both the Tables, whether it be with any loss of the bony substance, whether it run long wayes, or else be but short; or otherwise are dilated to some breadth, or else be but narrow; whether they shall be done with a cut, or with a prick with a dagger, styletto, lance or other kind of weapon, whether they shall have this or that accident joined with them, I say all of them, how many and various soever they be, ought and must be cured by some of the formerly described Instruments and means. Yet this must be noted, which as yet we have not remembred, that if it happen by a violent stroak, & great wound, that a portion of the bone is wholly so cut off, that it is clean severed from the rest of the scull, and hang only by the *Pericranium* and musculous skin; yet you must not pluck it from the *Pericranium*, and cast it away as unprofitable, but restore it to its proper seat and place, so by the force of nature, to be glewed by a *Callus*, as *Celsus* hath observed.

The cure;

Lib. 8. cap. 2.

I have tryed the truth of this experiment, in captain *Hydron*, not very long agoe. He had the middle part of the *Os Coronale*, of the bredth, and length of three fingers, so cut with a sharp sword, that it stuck not to the rest of the bone; but scarce adhering to the *Pericranium* and musculous skin; but lay turned down over his face, so that the *Dura Mater* was plainly seen; wherefore I prepared to pluck it from the skin, and cast it away, but that I remembred *Hippocrates* precept, where he bids, that the Brain should not be robbed of its cover and left bare. Wherefore first of all I wiped away the blood which was fallen upon the *Dura Mater*; whose motion you might plainly see, then I restored the portion of the bone to its place, and fastned it on the upper side with a suture consisting of three stiches; and that the residue of the matter might have passage forth, I filled the places between each stitch with lint; by this means, he by the mercie of God recovered, though at the same time he received many other large wounds in his body; which is a certain experiment, that we must cast away no part of the scull, nor of the *Pericranium*, no not of the musculous skin, unless necessity urge; therefore much less to leave the brain naked and despoiled of its coverings.

A History.

CHAP. VIII.

Of a Resonitus, or Counter-fissure, being the fifth kind of Fracture.

Sometimes the fracture is made in the part opposite to that which received the blow; as if the right side be struck, the left is cloven; this kind of fracture is very dangerous, because we cannot find it out by any certain sign, as it is written by *Hippocrates Lib. de vuln. Capitis*. Wherefore if at any time the patient dye of such a fracture, the Chirurgion must be pardoned.

What a Resonitus is.

And although *Paulus Aegineta* laugh at this kind of fracture and thinks that it cannot happen to a mans head, as that which is hard and full, as it happens in empty glass bottles, yet I have sometimes seen and observed it.

Lib. 6. cap. 90.

Neither is their reason of any validity, who think nature therefore to have framed the head of many bones knit together by sutures, lest the fracture of the one side, should be stretched to the other. For peradventure this may take place, in such as have expresse sutures, seated and framed according to nature. But it takes no place in such as either want them, or have them not seated according to nature, or have them very close and so defaced that it may seem one bone growne together of many; This shall be made manifest by recital of the following Historie.

In whom this fracture may take place in divers bones of the Scull.

A servant of *Massus* the Post-master had a grievous blow with a stone, upon the right

A History.

Bregma,

Bregma, which made but a small wound, yet a great contusion and Tumor. Wherefore that it might more plainly appear, whether the bone had received any harme, and also that the congealed blood might be pressed forth, the wound was dilated, the skin being opened by *Theodore Hereus* the Chirurgeon, who as he was a skillfull workman and an honest man, omitted nothing which Art might do for his cure. When he had divided the skin, the bone was found whole, although it was much to be feared, that it was broken, because he fell presently to the ground with the blow, vomited and shewed other signes of a fractured scull; so it happened that he dyed on the one and twentieth day of his sicknes. But I being called to learn, and search how he came by his death, dividing the scull with a saw, found in the part opposite to the blow, a great quantity of *Sanies* or bloody matter, and an Abscess in the *Crassameninx*, and also in the substance of the very brain, but no sutures, but the two scaly ones. Therefore that is certain which is now confirmed by the authority of *Hippocrates*; as also by reason and experience, that a blow may be received on the one side, and the bone may be fractured on the opposite, especially in such as have either no sutures, or else so firmly united and closed, that they are scarce apparent.

The *Resonius* may be in the same bone of the scull.

A History.

Neither is it absurd, that the part, opposite to that which received the stroak, of the same bone and not of divers bones may be cloven, and in those men who have their sculls well made, and naturally distinguished and composed with sutures; and this both was, and is, the true meaning of *Hippocrates*. That this may be the better understood, we must note that the opposite part of the same bone may be understood two manner of ways. First, when the fracture is in the same surface of the smitten bone, as if that part of one of the bones of the *Bregma* which is next to the *Lambdall* future be smitten, and the other part next to the *Coronall* future be cloven. Secondly, when as not the same superficies and table which receives the blow, but that which lyes under it is cleft, which kind of fracture I observed, in a certain Gentleman a Horsman of Captain *Stempans* troop; He in defending the breach of the wall of the Castle of *Hisdin* was struck with a Musket bullet upon the *Bregma*, but had his helmet on his head; the bullet dented in the helmet but did not break it, no nor the musculous skin, nor scull, for as much as could be discerned, yet notwithstanding he died apoplectick upon the sixth day after.

But I being very desirous to know, what might be the true cause of his death, dividing his scull; observed that the second table was broken, and cast off scales and splinters, wherewith as with needles the substance of the brain was continually pricked, the first and upper table being whole, for all this: I afterwards shewed the like example to *Capellanus* and *Castellanus* the King and Queens chief Physitians in the expedition of *Roane*.

Why *Hippocrates* sets set downe no way to cure a *Resonius*.

The manner to know when the scull is stasford by a *Resonius*.

But *Hippocrates* prescribes no method of curing this sixth kind of fracture, by reason he thinks it cannot be found out by any circumstance, whence it happens that it is for the most part deadly: Yet must we endeavour to have some knowledg and conjecture of such a fracture, if it shall at any time happen. Wherefore having first diligently shaven away the haire, we must apply an Emplaster of Pitch, Tar, Wax, Turpentine, the powder of *Iris*, or flower deluce roots, and massich; now if any place of the head shall appeare more moist, soft and swoln, it is somewhat likely that the bone is cleft in that place, so that the Patient, though thinking of no such thing, is now and then forced to put his hand to that part of the scull. Confirmed with these and other signs formerly mentioned, let him call a counsell of learned Physitians; and foretell the danger to the Patients friends which are there present, that there may no occasion of calummie remain, then let him boldly perforate the scull; for that is far better, than forsake the Patient ready to yeeld to the greatnes of the hidden disease, and so consequently to dye within a short while after. There are four sorts, or conditions of fractures, by which the Chirurgeon may be so deceived, that when the scull is broken indeed, yet he may think there is no fracture. The first is when the bone is so depressed, that it presently rises up into its true place, and native equability. The second is when the fissure is only capillary. The third is when the bone is shaken on the inside, the utter surface nevertheless remaining whole, forasmuch as can be discerned. The fourth is, when the bone is stricken on the one side and cleft on the other.

CHAP. IX.

Of the moving, or Concussion, of the Brain.

Gal. lib. 2. de comp. medic. cap. 6. & Com. ad Aph. 58. sect. 7.



Besides the mentioned kinds of fractures by which the brain also suffers; there is another kind of affect besides nature, which also assailes it by the violent incurfion of a cause, in like manner, externall; they call it the Commotion or shaking of the brain, whence Symptomes like those of a broken scull ensue. Falling from aloft upon a solid and hard body, dull and heavy blows, as with stones, clubs, staves, the report of a peece of Ordnance, or crack of Thunder, and also a blow with ones hand.

Lib. 5. Epidem.

Thus as *Hippocrates* tells, that beautifull damosell the daughter of *Nerius*, when she was twenty yeeres old, was smitten by a woman, a friend of hers, playing with her, with her flat hand upon the fore part of the head, and then she was taken with a giddines, and lay without breathing, and when she came home, she fell presently into a great Feaver, her head

aked,

aked, and her face grew red. The seventh day after there came forth some two or three Ounces of stinking and bloody matter about her right eare, and she seemed somewhat better and to be at somewhat more ease. The feaver increased again, and she fell into a heavy sleepiness, and lost her speech, and the right side of her face was drawn up, and she breathed with difficulty, she had also a convulsion and trembling; both her tongue failed her, and her eyes grew dull, on the ninth day she died. But you must note, that though the head be armed with a helmet, yet by the violence of a blow, the Veines, and Arteries may be broken, not only these which pass through the sutures, but also those which are dispersed between the two tables in the Diploe, both that they might bind the *Crassa meningis* to the skull, that so the brain might move more freely, as also that they might carry the alimentary juyce to the brain wanting marrow, that is, blood to nourish it, as we have formerly shewed in our Anatomie.

But from hence proceeds the efflux of blood running between the skull, and membranes, or else between the membranes and brain; the blood congealing there, causeth vehement pain, and the eyes become blind, vomiting is caused, the mouth of the stomach suffering together with the brain, by reason of the Nerves of the sixth conjugation, which run from the brain thither, and from thence are spread over all the capacity of the ventricle; whence becoming a partaker of the offence it contracts it self, and is presently as it were overturned; whence first, these things that are contained therein are expelled, and then such as may flow, or come thither from the neighbouring and common parts, as the Liver and Gall; from all which cholera, by reason of its naturall levity and velocity, is first expelled and that in greatest plenty; and this is the true reason of that vomiting, which is caused and usually followes upon fractures of the skull and concussions of the brain.

Within a short while after inflammation seizes upon the membranes and brain it self, which is caused by corrupt and putrid blood proceeding from the vessels broken by the violence of the blow, and so spread over the substance of the brain. Such inflammation communicated to the heart, and whole body by the continuation of the parts, causes a feaver. But a feaver, by altering the brain causes Doting; to which if stupidity succeed, the Patient is in very ill case, according to that of *Hippocrates*; Stupidity, and doting, are ill in a wound, or blow upon the head. But if to these evils, a sphacell, and corruption of the brain ensue, together with a great difficulty of breathing, by reason of the disturbance of the Animall faculty, which from the brain imparts the power of moving to the muscles of the Chest, the instruments of respiration, then death must necessarily follow.

A great part of these accidents appeared in King *Henry* of happy memory, a little before he dyed. He having set in order the affaires of France, and entred into amitie with the neighbouring Princes, desirous to honour the marriages of his daughter, and sister, with the famous and noble exercise of Tilting, and he himself running in the Tilt-yard, with a blunt lance received so great a stroak upon his brest, that with the violence of the blow, the visour of his helmet flew up, and the trunchion of the broken Lance hit him above the left eye-brow, and the musculous skin of the forehead was torn even to the lesser corner of the left eye, many splinters of the same; trunchion being struck into the substance of the fore mentioned eye, the bones being not touched or broken; but the brain was so moved and shaken, that he dyed the eleventh day after the hurt. His skull being opened after his death, there was a great deal of blood found between the *Dura*, and *Pia Mater*, poured forth in the part opposite to the blow, at the middle of the future of the hind part of the head; & there appeared signs by the native colour turned yellow, that the substance of the brain was corrupted, as much as one might cover with ones thumb. Which things caused the death of the most Christian King, and not only the wounding of the eye, as many have falsely thought. For we have seen many others, who have not dyed of farre more grievous wounds in the eye.

The history of the Lord Saint *Johns* is of late memory; he in the Tilt-yard, made for that time before the Duke of *Guises* house, was wounded with a splinter of a broken Lance, of a fingers length and thicknesse, through the visour of his Helmet, it entring into the Orbe under the eye, and piercing some three fingers bredth deep into the head; by my help and Gods favour he recovered, *Valerianus* and *Duretus* the Kings Physitians and *James* the Kings Chirurgeon assisting me.

What shall I say of that great and very memorable wound of *Francis* of *Lorraine* the Duke of *Guise*? He in the sight of the City of *Bologne* had his head so thrust through with a Lance, that the point entring under his right eye by his nose, came out at his neck between his ear and the *Vertebre*, the head or Iron being broken and left in by the violence of the stroak, which stuck there so firmly, that it could not be drawn or plucked forth, without a pair of smiths pincers. But although the strength and violence of the blow was so great, that it could not be without a fracture of the bones, a tearing and breaking of the Nerves, Veines, Arteries and other parts; yet the generous Prince by the favour of God recovered.

By which you may learn, that many dye of small wounds; and other recover of great, yea, very large and desperate ones. The cause of which events is chiefly and primarily to be attributed to God, the author and preserver of mankind; but secondarily to the

The vessels of the brain broken by the commotion thereof.

Signes.

Celsum.

The cause of vomiting when the head is wounded.

Aph. 24. Sect. 70.

A History.

What was the necessary cause of the death of King Henry the second of France.

A History.

A History.

Why some die of small wounds and others recover of great.

variety

variety and condition of temperaments. And thus much of the commotion or concussion of the brain; whereby it happens that although all the bone remains perfectly whole, yet some veins broken within by the stroak, may cast forth some blood upon the membranes of the brain, which being there concrete may cause great pain, by reason whereof it blinds the eyes; if so be that the place can be found against which the pain is, and when the skin is opened, the bone look pale, it must presently be cut out, as *Celsus* hath written. Now it remains, that we tell you how to make your prognosticks, in all the forementioned fractures of the skull.

CHAP. X.

Of Prognosticks to be made, in fractures of the skull.

Hip. de vul. cap.



E must not neglect any wounds in the head, no not these which cut or bruise but only the hairy scalp; but certainly much less, these which are accompanied by a fracture in the skull; for oft-times all horrid symptoms follow upon them, and consequently death it self, especially in bodies full of ill humors, or of an ill habit, such as are these which are affected with the *Lues venerea*, leprosie, dropsie, Pthifick, consumption, for in these, simple wounds are hardly or never cured; for union is the cure of wounds, but this is not performed, unless by the strength of nature, and sufficient store of laudable blood: but those which are sick of hec tick feavers and consumptions, want store of blood, and those bodies which are repleat with ill humors, and of an ill habit, have no afflux or plenty of laudable blood: but all of them want the strength of nature; the reason is almost the same in those also which are lately recovered of some disease.

Whether the wounds of children, or old people are better to heal.

Those wounds which are bruised are more difficult to cure, than those which are cut. When the skull is broken, then the continuity of the flesh lying over it must necessarily be hurt and broken, unless it be in a *Resonitus*. The bones of children are more soft, thin, and replenished with a sanguine humidity, than those of old men, and therefore more subject to putrefaction; Wherefore the wounds which happen to the bones of children, though of themselves, and their own nature they may be more easily healed, (because they are more soft, whereby it comes to pass, that they may be more easily agglutinated, neither is there fit matter wanting for their agglutination by reason of the plenty of blood laudable both in consistence and quality) than in old men, whose bones are dryer and harder, and so resist union, which comes by mixture, and their blood is ferous, and consequently a more unfit bond of unity and agglutination; yet oft-times through occasion of the symptoms which follow upon them, that is, putrefaction and corruption, which sooner arise in a hot and moist body, and are more speedily encreased in a soft and tender, they usually are more suspected and difficult to heal.

The Patient lives longer of a deadly fracture in the skull, in Winter than in Summer, for that the native heat is more vigorous in that time than in this; besides, also the humors putrefie sooner in Summer, because unnaturall heat is then easily inflamed and more predominant, as many have observed out of *Hippocrates*.

Aph. 15. sect. 1.

The wounds of the brain and of the *Meninges* or membranes thereof are most commonly deadly, because the action of the muscles of the chest, and others serving for respiration, is divers times disturbed and intercepted, whence death insues. If a swelling happening upon a wound of the head presently vanish away, it is an ill sign, unless there be some good reason therefore, as blood-letting, purging, or the use of resolving locall medicines, as may be gathered by *Hippocrates* in his Aphorisms. If a feaver insue presently after the beginning of a wound of the head, that is, upon the fourth or seventh day, which usually happens, you must judge it to be occasioned by the generating of *Pus* or Matter, as it is recited by *Hippocrates*. Neither is such a feaver so much to be feared, as that which happens after the seventh day, in which time it ought to be terminated; but if it happen upon the tenth or fourteenth day with cold or shaking, it is dangerous, because it makes us conjecture that there is putrefaction in the brain, the *Meninges*, or skull, through which occasion it may arise, chiefly if other signs shall also concur, which may shew any putrefaction, as if the wound shall be pallid and of a faint yellowish colour, as flesh looks after it is washed.

Aphor. 65. sect. 5.

Aph. 47. sect. 2.

Wounds which are dry, rough, livid and black are evil.

For, as it is in *Hippocrates* Aphorif. 2. sect. 7. It is an ill sign if the flesh look livid, when the bone is affected; for that colour portends the extinction of the heat, through which occasion, the lively, or indifferently red colour of the part, fairs and dyes, and the flesh thereabout is dissolved into a viscid *Pus* or filth.

Commonly another worse affect follows hereon, wherein the wound becoming withered and dry, looks like salted flesh, sends forth no matter, is livid and black, whence you may conjecture, that the bone is corrupted, especially if it become rough, whereas it was formerly smooth and plain; for it is made rough when *Caries* or corruption invades it; but as the *Caries* increases, it becomes livid and black, sanious matter with all sweating out of the *Diploe*, as I have observed in many: all which are signs that the native heat is decayed, and therefore death at hand; but if such a feaver be occasioned from an *Erysipelas* which is either present or at hand, it is usually less terrible. But you shall know by these signs, that the feaver is caused by an *Erysipelas* and conflux of cholerick matter; if it keep the form of a Ter-

The signs of a feaver caused by an *Erysipelas*.

tian, if the fit take them with coldness and end in a sweat; if it be not terminated before the choleric matter is either converted into Pus or else resolved; if the lips of the wound be somewhat swollen, as also all the face; if the eyes be red and fiery; if the neck and chaps be so stiff, that he can scarce bend the one, or open the other; if there be great excess of biting and pricking pain, and heat, and that far greater than in a Phlegmon. For such an Erysipelous disposition generated of thin and hot blood, chiefly assails the face, and that for two causes.

The first is, by reason of the naturall levity of the choleric humor; the other because of the rarity of the skin of these parts.

The cure of such an affect must be performed by two means, that is, evacuation, and cooling with humectation. If cholera alone, cause this tumor, we must easily be induced to let blood, but we must purge him with medicines evacuating cholera. If it be an Erysipelas phlegmonodes, you must draw blood from the Cephalick vein of that side, which is most affected; always using advice of a Physitian. Having used these generall means, you must apply refrigerating and humecting things, such as are the juyce of Night-shade, Houseleek, Purslane, Lettuce, Navell wort, Water Lentill, or Ducks-meat, Gourds; a liniment made of two handfuls of Sorrell boyled in fair water, then beaten or drawn through a sarse, with ointment of Roses, or some unguent. Populeon added thereto, will be very commodious. Such and the like remedies must be often and so long renewed untill the unnaturall heat be extinguished. But we must be carefull to abstain from all unctuous and oily things, because they may easily be inflamed, and so increase the disease. Next we must come to resolving medicines; but it is good when any thing comes from within, to without; but on the contrary it is ill, when it returns from without inwards, as experience and the Authority of Hippocrates testifie: If when the bone shall become purulent, pustules shall break out on the tongue; by the dropping down of the acrid filth or matter by the holes of the palat upon the tongue, which lyes under. Now when this symptom appears, few escape. Also it is deadly when one becomes dumb and stupid, that is, Apoplectick by a stroak or wound on the head; for it is a sign that not only the bone, but also the brain it self is hurt. But oft-times the hurt of the Brain proceeds so far, that from corruption it turns to a Sphacell, in which case, they all have not only pustules on their tongues, but some of them dye stupid and mute, other some with a convulsion of the opposite part; neither as yet have I observed any which have dyed with either of these symptomes, by reason of a wound in the head, who have not had the substance of their brain tainted with a Sphacell, as it hath appeared when their skulls have been opened after their death.

Why an Erysipelas chiefly assails the face. The cure of an Erysipelas on the face.

Why oily things must not be used in an Erysipelas of the face. Aph. 25. sect. 6.

Deadly signs in wounds of the head.

CHAP. XI.

Why, when the brain is hurt by a wound of the head, there may follow a Convulsion of the opposite part.

Many have to this day enquired, but as yet as far as I know it hath not been sufficiently explained, why a convulsion in wounds of the head seizes on the part opposite to the blow. Therefore I have thought good to end that controversie in this place. My reason is this, that kind of Symptom happens in the sound part by reason of emptiness and dryness; but there is a twofold cause, and that wholly in the wounded part, of this emptiness and dryness of the sound or opposite part; to wit, pain and the concurrence of the spirits and humors thither by the occasion of the wound, and by reason of the pains drawing and natures violently sending help to the afflicted part.

The sound part exhausted by this means both of the spirits and humors, easily falls into a Convulsion.

For thus Galen writes; God the Creator of nature, hath so knit together, the triple spirituous substance of our bodies, with that tie, and league of concord, by the productions of the passages; to wit of Nerves, Veins, and Arteries, that if one of these forsake any part, the rest presently neglect it, whereby it languisheth; and by little and little dyes, through defect of nourishment. But if any object that nature hath made the body double, for this purpose, that when one part is hurt, the other remaining safe and sound, might suffice for life and necessity: but I say, this axiom hath no truth in the vessels and passages of the body. For it hath not every where doubled the vessels, for there is but one only vein, appointed for the nourishment of the brain, and the membranes thereof, which is that they call the Torcular, by which when the left part is wounded, it may exhaust the nourishment of the right and sound part, and though that occasion cause it to have a convulsion, by too much dryness; Verily it is true, that when in the opposite parts, the muscles of one kind are equal in magnitude, strength, and number, the resolution of one part, makes the convulsion of the other by accident; but it is not so in the brain.

For the two parts of the brain, the right and left, each by its self performs that which belongs thereto, without the consent, conspiracy or commerce of the opposite part; for otherwise it should follow, that the Palsie properly so called, that is of half the body, which happens by resolution, caused either by mollification or obstruction residing in either part of the brain, should infer together with it a Convulsion of the opposite part. Which notwithstanding dayly experience convinces as false. Wherefore we must certainly think;

A convulsion is caused by dryness.

A twofold cause of convulsifick dryness.

Lib. 4. de usu partium.

Opinion of
Dalechampius

think, that in wounds of the head wherein the brain is hurt, that inanition and want of nourishment are the causes, that the sound and opposite part suffers a convulsion.

Francis Dalechampius in his French Chirurgery renders another reason of this question; That, (saith he) the truth of this proposition may stand firm and ratified, we must suppose, that the convulsion of the opposite part mentioned by *Hippocrates*, doth then only happen, when by reason of the greatness of the inflammation in the hurt part of the brain, which hath already inferred corruption, and a Gangrene to the brain and men-branes thereof, and within a short time is ready to cause a sphacell in the skull, so that the disease must be terminated by death; for in this defined state of the disease, and these conditions, the sense and motion must necessarily perish in the affected part, as we see it happens in other Gangrens, through the extinction of the native heat. Besides, the passages of the animall spirit must necessarily be so obstructed by the greatness of such an inflammation or phlegmon, that it cannot flow from thence to the parts of the same side lying there under, and to the neighbouring parts of the brain; and if it should flow thither, it will be unprofitable to carry the strength and faculty of sense and motion, as that which is infected and changed by admixture of putrid and Gangrenous vapours. Whereby it cometh to pass, that the wounded part destitute of sense, is not stirred up to expell that which would be troublesome to it, if it had sense; wherefore neither are the Nerves thence arising seized upon, or contracted by a Convulsion.

It furthermore comes to pass, that because these same nerves are deprived of the presence and comfort of the animall spirit, and in like manner the parts of the same side, drawing from thence their sense and motion are possessed with a palse; for a palse is caused either by the cutting or obstruction of a Nerve, or the madefaction, or mollification thereof by a thin and watry humor, or so affected by some vehement distemper, that it cannot receive the Animall spirit.

But for the opposite part and the convulsion thereof, it is known and granted by all, that a convulsion is caused either by repletion which shortens the Nerves by distending them into breadth, or by inanition, when as the native and primitive heat of the Nerves being wasted, their proper substance becoming dry is wrinkled up and contracted; or else it proceeds from the vellication, and acrimonie of some vapour, or sanious and biting humor, or from vehemency of pain. So we have known the falling sickness caused by a venenate exhalation carried from the foot to the brain. Also we know that a convulsion, is caused in the puncture of the Nerves, when as any acrid and sanious humor is shut up therein, the orifice thereof being closed; but in wounds of the Nerves when any Nerve is half cut, there happens a convulsion by the bitterness of the pain.

But verily in the opposite part, there are manifestly two of these causes of a convulsion; that is to say, a putrid and carionlike vapour, exhaling from the hurt, and Gangrenate part of the brain; and also a virulent, acrid and biting *Sanies*, or filth, sweating into the opposite sound part, from the affected and Gangrenous; the malignity of which *Sanies*, *Hippocrates* desirous to decipher, in reckoning up the deadly signs of a wounded head, hath expressed it by the word *Ichor*; and in his book of fractures he hath called this humor *Dacryodes et non Pyon*. [that is, weeping and not digested.] Therefore it is no marvail if the opposite and sound part endued with exquisite and perfect sense, and offended by the flowing thereto of both the vaporous and sanious matter, using its owne force, contend and labour as much as it can, for the expulsion of that which is troublesome thereto. This labouring or concussion is followed (as we see in the falling sickness) by a convulsion, as that which is undertaken in vain, death being now at hand; and nature over-ruled by the disease. Thus (saith *Dalechampius*) must we in my judgement determine of that proposition of *Hippocrates* and *Avicenn*.

But he addes further, in wounds of the head, which are not deadly, practitioners observe that sometimes the hurt part is taken with the palse, and the sound with a convulsion; otherwhiles on the contrary, the wounded part is seized by a Convulsion and the sound by a Palse; otherwhiles both of them by a convulsion or Palse, and somewhiles the one of them by a convulsion or Palse, the other being free from both affects; the causes of all which belong not to this place to explain. Thus much *Dalechampius*.

CHAP. XII.

A Conclusion of the deadly signs in the Wounds of the head.

The signes of
a deadly
wound from
the depraved
faculties of the
minde.



Now that we may returne to our former discourse; you may certainly foretell the patient will dye; when his reason and judgement being perverted, he shall talke idly; when his memory fails him; when he cannot governe his tongue; when his sight growes dark and dim, his ears deaf, when he would cast himself headlong from his bed, or else lyes therein without any motion; when he hath a continuall feaver with a *delirium*; when the tongue breaks out in pustles, when it is chopt, and become black, by reason of too much dryness; when the wound grows dry, and casts forth little or no matter; when as the colour of the wound which was formerly fresh, it now become like salted

From habite
of the body.

salted flesh yellow and pale; when the Urine, and other excrements suppress; when the palse, convulsion, apoplexie; and lastly, often sowning, with a small and unequall pulse, invade him. All such signs sometimes appear presently after the wound, otherwhiles some few dayes after; therefore when as the brain is hurt and wounded by the violence of the incision, or fissure, of the contusion, compression, puncture, concussion, or any other fracture, the forementioned signs appear presently in the first dayes; but when they do not appear til many dayes after the blow, you may know that they rise and appear, by reason of an inflammation and phlegmon in the brain, occasioned by the putrefaction of the blood poured forth upon it.

From the time that such signs appear.

But we must observe this by the way, which also belongs to the prognosticks, that flesh is easily regenerated, and restored in all parts of the head, except in that part of the forehead, which is a little above that which lies between the eye-brows, so that it will be ulcerated ever after, and must be covered with a Plaister. I beleve that in that place there is an internall cavity in the bone, full of air, which goes to the five-like bones of the nose, by which the growth of flesh may be hindered; or else that the bone is very dense or compact in that place, so that there can scarce sufficient juice sweat forth, which may suffice for the regeneration of flesh; add hereunto a great conflux of excrements flowing to this ulcer, which should otherwise be evacuated by the eyes and nose, which hinder by that means the dryness of the ulcer, and consequently the healing thereof.

Celsus lib. 8. cap. 4.

Hence certainly it comes to pass, that if you desire the Patient thus affected to breath, shutting his mouth and nose, the air or breath will come forth of the ulcer with such force, as it will easily blow forth a lighted candle of an indifferent bigness held thereto. Which thing I protest, I observed in a certain man, whom I was forced to trepan in that place, by reason the bone of the forehead was broken and depressed.

CHAP. XIII.

Of salutary signs in wounds of the head.

BUt on the contrary these are salutary signs, when the Patient hath no feaver, is in his right mind, is well at the application or taking of any thing, sleeps well, hath his belly soluble, the wound looks with a fresh and lively colour, casts forth digested and laudable matter, the *Crassa Meninx* hath its motion free and no way hindred.

Yet we must note, which also is observed by the Ancients and confirmed by experience, that we must think none past danger, and free from all chance, untill the hundredth day be past. Wherefore the Physitian ought so long to have a care of his Patient, that is, to consider how he behaves and governs himself in meat, drink, sleep, venery and other things.

When the Patients are out of danger.

But let the Patient diligently avoid and shun cold, for many when they have been cured of wounds of the head, by careless taking cold have been brought into danger of their lives. Also you must know that the *Callus* whereby the bones of the skull are knit together, requires almost the space of forty or fifty dayes to its perfect coagmentation and concretion. Though in very deed one cannot set down a certain number of dayes, by reason of the variety of bodies, or tempers: For it is sooner finished in young men, and more slowly in old; And thus much may serve for prognosticks. Now will we treat as briefly and perspicuously as we can of the cure both in generall and particular; wherefore beginning with the generall we will first prescribe a convenient diet by the moderate use of the six things not naturall.

The Patient must beware of cold.

CHAP. XIII.

Of the generall cure of a broken skull, and of the Symptomes usually happening thereupon.

THe first cure must be, to keep the Patient in a temperate air; and if so be, that it be not such of it self and its own proper nature, it must be corrected by Art. As in winter he must have a clear fire made in his chamber, lest the smoak cause sneezing and other accidents; and the windows and doors must be kept shut to hinder the approach of the cold air and wind. All the time the wound is kept open to be dressed, some body standing by

How the air ought to be.

shall hold a chafendish full of coals or a heated Iron bar over the wound, at such a distance, that a moderate heat may pass thence to the wound; and the frigidity of the encompassing air may be corrected by the breathing of the diffused heat. For cold according to the opinion of *Hippocrates*, is an enemy to the Brain, Bones, Nerves, and spinal marrow; it is also hurtfull to ulcers, by suppressing their excrements, which suppress do not only hinder suppuration, but also by corrosion makes them sinuous. Therefore *Galen* rightly admonisheth us, to keep cold from the brain, not only in the time of trepaning, but also afterwards. For there can be no greater, nor more certain harm befall the fractured skull, than by admitting the air, by such as are unskillfull. For if the air should be hotter than the brain, then it could not thence be refrigerated; but if the brain should be laid open to the air, in the midst of summer, when it is at the hottest, yet would it be refrigerated; and unless it were relieved with hot things, take harm: this is the opinion of *Galen*, whereby you may understand that many who have their skulls broken, dye more through default of skill in the curing, than by the greatness of the fracture.

Apher. 18. lib. 3.

Lib. 2. de usu part.

cap. 2. The Air though in summer is colder than the brain.

But (when the wound is bound up with the pledgets, cloths, and rowlers, as is fit) if the air chance to be more hot, than the Patient can well indure, let it be amended by sprinkling, and strawing the chamber with cold water, oxycrate, the branches of Willows and Vine. Neither is it sufficient to shun the too cold air, unless also you take heed of the over light, chiefly untill such time as the most feared and malign symptomes are past.

For a too great light dissipates the spirits, increases pain, strengthens the feaver and symptomes. *Hippocrates* wholly forbids wine, therefore the Patient instead thereof must drink Barly water, fair water boyled and tempered with Julep of Roses, syrup of Violets, vinegar and the like: water where-

The disorders of too much light.

What his drink must be. in bread crums have been steeped, water and sugar with a little juyce of Lemons, or pomecitron added thereto, and such like as the ability and taste of the Patient shall require. Let him continue such drinks untill he be free from malign symptoms, which usually happen within fourteen dayes.

Almonds increase the pain of the head. His meat shall be pap, ptisan, shunning Almond milks; (for Almonds are said to fill the head with vapours and cause pain) stued damask Prunes, Raisons and currants, seasoned with sugar, and a little cinnamon (which hath a wonderfull power to comfort the stomach, and revive and exhilarate the spirits) Chickens, Pidgeons, Veal, Kid, Liverets, birds of the fields, Pheasons, black-birds, Turtles, Partridges, Thrushes, Larks and such like meats of good digestion, boiled with lettuce, purslain, sorrell, borage, bugloss, succory, endive and the like, are thought very convenient in this case. If he desire at any time to feed on these meats roasted, he may only dipping them in verjuice, in the acid juices of Oranges, Citrons, Lemons, or Pomegranats, sometimes in one, and sometimes in another, according to his tast and ability. If any have a desire to eat fish, he must mak choyce of Trouts, Gudgeons, Pikes and the like, which live in running and clear waters, and not in muddy; he shall eschew all cold sallets and pulse, because they fly up and trouble the head: it will be convenient after meat to use common dridg powder, or Aniseed, Fennellseed or Coriander comfits, also conserve of Roses, or Marmilate of Quinces to shut up the orifice of the Ventricle, lest the head should be offended with vapours arising from thence.

What fish he may eat. Children must eat often, but sparingly; for children cannot fast so long as those which are elder, because their naturall heat is more strong, wherefore they stand in need of more nourishment; so also in winter all sorts of people require more plentifull nourishment, for that then their stomachs are more hot than in Summer.

Aphor. 13. & 14. sect. 1. When the foureteenth day is past, if neither a fever, nor any thing else forbid, he may drink wine moderately, & by little and little, encrease his diet, but that respectively to each ones nature, strength and custome. He shall shun, as much as in him lyes, sleep on the day time, unless it happen that a *Phlegmon* seise upon the brain or *Meninges*. For in this case it will be expedient to sleep on the day time, especially from morning till noon, for in this season of the day, as also in the spring blood is predominant in the body, according to the opinion of *Hippocrates*. For it is so vulgarly known, that it need not be spoken, that the blood when we are awake is carried into the habit and surface of the body; but on the contrary by sleep it is called into the noble parts, the Heart and Liver. Wherefore if that the blood by the force of the Sun casting his beanis upon the earth at his rising is carryed into the habit of the body, should again be more and more diffused by the strength & motion of watching, the inflammation in the brain and *Meninges* would be much encreased. Wherefore it will be better, especially then to stay by sleep the violence of the blood running into the habit of the body, when it shall seem to rage and more violently to affect that way. Watching must in like manner be moderate; for too much depraves the temper of the brain and of the habit of the whole body; it causes crudities, pains and heaviness of the head, and makes the wounds dry and maligne.

Why sleep upon the day time is good for the brain being inflamed. Lib. 2. Epidem. The commodities insuing immoderate Watching. Gal. Meth. 18. Medicines procuring sleep. The commodities of sleep. But if the Patient cannot sleep by reason of the vehemency of the inflammation of the brain and *Meninges*, *Galen* wilhes, to wash, besmear and anoint the head, nose, temples and ears with refrigerating and humecting things, for these stupefie, and make drowsie the Brain and membranes thereof, being more hot than they ought to be. Wherefore for this purpose let the temples be anointed with *Vnguentum populeon*, or *Vnguentum Rosatum* with a little rose vinegar, or oxycrate; let a sponge moistened in the decoction of white or black poppie seed, of the rinds of the roots of Mandrages, of the seeds of Henbane, lettuce, purslane, plantain, night-shade and the like. He may also have a broath or barley creani, into which you may put an emulsion made of the seeds of white Poppy, or let him have a potion made with ζ i, or ζ i β , of the syrup of poppy, with ζ ij, of Lettuce water; Let the Patient use these things 4. houres after meat, to procure sleep. For sleep doth much help concoction, it repairs the efflux of the triple substance caused by watching a swageth pain, refresheth the weary, mitigates anger and sorrow, restores the depraved reason, so that for these respects it is absolutely necessary that the Patient take his naturall rest.

If the Patient shall be plethorick, let the plenitude be lessened by blood-letting, purging and a slender diet, according to the disertation of the Physitian who shall oversee the cure. But we must take heed of strong purgations, in these kinds of wounds, especially at the beginning, lest the fever, inflammation, pain, and other such like symptoms be increased by stirring up the humors.

Lib. 4. meth. Phlebotomy, according to *Galens* opinion, must not only be made respectively to the plenty of blood, but also agreeable to the greatness of the present disease, or that which is to come, to divert, and draw back that humor which flows down, by a way contrary to that which is impact in the part; and which must be there evacuated, or drawn to the next. Wherefore for example, if the right side of the head be wounded, the Cephalick vein of the right arm shall be opened, unless a great *Plethora* or plenitude cause us to open the *Basilica*, or Median, yet if neither of them can be fitly opened, the *Basilica* may be opened, although the body is not plethorick. The like course must be observed in wounds of the left side of the head; for that is far better by reason of the straitness of the fibers, than to draw blood on the opposite side; in performance whereof you must have diligent care of the strength of the Patient, still feeling his pulse, unless a Physitian be present, to whose judgment you must then commit all that business. For the pulse is, in *Galens* opinion, the certainest shewer of the strength. Wherefore we must consider the changes and inequalities thereof, for as soon as we find it to become lesser and more slow, when the forehead begins to sweat a little, when he feels a pain at his heart, when he is taken with a desire to vomit, or go to stool, or with yawning, and when he shall change his colour and his lips look pale, then you must stop the blood as speedily as you can; otherwise there will be danger lest he poure forth his life together with his blood. Then he must be refreshed with bread steeped in wine, and put into his mouth, and by rubbing his temples and nostrils with

Lib. de cur. per sanguinis miss.

with strong vinegar, and by lying upon his back. But the part shall be eased and freed from some portion of the impact and conjunct humor by gently scarifying the lips of the wound, or applying of Leeches. But it shall be diverted, by opening these veins which are nearest to the wounded part, as the *Vena puppis*, or that in the midst of the forehead, or of the temples, or these which are under the tongue; besides also cupping-glasses shall also be applyed to the shoulder sometimes, with scarification, sometimes without; neither must strong, and long frictions, with course clothes, of all the whole body, the head excepted, be omitted during the whole time of the cure, for these will be available, though but for this; that is, to draw back and dissipate by insensible transpiration the vapours which otherwise would ascend into the head, which matters certainly in a body that lyes still and wants both the use and benefit of accustomed exercise, are much increased.

The use of Fractures.

But it shall be made manifest by this following and notable example, how powerfull blood-letting is, to lessen and mitigate the inflammation of the Brain, or the membranes thereof in wounds of the head. I was lately called into the suburbs of Saint German, there to visit a young man twenty eight yeeres old, who lodged there in the house of *John Martiall*, at the sign of Saint *Michaell*. This young man, was one of the household servants of Master *Doucador*, the steward of the Lady *Admirall* of *Erion*. He fell down headlong upon the left *Bregma*, upon a marble pavement, whence he received a contused wound, without any fracture of the skull, and being he was of a sanguin temperature, by occasion of this wound, a fever tooke him on the seventh day with a continuall *delirium* and inflammation of phlegmonous tumor of the wounded *Pericranium*. This same tumor possessing his whole head and neck by continuation and sympathy of the parts, was grown to such a bigness, that his visage was so much altered, that his friends knew him not; neither could he speak, heare, or swallow any thing but what was very liquid. Which I observing, although I knew, that the day past, which was the eight day of his disease, he had foure saucers of blood taken from him by *Germaine Agate* Barber-surgeon of the same suburbs; yet considering the integrity and constancy of the strength of the Patient, I thought good to bleed him again; wherefore I drew from him fourteen saucers at that one time; when I came to him the day after, & saw that neither the fever, nor any of the fore mentioned symptoms were any whit remitted, or asswaged, I forthwith took from him foure saucers more, which in all made two and twenty; the day following when I had observed, that the symptoms were no whit lessened, I durst not presume by my own only advice, to let him the fourth time blood as I desired. Wherefore I brought unto him, that most famous Physitian Doctor *Violene*, who as soon as he felt his pulse, knowing by the vehemency thereof, the strength of the Patient, and moreover considering the greatness of the inflammation & tumor which offered it self to his sight, he bid me presently take out my Lancet and open a vein. But I lingred on set purpose, and told him, that he had already twenty two saucers of blood taken from him. Then said he, Grant it be so, and though more have been drawn, yet must we not therefore desist from our enterprise, especially seeing the two chiefe Indications of blood-letting yet remain, that is, the greatness of the disease, and the constant strength of the Patient. I being glad of this, tooke three saucers more of blood, he standing by, and was ready to take more but that he wished me to defer it untill the after noon; wherefore returning after dinner I filled two saucers more, so that in all, this young man to his great benefit, lost twenty seven saucers of blood at five times, within the space of foure dayes. Now the ensuing night was very pleasing to him, the fever left him about noon, the tumor grew much lesse, the heat of the inflammation was asswaged in all parts, except in his eyelids, and the laps of his ears, which being ulcerated cast forth a great quantity of Pus or matter. I have recited this history purposely, to take away the childish feare which many have to draw blood in the constant strength of the Patient, and that it might appear how speedy and certain a remedy it is in inflammations of the head and brain.

A History.

The two chief Indications in blood-letting.

Now to return from whence we digressed, you must note that nothing is so hurtfull in fractures and wounds of the head, as venery; not only at that time the disease is present, but also long after the cure thereof. For great plenty of spirits are contained in a small quantity of seed, and the greatest part thereof flows from the brain; hence therefore all the faculties, but chiefly the Animall, are resolved, whence I have divers times observed death to ensue in small wounds of the head, yea when they have been agglutinated and united. All passions of the mind must in like sort be avoided, because they by contraction and dissipation of the spirits cause great trouble in the body and mind. Let a place be chosen for the Patient as far from noise as can be, as from the ringing of bells, beatings and knockings of Smiths, Coopers, and Carpenters, and from high-ways through which they use to drive Coaches; for noise encreases pain, causes a fever, and brings many other symptoms.

The discommoditie of venery in wounds of the head.

How hurtfull noyse is to the fractures of the skull.

I remember when I was at *Hisdin* at the time that it was besieged by the forces of *Charles* the fifth, that when the wall was beaten with the Cannon, the noise of the Ordnance caused grievous torment to all those which were sick, but especially those that were wounded on their heads, so that they would say; that they thought at the discharging of every Cannon that they were cruelly stricken with staves on that part which was wounded, and verily their wounds were so angred herewith, that they bled much, and by their pain and feavers encreased, were forced with much sighing to breath their last. Thus much may serve to be spoken of the cure in generall, now we will out of the monuments of the ancients, treat of the particular.

A History.

CHAP. XV. Of the particular cure of wounds of the head, and of the musculous skin.

Let us begin with a simple wound, for whose cure the Chirurgeon must propose one only scope, to wit, Union; for unlesse the wound pierce to the skull, it is cured like other wounds of the fleshy parts of our bodies. But if it be compound, as many wayes as it is complicate, so many indications shew themselves. In these the chiefe care must be had of the more urgent order and cause,

Of a simple wound of the fleshy and the skin.

Therefore if the wound shall be simple and superfiariy, then the haire must first be shaven away, then a plaister applyed made of the white of an egge, bole Armenick and Aloes. The following day you must apply *Emplastrum de Ianua* or else *de gratia Dei*, untill the wound be perfectly healed. But if it be deeper and penetrate even to the *Pericranium*, the Chirurgeon shall not do amiss, if at the second dressing he apply a digestive medicine (as they call it) which may be made of Venice Turpentine, the yolks of egges, oyl of Roses, and a little Saffron, and that shall be used so long, untill the wound come to maturation; for then you must add honey of Roses and Barly floure to the digestive. Hence must we pass to these medicines, into whose composition no oyle or unctuous bodie enters, such as this; *R. Terebinth. veneta. ʒ ij, Syrupi rosar. ʒ j, pul. aloes, Myrrhe, & mastich. an. ʒ β.* Let them all be incorporated and made into an unguent, which shall be perfectly regenerated, then it must be cicatrized with this following powder. *R. Aluminis combusti, corticis granatorum combust. ʒ an ʒ j, Miscantur simul & fiat pulvis*: but if the wound be so large that it require a suture, it shall have so many stiches, with a needle, as need shall seem to require.

A digestive
medicine.

A scarotick
medicine.

An Epulo-
tick.

A History.

What
things we
must ob-
serve in
sewing.

When we
must not let
blood in
wounds.
A History.

The bitings
of man and
beasts are
venenate.

Theriacall
topick Me-
dicines.

A Cordiall
Epithema.

The cure of
the Hairy
scalp when
it is contu-
sed.

A repelling
medicine.

Whilst I was at *Hisdin*, a certain souldier, by falling of the earth whilst he undermined, had the Hairy scalp so pressed down even to the *Pericranium*, and so wholly separated from the beginning of the hind part of his head, even to his forehead, that it hung over his face. I went about the cure in this manner; I first washt all the wound with wine, a little warmed, that so I might wash away the congealed blood mixed with the earth; then I dryed it with a soft linnen cloth, and laid upon it Venice-Turpentine mixed with a little *Aqua-vitæ* wherein I had dissolved some *Sanguis Draconis*, *Mastick* and *Aloes*; then I restored the hanging skin to its former place, and there staid it with some stiches, being neither too strait, nor too close together, for fear of pain and inflammation, (which two chiefly happen whilst the wound comes to suppuration) but only as much as should serve to stay it on every side, and to keep forth the air, which by its entrance doth much harm to wounds: the lower sides of the wound, I filled with somewhat long and broad tents, that the matter might have passage forth. Then I applyed this following cataplasim to all the head. *R. farinæ bord. & fabarum an. ʒ vi. olei rosati, ʒ iij, aceti quantum sufficit, fiat cataplasma ad formam pultis*; this hath a faculty to dry, cool, repell, mitigate pain and inflammation and stay bleeding.

I did not let him bleed, because he had bled much, especially at certain arteries which were broken near his temples; he being dressed after this manner grew well in a short time. But if the wound be made by the biting of a wild beast, it must be handled after another manner, as shall appear by this following history. As many people on a time stood looking upon the Kings Lyons, who were kept in the Tilt-yard at *Paris*, for the delight of King *Henry* the second, and at his charges: it happened that one of the fiercest of them broke the things wherein he was tyed, and leaping amongst the company, he with his paws threw to the ground a Girl of some twelve yeers old, and taking her head in his mouth, with his teeth wounded the musculous skin in many places, yet hurt not the skul. She scarce at length delivered by the Master of the Lyons from the jaws of Death and the Lyon, was committed to the cure of *Rowland Claret* Chirurgeon; who was there present by chance at the same time; some few dayes after, I was called to visit her; she was in a fever, her head, shoulders, breast, and all the places where the Lyon had set his teeth, or nails, were swollen, all the edges of the wound were livid, and did flow with a waterish, acrid, virulent, cadaverous, dark green and stinking matter, so that I could scarce indure the smell thereof; she was also oppressed with pricking, biting and very great pain; which I observing, that old saying came into my mind, which is: That all wounds made by the bitings of beasts, or of men also, do somewhat participate of poyson. Wherefore there must principally great care be had of the venenate impression left in the wounds by the nails & teeth, and therefore such things must be applyed, as have power to overcome poyson. Wherefore I scarified the lips of the wounds in divers places, and applyed Leeches to suck out the venenate blood, and ease the inflammation of the parts, then I made a Lotion of *Ægyptiacum* Treacle and Mithridate after the following manner.

R. Mithrid. ʒ j, theriac. ʒ ij, ægyptiac. ʒ β, dissolvantur omnia cum aqua vitæ, & Cardui ben. Let the wounds be fomented and washed with it warm; besides also Treacle and Mithridate were put in all the medicines which were either applyed or put into the wound; and also of the same with the conserves of Roses and Bugloss dissolved in the water of Sorrell and *Carduus benedictus*, potions were made to strengthen the heart and vindicate it from malign vapors.

For which purpose also this following *Epithema* was applyed to the region of her heart. *R. aquæ rosar. & nenuphar, an. ʒ iij, aceti scillitici ʒ j, corallorum, santalorum alborum & rubrorum, rosar. rub. pulveris, spodi. an. ʒ j, Mithridatii, theriacæ an. ʒ ij, flo. cordial. pulveris atorum p. ij, croci ʒ j,* dissolve them all together, make an Epitheme and apply it to the heart with a scarlet cloth or sponge, and let it be often renewed. Verily she drest after this manner, and the former remedies but once used, pain, inflammation and all the malign symptomes were much lessened; to conclude, shee recovered, but lingered and was lean some two yeers after, yet at length she was perfectly restored to her health and former nature. By which you may understand, that simple wounds must be handled after another manner, than these which have any touch of poison.

But now that we may prosecute the other affects of the hairy scalp; say that it is contused with a blow without a wound, that which must be first and alwayes done, (that so the affect may better appear, and the remedies which are applyed may take more effect) the hair must be shaven away, and at the first dressing a repelling medicine applyed, such as this following *Oxyth odinum. R. ol. ros. ʒ iij, album ovorum nu. ij, pulveris nucum cypressi, balaust. alumin. rochæ. rosar. rub. an. ʒ j.* Let them be all incorporated, and make a medicine for the former use, or in stead thereof you may apply the cataplasim prescribed before consisting of *Farina hordei, fabarum, aceto & oleo rosaceo*. But such medicines must be often renewed. When the pain and defluxion are appeased, we must use discussing medicines for dissipation of that

that humor which remains impacted in the part; R^e Emplastri de mucilag. ℥ij. oxicrocei, & emp. de melilo-
to, an. ℥j. olei chamem. & anethi, an. ℥β. malaxentur simul et fiat emplastrum ad usum dictum. Such a fomentation
will also be good. R^e vini rub. lib. iij. lixivii. com. lib. ij. nuces cupressi contus. nu. x. pul. myrtillorum ℥j. rosar. rub.
absinth. fol. salvia. major ane. st. echados. florum chamem. melil. an. M. β. aluminis rocha. radices cyperi, calami aromatici
an. ℥β. bulliant omnia simul, and make a decoction to foment the grieved part. After somewhat a long
fomenting it, whereby it may the better discusse, dry and exhaust the concrete humor, the head must
be dried and more discussing things applycd, such as the Cerate described by Vigo called de minio;
which hath an emollient and digestive facultie in this form. R^e Olei chamem. lilior. an. ℥x. olei mastich. ℥ij.
pinguedinis vervecis lib. j. litharg. auri, ℥vii. minii ℥ij. vini boni cyathum unum, bulliant omnia simul baculo agi-
tando, primum quidem lento igne, mox vero luculentiore, donec tota massa colorem nigrum vel subnigrum contrahat;
adde in fine cocturae Terebinth. lib. s. pulveris mastich. ℥ij. gum. elemi. ℥j. cera quantum sufficit, bulliant rursus una
ebullitione & fiat empl. molle. But if the humor be not thus discussed, but onely grow soft, then the tu-
mor must be quickly opened, for when the flesh is inflamed and putrefied through occasion of the
contained humor, the bone under it putrefies also by the contagion of the inflammation and the acri-
mony of the matter falling upon the bone. When you have opened it, wash away the filth of the ul-
cer with this following deterfive medicine. R^e syrapi ros. & absinth. an. ℥j. terebinth. ℥β. pul. ireos, aloes, ma-
stichis, myrrh. & farine bordei an. ℥β. In stead hereof if there be great putrefaction, *Aegyptia* either by it
selfe, or mixt with an equall quantity of *Vnguentum apostolorum* may be put into the ulcer. When the
ulcer is clenfed it will be time to use scarotick and cicatrizing medicines.

A diseuf-
sing Fo-
mentation;Ceratum
de Minio.Deterfive
or clean-
sing medi-
cines.

C H A P. XVI. Of the particular cure of a fracture or broken skull.

F the skull be broken, so that it be needfull to trepan it, or to elevate and lift it up, or scrape
it away, the musculous skin being cut as we formerly noted, the *Pericranium* shall be pluck-
ed from the skull, as we said before; which because it can hardly be done without great
pain, by reason of its exquisite sense and connexion with the membranes of the braine, we
must labour to mitigate the paine for feare of inflammation and other accidents. Therefore the first
dressing ended & the corners of the wound drawn each from other; at the second dressing put to the
wound, a digestive (as they terme it) made of the yolk of an egge, and oyle of Roses, but you must
apply no humid thing to the bone, because we desire to keep it found and whole. For *Galens* opini-
on is, that bared bones must not be touched with unctuous things; but rather on the contrary, all
dry things must be applycd to them, which may consume the superfluous humidity. Therefore we
must lay some lint and the cephalick powders which we shall hereafter describe, upon the bone we
intend to preserve, and must have diligent care that it be not offended either by the ayre, or touch of
humid medicines. You must in Trepaning have a speciall care of the *Crassa meninx*. For I have often
observed a great quantity of blood to have flowed from some broken vessell, which adhered to the
second Table: neither must we presently and forthwith stay such bleeding, but suffer it to flow ac-
cording to the plenitude and strength of the patient; for thus the fever, and together therewith
the rest of the symptomes are diminished. For the opinion of *Hippocrates*, in every green wound it is
good to cause often bleeding, except in the bellies; for thus the vehemency of pain, inflammation and
other accidents will be less troublesome; also it is not amisse too for old ulcers to bleed much, for
so they are freed from the burden of the impact humors. When you think it hath bled sufficiently,
it may be stanchd with this following medicine described by *Galen*:

Why the
Pericran-
um hath
such ex-
quisite
sense.Gal. 6. meth.
The bones
are offen-
ded with the
applicati-
on of humid
things.

Lib. de ulcer.

Gal. 6. meth.

R^e pulveris Aloes ℥ij. thuris mastiches, an. ℥β. albumina ovorum nu. ij. agitentur simul cum pilis leporinis mi-
nutim incisis, fiat medicamentum. When the bleeding is stayed, you shall for the asswaging of pain, drop
upon the *Meninx* some Pigeons blood, yet warme by opening a Vein under the wing, then it shall be
strewed over with this following powder, R^e Aloes, thuris, myrrh. & sanguinis draconis an. ℥j. Misc. fiat pulvis
subtilis. Also you may make an irrigation with Rose Vinegar, or some repelling medicine; such as
is a cataplasme ex farina, & oleo rosaceo. Which may be applycd untill the fourth day to asswage and
mitigate pain.

Vigoes Cerate will be of good use in this case, as that which in my opinion is most fit for fractures
of the skull, because it draws powerfully, resolves and dryes moderately, and by reason of the smell
refreshes the animall spirits, and strengthens the brain and membranes thereof, as you may easily per-
ceive by things which enter into the composition thereof. R^e Olei ros. Omph. resina pini, gummi Elemi,
an. ℥ij. Mastiches ℥β. pinguedinis vervecis castrati ℥ij. foliorum beton. caprifol. antbos an. Mj. ammoniaci ℥β. gra-
norum tinctorum ℥x. liquata pinguedin eterenda terantur, & ammoniacum simul cum aceto scillitico, eliquetur;
deinde bulliant omnia simul in lib. ij. vini boni, lento igne usque ad consumptionem vini, deinde
exprimantur; cum expressione addantur terebinth. Ven. ℥iij. cera alba quantum sufficit, fiat cerotum mol-
le ad usum predictum. Also let the neck, and all the spine of the back be anointed with a liniment,
which hath force of mollifying the Nerves, lest they should suffer convulsion; such is this.

Vigoes Cer-
te good for
a broken
skull.A liniment
good a-
gainst con-
vulsions.

R^e Ruta, marrubii, torismar. ebular salvia, herb. paralyf. an. M. s. rad. Ireos, cyperi, baccarum lauri, an. ℥j. florum
ebanae. melil. hyperici, an. Mj. pistentur & macerentur omnia in vino albo per noctem, deinde coquantur in vase duplici
cum oleo lumbri-corum, liliorum, de terebinthina, axungie, ansetis & hum. an. ℥ij. usque ad consumptionem vini, postea
colentur & incelatur a adde terebinth. venet. ℥iij. aque vitæ ℥β. cera quantum sufficit fiat linimentum secundum
artem.

But when the pain is asswaged, we must abstain from all such unctuous things, lest they make the
wound become sordid and malign, and putrefie the adjacent parts, and consequently the *Crassa
meninx* and skull; for the integrity of all parts may be preserved by their like, and such are dry things
in a fracture of the skull. Wherefore all humid and oily things must be shunned in the cure there-
of, unless peradventure there shall be some need to mitigate pain & bring the humor to suppuration.

For according to *Galen*, we are oft forc'd for a time to omit the proper cure of the disease, so to

How farre humid things are good for a fractured skull.

resist the symptomes; furthermore *Hippocrates* would have us not to foment the skull, no not with wine, but if we do, to let it be but with very little. *Vidius* interprets that litle to be, when there is fear of inflammation; for wine if it be red, tart and astringent, hath a repressing, refrigerating and drying faculty: for otherwise all wine although it heats and dries by its faculty, yet it actually humects and cools, both which are very hurtfull in wounds of the head, or a fractured skull, especially when the bone is bare; for from too much cooling of the brain there is fear of a convulsion, or some other evill symptome. Wherefore let this be ratified, that is, We must not use humid and unctuous medicines in wounds of the head, except for curing of an inflammation, or the mitigation of pain caused thereby. Therefore let the bared skull be strewed with catagmatick and cephalick powders, (being so called by the Ancients, for that they are convenient and good in fractures of the skull and the rest of the bones) for by their dryness they consume the superfluous humidity, and by that means help nature in the separating of the broken bones, and the regenerating of flesh. Such powders usually consist of such things as these ensuing. Thus, *radix Iridos florent. farina bordei. & Ervi, pulvis Aloes Hepaticæ, sanguis Draconis, mastiche, Myrrha, rad. Aristolochiæ, Gentianæ*: and generally all such simples as have a drying and an abstergent faculty without biting; but you must not use these things before the pain, inflammation and apostumation be past; that is then, when the membranes must be clenfed, the bones sealed, and the flesh generated. For the skull by how much it is the dryer, by so much it requires and more easily endures more powerfull and dryer medicines than the *Dura Mater* or *Pericranium*, as that which in quickness of sense comes far short of these two. Wherefore when you would apply the forementioned cephalick powders to the *Meninges*, they must be associated and mixed with hony, syrup of roses or of wormwood and such other like, that so their too violently drying faculty may be allayed and tempered.

Why Cephalick or Catagmatick powders are good.

When to be used. How to be mixed when they are to be applied to the *Meninges*.

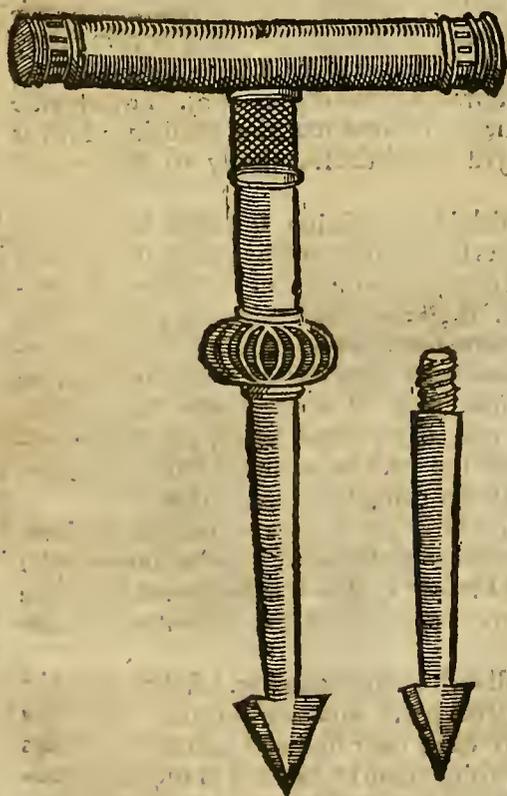
CHAP. XVII. Why we use Trepaning, in the Fractures of the Skull.

Here are four causes of this remedy: The first is, to raise up the deprest bones, and take forth their fragments, which press upon the *Meninges*, or also upon the substance of the brain. The second is, that the *Sanies* or matter may be evacuated, clenfed, wasted, and dried up, which by the breaking of any vessell is poured forth upon the Membranes, whereby they are, and not they only, but the brain also is in great danger of corruption. The third is, for the sifter application of medicines, convenient for the wound and fracture. The fourth is, that so we may have something whereby we may supply the defect of a Repelling Ligature, & such an one as may hinder defluxions; for such a Ligature cannot take place here as it may in the other parts of the body, by reason of the Sphæricall or Round figure of the head, which doth not easily admit binding; & then the density and hardness of the interposed skull is a means that the vessells lying under it (by which usually the defluxion comes) cannot easily be bound with a rowler sufficiently to repell the running blood. And the externall vessells, (to whom the force of the Ligature may come) cannot be bound without great pain, and danger of inflammation. For by such a compression the pulsation of the Arteries would be intercepted, and the efflux of the fuliginous excrements which useth to pass through the futures of the skull, would be suppressed, by reason of the constriction of these futures.

Why a repelling Ligature cannot be used in fractures of the skull.

The shape of this Instrument is not much different from a Gimblet, but that the point is three-square, and not twined like a screw; as you may perceive, by this following figure.

A Gimblet or piercer to perforate the skull, before the setting in of the Trepan.



How the patient must be placed when you Trepan him.

What to be done before the application of the Trepan.

Besides also, the blood would thus be forced from the wounded part without, to within into the Membranes and Brain; when pain, inflammation, a Fever, Abscess, Convulsion, Palsie, Apoplexie, and lastly, death it self would insue.

And these are the chief causes, that Trepaning is necessary in fractures of the skull, and not so in the fractures of other bones.

But before you apply or put to your Trepan, the Patient must be fitly placed or seated, and a double cloth must be many times wrapped about his head, and then his head must be so laid, or pressed upon a Cushion or pillow, that when you come to your operation, it may not sink down any further, but remain firm and steady. Then you must stop the Patients ears with Cotten-wooll, that so he may not hear the noise made by the Trepan or any other Instrument.

But before you put to your Trepan, the bone must be pierced with an Instrument, having a three square point, that so it may be the more speedily and certainly perforated. The point thereof must be no bigger then the pin of a Trepan, that so the Trepan which is forthwith to be applied may stand the more firmer, and not play to and again in too wide a hole.

A. Shews the handle. B. The points which may be screwed and fitted into the handle.

CHAP. XVIII. A Description of Trepanns.

Trepanns are round saws, which cut the bone circularly more or less according to their greatness; they must have a pin standing in the middle a little further out than their teeth, so to stay and hold fast the Trepan that it stir neither to this side nor that, until it be entered and you have cut through the first table at the least: then you must take forth the pin, lest going quite through the bone, it may prick or hurt the *Crassa Meninx*. Wherefore when you have taken forth the pin, you may safely turn it about until you have cut through both the tables; Your Trepanns must also have a cap, or somewhat to ingirt or encompass them, lest no way hindred they cut more of the bone than we would, and in conclusion run into the *Meninx*. They must also be anointed with oyl, that so they may cut the more readily and gently; for thus Carpenters use to greafe their saws. But you must, during the time of the operation, often dip them in cold water, lest the bone by attrition become too hot: for all hard solid bodies by quick and often turning about, become hot; but the bone made more hot and dry, is altered and changeth its nature, so that after it is cut, more of it scales and falls away. Now you must know that the bone, which is touched with the Trepan, or the Air, alwayes casts off scales, for the speedier helping forwards whereof, you must strew upon it powders made of Rocket, Briony, wild Cucumber & *Aristolochia* roots. When the bone is sufficiently scaled, let this following powder be put upon it, which hath a faculty to cover the bone with flesh, and and to harden it with dryness convenient to its kind. *R Pulver. Treas Illyricæ, Aloes, Mammæ thuris, Myrrhæ, aristolochiæ an. ʒ j.* Flesh being by this means generated, let it be cicatrized by strewing upon it, the rinds of Pomegranat sand Alum burnt.

The harm the bone receives by being heated with the Trepan. What things hasten the scaling of the bone.

Neither shall the Chirurgeon forcibly take away these scales, but commit that whole work to nature, which useth not to cast them off before that it hath generated flesh under them. For otherwise if he do any thing rashly, he brings new corruption to the bone; as we shall more at large declare, when we come to treat of *Caries* or rottenness of bones.

The bone must not be forcibly scaled.

He which useth the Trepan, must consider this, that the head is of a round figure, and also the Trepan cuts circularly, and therefore it is impossible to cut the bone so equally on every side, as if it were performed upon a plain body. Furthermore the thickness of the skull is not alike in all places, wherefore you must look, and mark whether the Trepan go not more deep on one side than on the other, which you may do by measuring it now and then with a pin or needle, and if yee find that it is cut deeper on one side, than on the other, you must press down the Trepan more powerfully upon the opposite part.

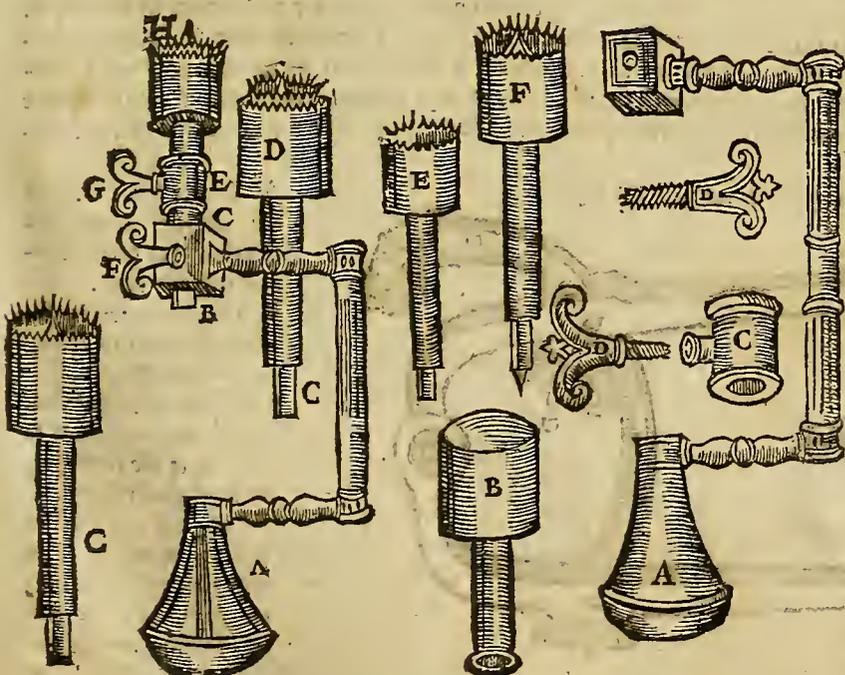
A caution in Trepaning.

But seeing there are many sorts of Trepanns invented and expressed by many men, yet if you weigh and rightly consider them all, you shall find none more safe, than that I invented and have here delineated. For it cannot pierce one jot further into the skull, than he pleases that uses it, and therefore it cannot hurt either the *Meninges* or the Brain. An Iron head or cover stayes it as a bar, that it can penetrare no further than you shall think it requisite. This head or cover is to be drawn up and down, and set higher and lower, as he which uses it shall think good, and so it will stay the Trepan that it shall not goe a hairs bredth beyond your intended depth. So that henceforwards there shall be no Chirurgeon, howsoever ignorant in the performance of his Art, which by the benefit of such a Trepan may not perform this operation without any danger or fear of danger of touching the *Dura Mater*, the hurting whereof, puts the life in jeopardy.

A safe and convenient Trepan.

The figure of our Trepan opened and taken in pieces.

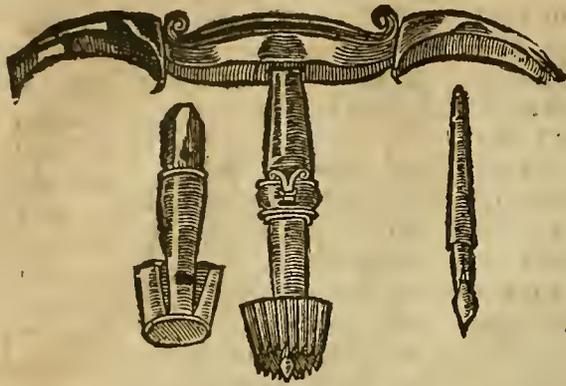
The figure of the same Trepan fitted and put together.



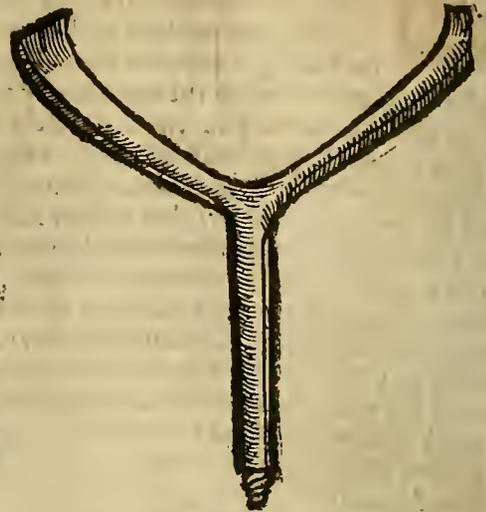
- A. Shews the whole handle or Brace of the Trepan.
- B. The Cover or Cap of the Trepan.
- C. The ferule.
- D. D. The screw pins which hold and stay the ferule and Trepan.
- E. The Trepan without his pin.
- F. The Trepan furnished with its pin.
- A. Shews the Brace and Trepan fitted in every point.
- B. The place into which the Trepan is put, and fitted.
- C. C. C. The upper end of the trepan which is to be fitted and put into the Brain.
- D. The Trepan with its cover or cap up on it.
- E. The ferule.
- F. A screw pin by the twining whereof the Trepan is fastened in the Brace.
- G. Another screw pin which fastens the ferule closer to the Trepan.
- H. The three square points.

In stead of the other Trepan set forth by the Author, I have thought fit to give you the figure of that Trepan that is here most in use, and the fittest therefore, as it is set forth by Mr. Doctor Crook.

A Terebellum or Gimblet consisting of three branches.



A Lentill-like cutting Scraper.

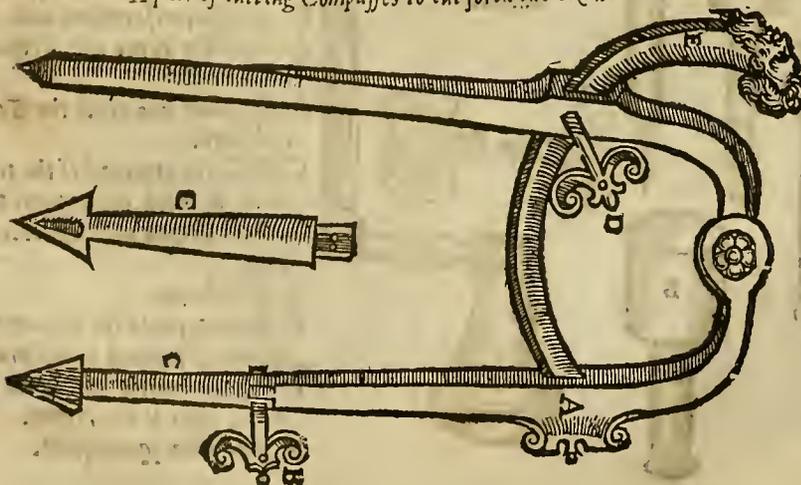


All these particulars of the Trepan taken in sunder, you may see united and fitted together in the other figure. But when you cannot bring out the bone which you have cut off with your Trepan, then you may take it forth with the *Terebellum* or Gimblet here express, that is, screwing the point thereof into the hole made by the three square pin; the handle of this Instrument may also serve in stead of a Levatory. When with the Gimblet you have drawn or taken forth that part of the skull which was cut away by the Trepan; if there shall be any sharp splinters in the second table, which may hurt and prick the *Meninx*, when it is heaved up by the motion of the brain, they must be shaved away and planed with this Lentill fashioned scraper, being so called, because it hath the head thereof fashioned and smooth like a Lentill, lest being sharpe it should hurt and prick the membrane in the smoothing thereof.

But if by reason of the thickness, the skull cannot be cut with this Lentill-like scraper, you may use the cutting scrapers and a Mallet. The mallet must be of lead, that so it may shake the brain as little as may be. But you must diligently with your mallets take forth the sharp splinters, and peeces of the bone. But if the fractured part of the skull be such, that it will not admit that section which is requisite for the bared bone, as when the fracture is upon the temporall muscle, or at the futures; then in the stead of one Trepan, two or three must be applyed, if the necessity of the present case so require, and that within a very small compass; but they must not be applyed to the fractured part, but nigh thereto, as we shall shew more at large in the following chapter. But the Trepan shall be applyed so neer to each other, that the ring of the second may be joynd with the ring of the first and third. But if a fracture shall happen to light upon a future, then you must not apply a Trepan to it, but use two thereto on each side; he that shall do otherwise, shall tear in sunder the nervous and membranous fibers, and also the veins and arteries by which the *Dura Mater* is fastened to the skull, and yeelds matter to the *Pericranium*. He which shall apply one Trepan, that is, but upon one side of the future, he shall not be able to get forth all the *Sanies* which is fallen down on both sides by reason of the partition of the *Crassa Meninx*, which lies between, and rises up by the future of the skull.

To conclude, when for what cause soever we cannot make use of a Trepan, we may imploy this instrument, if so be as much of the bone be bared as is needfull. It is made in form of a pair of Compasses, and by means of a screw may be opened more or less as you please. You as need shall require may change the points, and put other into their places, for they may be fitted to one side of the compass with a screw.

A pair of cutting Compasses to cut forth the skull.



A. Shews the one leg of the cutting compasses, which as you carry it about cuts the skull.

B. The screw which fastens the point to the leg of the compasses.

C. C. Two different points which may be screwed to the leg of the compasses, as need shall require.

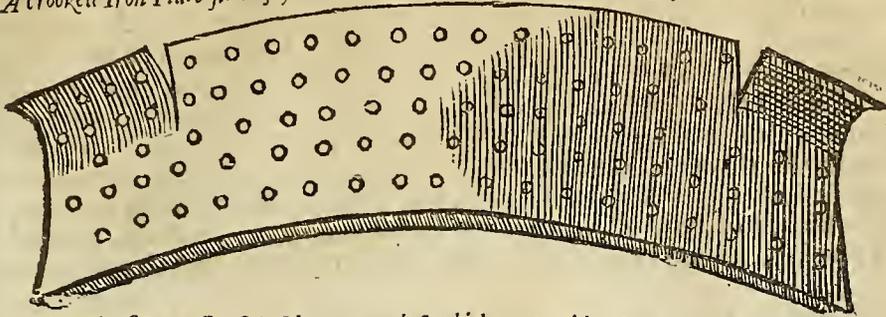
D. A great screw which fastens upon an Iron string, alongst which the one of the legs of the compass running, may be widened & straitned as you please.

More-

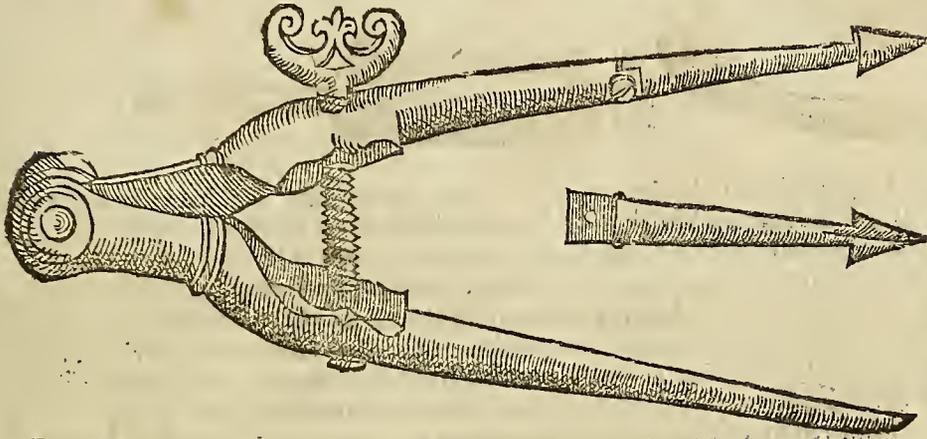
The use of a Leaden Mallet.

Why a Trepan must not be applyed to the futures. Why two Trepan are to be used to a fractured future.

A crooked Iron Plate fit to sustain and hold steady one leg of the compass upon the head.



Another pair of Compasses of the like nature and use, which may be widened and strained by a screw.



Moreover it is fit that the one leg of such cutting compasses should stand firm and steady, whilst the other is drawn circularly to cut. Wherefore it is fit you have an Iron plate made full of little holes, wherein you may firmly stay that leg of the compass, lest it waver against your will; it is requisite that this plate be crooked, (because the head is round) that so it may be fitted to any part thereof.

CHAP. XIX. *Of the places of the skull whereto you may not apply a Trepan.*

First of all, you shall not apply a Trepan, to a bone that is so broken that it is wholly, or in the greater part thereof divided from the skull by the violence of the stroke, lest by your weight & pressing of the trepan, you force it down upon the membrane. Secondly, you must not apply one to the fractured Sutures, for the reasons mentioned in the former chapter. Thirdly, nor to that part of the forehead which is a little above the eye-browes, for these reasons we gave you before in the twelfth chapter. For there is in that place under the first table of the skull a large cavity replenished with a certain white and tough humor, as also with a certain spirituous and ayrie substance, placed there by nature, to prepare the aire which ascends to the brain by the Nostriils: unless the Chirurgion observe and be mindfull hereof, he may be deceived, supposing this cavity to be an Effraction of the bone and a depression thereof. Fourthly, neither in the lowest parts of the skull, lest the marrowy substance of the Brain, by reason of its weight, should slide through the hole made by the Trepan. Fifthly, neither to the *Bregma* bones of Children, as those which as yet have not acquired just solidity, to endure the impression of a Trepan. Sixthly, nor to the temples by reason of the Temporall muscle, the cutting whereof in the opinion of *Hippocrates* causes convulsion of the opposite part. For being cut athwart it loses its proper action, that is, to move and lift up the lower Jaw; but then the opposite Temporall muscle being whole and perfect, using its strength, (his antagonist suffering it, and not resisting or labouring any thing at all to the contrary) it draws the same Jaw to it, whereupon the mouth and all the parts of the face are drawn awry, and suffer a Convulsion towards the sound part, the other being resolved according to *Hippocrates* his rule. For as often as the muscles of one kind are equall in number, magnitude and strength on each side, the resolution of the one part, causes the Convulsion of the other.

Neither doth this danger alone arise from the cutting of the Temporall muscle, but also another, which is, that this muscle when we eat and speak, is in perpetuall motion, whereby it comes to pass, that being once cut it is scarce ever united again, besides also the commissure or joyning together of the stony bones lye under it. But by the second caution we are forbid to trepan upon the sutures; moreover also many veins, arteries and nerves are spread over the substance thereof, so that by cutting of them, there is danger of many and malign symptoms, as pain, inflammation, a fever, a convulsion not only of the part it self, but also of the whole body, whence lastly death insues. Wherefore let no Chirurgion be so fool hardy, as to attempt the cutting of this muscle so to trepan the bone which lies under it; rather let him apply his Trepan above it, or on the side thereof, or as neer to the affected part as he can, as I did in a Gentleman called *Monsieur dela Bretesche*. He in the triumphant entrance of King *Henry* the second, into the City of *Paris*, was so hurt with a stone, that the *Os Petrosum* or scaly bone, was broken with the violence of the blow, and the temporall muscle was vehemently contused, yet without any wound. I being called the next day (viewing the manner of the hurt, & the condition of the wounded part) thought good to bring some Physitians, and Chirurgions with me to consult hereof, of whom when some thought it expedient presently to divide the temporall muscle that baring the bone we might apply a Trepan, and so take forth the broken bones: I on the contrary, begun earnestly to withstand that opinion, citing that saying of *Hippocrates*, *ex libro de vulneribus Capitis*, wherein Chirurgions are forbidden to cut such muscles, for fear of the forementioned symptoms; also I cited experience, how that I had often observed all those which had this muscle

A bone almost severed from the skull must not be trepaned.

A notable cavity in the forehead bone.

Lib. de Vul.

A rule out of *Hippocrates*.

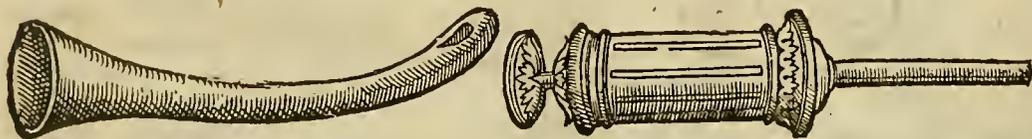
What discommodities arise from cutting the temporall muscles.

A History

cut, dyed with a convulsion; but that it should be far better, that neer above the fracture the bone should be trepaned, not touching the Temporall muscle at all if he could. When all of them at the last had inclined to my opinion, I presently divided the musculous skin which was over the upper part of the fracture with a three cornered section: the day following which was the third of his disease, I trepaned him, and after I had done, some few dayes after, I took out some four splinters of the broken bone; and I put in a plain leaden pipe, by which (I wishing the Patient ever when I dreft him to hold down his head, to stop his mouth and his nose, and then strive as much as in him lay to put forth his breath) much sanious matter came forth, which was gathered between the skull and *Crassa Meninx*. Other filth which stuck more fast, I washed out with a detergent decoction, injected with such a syringe as is here exprest; And I did so much, God blessing my indeavours, that at length he recovered.

A plaine leaden pipe ser to carry forth the Sanies gathered under the skull.

A little syringe fit to make injections withall.



The like chance and fortune befell *Monsieur de Pienne* at the siege of *Mets*. For he as he fought at the breach of the wall, had the bone of his Temples broken with a stone struck out of the adjacent wall, by a peece of Ordinance shot from the Emperours campe, he presently fel down with the blow, and cast blood out of his mouth, nose and ears, with much vomiting, and remained dumb and as it were senseless almost fourteen dayes, so that he knew none of the by-standers. He had often palpitations; and convulsive twitchings, and his face was swoln. His forehead bone was trepaned at the side of the temporall muscle by the hand of *Peter Aubert* the Kings Chirurgion: and although on the 25. day, soft flesh endued with exquisite sense grew out of the hole made with the Trepan, whose growth could not be hindered by Cathæretick pouders, yet at the length he recovered. The Ancients called this kind of growing flesh a *Fungus* [i. a Mushrome] for that it is soft, and grows with a small root and broad top like a mushrome: but it increases and decreases, according to the plenty of the flowing matter, and industry of the Chirurgion hindering by art the growth thereof. This flesh stinks exceedingly, they commonly call it *Ficus* [anæti *Fiacrii* [i. the fig of *S. Fiacrye*.] This disease commonly hath its original after this manner. Even as in the bodies of trees from the excrements of nourishment, a certain half putrid, gross and viscous humor sweats through the bark, and gathered together by little and little grows into a Mushrom, so blood melancholy both in temper and consistence, springs from the broken vessells of the skull and *Crassa Meninx*, which also is sent sometimes by nature for the necessary repairing of the flesh in these parts, whereupon a certain fungus breeds, which in *Galens* opinion, favors or partakes of the nature & condition of the parts to which it grows though in generall it be of the nature of malign warts, or excrescences. But for to take away such *Fungi*, you must apply medicines which have a specifick faculty to waft superfluous flesh; such are these which strongly dry, and gently waft and eat, such as this which follows. *R Sabine ʒ ij. creæ ʒj. pulveriscentur simul, aspergatur caro excrescens.* Or else *R Hermodactylorum combustorum ʒβ*, make a powder for the same use. But if so be that this fungous flesh come to such growth, (as it often happens) as to equall the bigness of an egg, it must be tied and strait twitched, close to the root with a silken thred; and when it shall fall away by reason of this binding, the place must be strewed with the forementioned pouders, for so it will be more certainly cured, than with more acrid cathæreticks.

CHAP. XX. Of the corruption and Caries, or rottenness of the bones of the Head.



Here sometimes follows a corruption and Sphacell of the fractured bones of the skull upon wounds of the head; which happens either because they are touched by the air, which they are not sensible of; or for that the *Sanies* putrefying and detained under them, hath infected them with like putrefaction; or by the cure unskillfully handled, they by the rash application of suppurating and oily medicines becoming more moist, and so undergoing an unnaturall change of their proper complexion and native temper, as we shall shew more at large, when we shall treat of the reason of the *Caries* in the *Lues venerea*. We shall know this unnaturall change and corruption, partly by sight, that is, when from white they become to be yellowish, livid and black; partly also by putting down a Probe, when as it meets with nothing smooth and slippery, but feels rough in many places, and besides also when it enters and easily penetrates with a small thrusting down into their substance, as if it were fungous. Yet this last sign may often deceive you, for I have divers times observed rotten bones, which being bare had long suffered the injury of the air, to become so hard that a Trepan would scarce pierce them; for it is putrid humidity which makes the bones soft and fungous; but the air by drying them exhausts this humidity, and lastly dries it, whence follows such contumacious hardness. This sign will be far more certain, if the flesh which is grown upon the bone be more soft than is fit, loose and have little or no sense of feeling. You may correct and amend this corruption of the bone with cauteries as well actuall, as potentiall, or with the powders of *Aloes*, *Gentian*, *Aristolochia*, *centaury*, *cortex pini*, as *R, radic. Ireos, l'lor. aristo'ochie an. ʒj. centaury. ʒij, corticis pini ʒβ, Misce & fiat pulvis subtilissimus ossi inspergendus.* But if it be much corrupted, it must be scraped forth with your *Scalpra*. And you must expect the falling or scaling of the corrupt bone from the sound, and not forcibly procure it; for otherwise the sound bone, which lies under it, being as yet covered with no flesh growing over it, would be corrupted by the appulse, or touch of the air. Yet you shall by little and little gently move and shake rotten bones with your probe,

A history.

The generation of a Fungus.

Why when the skull is broken the bones sometimes become foul or rotten. The signs of foulness of the bone.

Corrupt bones are sometimes hard.

probe, that so they may more easily scale and with less trouble to nature. But note by the way, that the scaling of the bone which hath invironed the Trepan, is commonly performed in the space of forty or fifty dayes. So long also will that caused by the unusuall appulse or touch of the air, or application of a cautery, or the asperision of the Cephalick powders; besides also in the same number of dayes broken bones may be united and joyned together by a *Callus*, which is to them as a scar, yet sometimes sooner, somewhiles later, according to the variety of the ages, tempers and habits of divers men. But if the *Caries* or *rottenness* can neither by these fore-mentioned remedies be overcome and amended, neither the loosed continuity agglutinated nor united, you must give the Patient a vulnerary potion, for hence I have found happy success in many. But sometimes not only a certain portion of the bone, is taken with a *Caries*, but also the whole is often seized upon with sphacell, and all falls out. For in *Hippocrates* opinion, *Lib. de vulneribus capit. is*, the bone of the skull being broken falls from the sound more or less, according to the violence of the blow; which also is confirmed by experience. For which purpose I think good in this place to recite a History, whereof I was an eye-witness, whilst I served as Chirurgion in *Piemont* under the Marshall *de Montejan* (who was the Kings Lieftenant there.) It happened that a Lackey of *Monsieur de Goulaines* came to me to be cured; he had the *Bregma* bone of the left side broken with a sword, neither yet did the fracture come to the second Table; a few dayes after his recovery the bone being agglutinated and united, it came to pass that a company of *Gascoine* souldiers his countrymen came to *Turin*, with whom one morning he eat plentifully Tripe fryed with Onions and spices, and drunk a great quantity of strong wine. Whereupon he presently fell into a continuall Feaver, and lost his speech and understanding; his head swelled, his eyes looked red and fiery and as though they would have started out of his head. Which things being considered, I let him blood, having first (by the Physitians advice) given him a Glyster, and applyed to his head such things as were fit; and also I laboured with Frictions and Ligatures of the extrem parts to draw the humors downwards; yet for all this the part of the head which was formerly affected began to impostumate; which being opened, there came forth a great quantity of matter, and at the length the musculous skin and *Pericranium* sinking down, both the Tables of the skull became putrefied and rotten, as you might know by their blackness and stench. Now to take away this corruption, I applyed at certain times actuall cauteries, both to amend the corruption and separate that which was altered: but mark, after some months space, a great number of worms came forth by the holes of the rotten bones from underneath the putrefied skull; which moved me to hasten the separation and falling away of the putrid bones. Which being done, upon the very *Crassa Meninx*, which is more strange in that place, which nature had covered with flesh, I observed three cavities of the largeness of ones thumb filled with worms about the bigness of a points tag, with black heads, diversly wrapped amongst themselves. The bone which nature separated was of the bigness of the palm of ones hand, so that it was strange that so large a portion of the skull should be cast off by nature, and yet the Patient not dye thereof; for he recovered yet beyond all mens expectation, but after the agglutination of the wound the scar remained very hollow according to the decree of *Hippocrates*. For flesh doth not easily grow upon a *Callus*, because it is a thing strange and supposititious by nature; besides, as a scar is a thing more dense than the skin, so is a *Callus* than the bone, so that through the more compact substance thereof, the blood can neither freely nor plentifully sweat through for matter to regenerate flesh. Hence it is, that wheresoever any portion of the skull is wanting, you may there by putting to of your hand perceive and feel the beating of the brain, wherefore the skull must needs be much weaker in that place. Now to help this infirmity, I wished this Lacky to were a Cap made of thick leather, so more easily to withstand externall injuries: and verily thereby he grew much better. Now I think good in this place to lay open the deceit and craft of some Impostors falsly stiling themselves Chirurgions, who when they are called to cure wounds of the head, wherein any part of the skull is lost, perswade the Patient and his friends, that they must put a plate of gold in the place of the skull which is wanting. Wherefore they hammer it, in the presence of the Patient, & turne it divers wayes & apply it to the part, the better to fit it; but presently after they slyly convey it into their purses, and so leave the patient thus coufened. Others brag that they are able to put the dried rind of a gourd into the place of the lost bone, and fasten it on to defend the part; and thus they grossely abuse those which are ignorant in the Art. For this is so far from being done that nature will not suffer nor endure so much as an haire, or any other small body to be shut up in a wound when it is cicatrized; neither is the reason alike of a leaden bullet which shot into the body lies there for many years without any harm to the patient; for although lead have a certain familiarity with mans body, yet is it at length (unless the density of the opposed flesh, ligament, tendon, or some other such like substance hinder) thrust forth by nature impatient of all strange bodies. And thus much of the rottenness and corruption of fractured bones; now must we speak of the discommodities which befall the *Meninges* by wounds whereby the skull is broken.

The bone
fit of a vul-
nerary po-
tion.

A History.

A great fall-
ing away of
a corrupt
bone.

Ap. 45.
Sect. 6.

The cover-
teous case
of impo-
sters.

CHAP. XXI. Of the discommodities which happen to the *Crassa Meninx* by fractures of the skull.

MAny discommodities chiefly happen to the *Crassa meninx* by a fracture of the skull and rash trepaning thereof; for it sometimes chanceth to be cut and torn. Agglutination is a remedy for this disease, which *Hippocrates* wishes to be procured with the juice of *Nepeta* [that is, of that calamint, which smells like Penny-royall] mixed with barley flour. In stead whereof this following powder having the like faculty may take place.

R. Colophon. ℥iij. Myrrha, aloes, mastiches, sanguinis Dracon. an. ʒi. croci, sarcocollæ an. ʒβ. misce & fiat pulvis subtilis. But to purge the blood and matter which is gathered and lyes between the *Crassa meninx* and skull, you shall put in a Tent made of a rag twined up some foure or five double, and steeped in sy-

Remedies
for the la-
cerated
Meninges
rup

rup of Roses or wormwood and a little *Aqua vite*; for thus you shall press down both the *Crassa Meninx*, left lifted up by the accustomed and native pulsation of the brain; it should be hurt by the edges of the skull, yet rough by reason of the sharp splinters of the bone lately trepaned, and give freer passage forth for the matter there contained. But as oft as you shall dress the Patient, you shall renew the forementioned Tent, until all the matter be purged forth. And so often also you shall press down with the following instrument the *Dura Mater*, and bid the Patient to strive to put forth his breath, stopping his mouth and nose, that so the matter may more easily be evacuated. This Instrument wherewith you shall hold down the *Dura Mater*, must have the end round, polished and smooth as it is here expressed.

A fit Instrument to press and hold down the Dura Mater, so to make way for the passage forth of the Sanies or Matter.



And let there be laid upon the *Dura Mater* strewed over with the fornerly mentioned powder, a sponge moistened and wrung forth of a drying decoction made of aromatick and cephalick things, such as this which follows. *Rx Fol. salviae, majoran. betonicae, rosar. rub. absinth. Myrtil. forum chamen. melil. stoebad. urisugue an. M. iij. rad. cyperi, calan. aromat. ireos, caryophyllatae, angelicae, an. ʒij. bulliant omnia secundum artem cum aqua fabrorum & vino rubro, fiat decoctio ad usum dictum.* And in stead hereof you may use claret with a little *aqua vite*, that so the contained matter may be evacuated and dried up. A sponge is fitter for this purpose to draw than a linnen rag or any other thing, both because it is good of it self to draw forth the humidity, as also for that by its softness it yields to the pulsation of the Brain. Then apply to the wound & all the adjoining parts, an emplaster of *Diacaltheos* dissolved with vinegar, or wine, or oyl of Roses, that so the plaster may be the more cold and soft. For in *Hippocrates* opinion, nothing which is any thing heavy or hard must be applied to wounds of the head, neither must it be bound with too strait, or hard a ligature, for fear of pain and inflammation.

For *Galen* tells (as he had it from *Mantias*) that a certain man had lost his eyes by inflammation and impostumation arising, for that an Apothecary had used too strait a ligature to his head and face; for this strait ligature so pressed the futures, that the fuliginous vapours, which used to pass through them and the pores of the skull, were stopped from passing that way; besides, the beating of the Arteries was intercepted and hindered; by which means the pain and inflammation so increased, that his eyes were rent and broke in sunder and fell forth of their orb. Wherefore *Hippocrates* rightly commends an indifferent ligature: also he sicly witheth us to let the emplasters be soft which are applied to the head, as also the cloaths wherewith it is bound up, to be of soft and thin linnen, or of Cotton, or wooll. When the patient is in dressing, if there come much matter out of the wound, you shall wish him if he can, to lye upon the wound, and now and then by fits to strive to breath, stopping his mouth and nose, that so the brain lifted and swoln upwards, the matter may be the more readily cast forth; otherwise suffer him to lye so in his bed, as he shall best like of, & shall be least troublesome to him. You may with good success put upon the *Crassa Meninx* oyl of Turpentine with a small quantity of *aqua vite* and a little Aloes and Saffron finely powdred, to cleanse or draw forth the *Sanies*, or matter. Or else, *Rx Mellis rosar. ʒij. farinae hord. pulver. aloes, mastick. & Ireos florent. an. ʒij. aqua vite parum;* let them be incorporated together & make a detensive medicine for the foresaid use.

Sometimes also the *Crassa Meninx* is inflamed after Trepaning, and swoln by a *Iblegmon*, that impatient of its place, it rises out of the hole made by the Trepan, and lifts it self much higher then the skull, whence grievous symptoms follow. Wherefore to prevent death, of which then we ought to be afraid, we must enlarge the former hole with our cutting mallets, that the matter contained under the skull, by reason of whose quantity the membrane swells, may the more freely breath and pass forth; and then we must goe about by the prescript of the Physitian to let him bleed again, to purge and diet him. The inflammation shall be resisted by the application of contrary remedies, as this following fomentation. *Rx Sem. lini, althae, fan. psyllii, ros. rub. an. ʒj. solani, plantag. an. M. j. bulliant in aqua tepida communi, ex qua fiat solus.* Anodyne and repelling medicines shall be dropped into his eares, when it is exceedingly swoln, that the tumor may subside, you shall cast upon it the meal or floure of lentills, or vine leaves beaten with Goose greafe. With all which remedies if the tumor doe not vanish, and withall you conjecture that there is Pus or matter contained therein, then you must open the

Dura Mater with your incision knife, holding the point upwards & outwards, for so the matter will be poured forth and the substance of the brain not hurt nor touched. Many other Chirurgions, and I my self have done this in many patients with various success. For it is better in desperate causes to try a doubtfull remedy then none at all; also it oft-times happens, whether by the violence of the contusion and blow, or concretion or clotting of the blood which is shed, or the appulse of the cold ayre, or the rash application of medicines agreeing neither in temper nor complexion with the *Crassa Meninx*, or also by the putrefaction of the proper substance, that the *Dura Mater* it self becomes black. Of which synptome the Chirurgion must have a great and special care.

Therefore that thou mayst take away the blackness, caused by the vehemency of the contusion, you shall put upon it oyl of egges with a little *Aqua vite*, and a small quantity of Saffron and Orris roots in fine powder; you shall also make a fomentation of discussing and aromatick things boyled in water and wine; and *Vigoes Cerat* formerly described shall be applyed. But if the harm come from congealed blood, you shall withstand it with this following remedie. *Rx Aqua vite ʒij. granor. tinctorum in tenuem pulverem tritorum ʒij. croci, ʒi. Mellis rosar. ʒij. Jarcoool. ʒij. Leviter & simul bulliant omnia, & de colatura infundatur, quousque nigrities fuerit oblitterata.* If this affect come by the touch of the ayre, it shall be helped with this following remedie. *Rx Tereb. ven. ʒij. Mellis ros. ʒij. Vitellum ovi u-*

A sponge fit to foment withall.

Lib. de vuln. cap.

Lib. de fasciis.

The commodities of too strait binding of the head.

What cloathes we must use.

How the patient must lye in his bed.

Paulus lib. 6. cap. 90.

Remedies for the inflammation of the *Crassa Meninx*.

How we must open the *Crassa Meninx* when it is impostumate.

The causes and remedies of the blackness of the *Dura Mater*. Remedies for contusion.

For congealed blood.

nam *farin. borderi* ℥ij. *croci* ℥j. *sarcocol.* ʒij. *aq. vitæ* ʒij. Incorporentur simul, & bulliant paululum. This remedy shall be used until the blackness be taken away, and the membrane recover its pristine colour.

But if this affect proceeds from the rash use of medicines, it must be helped by application of things contrary. For thus the offence caused by the too long use of moist and oily medicines, may be amended by using catagmatick and cephalick powders; but the heat and biting of acrid medicines, shall be mitigated by the contrary use of gentle things; for both humid and acrid things somewhat long used make the part look black, that truly by generating and heaping up filth, but this by the burning and hardening heat. But when such blackness proceeds from putrefaction, *Iohr de Vigo* commends the following remedy. *R aqua vitæ* ʒij. *mellis ros.* ʒij. *putver.* Mercur. ʒij. *unica ebullitione bulliant simul ad uam dictum.* Or *R aqua vit.* ʒij. *lyrip. absinth.* & *mellis ros. at. an.* ʒij. *unguenti egyptiaci* ʒ. *ʒ. sarcocol. myrrhæ, aloes. an.* ʒj. *vini albi boni & odoriferi.* ʒj. *bulliant leuiter omnia simul, coeantur ad uam dictum.* But if the force of the putrefaction be so stubborn, that it will not yeeld to these remedies, it will be helped with *Aegyptiacum* (made with plantain water in stead of Vinegar) used alone by it self, or with the powder of Mercury alone by it self, or mixt with the powder of Alome. Neither must we be afraid to use such remedies especially in this extrem disease of the *Dura Mater*; for in *Galens* opinion the *Crassa Meninx* after the skull is trepaned delights in medicines that are acrid, that is, strong and very drying, especially if it have no *Plegmon*; and, this for two reasons; the first is, for that hard and dry bodies, such as membranous bodies are, be not easily affected unless by strong medicines; the other is, which must be the chiefe and prime care of the Physitian, to preserve and restore the native temper of the part by things of like temper to it. But if the auditory passage not onely reaching to the hard membranes of the Brain, but also touching the Nerve which descends into it from the brain, suffer most vehement medicines, though it be placed so near; certainly the *Crassa Meninx* will endure them far more easily and without harm. But if by these means the putrefaction be not restrained, and the tumor be increased so much, that the *Dura Mater* rising far above the skull, remains unmovable, black and dry, and the patients eyes look fiery, stand forth of his head and rowl up and down with unquietness and a phrensie, and these so many ill accidents be not fugitive, but constant, then know that death is at hand, both by reason of the corruption of the gangran of a noble part, as also by extinction of the native heat.

For the hurt received by the ayre.

What Medicins make the *Crassa Meninx* black.

Medicins that putrefact on of the *Meninx*.

VVhy the *Crassa Meninx* easily endures acrid medicins.

Signs of death at hand.

CHAP. XXII. Of the cure of the Brain being shaken, or moved.

WHE formerly declared the causes, signes and symptoms of the concussion, or shaking of the Brain, without any wound of the muscular skin, or fracture of the bone; wherefore for the present I will treat of the cure. Therefore in this case, for that there is fear that some vessell is broken under the skull, it is fit presently to open the cephalick vein. And let blood be plentifully taken according to the strength of the Patient, as also respectively to the disease both which is present, and like to ensue, taking the advice of a Physitian. Then when you have shaven away the haire, you shall apply to the whole head and often renewe the forementioned cataplasme, *Ex farinis, oleo rojacco, oxymelite,* and other like cold and moist repelling medicines. But you must echeew dry, and too astringent medicines must be shunned, such as are *Unguentum de bolo* and the like; for they obstruct too vehemently, and hinder the passage forth of the vapours both by the suture and the hidden pores of the skull. Wherefore they do not only not hinder the inflammation, but fetch it when it is absent, or encrease it, when present. The belly shall be loosed with a clyster, and the acrid vapours drawne from the head; for which purpose also it will be good, to make frictions from above downwards, to make straight ligatures on the extrem parts, to fasten large cupping-glasses with such flame to the shoulders and the originall of the spinall marrow, that so the reuulsion of the blood running violently upwards to the brain, and ready to cause a plegmon, may be the greater. The following day it will be convenient to open the *Vena Puppis*, which is seated upon the Lambdall suture, by reason of the community it hath with the veins of the brain, & shutting the mouth and nose to drive powerfully to breath. For thus the membranes swell up, and the blood gathered between them and the skull is thrust forth; but not that which is shut up in the brain and membranes, of which if there be any great quantity, the case is almost desperate, unless nature assisted with stronger force, cast it forth turned into Pus. But also after a few dayes the *vena frontis* or forehead vein may be opened, as also the Temporal Arteries and Veins under the tongue, that the conjunct matter may be drawn forth by so many open passages. In the mean space the Patient must keep a spare diet, and abstain from wine, especially until the fourteenth day, for that until that time the fearfull symptoms commonly reign. But repelling medicines must be used until the fourteenth day be past, then we must come to discussing medicines, beginning with the more milde, such as is this following decoction. *R rad. Alib.* ʒvj. *ireos, cyperi, calami arom. an.* ʒij. *fol. sabinis, sngior an. betonic. stor. chamem. melil. ros. rub. stachad. an.* M. ʒ. *alis com.* ʒij. *bulliant omnia simul secundum artem cum vino rub. & aqua savorum, fiat decoctio.* Let the head be washed therewith twice a day with a sponge. But yet when you do this, fear that the head be not too much heated by such a fomentation, or any such like thing, for fear of pain and inflammation. Then you shall apply the cerate of *Vigo* which hath power to discuss indifferently, to dry, and draw forth the humors which are under the skull, and by its aromatick force and power to confirm and strengthen the brain; it is thus described. *R Furfuris bene triturate* ʒij. *farin. lentini* ʒij. *ros. myrtillor. foliorum & granorum ejus, an.* ʒj. *calam. aromati.* ʒj. *ʒ. chamemel. melil. M. ʒ. nuce cupressi num. vj. olei rojacei, & chamem. an.* ʒij. *ceræ albæ* ʒij. *ʒ. thuris, mastichis, an.* ʒij. *myrrhæ* ʒij. *In pulverem que redigi debent radactis, & liquefactis oleis cum cera, omnia misceantur simul, & fiat mixtura, que erit inter formam emplastris & cerati.*

What the concussion of the brain is.

The opening of the *Vena Puppis*.

A discussing fomentation.

A caution in fomenting the head.

A description of *Vigoes* Cerate.

A History. *Vigo* saith, that one of the Duke of *Urbins* Gentlemen found the urine hereof to his great good. He fell from his horse with his head downwards upon hard Marble, he lay as if he had been dead, the blood gusht out of his nose, mouth and ears, and all his face was swollen and of a livid colour; he remained dumb twenty dayes, taking no meat but dissolved gellies, and Chicken and Capon broths with sugar; yet he recovered, but lost his memory, and faltered in his speech all his life after. To which purpose is that Aphorism in *Hippocrates*; Those which have their Brain shaken by what cause soever, must of necessity become dumb; yea also, as *Galen* observes in his Commentary, lose both their sense and motion. That Cerat is not of small efficacy, but of marvellous and admirable force, which could hinder the generating of an abscess, which was incident to the brain by reason of the fall. Yet there be many men so far from yeelding to reason, that they stily deny, that any impostumation can be in the brain; and augmenting this error with another, they deny that any who have a portion of the brain cut off can recover, or rise again; but the authority of ancient writers and experience do abundantly refell the vanity of the reasons whereon they rely. Now for the first, in the opinion of *Hippocrates*; If those which have great pain in their heads have either pus, water or blood flowing from their Nose, mouth or ears, it helps their disease.

Aph. 58. sect. 7.

That there may be an abscess in the brain.

Aph. 10. sect. 6.

Gal. lib. de inaequal. in temp. Rbas. cap. 4. contin. Avicen. cap. de exil. sen. 3. lib. 4. cap. 20.

A History-

But *Galen*, *Rhasis*, and *Avicen* affirm that Sanies generated in the brain disburdens it self by the nose, mouth or ears; and I my self have observed many who had the like happen to them.

I was told by *Prothais Coulen*, Chirurgeon to *Monsieur de Langey*, that he saw a certain young man in the town of *Mans*, who often used to ring a great bell; he once hanging in sport upon the rope; was snatcht up therewith and fell with his head full upon the pavement: he lay mute, was deprived of his senses and understanding, & was besides hard bound in his belly. Wherefore presently a fever and delirium with other horrid symptoms assayled him, for he was not trepaned because there appeared no sign of fracture in the skull: on the seventh day he fell into a great sweat with often sneezing, by violence whereof a great quantity of matter and Pus flowed forth of his ears, mouth and nose, then he was eased of all his symptoms, and recovered his health.

Now for the second, *Galen* affirms that he saw a boy in *Smyrna* of *Ionia* that recovered of a great wound of the brain, but such an one as did not penetrate to any of the ventricles. But *Guido* of *Cauliac* saith, he saw one which lived and recovered after a great portion of the brain fell out by reason of a wound received on the hind part of his head. In the year of our Lord 1538. while I was Chirurgeon to the Marshall of *Montejan* at *Turin*, I had one of his Pages in cure, who playing at quoits received a wound with a stone upon the right *Bregma* with a fracture, and so great an Effraction of the bone, that the quantity of half a hazell Nut of the brain came forth thereat. Which I observing, presently pronounced the wound to be deadly; a Physitian which was present contradicted my opinion, affirming that substance was no portion of the brain, but a certain fatty body. But I with reason and experience in presence of a great company of Gentlemen, convinced the pertinacy of the Man, with reason; for that fat cannot be generated under the skull, for although the parts there contained be cold, yet because they are heated by the abundance of the most hot and subtile animall spirits, and the heat of vapours rising thither from all the body, they do not suffer fat to concreat about them. But with experience, for that in the dissecting of dead bodies, there was never any fat observed there; besides also fat will swim on the top of water; but this substance as marrowy, cast into the water presently sunk to the bottome.

Lastly, fat put to the fire becomes liquid and melts; but this substance being laid upon a hot iron, became dry, shrunk up and contracted it self like a peece of leather; but dissolved not at all. Wherefore all those which were present cryed out, that my judgment was right of that substance that came forth of the skull. Yet though it was cut away, the Page recovered perfectly, but that he continued deaf all his life after.

Why fat cannot be generated under the skull.

Signs of a fatty substance.

Why we treat in particular of wounds of the face.

A thing to be observed in wounds of the eye-brows.

CHAP. XXIII. Of the wounds of the face.

HAVING treated of the wounds of the head by their causes, signs and cure, it follows that we now speak of the wounds of the face, if but for this, that when they are carelessly handled, they leave deformed scars in the most specious and beautifull part of the body. The causes are the same which are incident to the skull, that is, external. But this may be added to the kinds and differences of the wounds, that the life may be out of danger though any one whole part of the face, (as the ear, eye, nose, lip) may be cut away by a wound, but not so in the head or skull. Wherefore beginning at the wounds of the eye-brows, we will prosecute in order the wounds of the other parts of the face.

This is chiefly to be observed in wounds of the eye-brows, that they are oft-times cut so overthwart, that the muscles, and fleshy pannicle which move and lift them up, are wholly rent and torn. In which case the eye-lids cannot be opened, and the eyes remain covered, and as it were shut up in the cases of their lids; so that even after the agglutination of the wound, if the Patient would look upon any thing, he is forc'd to hold up the eye-lids with his hand; with which infirmity I have seen many troubled, yet oft-times not so much by the violence of the wound, as by the unskilfulness of the Chirurgeon who cured them; that is, by the negligent application of the boulders, an unfit ligature and more unfit suture. In this case the skilfull Chirurgeon which is called to the Patient shall cut off as much of the skin and fleshy pannicle as shall serve the eye-lids, that so they may by their own strength hold and keep open, without the help of the hand: then he shall sow the wound as is fit, with such a stitch as the Furriers, and Glovers use; and then he shall pour thereon some of the balsome of my description, and shall lay such a medicine to the neighbouring parts. *Rx Olei ro-*

far.

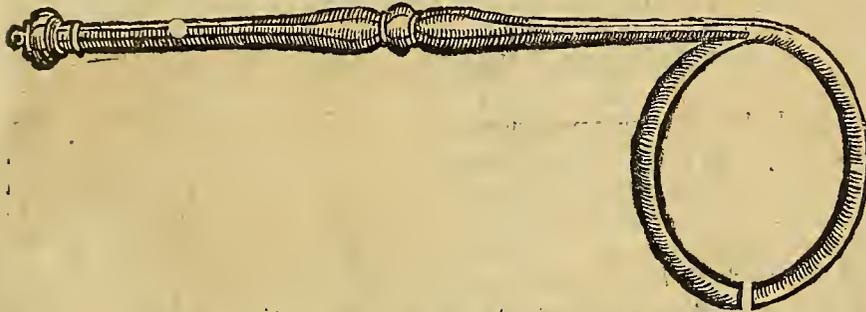
far. \mathfrak{z} β , album. ovor. nu. ij. boli armeni, sanguinis Dracon. Mastich. an. \mathfrak{z} j. agitentur simul, fiat medicamentum. Then let the part be bound with a fitting Ligature. Afterwards you shall use Emplast. de gratia Dei, Empl. de Betonica, Diacalctheos, or some other like, untill the wound be cicatrized. But such like and all other wounds of the face may be easily healed, unless they either be associated with some malign symptoms, or the Patients body be repleat with ill humors.

There sometimes happens a quite contrary accident in wounds of the eye-brows, that is, when the eye-lids stand so up that the Patient is forc'd to sleep with eyes open, wherefore those which are so affected are called by the Greeks *Lagophthalmi*. The cause of this affect is often internall, as a carbuncle or other kind of abscess, as a blow or stroak. It shall be cured by a crooked or semicircular incision made above the eye-lids, but so that the extreame of the semicircle bend downwards, that they may be pressed down and joyued as much as is needfull to amend the stiffness of the eye-lid. But you must not violate the gristle with your Instrument, for so they could no more be lifted up; the residue of the cure must be performed as is fit.

CHAP. XXIII. Of the wounds of the eyes.

Wounds of the eyes are made by the violence of things pricking, cutting, bruising, or otherwise loosing the continuity. But the cure must alwayes be varied according to the variety of the causes and differences. The first head of the cure is, that if any strange and heterogeneous body shall be fallen into the eyes, let it be taken forth as soon as you can, lifting and turning up the eyelid with the end of a spatula. But if you cannot discern this moat or little body, then put three or four seeds of Clary, or *Oculus Christi* into the pained eye. For these seeds are thought to have a faculty to cleanse the eyes and take out the moats, which are not fastened deep in, nor do too stubbornly adhere to the membranes. For in this case, you shall use this following instrument, for herewith we open the eye-lids the further, putting it between them and the eye, and also keeping the eye steady by gently pressing it, that so with our mallets we may pull out the extraneous body; this is the figure of such an Instrument.

The delineation of a *Speculum oculi*, fit to dilate and hold asunder the eye-lids, and keep the eye steady, it is so made, that it may be dilated and contracted according to the greatness of the eyes.



All strange bodies taken out, let this medicine be put into the eye. Take the strains of a dozen eggs, let them be beaten in a leaden Mortar, with a little Rose water, and so put into the eye; but let this repercussive be laid upon the eye and the

A repercussive to be put into the eye.

Divers repercussives to be applied to the eye.

neighbouring parts. *Rx.* album. ovor. nu. iiij. pulver. aluminis roche combusti \mathfrak{z} ij. sanguinis Draconis \mathfrak{z} j. aqua rosar. & plantag. an. \mathfrak{z} ij. agitentur simul, make a repercussive, which you may frequently use. Or else apply cheefe curds well wrung, mixed with rosewater, the white of an egge, and as much acacia as shall suffice. This which followeth doth more powerfully stay the flowing humor. *Rx.* gum arab. & tragac. an. \mathfrak{z} ij. psyllii. cydon. semin. portul. plant. sumach. an. \mathfrak{z} ij. fiat mucag. cum aqua plantag. solan. & rosar. concinetur collyrium, of which you may drop some both within and about the eye.

But note, that all such remedies must be applyed warm, both that they may the better penetrate by their moderate heat, as also for that all actuall cold things are hurtfull to the eyes and sight, because they dull the sight by incrustating the visive spirits. For I have known many who have become dull of sight by the frequent using of medicines actually cold to the eyes. I have on the contrary seen not a few, who have recovered with the fit use of such like medicines, who have had any part of their eye (so it were not the *pupilla* or apple of the eye) so pricked with a needle or bodkin; that much of the waterish humor ran forth thereat.

Things actually cold are hurtfull to the eyes.

The milk of a woman which suckles a girl (for that is reputed the cooler) mitigates pain and clenfes, if it be milked out of the Dug into the eye; to which purpose also the blood of Turtles, Pigeons or Chickens much conduces; being dropt into the eye by opening a vein under their wings. Also this following cataplasma asswageth pain and inflammation, and hinders defluxion, being applyed to the eye and the adjacent parts. *Rx.* Carnis pomorum sub cinere calido decoctorum \mathfrak{z} v. vitellos ovorum num. iiij. casia fistula recent er extracte \mathfrak{z} β , mucaginis psyllii, althea & cydon. an. \mathfrak{z} j. farin. hordei parum, incorporentur omnia simul, fiat cataplasma. Also sheeps lungs boyled in milk and applyed warm, and changed as they grow cold, are good to asswage pain. But if the too violent heat and pain, shall not yeeld to such medicines, but require more vehement, then *Foliorum Hyoscyami*, m. j. sub. cineribus coquatur, atque in mortario cum mucagine seminis psyllii, & cydonior. extract. in aquis solani & plantag. pistetur: then let this medicine be wrapped in a linnen cloth and applyed to the eyes and temples. The mucilages of *Psyllium*, or Fleawort, and Quince seeds extracted in a decoction of Poppy heads and mixed with a little Opium and Rose water, are used for the same purpose. But when there is need of detergent and sarcotick medicines, then *Rx.* Syrup. rosar. seccar. \mathfrak{z} j. aq. sanic. & ruta an. \mathfrak{z} ij. aloes lota, olibani an. \mathfrak{z} β . mix them for the foresaid use. The galls of Scates, Hares, and Partridges dissolved in Eye-bright, and Fennill water, are fit for clenfing such wounds; as also this following Collyrium. *Rx.* Aqua hordei \mathfrak{z} j. mellis despumati, \mathfrak{z} iiij. aloes ter lota in aqua plantaginis & sacchari cand. an. \mathfrak{z} j, fiat collyrium. Also this insuing medicine is very sarcotick. *Rx.* mucagin. gummi olibani, arabici, tragacanth. & sarcocol. in aq. hordei extract. an. \mathfrak{z} iiij.

Anodyne medicines for the eyes.

Narcotick medicines.

Detergent medicines.

A sarcotick medicine for the eyes.

aloes ter lota in aq. rosarum. ʒj. cerus. usq. & lota, tutia prepar. an. ʒβ. fiat collyrium. But here you must note, that the coat *Adnata* often swells so much by reason of a wound or some other injury, and stands so forth by the falling down of humors, access and mixture of flatulencies, that it hides the whole *Pupilla*, and hangs forth of the eye-lids, like as if it were an unnaturall fleshy excrescence, and it looses the native colour, and looks very red, so that the eye can neither be shut nor opened.

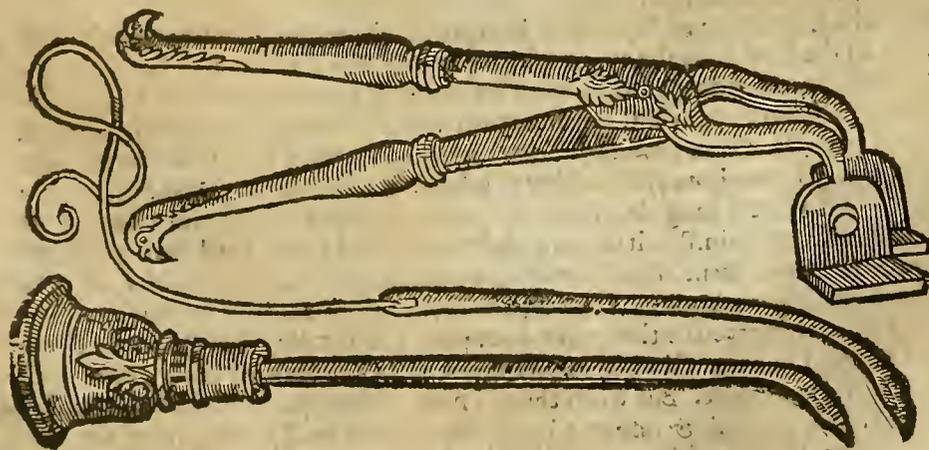
Where with a young Chirurgeon being deceived, determined to cut away this protuberancy of the *Adnata*, as though it had been some superfluous flesh, and then to wash it with cathæretick powders, had I not forbidden him, telling him of the certain danger of blindness which would thereupon befall the Patient. Wherefore I prescribed a fomentation of chamomile, melilote, Rose leaves, wormwood, rue, fennill, and aniseeds boyled in milk with the roots of Orris and Marigolds. Then I presently added this following fomentation, being more powerfull and drying. *R Nucis cupressi, gallar. balauft. an. ʒj. plantag. absinth. hippuris, flo. chamem. ros. rub. an. M.β. bulliant simul cum aqua fabrorum, & fiat decoctum: pro fotu cum spongia.* Besides also you may apply a cataplasm made of barley and bean flowre, the powders of Mastick, Myrrhe, and Aloes, and some of the last described decoction. The tumor beginning to decline, I dropt the flowing liquor into the eye, which hath a very astringent, drying and strengthening faculty. Roast a new laid egge in Embers untill it be hard, then pill off the shel, take forth the yolk, and in place thereof put a scruple of Roman Vitrioll in fine powder, then put it in a linnen cloth and wring it hard forth into some clean thing, and drop thereof for some dayes into the eye, with a little Smiths water wherein Sumach and Rose leaves have been boyled. I have found by experience the certain force of this remedy; but if notwithstanding there be a true fleshy excrescence upon the coat *Adnata*, it may be taken away by this following powder. *R Ossis sepiæ, & teste ovorum calcinata an ʒj. fiat pulvis.* Calcined Vitriol, burnt Alum and the like may be commodiously used to this purpose. Yet you must warily make use of all such things, and always lay repercussives about the eye, that no harm insue thereof. For divers times acrid humors fall down into the eye with such violence, that they break the Horny coat, whereupon the humors of the eye are poured out. Remember also, that in diseases of the eyes, the Patient lye with his head somewhat high, and that he keep shut not only the pained, but also the sound eye, because rest is always necessary for the grieved part. But one eye cannot be moved without some motion of the other by reason of the connexion they have by their optick and moving nerves, both the *Meninges* and the *Pericranium*, Veins and arteries; which is the cause that when the one suffers, the other in some sort partakes therewith.

But if we cannot prevail by all these formerly prescribed medicines fit to stay the defluxion, then it remains, that we apply a Seton to the neck; for it is a singular remedy against inveterate defluxions into the eyes. For we know by dayly experience, that many who have had their sight dulled by a long and great defluxion, so that they were almost blind, have by little and little recovered their former splendour and sharpness of sight, when matter once begun to be evacuated by the Seton.

The truth hereof appeared in *Paul the Italian Goldsmith*, who dwelt neer the Austine Friers. For he having used many medicines of divers Physitians, and Chirurgeons in vain, when he was almost blind, he applying a Seton, by mine advice, began by little and little to see better according to the quantity of the matter which was evacuated, untill at length he perfectly recovered his sight. But at last growing weary of the Seton which he had worn for a year (although matter came dayly forth thereof) yet he would have it taken forth, and healed up; but this way of evacuation being shut up, and the humor again beginning to flow into his eyes, so that he was in danger to become blind, he called me and made me again to apply the Seton in his neck. Whereby recovering his former soundness and perfection of sight, he yet wears the Seton.

I also once freed by this kind of remedy, by the appointment of the most learned Physitian *Hollerius*, a certain young man of twenty years old, from the falling sickness, who before had many fits thereof; the Ichorous humors, the feeders of this disease, being by this means, as it is most probable, drawn away and evacuated.

A figure of the Pincers, a true Cautery and Needle used in making a Seton.



Wherefore seeing a Seton is of this use, I have thought good in this place to set down in writing, and by figure, the manner of making thereof, for the behoof of young practitioners: with the Patient to sit on a low stool, and to bend down his head, that so the skin and fleshy pannicle may be relaxed; then must you with your fingers

pluck up and sever the skin from the muscles, and take hold of as much hereof as you can with your pincers, not touching the muscles of the neck for fear of a convulsion and other symptoms; you shall then twitch the skin which is held in the pincers, most hard, when you shall thrust the hot Iron through

A drying fomentation.

A medicine to consume a fleshy excrescence without biting.

A Seton, a good remedy against inveterate defluxions into the eyes.
A History.

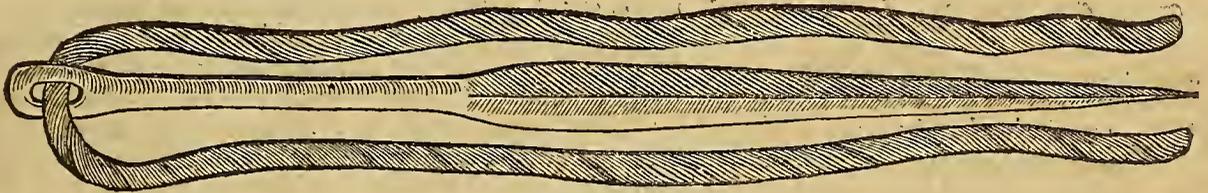
A Seton good against the falling sickness.

The manner of making a Seton.

through the holes made in the midst of them; that also the nerves being so twitched, the dolorifick sense may the less come to the part. The wound must be made or burnt in long wayes, and not thwarting, that so the matters may be the better evacuated by the strait fibers. But the cautery or hot Iron must have a three or else a four-square point & that sharp, that so it may the more easily and speedily enter. Then keeping the pincers immoveable, let him draw through the passage made by the cautery a needle thred with a three or four doubled thred of Cotton [or rather a skean of silk] moistened in the white of an egge and oyl of Roses; then after you have applyed pledgets dipped in the same medicine, bind up the part with a convenient ligature. The day following the neck must be anointed with oyl of Roses, and the pledgets dipped in the former medicine applyed for some dayes after. But it will be convenient to moisten the Seton with a digestive made of the yolk of an Egge and oyl of Roses, untill the ulcer cast forth much matter; then you shall anoint the Cotton thred with this following remedy. \mathcal{R} *terebinthina ven.* \mathfrak{z} *iiij.* *syrupi rosar.* & *absinthii an.* \mathfrak{z} β *pulveris Iros, diacrydii, agarici trochiscati, & Rhei, an.* \mathfrak{z} β . *incorporentur omnia simul & fiat medicamentum.* Which you shall use so long, as you intend to keep open the ulcer. For it hath a faculty to draw the humors from the face, and cleanse without biting.

I have found not long since by experience, that the apertion made with a long thick Triangular needle of a good length like to a large pack-needle, is less painfull than that which is performed with the actuall cautery, which I formerly mentioned. Wherefore I would advice the young Chirurgion, that he no more use the foresaid actuall cautery. I have here given you the figure of the needle.

The Figure of a Triangular Needle.



CHAP. XXV. Of Wounds of the Cheek.

Seeing a wound of the cheek seems to require a suture, it must have a dry suture (as they term it) lest that the scar should become deformed. For that deformity is very grievous to many, as to women who are highly pleased with their beauties. Therefore you shall spread two peeces of new cloth of an indifferent fineness, and proportionable bigness with this insuing medicine. \mathcal{R} : *pulveris mastichini, sanguinis Draconis, iburis, farinae volatilis, tragacanthæ contuse, gypsi, picis, sarcocollæ an.* \mathfrak{z} *ij.* *picis nigrae* \mathfrak{z} *i* β . *albumina ovorum quæ sufficiant, fiat medicamentum.* Apply the peeces of cloth spread with this on each side of the wound one, some fingers breadth asunder, and let it alone till it be hard dried to the skin. Then you shall so draw them together with your needle and thred, that the flesh by their sticking may also follow, and be mutually adjoined, as you may see it here exprest. The wound shall be agglutinated by this means, together with the use of fit medicines, pledgets, ligatures. But all the ligatures and staves which shall be used for that purpose must be fastened to the Patients night-lap.

The use of a dry suture.

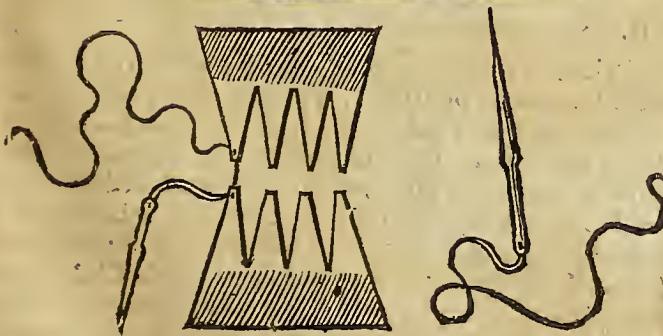
How to make a dry suture.



But when the wound is great and deep, and the lips thereof are much distant the one from the other, there can be no use of such a dry suture. Wherefore you must use a three or four square needle (that so it may the more readily and easily enter into the flesh) being thred with a waxed thred; and with this you must thrust through the lips of the wound, and leave the needle sticking in the wound, & then wrap the thred to and again over the ends thereof eight or ten times, just after that manner which women use to fasten a needle with thred in it, upon their sleeves, or Tailors to their hats or caps, that they may not lose them.

A Suture fit for hare-lips.

The manner thereof.



future is used in the wounds of the lips, as also in hare-lips, for so we commonly call lips which are cleft from the first conformation in the wombe by the error of the forming faculty. But such a future will help nothing to agglutination, if there lye or remain any skin between the lips of the

What hare lips are.

wound; Wherefore you shall cut away whatsoever thereof shall be there, otherwise you must expect no union. Other kind of sutures are of no great use in wounds of these parts, for out of the necessity of eating and speaking, they are in perpetuall motion; wherefore a third would cut the flesh; for which reason you shall take up much flesh with such Needles mentioned in this last described kind of Suture as this following figure shewes.

The figure of the suture fit for cloven or bare lips; as also the delineation of the Needle about whose ends the thred is wrapped over and under, 10 and again.

A History.



A decoction good to wash away putrefaction.

A small hole remaining after the cure of great wounds,



put the head of the pin; out whereof neverthelesse much serous and thin moysture flowed, especially when he either eat or spake; which I have also observed in many others. But for staying of this waterish humidity I dropped *Aqua fortis* into the bottome of the ulcer, and divers times put therein a little of the powder of burnt vitriol. Thus by Gods grace he recovered and became whole.

To this purpose I will recite a history, to the end, that if any such thing happen to come to your hands, you may do the like. A certain Gascoin in the battell at Saint *Laurence* had his upper jaw cut overthwart even to his mouth, to the great disfiguring of his face. The wound had many wormes in it and stank exceedingly, because he could get no Chirurgeon untill three dayes after he was hurt. Wherefore I washed it with a decoction of wormwood, Aloes, and a little *Ægyptiacum*, both to kill the wormes, and to fetch away all the putrid matter; I discussed the tumor with a dissolving fomentation and cataplasme, I joyned together the lips of the wound with the last described suture. But I applyed this following medicine to the whole part. *Re Terebinth. vcnet. ʒvj. gummi elemi. ʒij. pulveris boli armeni, san. drac. Mastichs, myrrhæ, aloes, an. ʒß. incorporentur simul. fiat medicamentum.* The wound was agglutinated within a few dayes, but that there remained a certain little hole at the joyning of the lower jaw with the upper, wherein you could scarce

CHAP. XXVI. Of the wounds of the Nose.

How many wayes the nose may be hurt.

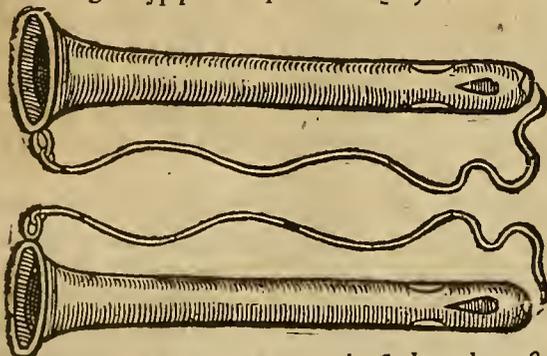


He Nose many wayes suffers solution of continuity; as by a wound, fracture and contusion, and it is sometimes battered & broken on the upper part; which when it happens, you shall restore the deprest bones to their native seat and figure, with the end of a *spatula* or fit stick wrapped about with towe, cotton or a linnen rag. Then with pledgets dipped in an astringent medicine composed *ex albumine ovi, mastich. bolo armeno, sanguin. drac. & Alumine usto*, and applyed to the side of the nose, he shall labour to strengthen the restored bones, and then bind them with a convenient ligature, which may not presse them too much, lest the nose should become flat, as it happens to many through the unskilfulness of Chirurgeons.

The cure of a broken nose.

The Figure of pipes to be put into the Nostrils.

The use of pipes in broken noses.



Then must you put little pipes into the nostrills, and these not exactly round, but somewhat flat and deprest, tyed to the night-cap on each side with a thred, lest they should fall out. By the help of these pipes the bones of the nose will be kept in their place, and there will be passage forth for the matter, and for inspiration and expiration. But if all the nose, or some portion thereof shall be wholly cut off, we must not hope to restore it. But if the Nose be so cut, that as yet it adheres to much of the adjacent flesh, from whence it may receive life and nourishment, then sow it up. For the lower part of the nose it may be shaken, deprest and wrested aside, seeing it is griffly; but it cannot be broken as the other which is of a bony nature.

CHAP. XXVII. Of the Wounds of the Tongue.

How many wayes the continuity of the tongue may be loosed.



He tongue may be so wounded, that either it may be wholly cut off and deprived of some portion of the substance, or only slit long wayes or atwhart. The losse of the substance cannot be repaired, because every part separated and pluckt from the living body, from whence it had life, spirit and blood, presently dyes. For as the Philosophers say, *Privatione ad habitum non est regressus*. But when it is cut or slit long wayes or sidewayes, it is easily restored by suture, if so be that the cloven part yet adhere to the living body from whence it may draw both matter and form of life. Therefore a carefull servant shall straitly hold with a soft and clean linnen cloth the body of the tongue, lest it should slip away by reason of its slipperiness, whilst the Chirurgeon stich it above and below; when he thinks he hath sufficiently sowed it, let him cut off the thred as neer to the knot as he can, lest being left too long it might be tangled with the teeth as he eats, and so cause a hurtfull laceration or rending of the sowed parts. In the mean time let the patient eat barley creams, almond milks, Gellyes, cullisses and broths, and the yolks of eggs; and let him often hold in his mouth Sugar of Roses and syrup of Quinces; for such things besides their nourishing faculty, perform the part of an agglutinating and detergent medicine. I have learned these things I have here set down, neither from my masters whom I have heard with attention, nor by reading

The cure of a cloven tongue.

of books, but they have been such as I have tryed with happy success in many; as in the son of Monsieur de Marigny President of the Inquisition, in John Piet a Carpenter dwelling in the suburbs of Saint German.

But most apparently in a child of three years old, the son of the great Lawyer Monsieur Covet, who fell with his chin upon a stone, and so cut off a large peece of the end of his tongue, which chanced to be between his teeth, it hung but at a very small fiber of flesh, so that I had very little or no hope to agglutinate and unite it, which thing almost made me to pluck it quite away; yet I changed that determination by considering the loss of the most noble action of speaking, which would thereupon ensue, and weighing the providence of nature often working wonders and such things as exceed the expectation of the Phylitian in curing diseases. I also thought thus with my self, the flesh of the tongue is soft, loose, fungous and spongy, neither is it altogether obvious to the externall injuries of the ayr; wherefore after that I had once or twice thrust through the needle and thred upwards and downwards, and for the rest ordered the child to be used and dieted after the manner I lately mentioned, he grew well within a short time, and yet remains so, speaking well and distinctly.

A History.
Nature oft
doth strange
things in
the cure;
of diseases;

CHAP. XXVIII. Of the Wounds of the Eares.

THe eares are sometimes wholly cut off, sometimes but in part, otherwhiles they are only slit, so that the rent portion as yet adhering to the rest, is joynd with it in communion of life. In this last case it is fit to use a suture; but yet so that you touch not the gristle with your needle; for thence there would be in danger of a gangrene which happens to many by foolish curing; therefore you shall take up and comprehend with your needle only the skin, and that little flesh which encompasses the gristle. You shall perform the rest of the cure with pledgets and ligatures artificially fitted, and shall resist inflammation and other symptomes with fit medicins. But you must take speciall care that no superfluous flesh grow in the auditory passage, which may hinder the hearing; wherefore you shall keep that passage free by stopping it with a peece of sponge. But you shall procure agglutination and consolidation of the gristly part (and therefore next to a bone most dry) with dry medicins. But those who have their eares quite cut off, can do nothing but hide the deformity of their mis-hap with a cap, stuffed with cotton on that side.

How many
wayes the
unity of
eares may be
violated.
How to
sow a
wounded
Eare.

CHAP. XXIX. Of the Wounds of the neck and throat.

THe Wounds of the neck and throat are somewhiles simple, as those which only use the continuity of the muscles; otherwhiles compound, such as those which have conjoynd with them a fracture of the bones, as of the *Vertebra*, or hurt of the internall and externall jugular Veins, or sleepey Arteries; sometimes the *Trachea Arteria*, or Weazon, and the *oesophagus* or gullet are wounded; sometimes wholly cut off, whence present death ensues. Wherefore let not the Chirurgeon meddle with such wounds, unless he first foretell the danger of death, or the loss of some motion to those that are present. For it often happens that some notable nerve or tendon is violated by a wound in the neck, whence a palfie ensues, and that absolutely incurable, if the wound shall penetrate to the spinall marrow, also hurt therewith. Wounds of the gullet and Weazon are difficultly cured because they are in perpetuall motion; and chiefly of the latter by reason it is gristly and without blood. The wounds of the gullet are known, by spitting of blood, by the breaking forth of meat & drink by the wound; but if the gullet be quite cut asunder, the patient cannot swallow at all. For the cut parts are both contracted in themselves, the one upwards, and the other downwards. But we know the weazon is hurt, by casting up blood at the mouth with a continuall cough, and by the coming forth of the breath or winde by the Wound. The Wounds of the jugular Veins and sleepey Arteries, if they be great, are usually deadly, because they cannot be straitly bound up; for you cannot bind the throat hard without danger of choaking or strangling the patient. But for defect of a strait ligature in this case the flux of blood proves deadly. If the recurrent Nerve of either side be cut, it makes the voice hoarse; if cut on both sides, it takes away the use of speech, by hurting these instruments which impart motion to the muscles of the *Larynx*. For the cure if the wound be small, and not associated with the hurt of any notable vessel, nor of the Weazon and gullet, it is speedily and easily cured; and if there shall be need you shall use a suture, then you shall put therein a sufficient quantity of Venice Turpentine mixed with bole-Armenick; or else some of my Balsam of which this is the receipt. *R. Terebinth. venet. lb. ss. gum. elemi. ℥iij. olei hypericonis ℥iij. boli armeni. & sang. draconis an. ℥j. aqua vitæ ℥ij. liquefiant simul omnia lento igne, & fiat Balsamum ut artis est, addendo pulveris ireos florent. aloes, Mastiches, myrrhæ an. ℥j.* I have done wonders with this Balsame in the agglutination of simple wounds, wherein no strange body hath been. Now when you have put it in, lay upon it a plaister of *Diacalcitheos* dissolved in oyl of Roses & vinegar, as that which hath power to repress the flowing down of humors, and hinder inflammation, or in stead thereof you may apply *Emp. de Gratia Dei*, or *Emp. de Ianua*. But if the jugular veins and sleepey Arteries be cut, let the bleeding be stayed, as we have shewed in a chapter, treating thereof. When the Weazon or Gullet are wounded, the Chirurgeon shall sow them up as neatly as he can, and the Patient shall not endeavour to swallow any hard thing, but be content to be fed with gellyes and brothis. When a gargarisine is needfull, this following is very good. *R. bordei M. j. storum rosar. p. j. passul. mund. jujuban. an. ℥β. ghyr hize ℥j. bulliant omnia simul, addendo mellis ros. & Iulep. ros. an. ℥ij. fiat gargarisina, ut artis est.*

With which being warm the Patient shall moisten his mouth, and throat, for it will mitigate the harshness of the part, assuage pain, cleanse and agglutinate, and make him breath more freely. But that the Chirurgeon may not despaire of, or leave any thing unattempted in such like wounds, I have thought good to demonstrate by some examples how wonderfull the works of nature are, if they be assisted by Art.

The differences of
wounds of
the neck &
throat.
The palfie
follows
upon
wounds of
the neck.
Signes that
the gullet
is wounded.

The
wounds of
the jugular
veins and
sleepey Ar-
teries are
deadly by
accident.
By hurrying
the recur-
rent Nerve
the voice
is hurt.
The de-
scription of
the Au-
thors Bal-
sam.
The faculty
of *Diacal-
citheos*.
The cure
of the
wounded
Weazon
and gullet.
A garga-
risina.
The mar-
fold use
thereof

A History. A certain servant of Monsieur de *Champaigne*, a gentleman of *Anjou*, was wounded in the throat with a sword, whereby one of the jugular veins was cut together with his Weazon. He bled much and could not speak, and these symptoms remained, untill such time as the wound was sowed up, and covered with medicines. But if the medicins at any time were more liquid, he as it were sucked them by the wound and spaces between the stitches, and presently put forth at his mouth that which he had sucked or drawn in. Wherefore more exactly considering with my self, the greatnes of the Wound, the spermatick, and therefore dry and bloodless nature unapt to agglutination, of the affected part, but chiefly of the Weazon and jugular vein; as also for that the rough Artery is obnoxious to these motions which the gullet performs in swallowing, by reason of the inner coat, which is continued to the coat of the gullet, by which means these parts mutually serve each other with a reciprocall motion, even as the ropes which run to the wheel of a pulley; furthermore weighing that the Artery was necessary for the breathing, and tempering the heat of the heart, as the jugular veins served for the nourishment of the upper parts; and lastly weighing with my self the great quantity of blood he had lost, which is as it were the treasure of nature, I told those which were present, that death was neer and certainly at hand. And yet beyond expectation, rather by divine favour than our Art, he recovered his health.

A strange History. Equally admirable is this history following, Two Englishmen walked out of the City of *Paris* for their recreation to the wood of *Vincenne*; but one of them lying in wait to rob the other of his money and a massie chain of gold which he wore set upon him at unawares, cut his throat and robbed him, and so left him amongst the Vines which were in the way, supposing he had kill'd him, having with his dagger cut the Weazon and gullet. This murderer came back to the city; the other half dead, crawled with much adoe to a certain Peasants house, and being dressed with such medicines as were present and at hand, he was brought to the City, and by his acquaintance committed to my cure to be cured. I at the first, as diligently as I could, sowed up the Weazon which was cut quite asunder, and put the lips of the wound as close together as I could; I could not get hold of the gullet because it was fallen down into the stomach, then I bound up the wound with medicins, pledgets and sit ligatures. After he was thus drest he begun to speak, and tell the name of the villain the author of this fact, so that he was taken and fastened to the wheel, and having his limbs broken lost his wretched life, for the life of the innocent wounded man who dyed the fourth day after he was hurt.

Another History. The like hurt befell a certain Germane, who lay at the house of one *Perots* in the street of *Nuts*; he being frantick, in the night cut his throat with a sword: I being called in the morning by his friends who went to see him, drest him just after the same manner as I dressed the Englishman. Wherefore he presently recovered his speech, which before could not utter one syllable, freed from suspicion of the crime and prison the servant, who lying in the same chamber with him, was upon suspicion committed to prison, and confessing the thing as it was done, lived foure dayes after the wound being nourished with broths put into his fundament like clysters, and with the gratefull vapour of comfortable things, as bread newly drawn out of the Oven and soaked in strong wine. Having thus by Art of Chirurgery made the dumb speak for the space of foure dayes.

CHAP. XXX. Of the Wounds of the Chest.

The differences of wounds of the Chest.



Some wounds of the Chest are on the fore side, some behind, some penetrate more deep, others enter not into the capacity thereof, other some pierce even to the parts contained therein, as the *Mediastinum*, Lungs, heart, midriff, hollow vein, and ascendent artery; Other some passe quite through the body; whereby it happens that some are deadly, some not.

The signes. You shall thus know that the wound penetrates into the capacity of the Chest, if that when the patients mouth and nose be shut, the breath, or wind breaks through the wound with noise, so that it may dissipate, or blow out a lighted candle being held neer it. If the patient can scarce either draw, or put forth his breath, which also is a signe that there is some blood fallen down upon the *Diaphragma*.

Signes that the heart is wounded. By these signes you may know that the heart is wounded: If a great quantity of blood gush out, if a trembling possesse all the members of the body; if the pulse be little and faint, if the colour become pale, if a cold sweat and frequent fawning assail him, and the extreame parts become cold, then death's at hand.

A History. Yet when I was at *Turin* I saw a certain Gentleman who fighting a duell with another, received a wound under his left brest which pierced into the substance of his heart, yet for all that he struck some blowes afterwards, and followed his flying enemy some two hundred paces untill he fell down dead upon the ground; having opened his body, I found a wound in the substance of the heart, so large as would contain ones finger; there was only much blood poured forth upon the midriff.

Signes that the Lungs are wounded. These are the signes that the Lungs are wounded, for the blood comes foamy or frothy out of the wounds, the Patient is troubled with a cough, he is also troubled with a great difficulty of breathing and a pain in his side, which he formerly had not; he lyes most at ease when he lyes upon the wound, and sometimes it comes so to pass, that lying so he speaks more freely and easily, but turned on the contrary side, he presently cannot speak.

Signes that the midriff is wounded. When the *Diaphragma*, or midriff is wounded, the party affected is troubled with a weight or heaviness in that place, he is taken with a *Delirium*, or raving by reason of the sympathy of the Nerves of the sixth conjugation which are spread over the midriff; difficulty of breathing, a cough & sharp pain troubles the patient, the Guts are drawn upwards; so that it sometimes happens by the vehemence

vehemency of breathing, that the stomach and guts are drawn through the wound into the capacity of the Chest; which thing I observed in two.

The one of these was a Mason, who was thrust through the midst of the midriff, where it is nervous, A History and dyed the third day following. I opening his lower belly, and not finding his stomach, thought it a monstrous thing; but at length searching diligently, I found it was drawn into the Chest, through the wound which was scarce an inch broad. But the stomach was full of wind, but little humidity in it.

The other was called captain *Francis d'Alon* a Native of *Xantoigne*, who before *Robbell* was shot with a Musket Bullet, entering by the breast-bone neer to the sword-like Gristle, and passing through the fleshy part of the midriff, went out at the space between the fifth and sixth bastard ribs. The wound was healed up on the out side, yet for all that there remained a weaknes of the stomach, whereupon a pain of the guts like to the colick took him, especially in the Evening, and on the night; for which cause he durst not sup but very sparingly. But on the eighth month after, the pain raging more violently in his belly then it was accustomed, he dyed; though for the mitigating of the vehemency thereof *Simon Malmedy* and *Anthony du Val* both learned Physitians omitted no kind of remedy. The body of the diseased was opened by the skilfull Chirurgeon *James Guillemeau*, who found a great portion of the colick gut swelled with much wind gotten into the Chest, through the wound of the *Diaphragma*, for all it was so small that you could scarce put your little finger in thereat. But now let us return from whence we digressed. Another History.

We understand that there is blood poured forth into the capacity of the Chest by the difficulty of breathing, the vehemency of the increasing feaver, the stinking of the breath, the casting up of blood at the mouth, and other symptomes which usually happen to these who have putrefied and clotted blood poured out of the vessels into the belly, infecting with the filthy vapour of the corrupt substance, the parts to which it shall come. But also, unless the Patient cannot lye upon his back, he is troubled with a desire to vomit, and covets now and then to rise, whence he often falls into a swoon, the vitall faculty which sustains the body being broken and debilitated both by reason of the wound, and concreat or clotted blood; for so putting on the quality of poyson, it greatly dissipates and dissolves the strength of the heart. Signs that there is blood poured into the capacity of the Chest.

It is a sign the spinall marrow is hurt, when a Convulsion or Palsie, that is, a sodain loss of sense and motion in the parts thereunder, an involuntary excretion of the Urine and other excrements, or a totall suppression of them, seizes upon the Patient. When the hollow vein and great Artery are wounded, the Patient will dye in a short time, by reason of the sodain and abundant effusion of the blood and spirits, which intercepts the motion of the Lungs and heart, whence the party dyes suffocated. Signs that the spine is wounded.

CHAP. XXX. Of the cure of the Wounds of the Chest.

WE have read in *Iohn de Vigo*, that it is disputed amongst Chirurgeons concerning the consolidation of wounds of the Chest. For some think that such wounds must be closed up, and cicatrized with all possible speed, lest the cold air come to the heart, and the vitall spirits fly away and be dissipated. Others on the contrary think that such wounds ought to be long kept open; and also if they be not sufficiently large of themselves, that then they must be enlarged by surgery, that so the blood poured forth into the capacity of the Chest may have passage forth, the which otherwise by delay would putrefie, whence would ensue an increase of the feaver, a fistulous ulcer, and other pernicious accidents. The first opinion is grounded upon reason and truth, if so be that there is little or no blood poured forth into the capacity of the Chest; But the latter takes place where there is much more blood contained in the empty spaces of the Chest. Which, lest I may seem rashly to determin, I think it not amiss to ratifie each opinion with a history thereto agreeable. Vigo tract. de vuln. thoracae cap. 10.

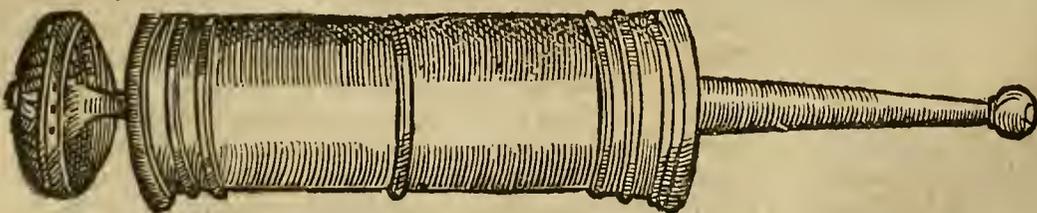
Whilst I was at *Turin*, Chirurgeon to the Marshall of *Montejan*, the King of *France* his Generall, A History I had in cure a Souldier of *Paris*, whose name was *Levesque*, he served under captain *Renovart*. He had three wounds, but one more grievous than the rest, went under the right breast, somewhat deep into the capacity of the Chest, whence much blood was poured forth upon the midriff, which caused such difficulty of breathing, that it even took away the liberty of his speech; besides through this occasion he had a vehement feaver, coughed up blood, and a sharp pain on the wounded side. The Chirurgeon which first dressed him, had so bound up the wound with a strait and thick suture, that nothing could flow out thereat. But I being called the day after, and weighing the present symptomes which threatned speedy death, judged that the sowing of the wound must straight be loosed; which being done there instantly appeared a clot of blood at the orifice thereof, which made me to cause the Patient to lye half out of his bed, with his head downwards, and to stay his hands on a settle which was lower than the bed, and keeping himself in this posture, to shut his mouth and nose that so his Lungs should swell, the midriff be stretched forth, and the intercostall muscles and those of the *Abdomen* should be compressed, that the blood poured into the Chest might be evacuated by the wound; but also that this excretion might succeed more happily, I thrust my finger somewhat deep into the wound, that so I might open the orifice thereof being stopped up with the congealed blood; and certainly I drew out some seven or eight ounces of putrefied & stinking blood by this means. When he was laid in his bed, I caused frequent injections to be made into the wound of a decoction of Barly with Honey of Roses and red Sugar, which being injected I wisht him to turn first on the one, and then on the other side, and then, again to lye out of his bed as before: for thus he evacuated smal, but very many clots of blood, together with the liquor lately injected; which being done, the symptomes were mitigated, & left him by little and little. The next day I made another more detergent injection, adding thereto wormwood, centaury, and Aloes; but such a bitternes did rise up to his mouth together with a desire to cast, that he could not longer indure it. Then it came into my mind that formerly I had observed the like effect of the like remedy in the Hospital. Why bitter things must not be cast into the Chest.

spitall of *Paris*, in one who had a fistulous ulcer in his Chest. Therefore when I had considered with myself that such bitter things may easily pass into the Lungs, and so may from thence rise into the Wæzon and mouth, I determined that thence forwards I would never use such bitter things to my Patients, for the use of them is much more troublesome than any way good and advantagious. But at the length this Patient by this and the like means recovered his health beyond my expectation.

But on the contrary, I was called on a time to a certain *German* gentleman who was run with a sword into the capacity of his Chest, the neighbouring Chirurgeon had put a great tent into the wound at the first dressing, which I made to be taken forth, for that I certainly understood there was no blood poured forth into the capacity of the Chest because the Patient had no fever, no weight upon the *Diaphragma*, nor spitted forth any blood. Wherefore I cured him in few dayes by only dropping in some of my balsame and laying a plaister of *Diacalctheos* upon the wound. The like cure I have happily performed in many others. To conclude, this I dare boldly affirm, that wounds of the Chest by the too long use of tents degenerate into *Fistula's*. Wherefore if you at any time shall undertake the cure of wounds which penetrate into the capacity of the Chest, you shall not presently shut them up at the first dressing, but keep them open for two or three dayes; but when you shall find that the Patient is troubled with none or very little pain, and that the midriff is pressed down with no weight, and that he breaths freely, then let the tent be taken forth, and the wound healed up as speedily as you can by covering it only with lint dipped in some balsame which hath a glutinative faculty, and laid somewhat broader than the wound; never apply liniments to wounds of this kind, lest the Patient by breathing draw them into the capacity of the Chest. Wherefore also you must have a care that the tent put into those kinds of wounds may be fastened to the pledgets, and also have somewhat a large head, lest they should be drawn as we said into the capacity of the Chest, for if they fall in, they will cause putrefaction and death. Let *Emplast. Decalctheos* or some such like be applied to the wound. But if on the contrary, you know by proper, and certain signs, that there is much blood fallen into the spaces of the Chest, then let the orifice of the wound be kept open with larger tents, untill all the *Sanies* or bloody matter, wherein the blood hath degenerated, shall be exhausted. But if it happen at any time, as assuredly it sometimes doth, that notwithstanding the Art and care of the Physitian, the wound degenerates into a *Fistula*, then the former evill is become much worse. For *Fistula's* of the Chest, are scarce cured at any time, and that for divers causes. The first is, for that the muscles of the Chest are in perpetuall motion; Auother is, because they on the contrary inside are covered only with the membrane investing the ribs, which is without blood. The third is, for that the wound hath no stay, by means whereof it may be compressed, sowed, and bound, whereby the lips being joyned together, the wound may at length be replenished with flesh and cicatrized.

But the reason why wounds of the Chest do every day heap up and pour forth so great a quantity of matter, seems to be their vicinity to the heart, which being the fountain of blood, there is a perpetuall efflux thereof from thence to the part affected. For this is nature's care in preserving the affected parts, that continually and abundantly without measure or mean it sends all its supplies, that is, blood and spirits to the aid. Add hereto, that the affected parts by pain, heat, and continuall motion of the Lungs and midriff, draw and allure much blood to themselves. Such like blood defiled by the malignity and filth of the wound, is speedily corrupted; whence it is that from the perpetuall afflux of blood, there is a continuall efflux of matter or filth, which at the last brings a man to a consumption; because the ulcerated part like a ravenous wolf consumes more blood by the pain, heat and motion than can be ministered thereto by the heart. Yet if there be any hope to cure and heal the *Fistula*, it shall be performed, (after the use of diet, phlebotomy, and according to the prescript of the Physitian) by a vulnerary potion, which you shall find described when we treat of the *Caries* or rottenness of the bones. Wherefore you shall make frequent injections therewith into the *Fistula*, adding and mixing with it *Syrupus de rosis siccis* and *mel rosarum*. Neither do I, if the putrefaction be great, fear to mix therewith *Ægyptiacum*. But you must have a care to remember & observe the quantity of the injected liquor, that you may know whether it all come forth again after it hath performed its detergent office. For if any thereof remain behind in the corners and crooked passages, it hurts the part, as corrupted with the contagion thereof,

The form of a Syringe fit to make injection, when a great quantity of liquor is to be injected into any part.



After the injected liquor is come forth, a pipe of gold, silver or lead, shall be put into the fistulous

ulcer; and it must have many holes in it, that so the filth may pass forth at them; it must be fast tyed with strings, that it may not fall into the capacity of the Chest. A great sponge steeped in *aqua vite*, and wrung forth again, shall be laid hot to the end or orifice thereof, both to hinder the entrance of the air into the *Fistulous* ulcer, as also to draw forth the filth there by its gentle heat, the which thing the Patient shall much further if often times both day and night he hold his breath, stopping his mouth and nose, and lying upon the diseased side, that so the *Sanies* may be the more forcibly evacuated; neither must we leave the putting in the pipe, before that this fistulous ulcer shall be almost dry, that is, whole, as when it yeelds little, or no matter at all; then it must be cicatrized. But if the orifice of this fistulous ulcer being in the upper part hinder the healing thereof, then by a chirurgicall Section, a passage shall be made in the bottome, as we said before in an *Empyema*.

Read the History of *Maryllus* in *Galen. lib. 7. de Anatom. administra.*

What harm ensues the too long use of tents.

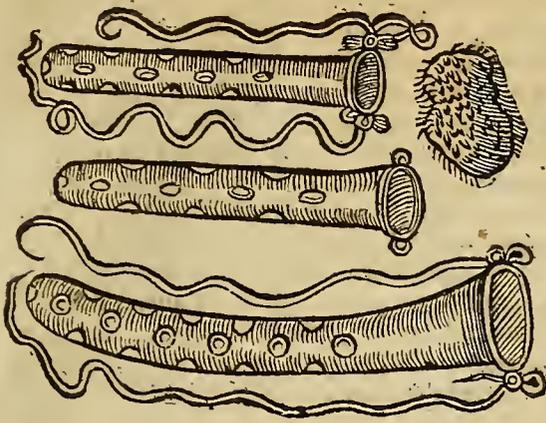
No liniments must be used in wounds of the Chest.

Wounds of the Chest easily degenerate into a *Fistula*.

Why there flows such plenty of matter out of wounds of the Chest.

The cure of a *Fistula* in the Chest. When *Ægyptiacum* must be put into the injections.

The delineation of the pipes with their strings and sponges.



The Reader must note that the pipes which are fit for this use, need not have so many holes as these here express; but only two or three in their ends: for the flesh growing and getting into the rest, make them that they cannot be plucked forth without much pain.

A wound made in the Lungs admits cure, unless it be very large, if it be without inflammation; if it be on the skirts of the Lungs, and not on their upper parts; if the Patient contain himself from coughing much, and contentious speaking, and great breathing: for the wound is enlarged by coughing, and thence also arises inflammation; the Pus and Sanies whereof, whilst the lungs again endeavour to expell by coughing, by which means they are only able to expell that which is hurtfull and troublesome to them, the ulcer

What wounds of the Lungs are curable.

The harm that infues upon coughing in wounds of the Lungs. How Eclegma's must be swallowed.

is dilated, the inflammation augmented, the Patient wastes away, and the disease becomes incurable.

There have bin many *Eclegma's* described by Physitians for to cleanse the ulcer, which when the Patient useth, he shall lye on his back, to keep them long in his mouth, so to relax the muscles of the *Larynx*; for thus the medicine will fall by little and little alongst the coats of the weazon, for if it should fall down in geeat quantity, it would be in danger to cause coughing. Cows, Asses, or Goats milk with a little hony, lest they should corrupt in the stomach, are very fit remedies for this purpose; but womans milk exceeds the rest.

But Sugar of Roses is to be preferred before all other medicines, in the opinion of *Avicen*, for that it hath a detergent, and also an astringent and strengthening faculty, than which nothing is more to be desired in curing of ulcers. When you shall think it time to agglutinate the clenfed ulcer, you must command the Patient to use emplastick, austere, and astringent medicines, such as are *Terra squillata*, *bolus armenus*, *hypocystis*, plantain, knot-grass, *Sumach*, *acacia* and the like, which the Patient shall use in his broaths and *Eclegma's*, mixing therewith honey of roses, which serving for a vehicle to the rest, may carry away the impacted filth which hinders agglutination. But seeing an hective feaver easily follows upon these kinds of wounds, and also upon the affects of the Chest and lungs, it will not be amiss to set down somewhat concerning the cure thereof, that so the Chirurgion may know to administer some help to his Patient, whilst a Physitian is sent for, to overcome this disease with more powerfull and certain remedies.

The utility of Sugar of roses in ulcerated or wounded Lungs.

CHAP. XXXII. Of the differences, causes, signs and cure of an Hective Feaver.



Hective feaver is so called, either for that it is stubborn and hard to cure and loose, as things which have contracted a habit; for *Hexis* in Greek signifies a habit; or else for that it seizes upon the solid parts of our bodies called by the Greeks *Hexeis*; both which the Latin word *Habitus* doth signifie.

The reason of the name.

There are three kinds, or rather degrees of this feaver. The first is when the hectick heat consumes the humidity of the solid parts. The second is, when it feeds upon the fleshy substance. The third and incurable is, when it destroyes the solid parts themselves. For thus the flame of a lamp first wastes the oyl, then the proper moisture of the weik. Which being done there is no hope of lighting it again what store of oyl soever you poure upon it. This feaver very seldome breeds of it self, but commonly follows after some other.

The differences thereof.

Wherefore the causes of a hective feaver are, sharp and burning feavers not well cured, especially if their heat were not repressed with cooling epithemes applyed to the heart and *Hypochondria*. If cold water was not fitly drunk. It may also succeed a Diary feaver which hath been caused and begun by some long, great, and vehement grief or anger, or some too violent labour, which any of a slender and dry body hath performed in the hot sun. It is also oft-times caused by an ulcer or inflammation of the Lungs, an *empyema* of the Chest, by any great and long continuing *Phlegmon* of the Liver, stomach, mesentery, wombe, kidneys, Bladder, of the guts *Iejunum* and *Colon*, and also of the other Guts, if the *Phlegmon* succeede some long *Diarrhæa*, *Lienteria* or bloody flux, whence a consumption of the whole body, and at last a hectick feaver, the heat becoming more acrid, the moisture of the body being consumed.

The causes.

This kind of feaver as it is most easily to be known, so is it most difficult to cure; the pulse in this feaver is hard, by reason of the dryness of the Artery which is a solid part; and it is weak by reason of the debility of the vitall faculty, the substance of the heart being assaulted. But it is little and frequent because of the distemper and heat of the heart, which for that it cannot by reason of its weakness cause a great pulse to cool it self, it labours by the oftensness to supply that defect.

The Signs.

But for the pulse, it is a proper sign of this feaver, that one or two houres after meat the pulse feels stronger than usuall; and then also there is a more acrid heat over all the Patients body. The heat of this flame lasts untill the nourishment be distributed over all the Patients body; in which time the dryness of the heart in some sort tempered and recreated by the appulse of moist nourishment, the heat increases no otherwise than lime which a little before seemed cold to the touch, but sprinkled and moistened with water grows so hot, as it smoaks and boyls up. At other times there is a perpetuall equality of heat & pulse in smalness, faintness, obscurity, frequency, and hardness, without any exacerbation, so that the Patient cannot think himself to have a feaver, yea he cannot complain of any thing, he feels no pain, which is another proper sign of an hectick feaver. The cause that the heat doth not

Why in the sticks the heat is more acrid after meat.

shew

The signes of a he-
ctick joy-
ned with a
putrid fea-
ver.

The cure.

A sympto-
maticall he-
ctick.

An essenti-
all hectick.

Things to
be taken
inwardly.

The benefit
of medici-
nall nour-
ishments.

The choice
of meats.

How Asses
milk must
be used in
a hectick.

Womans
milk more
wholsome
than Asses.

Things to
be out-
wardly ap-
plied.

shew its self is, it doth not possess the surface of the body, that is, the spirits and humors, but lyes as buried in the earthy grossness of the solid parts. Yet if you hold your hand somewhat long, you shall at last perceive the heat more acrid and biting, the way being opened thereto by the skin rarified by the gentle touch of the warm and temperate hand. Wherefore if at any time in these kind of feavers the Patient feel any pain, and perceive himself troubled with an inequality and excess of heat, it is a sign that the hectick feaver is not simple, but conjoined with a putrid feaver, which causeth such inequality, as the heat doth more or lesse seise upon matter subject to putrefaction; for a hectick feaver of it self is void of all equality, unlesse it proceed from some externall cause, as from meat; Certainly if an Hippocratic face may be found in any disease, it may in this, by reason of the colliquation, or wasting away the triple substance. In the cure of this disease, you must diligently observe with what affects it is entangled, and whence it was caused. Wherefore first you must know whether this feaver be a disease; or else a symptome. For if it be symptomaticall, it cannot be cured, as long as the disease the cause thereof, remains uncured; as if an ulcer of the guts occasioned by a bloody flux shall have caused it, or else a fistulous ulcer in the Chest caused by some wound received on that part, it will never admit of cure, unlesse first the fistulous or dysenterick ulcer shall be cured; because the disease feeds the symptomes, as the cause the effect. But if it be a simple and essentiall hectick feaver, for that it hath its essence consisting in an hot and dry distemper, which is not fixed in the humors, but in the solid parts, all the counsell of the Physitian must be to renew the body, but not to purge it; for only the humors require purging, and not the defaults of the solid parts. Therefore the solid parts must be refrigerated and humected; which we may doe by medicins taken inwardly and applyed outwardly.

The things which may with good success be taken inwardly into the body for this purpose, are medicinall nourishments. For hence we shall find more certain and manifest good, than from altering medicins, that is, wholly refrigerating and humecting without any manner of nourishment.

For by reason of that portion fit for nutriment which is therewith mixed they are drawn and carried more powerfully to the parts, and also converted into their substance: whereby it comes to passe that they do not humect and coole them lightly and superficially, like the medicins which have only power to alter and change the body, but they carry their qualities more thoroughly even into the innermost substance. Of these things some are herbs, as violets, purslain, bugloss, endive, ducks-meat, or water lentill, mallowes, especially when the belly shall be bound. Some are fruits, as gourds, cowcubers, apples, prunes, raisons, sweet almonds, and fresh or new pine-apple kernells; in the number of seeds are the foure greater and lesser cold seeds, and these new, for their native humidity, the seeds of poppyes, berberies, quinces. The flowers of bugloss, violets, water lillies, are also convenient; of all these things let broth be made with a chicken, to be taken in the morning for eight or nine dayes, after the first concoction.

For meats; in the beginning of the disease, when the faculties are not too much debilitated, he shall use such as nourish much and long, though of hard digestion; such as the extreame parts of beasts, as the feet of Calves, Hogs feet not salted, the flesh of a Tortois, which hath lived so long in a garden, as may suffice to digest the excrementitious humidity; the flesh of white Snails, and fish as have been gathered in a vineyard, of frogs, river Crabs, Eels taken in clear waters, and well cooked, hard eggs eaten with the juyce of Sorrell without spices; Whitings and stockfish. For all such things because they have a tough and glutinous juice, are easily put and glutinated to the parts of our body, neither are they so easily dissipated by the feaverish heat. But when the patient languisheth of a long hectick, he must feed upon meats of easie digestion, and these boyled rather than roasted; for boyled meats humect more, & roasted more easily turn into choler. Wherefore he may use to eat Veal, Kid, Capon, Pullet, boyled with refrigerating and humecting hearbs; he may also use Barly creams, Almond milks, as also bread crummed and moistened with rose water and boyled in a decoction of the foure cold seeds with sugar of roses; for such a Panada cools the liver, and the habit of the whole body, & nourisheth withall. The Testicles, wings, and livers of young cocks, as also figs and raisons. But if the Patient at length begin to loath and grow weary of boyled meats, then let him use roast, but so that he cut away the burnt & dried part thereof, and feed only on the inner part thereof, & that moistned in rose water, the juice of Citrons, Oranges or Pomegranats. Let him abstain from salt and dry fishes, and chuse such fishes as live in stony waters, for the exercise they are forc'd to undergoe in shunning the rocks beaten upon by the waves. Asses milk newly milked and seasoned with a little salt, sugar, honey, or fennell, that it may not corrupt, nor grow sowre in the stomach; or womans milk suckt from the dug by the Patient, to the quantity of halfe a pint, is much commended; verily womans milk is the more wholsome, as that which is more sweet and familiar to our substance, if so be that the nurse be of a good temper and habit of body. For so it is very good against the gnawings of the stomach, and ulcers of the Lungs, from whence a Consumption often proceeds. Let your milch Ass be fed with barly, oats, oakleaves; but if the Patient chance to be troubled with the flux of the belly, you shall make the milk somewhat astringent by gently boiling it, and quenching therein pebble stones heated red hot. But for that all natures cannot away with Asses milk, such shall abstain from it, as it makes to have acrid belchings, difficulty of breathing, a heat and rumbling in the *Hypochondria*, and pain of the head. Let the Patient temper his wine with a little of the waters of Lettuce, purslain and water-lillies, but with much bugloss water, both for that it moistens very much, as also for that it hath a specifick power to recreate the heart, whose solid substance in this kind of disease is grievously afflicted. And thus much of things to be taken inwardly.

These things which are to be outwardly applyed, are ununctuous, baths, epithemes, clysters. Ununctious are divers, according to the various indication of the parts whereto they are applyed. For *Galen* anoints all the spine with cooling and moderate astringent things, as which may suffice to streng- then

then the parts, and hinder their waſting, & not let the tranſpiration; for if it ſhould be letted, the heat would become more acrid, by ſuppreſſing the vapours. Oyl of roſes, water lillies, Quinces, the mucilages of Gum tragacanth and arabick extracted into water of nightſhade, with ſome ſmall quantity of canphire, and a little wax if need require; but on the contrary, the parts of the breaſt muſt be annointed with refrigerating and relaxing things; by refrigerating I mean things which moderately cool, for cold is hurtfull to the breaſt. But aſtringent things would hinder the motion of the muſcles of the cheſt, and cauſe a difficulty of breathing. Such inunctions may be made of oyl of Violets, willowes, of the ſeeds of lettuce, poppies, water-lillies, mixing with them the oyl of ſweet almonds to temper the aſtriction which they may have by their coldneſs. But you muſt have great care that the Apothecary for covetouſneſs in ſtead of theſe oyls newly made give you not old, rancid and ſalted oyls, for ſo in ſtead of refrigerating, you ſhall heat the part; for wine, honey and oyl acquire more heat by age; in defect of convenient oyls, we may uſe butter well waſhed in violet and nightſhade water. The uſe of ſuch inunctions, is to cool, humect and comfort the parts whereto they are uſed; they muſt be uſed evening and morning, chiefly after a bath.

A caution
in the
choice of
Oyles.

Now for Baths, we preſcribe them either only to moiſten, and then plain warm water wherein the flowers of Violets and water lillies, willow leaves and barley have been boyled, will be ſufficient; or

The diffe-
rences of
Baths.

elſe not only to moiſten, but alſo to acquire them a fairer and fuller habit, and then you may adde to your bath the decoction of a ſheeps head and Gather, with ſome butter. But the Patient ſhall not enter into the bath faſting, but after the firſt concoction of the ſtomach, that ſo the nourishment may be drawn by the warmneſs of the bath into the whole habit of the body, for otherwiſe he which is ſick of a conſumption and ſhall enter the bath with his ſtomach empty, ſhall ſuffer a greater diſſipation of the triple ſubſtance, by the heat of the bath, then his ſtrength is well able to endure. Wherefore it is fit thus to prepare the body, before you put it into the bath. The day before in the morning let him take an emollient clyſter, to evacuate the excrements baked in the guts by the heſtick dryneſs; then let him eat to his dinner ſome ſolid meats about nine of the clock; and let him about foure of the clock eat ſomewhat ſparingly, meats of eaſie digeſtion to his ſupper. A little after midnight let him ſup off ſome chicken broth or barley cream, or elſe two rear eggs tempered with ſome roſe water and ſugar of roſes in ſtead of ſalt. Some 4 or 5 houres after, let him enter into the bath, theſe things which I have ſet down, being obſerved. When he comes out of the bath, let him be dried and gently rubbed, with ſoft linnen cloaths, and anointed as I formerly preſcribed, then let him ſleep if he can for two or three houres in his bed: when he wakes let him take ſome Ptisan, or ſome ſuch like thing, and then repeat his bath after the foreſaid manner. He ſhall uſe this bath thrice in ten dayes; But if the Patient be ſubject to crudities of the ſtomach, ſo that he cannot ſit in the bath without fear of ſowning and ſuch ſymptomes, his ſtomach muſt be ſtrengthened with oyl of Quinces, Wormwood and maſſich, or elſe with a cruſt of bread toſted, and ſteeped in muſkadine, and ſtrewed over with the powders of Roſes, Sanders, and ſo laid to the ſtomach, or behind near to the thirteenth vertebra of the back, under which place, Anatomy teaches, that the mouth of the ſtomach lyes. Epithemes ſhall be applyed to the liver and heart, to temper the too acrid heat of theſe parts, and correct the immoderate dryneſs by their moderate humidity. Now they ſhall be made of refrigerating and humecting things, but chiefly humecting; for too great coldneſs would hinder the penetration of the humidity into the part lying within. The waters of bugloſs, and Violets, of each a quartern with a little white wine is convenient for this purpoſe. But that which is made of French barley, the ſeeds of gourds, pompions, or Cowcumpers of each three drams in the decoction, and mixed with much tempering with oyl of Violets, or of ſweet almonds, is moſt excellent of all other. Let cloaths be dipped and ſteeped in ſuch epithemes, and laid upon the part, and renewed as oft as they become hot by the heat of the part. And becauſe in heſtick bodies, by reaſon of the weakneſs of the digeſtive faculty, many excrements are uſually heaped up, and dried in the guts, it will be convenient, all the time of the diſeaſe to uſe frequently clyſters made of the decoction of cooling and humecting herbs, flowers, and ſeeds wherein you ſhall diſſolve *Caffia* with ſugar and oyl of Violets, or water-lillies. But becauſe there often happen very dangerous fluxes in a confirmed heſtick fever, which ſhew the decay of all the faculties of the body, and waſting of the corporeall ſubſtance, you ſhall reſiſt them with refrigerating and aſſiſting medicins; and meats of groſſer nourishment, as Rice, and Cicers; and application of aſtringent and ſtrengthening remedies; and uſing the decoction of Oats or parched barley for drink. Let the Patient be kept quiet and ſleeping as much as may be, eſpecially if he be a child. For this fever frequently invades children by anger, great and long fear, or the two hot milk of the nurſe, overheating in the Sun, the uſe of wine and other ſuch like cauſes; they ſhall be kept in a hot and moiſt ayre, have another Nurſe, and be anointed with oyl of violets; to conclude, you ſhall apply medicins which are contrary to the morbiſick cauſe.

V Why the
patients
muſt not
enter the
Bath fa-
ſting.

How to
prepare the
body for
the Bath.

Things
ſtrengthen-
ing the
ventricle.

Epithemes

What a
flux hap-
pening in a
heſtick fea-
ver indi-
cates.

How chil-
dren be
cured.

C. H A P. XXXIII. *Of the wounds of the Epigaſtrium and of the whole lower belly.*

The wounds of the lower belly are ſometimes before, ſometimes behind, ſome only touch the ſurface thereof, others enter in; ſome paſſe quite through the body, ſo that they often leave the weapon therein; ſome happen without hurting the contained parts; others grievouſly offend theſe parts, the liver, ſpleen, ſtomach, guts, kidneys, womb, bladder, ureters, and great veſſels, ſo that oft-times a great portion of the Kall, falls forth. We know the Liver is wounded, when a great quantity of blood comes forth of the wound, when a pricking pain reaches even to the ſword-like griffle, to which the Liver adheres. Oft-times more choler is caſt up by vomit, and the Patient lyes on his belly with more eaſe and content.

Their diffe-
rences.

Signs of a
wounded
liver.

Signs that
the ſto-
mach and
ſmaller guts
are wound-
ed.

When the ſtomach or any of the ſmall guts are wounded, the meat & drink break out at the wound, the *Ilia* or flanks ſwell and become hard, the hicket troubles the Patient, and oft-times he caſts up more

cholera, and grievous pain wrings his belly, and he is taken with cold sweats, and his extreame parts wax cold.

If any of the greater guts shall be hurt, the excrements come forth at the wound: When the Spleen is wounded, there flows out thick and black blood, the Patient is oppressed with thirst, and there are also the other signs, which we said use to accompany the wounded Liver. A difficulty of making water troubles the Patient whose reins are wounded, blood is pissed forth with the Urine, and he hath a pain stretched to his groins and the regions of the Bladder and Testicles.

The Bladder or Ureters being wounded, the flanks are pained, and there is a Tension of the *Pecien* or share, blood is made in stead of urine, or else the urine is very bloody, which also divers times comes forth at the wound. When the wombe is wounded, the blood breaks forth by the privities, and the Symptomes are like those of the Bladder.

The wounds of the liver are deadly, for this part is the work-house of the blood, wherefore necessary for life; besides by wounds of the liver the branches of the Gate or Hollow veins are cut, whence ensues a great flux of blood not only inwardly, but also outwardly, and consequently a dissipation of the spirits and strength.

But the blood which is shed inwardly amongst the bowels putrefies and corrupts, whence follows pain, a fever, inflammation, and lastly death. Yet *Paulus Aegineta* writes, that the lobe of the Liver may be cut away without necessary consequence of death. Also the wounds of the Ventricle and of the small Guts, but chiefly of the *Iejunum* are deadly; for many vessells run to the *Iejunum* or empty Gut, and it is of a very nervous and slender substance, and besides it receives the cholerick humor from the bladder of the Gall. So also the wounds of the Spleen, Kidneys, Ureters, Bladder, Womb and Gall, are commonly deadly, but always ill, for that the actions of such parts are necessary for life; besides, divers of these are without blood and nervous others of them receive the moist excrements of the whole body, and lye in the innermost part of the body, so that they do not easily admit of medicins. Furthermore, all wounds which penetrate into the capacity of the belly, are judged very dangerous, though they do not touch the contained bowels; for the encompassing and new ayr entring in amongst the bowels, greatly hurts them, as never used to the feeling thereof; adde hereto the dissipation of the spirits which much weakens the strength. Neither can the filth of such wounds be wasted away according to the mind of the Chirurgion, whereby it happens, they divers times turn into fistula's, as we said of wounds of the Chest, and so at length by collection of matter cause death. Yet I have dressed many who by Gods assistance & favour have recovered of wounds passing quite through their bodies.

I can bring as a witness the steward of the Portingall Embassadour, whom I cured at *Melum*, of a wound made with a sword so running through his body, that a great quantity of excrements came forth of the wounded Guts, as he was a dressing, yet he recovered.

Not long agoe *Giles le Maistre* a Gentleman of *Paris* was run quite through the body with a Rapier, so that he voided much blood at his mouth and fundament divers dayes together, whereby you know the Guts were wounded; and yet he was healed in twenty dayes. In like sort the wounds of the greater vessells are mortall, by reason of the great effusion of blood and spirits which ensues thereupon.

C H A P. XXXIII. The cure of wounds of the lower belly.

He first cogitation in curing of these wounds ought to be whether they pierce into the capacity of the Belly; for those which passe no further than the *Peritonaeum* shall be cured like simple wounds which only require union. But those which enter into the capacity must be cured after another manner. For oft times the Kall or Guts, or both fall forth at them.

A gut which is wounded must be sowed up with such a seam as Furriers or Glovers use, as we formerly told you; and then you must put upon it a powder made of Mastich, Myrrh, Aloes and Bole. Being sowed up, it must not be put up boysterously together and at once into its place, but by little and little, the Patient lying on the side opposite to the wound. As for example, the right side of the Guts being wounded and falling out by the wound, the Patient shall lye on his left side, for the more easy restoring of the falln down Gut, and so on the contrary. If the lower part of the Guts being wounded slide through the wound, then the Patient shall lye with his head low down, & his buttocks raised up by putting a pillow under them; If the upper part be hurt, then must he lye quite contrary, that the Guts falling downwards by such a site, may give way to these which are falln out through the wound. But often in this case, the Guts having taken cold by the encompassing ayre, swell up and are distended with wind, the which you must discuss before you put them into their place, with a fomentation of the decoction of camomill, melilot, aniseeds and fennell applyed with a sponge, or contained in a bladder; or else with chickens, or whelps cut alive in the midst and laid upon the swelling; for thus they do not only discuss the flatulency, but also comfort the afflicted part. But if the inflation cannot thus be discussed, the wound shall be dilated, that so the Guts may return the more freely to their place.

If the Kall shall fall out, it must be speedily restored to its place, for it is very subject to putrefie; for the fat, whercof for the most part it consists, being exposed to the ayre, easily loses its native heat, which is small and weak, whence a mortification ensues. Hence is that of *Hippocrates*; If the Kall fall out, it necessarily putrefies. The Chirurgion shall know whether it putrefies, or not, by the blacknesse and the coldness you may perceive by touching it; neither must you when it putrefies presently restore it to its place, for so the contagion of the putrefaction would spread to the rest of the parts: but whatsoever thereof is putrefied shall be twitched and bound hard with a string and so cut off, and the rest restored to his proper place: but it's good after cutting of it away to leave the string still hanging thereat, that so you may pluck and draw forth whatsoever thereof may by being too strait bound fall away into the capacity of the belly. Some think it to be better to let the Kall thus bound to hang forth until

Signs to know when the greater guts are wounded. Signs that the Kidneys are hurt. Signs that the Bladder is wounded. Signs that the wombe is wounded. Prognosticks. Lib. 6. cap. 88.

A History.

Another History.

The cure of a wounded Gut.

The cure when the Kall falls out. Hip. Aph. 58. sect. 6.

till that portion thereof which is putrefied fall away of it self, and not to cut it off. But they are much deceived, for it hanging thus would not cover the guts, which is the proper place. The Guts and Kall being put up, if the wound be great and worth speaking of, it must be sowed with that suture which is termed *Gastroaphia*; but this kind of suture is thus made. The needle at the first putting in must only take hold of the *Peritonæum*, and then on the opposite side only of the flesh, letting the *Peritonæum* alone, & so go along putting the needle from without inwards, and from within outwards, but so that you only take the musculous flesh & skin over it, & then only the *Peritonæum*, until you have sowed up all the wound. He which doth otherwise shall undergo this danger, that whereas the coat *Peritonæum* is of it self without blood, it being divided, or wounded cannot of it self be united to it self, therefore it requires an intercourse of flesh: otherwise unless it be thus united by the benefit, of the flesh intermixed therewith, there would remain an incurable tumor after the wound is cicatrized on the outside. But that which we said before according to *Galens* mind, that all the wounds must be sowed, it is not so to be taken as if that the wound must be sowed up to the very end; for in the lower part of the wound there must be left a certain small vent by which the quittance may pass forth, which being wholly cleansed and exhausted, the wound must be quite healed up. But the wounds which shall penetrate into the substance of the liver, spleen, ventricles, and other bowells, the Chirurgeon shall not suffer them to be without medicines as if they were desperate, but here shall spare neither labour nor care to dress them diligently. For doubtfull hope is better then certain despair. The bladder, womb, & right gut being wounded, detergent and agglutinative injections shall be put up by their proper passages. I have read nothing as yet in any Author of the wounds of the fat, for all of them refer the cure thereof to the wounds of the Muscles. Yet I wil say this by the way, that wounds of the fat how deep soever they be, if they be only simple, may be dressed without putting in of any Tent, but only dropping in some of my balsam, and then laying upon it a plaister of *Gratia Dei*, or some such like, for so they will heal in a short time.

Lib. 5. Meth.
cap. 4.

The cure of
the wound-
ed fat.

CHAP. XXXV. *Of the wounds of the Groins, Yard and Testicles.*

When the Groins and neighbouring parts are wounded, we must first consider whether they pierce to within: and if they do penetrate, to what inward parts they come, whether to the bladder, the womb, or right gut: for these parts are such neer neighbours that oft-times they are all wounded with one blow. But for the wounds of the Testicles, and genitall parts, because they are necessary instruments for the preserving the species by generation, or a succession of individualls, and to keep all things quiet at home, therefore the Chirurgeon ought to be very diligent and carefull for their preservation. Wherefore if they should chance at any time to be wounded, they shall be dressed as we have formerly delivered, the medicines being varied according to the state of the wound, and the appearing and happening symptomes; for it would be a thing of immense labour to handle all things in particular.

CHAP. XXXVI. *Of the Wounds of the Thighes and Legs.*

Wounds which have been received on the inside of the Thighes, have often caused sodain death, if they have come to the vein *Saphena*, or the great Artery, or the Nerves, the associates of these vessels. But when they are simple, there is nothing which may alter the usuall manner of cure. Yet the Patient must be carefull to lye in his bed: for the vulgar *Italian* proverb is true: *La mano al petto, la gamba al letto*, [that is, the hand on the breast, and the leg on the bed.] But when they penetrate more deeply into the substance of the part, they bring horrid and fearfull symptomes, as an inflammation, an abscess, from whence oft-times such abundance of matter issues forth, that the Patient falls into an *Atrophia* and consumption. Wherefore such wounds and ulcers require a carefull & industrious Chirurgeon, who may fitly make incisions necessary for the corrupt parts, & callosity of the fistulous ulcer. Some Chirurgeons have been so bold as to sow together the end of the Tendons of the Ham, and of other joints, when they have been quite cut asunder. But I durst never attempt it for fear of pain, convulsions and the like horrid Symptomes. For the wounds of that large tendon which is composed in the calf of the Leg by the concurrence of three muscles, and goes to the heel, I have observed that when it hath been cut with the sword, that the wounds have been long and hard to cure; and besides when at the last they have been healed, as soon as the Patient hath got out of his bed, and indeavoured to go, they have grown ill and broke open again. Wherefore in such like wounds let the Patient have a care that he begin not to go or too boldly to use his hurt leg before it be perfectly cicatrized and the scar grown hard. Therefore that the Patient may be in more safety, I judg it altogether necessary, that he use to go with Crutches, for a good while after the wound is perfectly healed up.

Why
wounds of
the inside
of the thigh
are oft-
times dead-
ly.

The large
Tendon of
the heel
hard to
consolidate.

CHAP. XXXVII. *Of the Wounds of the Nerves and nervous parts.*

The continuity of the nervous parts is divers wayes loosed by the violent incursion of external things; as by things which contuse, batter and grind in sunder, as by the blow of a stone, cudgell, hammer, lance, bullet out of a gun, or crossbow; by the biting of greater teeth; or the pricking of some sharpe thing, as a needle, bodkin, penknife, arrow, splinter; or the puncture of some venomous thing, as of a Sea Dragon; or the edge of some cutting thing, as a sword or rapier; or of stretching things which violently tear asunder the nervous bodies. Hence therefore it is, that of such wounds some are simple, others compound, and the compound, some more compound than other. For of these some are superficially and short, others deep and long, some run alongst the nervous body, others run broadwayes; some cut the part quite asunder, others only a portion thereof. The symptomes which follow upon such wounds are, vehement pain, and defluxion, inflammation, abscess, fever, delirij

Differences
drawn from
things
wounded.

Their
Symptomes.

Why a puncture of a nerve is deadly.

um, fawning, convulsion, gangrene, sphacell; whence often death insues by reason of that sympathy, which all the nervous parts have with the brain. Amongst all the wounds of the nervous parts, there is none more to be feared than a puncture, or prick, nor any which causeth more cruell and dangerous symptomes. For by reason of the straitness of the wound, medicines can neither be put in, nor the sanious matter pass forth; now the sanious matter by long stay acquires virulency, whereby the nervous parts are tainted and swoln, suffer pain, inflammation, convulsions, and infinite other symptomes; of these the wounds are most dangerous, by which the nervous and membranous bodies are but half cut asunder. For the portion thereof which remains whole, by its drawing & contracting it self towards the originall, causeth great pain and convulsion by sympathy. The truth hereof is evident in wounds of the head, as when the *pericranium* is half cut, or when it is cut to apply a trepan. For the cutting thereof infers far greater pain, than when it is cut quite asunder. Wherefore it is safer to have the nervous body quite cut off, for so it hath no community, nor consent with the upper parts, neither doth it labour, or strive to resist the contraction of its self; now this contrariety, and as it were fight, is the cause of pain, yet there arises another misery from such a wound, for the part whereinto the nerve which is thus cut insunder passes, thence forwards loseth its action.

CHAP. XXXVIII. Of the cure of Wounds of the Nervous parts.

A wound of the nervous parts indicates contrary to the general cure of wounds. A History.



It is the ancient doctrine of the ancient Physicians, that the wounds of the nervous parts should not presently be agglutinated (which notwithstanding the generall and first indication usually taken from the solution of continuity requires) but rather, chiefly if they be too strait, that the punctures should be dilated, by cutting the parts which are above them, and let them be kept long open that the filth may pass freely forth, and the medicine enter well in. Yet I in many cures have not followed this counsel, but rather that which the common indication requires.

That cure is in fresh memory which I performed upon *Monsieur le Cocq*, a Proctor of the spirituall court, who dwelt in our Ladies street; he gathering and binding up some loose papers, run a penknife which was hid amongst them, through his hand. Also one of his neighbours who went to spit a piece of beef, thrust the spit through the midst of his hand; But I presently agglutinated both their wounds, without any danger, dropping presently in at the first dressing a little of my balsam warm, and putting about it a repelling and astringent medicine, and by this means they were both of them healed in a short time, no symptome thereupon happening. Yet I would not have the young Chirurgion to run this hazard, for first he must be well practised and accustomed to know the tempers and habits of men; for this manner of curing would not do well in a plethorick body, or in a body replete with ill humors, or indued with exquisite sense. Therefore in such a case it will be safer to follow the course here set down. For wounds of the nerves do not only differ from other wounds, but also among themselves in manner of curing. For although all medicines which draw from far, and waste sanious humors, may be reputed good for the wounds of the nerves; yet those which must be applied to punctures and to those nerves which are not wholly laid open, ought to be far more powerful, sharp & drying, yet so that they be not without biting, that so penetrating more deep they may draw forth the matter, or else consume and discuss that which either lies about the nerves, or moistens their substance. On the contrary, when the sinews are bared from flesh and adjoyning partieles, they stand in need but of medicines, which may only dry. Here you may furnish your selves with sufficient store of medicines good for the nerves howsoever pricked. As R. *Terebinth. venet. & olei veteris an. ʒ j. aquæ vitæ parum.* Or R. *olei Terebinth. ʒ j. aquæ vitæ ʒ j. euphor. ʒ ʒ.* Or R. *radices Dracontia, Brionia, valeriana, & gentiana exsiccatas, & in pulverem redactas, misce cum decocto centaurii, aut olco, aut exungia veteri;* drop hereof warm into the wound as much as shall suffice. Or else put some Hogs, Goose, Capons, or Bears grease, old oil, oil of Lillies or the like, to *Galbanum*, pure *Rozin*, *opopanax* dissolved in *aqua vitæ* and strong vinegar. Or R. *olei hypericonis sambati, & de euphorbio an. ʒ j. sulphuris vivi subtiliter pulverisati ʒ ʒ. gummi ammoni. bdellii an. ʒ ij. acetii boni ʒ ij. vermium terrest. preparat. ʒ j. bulliant omnia simul ad consumptionem acetii.* Let as much hereof as shall suffice be dropped into the wound; then apply this following cerate, which draws very powerfully. R. *olei supra scripti ʒ j. terebinth. venet. ʒ ʒ. diachylonis albi cum gummi, ʒ x. ammoniac. bdellii in aceto dissolutorum, an. ʒ ij. resin. pini, gum. elemi, picis navalis an. ʒ v. cere quod sufficit, fiat ceratum satis molle.* We must use some whiles one, some whiles another of these medicines in punctures of the Nerves with choise and judgment, according to their conditions, manner, depth, and the temperaments and habit of the wounded bodies. But if the pain yeeld not to such remedies, but rather increase, with the inflammation of the affected part, a swelling of the lips of the wound, and sweating forth of a serous, thin and virulent matter or filth, then you shall poure into it scalding oil, and shall touch three or four times not only the surface of the wound but the bottom thereof with a rag dipped therein and tyed to the end of a *spatula*. For this will take away the sense from the Nerve, Tendon, or Membrane, like as if they were burnt with a cautery, and so the pain will be eased. So in the most grievous pains of rotten teeth, the thrusting of an hot iron into their roots, or stopping them with cotten dipped in oyl of Vitrioll, or *aqua vitæ*, gives most certain ease; for by burning the nerve which is inserted into their roots, the sense and so consequently the pain is taken away. So also in malignant, gnawing, eating, and spreading ulcers, which are alwayes associated with much pain, the pain ceases by applying an Escharotick, as the powder of Alum, or Mercury, or *gyptiacum* made somewhat more strong than usuall. That the young Chirurgion may be more ready for this practise and the use of the former medicines, I have thought good to insert the following History both for the lateness of the thing and the pleasing memory of the most laudable Prince.

Medicines fit for wounds of the nerves.

What wounds of the Nerves must be burnt.

A certain Anodyne in pain of the teeth.

Why Escharoticks must be used to spreading ulcers. A famous history.

Charles the ninth, the French King, being sick of a Fever, *Monsieur Gouellan* and *Castellan* his Physicians thought it fit he should be let blood; for the performance whereof, there was called a Chirurgion wondrous famous for that business; but when as he by chance had pricked a nerve in stead of a vein, the

King cryed out, that he felt a mighty pain in that place. Then I bid, that the ligature should straightwaies be loosed, otherwise the arm would presently be much swelled. But he going slowly about it, beheld the arm began to swel with such contraction, that he could not bend it, nor put it forth, and cruel pain molested not only the pricked particle, but all the whole member besides. I forthwith laid upon the wound a plaister of *Basilicon*, to hinder the agglutination thereof, & then I wrapped al the arm in a double linnen cloth dipped in oxycrate, putting upon it an expulsive ligature, which beginning at the wrist and ending at the top of the shoulder, might keep the blood and spirits from fear of defluxion and inflammation. This being thus performed, we went aside to consult what was necessary to be done, both to assuage the pain, as also to divert the other symptoms, which usuallly happen upon punctures of the nerves. I being desired, thus delivered my opinion, that in my mind, there were nothing better, then presently to drop into the wound some oyl of Turpentine warmed and mixed with a little *aqua vite*. And then all the arm should be covered with a plaister of *Diacaltheos* dissolved in vinegar and oyl of Roses, bound over and besides with the expulsive ligature, which we formerly mentioned. For the oyl and *aqua vite* have a faculty to penetrate into the bottome of the wound, and to exhaust and dry up the ferous and virulent humor, which sweats from the substance of the pricked nerve; and also to mitigate the pain by its actuall heat. Furthermore the emplaister *Diacaltheos* hath a faculty to dissolve the humor which hath already fallen down into the arm, and to hinder the entrance and defluxion of any new matter. And the ligature is such as by its moderate astringion would serve to strengthen the muscles, and to press out and repell the humors which were fallen down into the upper part, and to prohibit that which is ready to fall down. Mine advice being approved of the Physicians both in word and deed, the pain was mitigated. But the humor stayed in the part, for the dissolving and drying whereof, this following remedy was used. *R. far. hordei & orobi an. ʒ ij. flor. cham. em. & melilot. an. p. ij.* *Butyr. recentis sine sale ʒ i ʒ lixivii barbitonforis quod sufficit, fiat cataplasma ad formam pultis.* By these remedies and drying cataplasms. the King at the last after 3. months space was perfectly healed, so that there remained no sign of the depraved action in the part. But if at any time there shall be so great contumacy, that it will not yeeld to these means, but that there is imminent danger of a convulsion; it will be better to cut it in sunder whether Nerve, Tendon or Membrane, than to expose the Patient to the danger of a deadly convulsion; for thus indeed the peculiar action of that part will be lost, but the whole body preserved thereby; for so we had determined by common consent, that if the pain which afflicted the King would not yeeld to the prescribed remedies, either to poure in scalding oyl, or else to cut the sinew quite asunder.

For the late and sad memory of Mistris *Courtin* dwelling in the street of the holy-Cross was in our minds, who of a vein not well opened in her arm fell into a Gangrene and totall mortification of that whole part, of which she dyed, because she was not dressed with the formerly mentioned medicins. Yet we must abstain from these too powerfull remedies, when the pricked nerve shall lye bare, for else the pain would be increased, & more grievous symptoms follow. Wherefore as I formerly wished; more mild medicins must be applyed, which may dry up the ferous humor without biting or acrimony, as *R. terebinth. venet. in aq. ros. lot. ʒ ij. boli armeni subtiliter pulverisati, ʒ ij. incorporentur simul.* Our Balsam also is excellent in this case, and this of *Vigoes* which follows. *R. olei rosar. omphacini ʒ j ʒ olei de terebinth. ʒ iij. succi plantag. ʒ ʒ. semin. hypericonis aliquantum contriti, m. ʒ. tutie prepar. ʒ iij. calcis decies lot. cum aqua plantagin. ʒ ij. antimonii ʒ j. sevi hircini, & vitulini, an. ʒ v. vermium terrestrium cum vino lotorum ʒ j ʒ. bulliant omnia simul dempta tutia in cyatho decoctionis hordei, ad consumptionem aquae & vini, coentur, rursumq; igni admoveantur, addendo tutiam, & fiat linimentum cum cera alba, & ʒ ʒ. croci.* This liniment asswages pains, & covers the bared nerves with flesh. This cure of punctured nerves, may with choise and judgment and observing the proportion of the parts be transferred to the pricked Tendons and membranes. But take this as a generall & common rule, that all nervous bodies howsoever hurt, are to be comforted by anointing them with hot oyls, such as the oyls of Bayes, Lillies, of Worms, Sage, or some other such like remedy being applyed to their originalls and more notable passages; as to the originall of the spinall marrow, the armpits and groins. Neither do I think it fit in this place to omit an affect which sometimes happens to the large Tendon of the heel, of which we formerly made mention. For it oft-times is rent or torn by a small occasion without any sign of injury or solution of continuity apparent on the outside as by a little jump, the slipping aside of the foot, the too nimble getting on horseback, or the slipping of the foot out of the stirrop in mounting into the saddle. When this chance happens it will give a crack like a Coachmans whip; above the heel, where the tendon is broken, the depressed cavity may be felt with your finger, there is great pain in the part, and the party is not able to go. This mischance may be amended by long lying and resting in bed, and repelling medicins applyed to the part affected in the beginning of the disease, for fear of more grievous symptoms, and then applying the Black plaister, or *Diacaltheos* or some other such, as need shall require; neither must we hereupon promise to our selves or the Patient certain or absolute health. But on the contrary at the beginning of the disease we must foretell that it will never be so cured but that some reliques may remain, as the depression of the part affected and depravation of the action and going; for the ends of this broken or relaxed Tendon by reason of its thickness and contumacy cannot easly be adjoined, nor being adjoined, united.

CHAP. XXXIX. Of the wounds of the joynts.

BEcause the wounds of the joynts have something proper and peculiar to themselves, besides the common nature of wounds of the Nerves, therefore I intend to treat of them in particular. Indeed they are alwayes very dangerous, and for the most part deadly by reason of the nervous productions and membranous Tendons wherewith they are bound and ingirt and into which the Nerves are inserted: whereby it comes to pass, that the exquisite sense of such like parts will easly bring malign symptoms, especially if the wound possess an internall, or as they term it, a domestique part of them; as for example, the armpits, the bending of the arm, the inner part of the

wrist, and ham, by reason of the notable Veins, Arteries, and Nerves of these parts, the loosed continuity of all which brings a great flux of blood, sharpe pain and other malignant symptoms; all which we must resist according to their nature and condition, as a flux of blood with things staying, bleeding; pain with anodynes. If the wound be large and wide, the severed parts shall be joined with a suture, leaving an orifice in the lower part, by which the quittance may pass forth. This following powder of *Vigoes* description must be strewed upon the future. *R. thuris sang. draconis, boli armen. terræ sigill. an. ʒ ij. aloes, mastich. an. ʒ j. fiat pulvis subtilis.* And then the joynt must be wrapped about with a repercussive medicine composed of the whites of Eggs, a little oil of Roses, Bole, Mastich, and barley flowre. If it be needfull to use a Tent, let it be short, and according to the wound thick, lest it cause pain: and moreover let it be anointed with the yolk of an egg, oil of Roses, washed turpentine and a little saffron. But if the wound be more short & narrow, it shall be dilated, if there be occasion, that so the humor may pass away more freely. You must rest the part, and beware of using cold, relaxing, mollifying, humecting, and unctuous medicines, unless peradventure the sharpness of the pain must be mitigated. For on the contrary, astringent and desiccant medicins are good, as this following cataplasme. *R. surfur. macri, farin. hordei, & fabarum. an. ʒ iiij. florum chamæ. & melil. an. m. ʒ. terebinth. ʒ iiij. mellis communis ʒ ij. ol. myrtin. ʒ j. oxymelitis, vel oxycrat. vel lixivii com. quantum sufficit, fiat cataplasma ad formam pultis.* Or you may compose one of the lees of wine, Wheat bran, the powder of Oaken bark, cypres nuts, galls and Turpentine, and such like, that have an astringent, strengthening and drying quality, and thereby asswaging pain, and hindering the defluxion of humors. This following medicine is astringent and agglutinative. *R. terebinth. venet. ʒ ij. aq. vitæ parum. pulveris mastich. aloes, myrrha, boli armen. an. ʒ ij.* And also our balsam will be good in this case, if so be that you add hereto so much powder which dries without acrimony, as occasion shall serve. I admonished you before to take heed of cold, and now again; for it is hurtfull to all wounds and ulcers, but especially to these of the nervous parts; hence it is that many dye of smal wounds in the winter, who might recover of the same wounds though greater in the Summer. For cold according to *Hippocrates* is nipping to ulcers, hardens the skin, and hinders them from suppuration, extinguisheth naturall heat, causes blackness, cold aguish fits, convulsions, and distentions. Now divers excrements are cast forth of wounds of the joynts, but chiefly albugineous, that is, resembling the white of an egg, and mucous, and sometimes a very thin water, all which favour of the nature of that humor which nourisheth these parts. For to every part there is appropriate for his nourishment and conservation, a peculiar balsam, which by the wound flows out of the same part, as out of the branches of the vine, when they are pruned, their radical moisture or juyce flows; whence also a *Callus* proceeds in broken bones. Now this same mucous, & albugineous humor, slow & as it were frozen flowing from the wounded joynts, shews the cold distemper of the parts, which cause pain, not to be overcome by medicins only potentially hot. Wherefore to correct that, we must apply things actually hot, as beasts and swines bladder half full of a discussing decoction, or hot bricks quenched in wines. Such actual heat helps nature to concoct and discuss the superfluous humor impact in the joynts, and strengthens them; both which are very necessary, because the naturall heat of the joynts is so infirm that it can scarce actuate the medicin unless it be helped with medicins actually hot. Neither must the Chirurgion have the least care of the figure and posture of the part, for a vicious posture increases ill symptoms, uses to bring to the very part though the wound be cured, distortion, numbness, incurable contraction; which fault lest he should run into, let him observe what I shall now say; If the forepart of the shoulder be wounded, a great boulder must be under the armpit, and you must carry your arm in a scarf, so that it may bear up the lower part of the arm, that so the top of the shoulder may be elevated somewhat higher, and that so it may be thereby more speedily and happily agglutinated and consolidated. If the lower part be wounded, when flesh begins to be generated and the lips of the wound to meet, you must bid the Patient to move and stir his arms divers wayes sever & anon, for if that be omitted or negligently done, when it is cicatrized, then it will be more stiffe and less pliable to every motion; and yet there is a further danger lest the arm should totally lose its motion. If the wound be upon the joynt of the elbow, the arm shall be placed and swathed in a middle posture, that is, which neither too straitly bows it, nor holds it too stiffe out; for otherwise when it is cicatrized, there will be an impediment either in the contraction or extension. When the wound is in the wrist, or joints of the fingers either externally or internally, the hand must be kept half shut, continually moving a ball therein. For if the fingers be held straight stretched forth, after it is cicatrized, they will be unapt to take up or hold any thing, which is their proper faculty. But if after it is healed, it remain half shut, no great inconveniency will follow thereon; for so he may use his hand divers wayes to his sword, pike, bridle and in any thing else. If the joints of the Hip be wounded, you must so place the Patient that the thigh bone may be kept in the cavity of the hucklebone, and may not part a hairs breadth there from, which shall be done with linnen boulders and ligatures applyed as is fitting, and lying full upon his back. When the wound shall begin to cicatrize, the Patient shall use to move his thigh every way, lest the head of the thigh-bone stick in the cavity of the hucklebone without motion. In a wound of the knee, the leg must be placed straight out, if the Patient desire not to be lame. When the joints of the feet and toes are wounded, these parts shall neither be bended in nor out, for otherwise he will not be able to go. To conclude, the site of the foot and leg, is quite contrary to that of the arm and hand.

CHAP. XL. Of the wounds of the Ligaments.



The wounds of the Ligaments, besides the common manner of curing these of the Nerves, have nothing peculiar, but that they require more powerfull medicins, for their agglutination, desiccation and consolidating; both because the Ligamentall parts are harder, and drier, and also for that they are void of sense. Therefore the foresaid cure of Nerves, and joints may be used for these wounds: for the Medicins in both are of the same kind, but here they ought to be stronger

The cure.

An astringent and drying cataplasme.

Aphor. 20. sect. 5.

V What matter usually flows from wounds of the joynts.

V Why things actually hot must be applyed to the wounded joynts. Of the site and posture of wounded joints.

Ligaments more dry than Nerves, and without sense.

stronger and more powerfully drying. The Theory and cure of all the symptoms which shall happen thereupon have been expressed in the Chapter of curing the wounds of the nervous parts, so that here we shall need to speak nothing of them, for there you may find as much as you will. Wherefore here let us make an end of wounds, and give thanks to God the author and giver of all good for the happy proesse of our labours, and let us pray that that which remains may be brought to a happy end, and secure for the health and safety of good people.

The end of the tenth Booke.



Of Wounds made by Gunshot, other fiery Engines, and all sorts of Weapons.

THE ELEVENTH BOOK.

The Preface.



Have thought good here to premise my opinion of the originall, encrease, and hurt of fiery Engines, for that I hope it will be an ornament and grace to this my whole treatise: as also to intice my Reader, as it were with these junckets, to our following Banquet so much favouring of Gunpowder. For thus it shall be known to all whence Guns had their originall and how many habits and shapes they have acquired from poore and obscure beginnings; & lastly how hurtfull to mankind the use of them is.

Polydore Virgill writes that a Germane of obscure birth and condition was the inventor of this new engin which we term a Gun, being induced thereto by this occasion. He kept in a mortar covered with a tyle, or slate, for some other certain uses a powder (which since that time for its chief and new known faculty, is named Gunpowder.) Now it chanced as he struck fire with a steel and flint, a spark thereof, by accident fell into the mortar, whereupon the powder suddainly catching fire, casts the stone or tyle which covered the mortar, up on high; he stood amazed at the novelty & strange effect of the thing, and withall observed the formerly unknown faculty of the powder; so that he thought good to make experiment thereof in a small Iron trunk framed for that purpose according to the intention of his mind. When all things were correspondent to his expectation, he first shewed the use of his engine to the Venetians, when they warred with the Genoveses about *Fossa Clodia*, in the year of our Lord 1380. Yet in the opinion of *Peter Messius*, their invention must have been of greater antiquity; for it is read in the Chronicles of *Alphonfus* the eleaventh King of *Castile*, who subdued the *Isles Argezires*, that when he besieged the chiefe Town in the year of our Lord 1343. The besieged Moores shot as it were thunder against the assailants, out of Iron mortars. But we have read in the Chronicles written by *Peter Bishop* of *Leons* of that *Alphonfus* who conquered *Toledo*, that in a certain sea fight fought by the King of *Tunis*, against the Moorish King of *Sivill*, whose part King *Alphonfus* favoured, the *Tunetans* cast lightning out of certain hollow Engines or Trunks with much noise. Which could be no other, than our Guns, though not attained to that perfection of art and execution which they now have.

I think the deviser of this deadly Engin hath this for his recompence, that his name should be hidden by the darknes of perpetuall ignorance, as not meriting for this his most pernicious invention, any mention from posterity. Yet *Andrew Thevet* in his *Cosmography* published some few years agoe, when he comes to treat of the *Suevi*, the inhabitants of Germany, brings upon the authority and credit of a certain old Manuscript, that the Germane the inventor of this warlike Engine was by profession a Monk and Philosopher or Alchymist, born at *Friburg*, and named *Constantine Anclzen*. Howsoever it was, this kind of Engine was called *Bombarda* (i) a Gun, from that noise it makes, which the Greeks and Latines according to the sound call *Bombus*; then in the following ages, time, art and mans malicioufness added much to this rude and unpolisht invention. For first for the matter, Brasse and Copper, metalls farre more tractable, fusible and lesse subject to rust, came as supplies to Iron. Then for the form, that rude and undigested barrell, or mortar-like masse, hath undergone many formes and fashions, even so far as it is gotten upon wheels, that so it might run not only from the higher ground, but also with more rapid violence to the ruin of mankind; when as the first and rude mortars seemed not to be so nimble traversed, nor sufficiently cruell for our destruction by the only casting forth of Iron and fire. Hence sprung these horrible monsters of Canons, double Canons, Bastards, Musquits, Field peeces; hence these cruell and furious beasts, Culverins, Serpentes, Basilisques, Sackers, Falcons, Falconets, and divers other names not only drawn from their figure and making, but also from the effects of their cruelty. Wherefore certainly I cannot sufficiently admire the wisdom of our Ancestors, who have so rightly accommodated them with names agreeable to their natures; as those who have not only taken them from the swiftest birds of prey, as Falcons; but also from things most harmfull and hatefull to mankind, such as Serpents, Snakes, and Basilisques. That so we might clearly discern, that these engines were made for no other purpose, nor with other intent, but only to be employed for the speedy and cruell slaughter of men; and that by only hearing them named we might detest and abhor them, as pernicious enemies of our lives. I let passe other engines of this offspring, being for their quantity small, but so much the more pernicious & harmfull, for that they nearer assail our lives, may traiterously and forthwith seize upon us not thinking nor fearing any such thing; so that we can scarce have

Lib. 2. de invent. rerum.

Cap. 8. prim. par. var. lect.

VVho the inventor of Guns.

The reason of the name.

The danger of Pistols. have any means of escape; such are Pistols and other small hand-guns, which for shortness you may carry in your pocket, and so privily and suddainly taking them forth oppress the careless and secure. Fowling peeces which men usually carry upon their shoulders, are of the middle rank of these engines, as also Muskets, and Calcevers, which you cannot well discharge unless lying upon a Rest, which therefore may be called Breast-guns for that they are not laid to the cheek, but against the Breast by reason of their weight and shortness; All which have been invented for the commodity of footmen, and light horsemen. This middle sort of engine we call in Latine by a generall name *Sclopius*, in imitation of the sound, and the Italians who term it *Sclopetere*; the French call it *Harquebuse*, a word likewise borrowed from the Italians, by reason of the the touch-hole by which you give fire to the peece, for the Italians call a hole *Buzio*. It is tearmed *Arcus* (*i*) a Bow, for that at this present it holds the same place in martiall affaires, as the Bow did of old; and as the Archers formerly, so at this day the Musquetiers are placed in front. From the same wretched shop and magazine of cruelty, are all sorts of Mines, Countermine, pots of fire, trains, fiery Arrows, Lances, Crossbowes, barrells, balls of fire, burning faggots, Granats, and all such fiery engines and Inventions, which closely stuffed with suell and matter for fire, and cast by the defendants upon the bodies and Tents of the assailants, easily take fire by the violence of their motion. Certainly a most miserable and pernicious kind of invention, whereby we often see a thousand of heedlesse men blown up with a mine by the force of Gunpowder; otherwhiles in the very heat of the conflict you may see the stoutest souldiers seised upon with some of these fiery Engines, to burn in their harness, no waters being sufficiently powerfull to restrain and quench the raging and wasting violence of such fire cruelly spreading over the body and bowells. So it was not sufficient to have armes, Iron and fire to mans destruction, unlesse also that the stroak might be more speedy, we had furnished them, as it were with wings, so to fly more hastily to our own perdition, furnishing sithe-bearing death with wings so more speedily to oppress man, for whose preservation, all things contained in the world were created by God. Verily when I consider with my self all the sorts of warlike Engines, which the ancient used, whether in the field in set battlls, as Bowes, Darts, Crossbowes, Slings; or in the assault of Cities, & shaking or overturning their walls, as Rams, Horses, wooden towres, slings and such like; they seem to me certain childish sports & games made only in imitation of the former. For these moderna inventions are such as easily exceed all the best appointed and cruell Engines which can be mentioned or thought upon, in the shape, cruelty and appearance of their operations. For what in the world is thought more horrid or fearfull than thunder and lightning? and yet the hurtfulness of thunder is almost nothing to the cruelty of these infernall Engines; which may easily appear by comparing together both their effects. Man alone of all creatures is not alwayes killed by being touched with thunder; but it immediatly killeth all other things which are subject to be toucht therewith. Nature bestowing this honour upon him, seeing so many creatures exceed him in strength: For all things ly contrary to man; and man, unless he be overthrown with it, doth not dye thereof. But these fire-spitting Engines do no more spare man, then they do other creatures, and kill without difference from whence soever they come, whither soever they are carryed, and howsoever they touch. There are many, but more are said to be the remedies against thunder; for beside the charms whereby the ancient Romans did suppose they might be driven away, they never penetrate deeper into the ground than five foot, therefore such as was fearfull thought the deeper caves most safe. Of those things which grow out of the earth, they do not touch the Bay tree, and that was the cause that it was counted a sign of Victory both in ancient and moderne times. Wherefore *Tiberius Caesar* otherwise a contemner of God and religion, as he who indued with the Mathematicall sciences thought all things governed by Fate, yet because he exceedingly feared thunder, he alwayes carried a Lawrell wreath about his neck when the aire was troubled, for that this kind of leaf is reported not to be touched by thunder. Some report that he made him tents of Seales skinnes, because it toucheth not this kinde of creature of all these things that live in the Sea, as neither the Eagle amongst birds, which for that is fained to be *Joves* squire. But on the contrary, charms, the victorious Bay, the Seale or Sea-calf, the Eagle or any such thing profits nothing against the violence of these fiery engines: no not a wall of ten foot thick will advantage. Lastly, this argues the immense violence of brasen Cannons above thunder, for that thunder may be dispersed and driven away with the noise and ringing of Bells, the founding of Trumpets, the tinkling of brasen kettles, yea also by the shooting of such great Ordnance; to wit, the clouds, by whose collision and fight the Thunder is caused, being dispersed by this violent agatation of the air, or else driven further to more remote parts of the skies. But their fury once provoked, is stayed by no opposition, appeased by no remedy. As there are certain seasons of the year, so also there are certain Regions of the earth, wherein Thunder is seldome or never heard. Thunders are rare in Winter and Summer, and that for contrary causes; for that in Winter the dense air is thickned with a thicker coat of clouds, and the frosty and cold exhalation of the earth extinguisheth what fiery vapours so ever it receives; which thing keeps *Scythia* and the cold countries about it free from Thunder. And on the contrary, too much heat preserves *Egypt*. For hot and dry exhalations of the earth are condensed into very thin, subtil and weak clouds. But as the invention, so also the harm and tempest of great Ordnance, like a contagious pestilence is spread and rages over all the earth, and the skies at all times sound again with their reports. The Thunder and Lightning commonly gives but one blow, or stroke, and that commonly strikes but one man of a multitude; But one great Cannon at one shot may spoil and kill a hundred men. Thunder, as a thing naturall, falls by chance, one while upon a high oak, another while upon the top of a mountain, and somewhiles on some lofty towre, but seldom upon man. But this hellish Engine tempered by the malice and guidance of man, assailes man only, and takes him for his only mark, and directs his bullets against him. The Thunder by its noise as a messenger sent before, foretells the storm at hand; but, which is the chief mischief, this infernall Engine

juice therein: then he strained it through a towell without much pressing; and added the Turpentine roars as it strikes, and strikes as it roars, sending at one and the same time the deadly bullet into the breast, and the horrible noise into the ear. Wherefore we all of us rightfully curse the author of so pernicious an Engine; on the contrary praise those to the skies, who endeavour by words and pious exhortations to dehort Kings from their use, or else labour by writing and operation to apply fit medicines to wounds made by these Engines. Which hath moved me, that I have written hereof almost with the first of the French. But before I shall do this, it seemeth not amisse, so to facilitate the way to the treatise I intend to write of wounds made by Gunshot, to premise two Discourses, by which I may confute and take away certain erroneous opinions which have possessed the mindes of divers; for that unless these be taken away, the essence and nature of the whole disease cannot be understood, nor a fitting remedy applied by him which is ignorant of the disease.

The first Discourse which is dedicated to the Reader, refells and condemnes by reasons and examples the method of curing prescribed by *Iohn de Vigo*, whereby he cauterizeth the wounds made by Gunshot, supposing them venenate; and on the contrary proves that order of curing which is performed by suppuratives, to be so salutary and gentle, as that prescribed by *Vigo* is full of error and cruelty. The second dedicated to the King, teaches that the same wounds are of themselves void of all poison, and therefore that all their malignity depends upon the fault of the air, and ill humors predominant in the bodies of the patients.

The arguments of the following discourses.



The first discourse wherein Wounds made by Gunshot, are freed from being burnt, or cauterized according to Vigos Method.

IN the year of our Lord 1536. *Francis* the French King, for his acts in war and peace stiled the Great, sent a puissant Army beyond the Alpes, under the government and leading of *Annas* of Mommorancy high Constable of France, both that he might relieve *Turin* with Victualls, souldiers, and all things needfull, as also to recover the Cities of that Province taken by the Marquis of *Guaft* Generall of the Emperours forces. I was in the Kings Army the Chirurgeon of Monsieur of *Montejan* Generall of the foot. The Imperialists had taken the straits of *Suze*, the Castle of *Villane*, and all the other passages; so that the Kings army was not able to drive them from their fortifications but by fight. In this conflict there were many wounded on both sides with all sorts of weapons, but chiefly with bullets. I will tell the truth, I was not very expert at that time in matters of Chirurgery; neither was I used to dress wounds made by Gunshot. Now I had read in *Iohn de Vigo* that wounds made by Gunshot were venenate or poisoned, and that by reason of the Gunpowder; Wherefore for their cure, it was expedient to burn or cauterize them with oil of Elders scalding hot, with a little Treacle mixed therewith. But for that I gave no great credit neither to the author, nor remedy, because I knew that causticks could not be powred into wounds, without excessive pain; I, before I would run a hazard, determined to see whether the Chirurgeons, who went with me in the army, used any other manner of dressing to these wounds. I observed and saw that all of them used that Method of dressing which *Vigo* prescribes; and that they filled as full as they could, the wounds made by Gunshot with Tents and pledgets dipped in this scalding Oil, at the first dressings; which encouraged me to do the like to those, who came to be dressed of me. It chanced on a time, that by reason of the multitude that were hurt, I wanted this Oil. Now because there were some few left to be dressed, I was forced, that I might seem to want nothing, and that I might not leave them undrest, to apply a digestive made of the yolk of an egge, oil of Roses, and Turpentine. I could not sleep all that night, for I was troubled in mind, and the dressing of the precedent day, (which I judged unfit) troubled my thoughts; and I feared that the next day I should find them dead, or at the point of death by the poison of the wound, whom I had not dressed with the scalding oil. Therefore I rose early in the morning, I visited my Patients, and beyond expectation, I found such as I had dressed with a digestive only, free from vehemency of pain to have had good rest, and that their wounds were not inflamed nor runnified; but on the contrary the others that were burnt with the scalding oil were feverish, tormented with much pain, and the parts about their wounds were swolne. When I had many times tryed this in divers others, I thought thus much, that neither I nor any other should ever cauterize any wounded with Gunshot. When we first came to *Turin*, there was there a Chirurgeon far more famous than all the rest in artificially and happily curing wounds made by Gunshot; wherefore I laboured with all diligence for two yeers time to gain his favour and love; that so at the length, I might learn of him, what kind of Medicine that was, which he honoured with the glorious title of Balsam, which was so highly esteemed by him, and so happy and succesfull to his patients; yet could I not obtain it. It fell out a small while after that the Marshall of *Montejan* the Kings Lieftenant, Generall there in *Piemont* dyed, wherefore I went unto my Chirurgeon, and told him that I could take no pleasure in living there, the favourer and *Mecenas* of my studies being taken away; and that I intended forthwith to return to *Paris*, and that it would neither hinder, nor discredit him to teach his remedy to me, who should be so far remote from him. When he heard this, he made no delay, but presently wished me to provide two Whelpes, 1 pound of earthwormes, 2 pounds of oil of Lillies, six ounces of Venice Turpentine, and one ounce of *aqua vite*. In my presence he boyled the Whelpes put alive into that oil, untill the flesh came from the bones, then presently he put in the Wormes, which he had first killed in white wine, that they might so be cleansed from the earthy drosse wherewith they are usually repleat, and then he boyled them in the same oil so long, till they became dry, and had spent all their juice

Lib. 1. de vul. nr. Cap. 8.

What chance may do in finding out of remedies.

The description of oil of Whelpes.

to it, and lastly the *aqua vite*. Calling God to witness, that he had no other Balsam, wherewith to cure wounds made with Gunshot, and bring them to suppuration. Thus he sent me away as rewarded with a most precious gift, requesting me to keep it as a great secret, and not to reveal it to any. When I came to *Paris*, I went to visit *Silvius* the Kings professor of Physick, well known by name to all scholars for his great learning; he kept me long that so I might dine with him, and diligently enquires of me, if I had observed any new Method of curing wounds made by Gunshot, and combustions occasioned by Gunpowder. Then I affirmed to him that Gunpowder did not participate any thing of poyson, for that none of these things whereof it is compounded are poysonous; which reason ought to free the whole composition from suspicion of poyson. And that experience confirmed this reason, for I had seen many souldiers, who would drink a great quantity of this powder with Wine, because they were perswaded, that this drink would free them from malign symptomes when they were wounded; yet I give no credit to this perswasion; and lastly, for that many without any harm, strew this powder upon rebellious ulcers. For the Bullets, I affirm, that they cannot conceive such heat, as to become caustick. For if you shoot them out of a Gun against a hard stone, yet you may presently take them up without any harm in your hands, though by striking upon the stone, they should become more hot. For the combustions caused by Gunpowder, I observed no speciall nor peculiar remedy, which might make their cure different from other combustions. To which purpose I related this insuing history.

Gunpowder
nor poyson-
ous.

Bullets shot
out of a
Gun do not
burn.

A History.

A medicine
hindering
blistering in
burns, or
scalds.

A History.

One of the Marshall of *Montejan* his Kitchin boyes, fell by chance into a Caldron of Oil being even almost boyling hot; I being called to dress him, went to the next Apothecaries to fetch refrigerating medicines commonly used in this case: there was present by chance a certain old countrey woman, who hearing that I desired medicins for a burn, perswaded me at the first dressing, that I should lay two raw Onions beaten with a little salt; for so I should hinder the breaking out of blisters or pustules, as she had found by certain and frequent experience. Wherefore I thought good to try the force of her Medicine upon this greasie scullion. I the next day found those places of his body whereto the Onions lay, to be free from blisters, but the other parts which they had not touched, to be all blistered.

It fell out a while after, that a *German* of *Montejan* his guard had his flasque full of Gunpowder set on fire, whereby his hands and face were grievously burnt: I being called, laid the Onions beaten as I formerly told you, to the middle of his face, and to the rest I laid medicins usually applyed to burns. At the second dressing I observed the part dressed with the Onions quite free from blisters & excoriation, the other being troubled with both; wherby I gave credit to the Medicin. Besides also, I lastly told him this, that I had observed, that that was the readiest to draw forth Bullets shot into the body, which sets the Patient in the same posture and site, as he was when he received his hurt. Which things when I had told him, together with many other handled at large in this work, the good old man requested me to publish in print my opinions concerning these things, that so the erroneous and hurtfull opinion of *Vigo* might be taken out of mens minds. To whose earnest intreaty when I had assented, I first of all caused to be drawn and carved many Instruments fit to draw forth Bullets and other strange bodies; then a short while after I first published this work in the year of our Lord 1545. which when I found to be well liked and approved by many, I thought good to set it forth the second time somewhat amended in the year 1552. And the third time augmented in many particulars in the year 1564. For I having followed many Wars, and detained as Chirurgion in besieged Cities, as *Mets* and *Hesdin*, had observed many things under five Kings, whom I served with diligence and content. I had learnt many things from most expert Chirurgions, but more from all learned Physitians, whose familiarity and favour for that purpose I alwayes laboured to acquire with all diligence and honest Arts; that so I might become more learned and skilfull by their familiarity, and discourse, if there was any thing especially in this matter and kind of wounds, which was hid from me, or whereof I was not well assured. Of which number I have known very few, who any thing seen in this kind of operation either by study, or experience in Wars, who have not thought that Wounds made by Gunshot ought to be dressed at the first with suppurative medicins, and not with scalding and Caustick oil. For this I affirm, which then also I testified to this good man, that I have found very many Wounds made in the fleshy parts by Gunshot, as easily cured as other Wounds, which be made by contusing things. But in the parts of the body where the bullet meets with bones and nervous particles, both because it tears and rends into small peeces those things which resist, not only where it touches, but further also, through the violence of the blow, therefore it causeth many and grievous symptomes, which are stubborn and difficult, and oft-times impossible to cure, especially in bodies replete with ill humors, in an ill constitution of the heaven and air, such as is hot, moist and foggy weather, which therefore is subject to putrefaction; & in like manner a freezing and cold season, which uses to mortifie the wounded parts not only of those that are hurt with Bullets, but in like sort with any other weapon; not only in bony and nervous particles, but also in musculous. Whereby you may understand, that the difficulty of curing proceeds not from the venenate quality of the Wounds; nor the combustion made by the Gunpowder, but the foulness of the Patients bodies, and the unseasonableness of the air.

Wounds
made by
Gunshot
must be
dressed with
suppura-
tives.
The causes
of difficult-
ty in this
cure.

A History.

For proof whereof, I will set down, that which I not long ago, observed in a Scottish Nobleman the Earl of *Gordon*, Lord of *Achindon*, whom I cured at the appointment of the Queen-Mother. He was shot through both his thighes with a Pistoll, the bone being not hurt nor touched; and yet the 32. day after the Wound he was perfectly healed, so that he had neither feaver nor any other symptom which came upon the Wound. Whereof there are worthy witnesses, the Archbishop of *Glasco*, the Scottish Embassadour, *Francis Brigart*, and *John Altine* Doctors of Physick, as also *Iames Guillemeau* the Kings Chirurgion, and *Giles Buzet* a Scottish Chirurgion, who all of them wondred that this Gentleman was so soon healed, no acrid medicin being applyed. This I have thought good to recite and set down, that the Readers may understand, that I for 30. years ago had found the way to cure Wounds made by Gunshot, with-

without scalding oil or any other, more acrid medicin; unless by accident the illness of the Patients bodies and of the air caused any malign symptomes, which might require such remedies besides the regular and ordinary way of curing, which shall be more amply treated of in the following discourse.



Another Discourse of these things, which King Charles the Ninth, returning from the expedition and taking of Roven, inquired of me concerning Wounds made by Gunshot.



Or that it pleased your Majesty one day, together with the Queen Mother, the Prince of the Rock upon Ion, and many other Noble men, and Gentlemen, to inquire of me, what was the cause that the far greater part of the Gentlemen and common Souldiers which were wounded with Guns, and other warlike Engines, all remedies used in vain, either dyed, or scarce and that with much difficulty recovered of their hurts, though in appearance they were not very great, and though the Chirurgeons diligently performed all things requisite in their Art: I have made bold to premise this Discourse to that Tractate which I determine to publish concerning wounds made by Gunshot; both to satisfie the desires of the Princes and of many Gentlemen, as also the expectation they have of me, as being the Kings chief Chirurgeon, (which place being given me by Henry the Second, Charles the Ninth, a Son most worthy of such a Father, had confirmed) neither make I any question, but that many who too much insist upon their own judgment, and not thoroughly consider the things themselves, will marvel, and think it far from reason; that I departing from the steps of my ancestors, and dissenting wholly from the formerly received opinions, am far from their Tenents, who lay the cause of the malignity of wounds made by Gunshot, upon the poyson brought into the body by the Gunpowder, or mixed with the bullets whilst they are tempered or cast. Yet for all this, if they will curiously and patiently weigh my reasons, they shall either think as I do, or at least shall judg this my endeavour and pains taken for the publike good, not to be condemned nor contemned. For I shall make it evident by most strong reasons drawn out of the writings of the Ancients both Philosophers and Physitians, and also by certain experiments of my own, and other Chirurgeons, that the malignity and contumacy which we frequently meet withall in curing wounds made by Gunshot, is not to be attributed either to the poyson carryed into the body by the Gunpowder or Bullet, nor to burning imprinted in the wounded part by the Gunpowder. Wherefore to come to our purpose, that opinion must first be confuted, which accuseth wounds made by Gunshot of poyson; and we must teach, that there is neither any venenate substance, nor quality in Gunpowder, neither if there should be any, could it impoyson the bodies of such as are wounded. Which that we may the more easily perform, we must examin the composition of such powder, and make a particular inquiry of each of the simples, whereof this composition consists, what essence they have, what strength and faculties, and lastly, what effects they may produce. For thus by knowing the simples, the whole nature of the composition consisting of them, will be apparently manifest.

The simples which enter the composition of Gunpowder are only three, Charcoals of Sallow or Willow, or of Hemp stalks, Brimstone, and Salt-peter, and sometimes a little *aqua vite*. You shall find each of these, if considered in particular, void of all poyson and venenate quality. For first in the Charcoal you shall observe nothing but dryness, & a certain subtlety of substance, by means whereof it fires so sodainly, even as Tinder. Sulphur or Brimstone is hot and dry, but not in the highest degree, it is of an oily & viscid substance, yet so that it doth not so speedily catch fire as the coal, though it retain it longer being once kindled, neither may it be so speedily extinguished. Salt-peter is such, that many use it for salt, whereby it is evidently apparent that the nature of such simples is absolutely free from all poyson, but chiefly the Brimstone, (which notwithstanding is more suspected than the rest.) For Dioscorides gives Brimstone to be drunk, or supped out of a rear Egg to such as are Asthmatick, troubled with the cough, spit up purulent matter, and are troubled with the yellow Jaundice. But Galen applies it outwardly to such as are bitten by venomous Beasts, to scabs, teaters, & leprosy. For the *aqua vite*, it is of so tenuous a substance that it presently vanisheth into air, and also very many drink it, and it is without any harm used in frictions of the exterior parts of the body. Whence you may gather, that this powder is free from all manner of poyson, seeing these things whereof it consists and is composed, want all suspicion thereof. Therefore the Germane horsemen, when they are wounded with shot, fear not to drink off cheerfully half an ounce of Gunpowder dissolved in Wine; hence perswading themselves freed from such malign symptomes as usually happen upon such wounds; wherein whether they do right or wrong I do not here determine; the same thing many French souldiers forced by no necessity, but only to shew themselves more courageous, also do without any harm; but divers with good success use to strew it upon ulcers, so to dry them. Now to come to these, who think that the venenate quality of wounds made by Gunshot, springs not from the powder, but from the bullet wherewith some poyson hath been commixt or joyned, or which hath been tempered or steeped in some poysonous liquor. This may sufficiently serve for a reply; that the fire is abundantly powerfull to dissipate all the strength of the poyson, if any should be poured upon or added to the Bullet. This much confirms my opinion which every one knows; The Bullets which the Kings Souldiers used to shoot against the Towns in the siege of Roven, were free from all poyson; and yet for all that they of the Town thought that they were all poysoned, when they found the Wounds made by them, to be incurable and deadly. Now

The occasion of writing this discourse.

The argument of this discourse.

Gunpowder is not poysonous.

Of what it is made.

Lib. 5. Cap. 73. Lib. 9. simpl. Cap. 36.

Bullets cannot be poysoned.

on the other side the Townsmen were falsely suspected guilty of the same crime by the Kings Army, when as they perceived all the Chirurgeons labour in curing Wounds made by the Bullets shot from *Roven*, to be frustrated by their contumacy and malign nature, each side judging of the magnitude and malignity of the cause from the unhappy success of the effect in curing. Even as amongst Physicians according to *Hippocrates*, all diseases are termed pestilent, which arising from whatsoever common cause, kill many people; so also Wounds made by Gunshot, may in some respect be called pestilent, for that they are more refractory, and difficult to cure than others, and not because they partake of any poisonous quality, but by default of some common cause, as the ill complexions of the Patients, the infections of the air, & the corruption of meats and drinks. For by these causes wounds acquire an evil nature, and become less yeelding to medicins. Now we have by these reasons convinced of error that opinion which held Wounds made by Gunshot for poisonous; let us now come to overthrow that which is held concerning their combustion.

First, it can scarce be understood how bullets which are commonly made of Lead, can attain to such heat, but that they must be melted, and yet they are so far from melting, that being shot out of a Musket they will pierce through an armour and the whole body besides, yet remain whole, or but a little diminished. Besides also, if you shoot them against a stone wall, you may presently take them up in your hand without any harm, and also without any manifest sense of heat; though their heat by the striking upon the stone should be rather increased if they had any. Furthermore, a Bullet shot into a barrell of Gunpowder, would presently set it all on fire, if the bullet should acquire such heat by the shooting, but it is not so. For if at any time the powder be fired by such an accident, we must not imagine that it is done by the bullet bringing fire with it, but by the striking and collision thereof against some Iron, or stone that opposes or meets therewith, whence sparks of fire proceeding as from a flint, the powder is fired in a moment. The like opinion we have of thatched houses, for they are not fired by the bullet which is shot, but rather by some other thing, as linnen rags, brown paper and the like, which rogues and wicked persons fasten to their bullets. There is another thing which more confirms me in this opinion, which is; take a bullet of Wax, and keep it from the fire, for otherwise it would melt, and shoot it against an inch board, and it will go through it; whereby you may understand that Bullets cannot become so hot by shooting, to burn like a cautery. But the Orifices (may some say) of such Wounds are always black. This indeed is true, but it is not from the effect of heat brought thither by the bullet, but the force of the contusion. Now the contusion is exceeding great, both because the bullet is round, and enters the body with incredible violence. Of which those that are wounded will give you sufficient testimony, for there is none of them, which thinks not presently upon the blow, that as it were some post, or thing of the like weight, falls upon the affected member, whence great pain and stupidity possess the part, whereby the native heat and spirits are so much dissipated, that a Gangrene may follow. But for the Eschar which they affirm is made by the blow, and falls away afterwards, they are much mistaken. For certain particles of the membranes and flesh contused and torn by the violence of the bullet beguile them; which presently putrefying are severed from the sound parts by the power of nature and the separating heat, which thing usually happens in all great Contusions. But for all that these so many and weighty reasons may free the Powder from all suspicion of Poison, and the bullet from all thought of burning; yet there are many who insisting upon Philosophicall arguments raise new stirs. For (say they) the discharging a peice of Ordnance is absolutely like Thunder and Lightning, which the rent and torn clouds cast from the middle region upon the earth; wherefore the Iron bullet which is shot out of the Cannon must needs have a venenate and burning faculty. I am not ignorant that Lightning generated of a gross and viscous exhalation, breaking the cloud wherewith it is incompassed, never falls upon the earth, but brings fire with it, one while more subtile, another while more gross, according to the various condition of the matter whence the exhalation hath arisen. For *Seneca* writes that there are three severall kinds of Lightning differing in burning, condition and plenty. One of them penetrates or rather perforates by the tenuity of the matter of the object which it touches. The other with a violent impetuosity breaks in sunder and dissipates the objects, by reason it hath a more dense, compact & forcible matter, like as Whirlwinds have. The third, for that it consists of a more terrestriall matter, burns what it touches, leaving behind it the impression of the burning. Also I know that Lightning is of a pestilent & stinking nature, occasioned by the grossness and viscidty of the matter whereof it is; which matter taking fire sends forth so lothsome & odious a smell, that the very wild beasts cannot indure it, but leave their Dens, if they chance to be touched with such a lightning. Besides also we have read in the Northern history of *Olaus Magnus*, that in some places after a Lightning, you shall find a whole Plain spread over with Brimstone, which Brimstone notwithstanding is extinguished, unprofitable, and of no efficacy. But grant these things be thus, yet must we not therefore conclude, that the Bullets of the great Ordnance carry poison and fire with them into the wounds. For though there be many things like in Lightning and discharging great Ordnance, yet they have no similitude either in matter or substance, but only in effects, whereby they shake, break in sunder and disperse the bodies which withstand them; For lightning and thunder do it by means of fire, & oft-times of a stone generated in them, which is therefore termed, a thunderbolt; but Ordnance by the Bullet carried by the force of the air, more violently driving and forcing it forwards. Neither if any should by more powerful arguments force me to yeeld that the matter of the lightning and shooting of Ordnance are alike, yet will I not therefore be forced to confesse that Wounds made by Gunshot are combust. For according to *Pliny*, there are some lightnings which consisting of a most dry matter, do shatter in sunder all that withstands them, but do not burn at all; others which are of somewhat a more humid nature, burn no more than the former, but only black such things as they touch; Lastly, other some of a more subtile and tenuous matter, whose nature (as *Seneca* saith) we must not doubt to be divine, if but for this reason, that they will melt gold & silver, not harming the purse; a sword, not hurt-

As Galen notes ad sent. 20. Cap. 21. sect. 3. lib. 3. Epid.

Wounds made by Gunshot are not burnt.

The reason why wounds made by Gunshot look black.

The reasons of our adversaries refuted. Quæst. nat. lib. 2. cap. 49.

The stinking smell of Lightning.

Lib. 2. cap. 51.

The wonderful nature of some lightning.

ing the purse; a sword, not hurting the scabbard; the head of a Lance, not burning the wood, and shed wine not breaking the vessel. According to which decree I can grant, that these Lightnings which break in sunder, melt and dissipate, and performe other effects so full of admiration, are like in substance to the shot of great Ordnance; but not these which carry with them fire and flame.

In prooffe whereof there comes into my mind the history of a certain Souldier, out of whose thigh I remember I drew forth a Bullet wrapped in the taffety of his breeches, which had not any sign of tearing or burning. Besides, I have seen many who not wounded, nor so much as touched, yet notwithstanding have with the very report and wind of a Cannon bullet, sliding close by their ears, fallen down for dead, so that their members becoming livid and black, they have dyed by a Gangrene ensuing thereupon. These and such effects are like the effects of Lightnings which we lately mentioned, and yet they bear no sign nor mark of poison. From whence I dare now boldly conclude, that Wounds made by Gunshot are neither poisoned, nor burnt. But seeing the danger of such Wounds in these last civill wars hath been so great, universall and deadly to so many worthy personages and valiant men, what then may have been the cause thereof, if it were neither combustion, nor the venenate quality of the Wound? This must we therefore now insist upon and somewhat hardily explain. Those who have spent all their time in the learning and searching out the mysteries of Naturall Philosophy, would have all men think and beleve, that the foure Elements have such mutuall sympathy, that they may be changed each into other; so that they not only undergoe the alterations of the first qualities which are heat, coldness, dryness and moisture, but also the mutation of their proper substances by rarefaction and condensation. For thus the fire is frequently changed into air, the air into water, the water into air, and the water into earth; and on the contrary, the earth into water, the water into air, the air into fire; because these 4. first bodies have in their common matter enjoyed the contrary and fighting, yet first and principall qualities of all.

Whereof we have an example in the * Ball-bellows brought out of Germany, which are made of brass, hollow and round; and have a very small hole in them, whereby the water is put in, and so put to the fire; the water by the action thereof is rarified into air, and so they send forth wind with a great noise, and blow strongly as soon as they grow throughly hot. You may try the same with Chestnuts, which cast whole and undivided into the fire, presently fly asunder with a great crack; because the watry and innate humidity turned into wind by the force of the fire, forcibly breaks his passage forth. For the air or wind raised from the water by rarefaction, requires a larger place, neither can it now be contained in the narrow filmes, or skins of the Chestnut, wherein it was formerly kept. Just after the same manner Gunpowder being fiered, turns into a far greater proportion of air, according to the truth of that Philosophicall proposition, which saith, Of one part of earth, there are made ten of water; of one of water, ten of air; and of one of air are made ten of fire. Now this fire, not possible to be pent in the narrow space of the peice, wherein the powder was formerly contained, endeavours to force its passage with violence, and so casts forth the Bullet lying in the way, yet so that it presently vanishes into air, and doth not accompany the Bullet to the mark, or object, which it batters, spoiles and breaks asunder. Yet the Bullet may drive the obvious air with such violence, that men are often sooner touched therewith than with the bullet, and dye by having their bones shattered and broken without any hurt on the flesh which covers them; which as we formerly noted, it hath common with Lightning. We find the like in Mines, when the powder is once fiered, it removes & shakes even mountains of earth.

In the year of our Lord 1562. a quantity of this powder which was not very great taking fire by accident in the Arcenall of Paris, caused such a tempest, that the whole City shooke therewith; but it quite overturned divers of the neighbouring houses, and shook off the tyles and broke the windowes of those which were further off; & to conclude, like a storme of Lightning it laid many here and there for dead, some lost their sight, others their hearing, and other some had their limbs torn asunder as if they had been rent with wild horses; and all this was done by the only agitation of the air into which the fiered Gunpowder was turned; just after the same manner as windes pent up in hollow places of the earth which want vents. For in seeking passage forth, they vehemently shake the sides of the Earth, and raging with a great noise about the cavities, they make all the surface thereof to tremble; so that by the various agitation one while up, another down, it overturnes or carries it to another place. For thus we have read that *Megara* and *Agina* anciently most famous Cities of Greece were swallowed up and quite overturned by an earthquake; I omit the great blusterings of the windes striving in the cavities of the earth, which represent to such as heare them at some distance, the fierce assailing of Cities, the bellowing of Bullets, the horrid roarings of Lions, neither are they much unlike to the roaring reports of Cannons. These things being thus premised let us come to the thing we have in hand. Amongst things necessary for life, there is none causes greater changes in us than the air; which is continually drawn into the Bowells appointed by nature, and whether we sleep, wake, or what else soever we do, we continually draw in, and breath it out. Through which occasion *Hippocrates* calls it Divine, for that breathing through this mundane Orbe, it embraces, nourishes, defends and keeps in quiet peace all things contained therein, friendly conspiring with the stars from whom a divine vertue is infused therein. For the air diversly changed and affected by the stars, doth in like manner produce various changes in these lower mundane bodies. And hence it is that Philosophers and Physitians do so seriously with us to behold and consider the culture and habit of places, and constitution of the air, when they treat of preserving of health, or curing diseases. For in these the great power and dominion of the air is very apparent, as you may gather by the foure seasons of the year; for in summer the air being hot and dry, heats and dries our bodies; but in winter it produceth in us the effects of winters qualities, that is, of cold and moisture; yet by such order and providence of nature, that although according to the varieties of seasons our bodies may be variously altered, yet shall they receive no detri-

A History.

Why the wounds made by Gunshot some few years agoe were so deadly.

The cause of the transmutation of the Elements.

* These bellows here mentioned by the Author, are

Balls made of Brass in form of a pear, with a very small hole in their lesser ends: when you would fill them with water you must heat them very hot, and so the air which is contained in them will be exceedingly rarified, which by putting them presently into water will be condensed as much, and so will draw in the water to supply the place, *ne detur vacuum*. Then put them into the fire, & it again rarifying the water into air will make them yeeld a strong continued, and forcible blast. The cause of the report and blow of a Cannon. A History. The cause of an Earthquake.

triment thereby, if so be that the seasons retain their seasonableness; from whence if they happen to digress, they raise and stir up great perturbations both in our bodies and minds; whose malice we can scarce shun, because they encompass us on every hand, and by the law of nature enter together with the air into the secret cabinets of our bodies both by occult and manifest passages. For who is he, that doth not by experience find both for the commodity and discommodity of his health, the various effects of winds, (wherewith the air is commixt) according as they blow from this or that Region, or quarter of the world. Wherefore seeing that the South wind is hot and moist; the North wind cold and dry; the East wind clear and fresh; the West wind cloudy; it is no doubt but that the air which we draw in by inspiration carries together therewith into the bowells the qualities of that wind which is then prevalent. When we read in *Hippocrates*, that changes of times, whether they happen by different winds, or vicissitude of seasons, chiefly bring diseases; For northerly winds do condense, and strengthen our bodies, and make them active, well coloured and daring, by resuscitating and vigorating the native heat. But southern winds resolve and moisten our bodies, make us heavy headed, dull the hearing, cause giddiness, and make the eyes and body less agile; as the Inhabitants of *Narbon* find to their great harme, who are otherwise ranked among the most active people of France. But if we would make a comparison of the seasons and constitutions of a year, by *Hippocrates* decree, Droughts are more wholesome and less deadly than Rains; I judg for that too much humidity is the mother of putrefaction, as you learn by these countries which are blown upon by a wind from Sea. For in these flesh which is kept for food, putrefies in the space of an houre; and such ulcers as in other places are easily and quickly healed, do there by the conflux and collection of matter become inveterate & contumacious. Therefore as when the seasons of the year successively fall out agreeable to their nature, & when each season is seasonable, then either we are not sick at all, or assuredly with less danger. So on the contrary the perfect constitution and health of our bodies becomes worse and decays, when the seasons of the year are depraved and perverted in time and temper. Now seeing that these many years the four seasons of the year have wanted their seasonableness, the summer wanting his usuall heat, and the winter its cold, and all things by moisture and the dominion of the southern winds have been humid and languid, I think there is none so ignorant in naturall Philosophy and astrology, who will not think that the causes of the malignitie and contumacy of those diseases which have so long afflicted all France, are not to be attributed to the air and Heavens. For otherwise, whence have so many pestilent and contagious diseases tyrannized over so many people of every age, sex and condition? whence have so many catarrhes, coughs and heavinesses of the head, so many plurisies, tumors, small poxes, meazells, and itches not admitting of digestion and remedies prescribed by Art? Whence have we had so many venomous creatures, as Toads, Grasshoppers, Caterpillars, Spiders, Wasps, Hornets, Beetles, Snails, Vipers, Snakes, Lizards, Scorpions and Efts or Nutes, unless from excessive putrefaction which the humidity of the air, our native heat being liquid and dull, hath caused in us, and the whole kingdome of France? Hence also proceeds the infirmity of our native heat, and the corruption of the blood and humors whereof we consist, which the rainy Southwind hath caused with its sultry heat. Wherefore in these last years I have drawn little blood, which hath not presently shewed the corruption of its substance by the black or greenish colour, as I have diligently observed in all such as I have bled by the direction of Physicians, either for prevention of future, or cure of present diseases. Whence it comes to passe that the fleshy substance of our bodies could not but be faulty both in temper and consistence; seeing that the blood whence it is generated had drawn the seeds of corruption from the defiled air. Whence it fell out, that the Wounds which happend with losse of substance could be scarce healed or united, because of the depraved nature of the blood. For so the Wounds and ulcers of these which are troubled with the Dropsie, whose blood is more cold or wholly waterish; so of Leprous persons, whose blood is corrupt, and lastly of all such as have their bodies replete with ill juice, or else are Cachectick, will not easily admit of cure. Yea assuredly if but the very part which is hurt swerve from its native temper, the Wound will not easily be cured. Therefore seeing all these things, both the putrefaction of the Air, and depraved humors of the body, and also the distemper of the affected parts conspired together to the destruction of the wounded, what marvail was it, if in these late civill warres, the Wounds which were for their quantitie small, for the condition of the wounded parts but little, have caused so many and grievous accidents and lastly death it self? Especially, seeing that the Air which encompasseth us, tainted with putrefaction corrupts and defiles the Wounds by inspiration and expiration, the body and humors being already disposed, or inclined to putrefaction. Now there came such a stink, which is a most assured sign of putrefaction, from these Wounds, when they were dressed, that such as stood by could scarce endure it, neither could this stink be attributed to the want of dressing, or fault of the Chirurgion; for the Wounds of the Princes and Nobility stunk as ill as these of the common Souldiers. And the corruption was such, that if any chanced to be undrest for one day, which sometimes happened amongst such a multitude of wounded persons, the next day the Wound would be full of wormes. Besides also, which furthermore argues a great putrefaction of humors, many had abscesses in parts opposite to their Wounds, as in the left knee, when as the right shoulder was wounded; in the left arm, when as the right leg was hurt. Which I remember befell the King of *Navarre*, the Duke of *Nevers*, the Lord *Rendan* and divers others. For all men had nature so overcharged with abundance of vicious humors, that if it expelled not part thereof by impostumes to the habit of the body, it certainly otherwise disposed of it amongst the inner parts of the body; for in dissecting dead bodies, we observed that the Spleen, Liver, Lungs, and other Bowells were purulent, and hence it was that the patients by reason of vapours sent from them to the heart were troubled with continuall feavers. But the Liver and all the veinous parts being polluted, & so the generation of the laudable blood hindered, they languished for want of fitting nourishment. But when the Brain by vapours was drawn in to sympathize with the

rest,

How the
air becomes
hurtfull.Aphor. 17.
sect. 3.Flesh
quickly putre-
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not easily
cured,An argu-
ment of
great putre-
faction of
the humors.

rest, they were molested with Ravings and Convulsions. Wherefore if any thing succeeded unprosperously in so great malignancy of wounds, the Chirurgeon was not to be blamed, for that it were a crime to fight against God and the Air, wherein the hidden scourges of the divine justice lye hid. Therefore if according to the mind of the great Hippocrates, who commands to bring all contused Wounds to suppuration, that so they may be healed, we indeavoured to cure with such medicins Wounds made with Gunshot, and therefore contused; who can rightly be angry with us, if we performed it not so well, by reason of these putrefactions, gangrenes, and mortifications which proceeded from the corrupt Air, for all that we used not only suppuratives, but were oft-times forced to use other medicins; so long turning aside from the cure of the disease, untill we had overcome the symptoms which much endanger the Patient, and customarily happen upon such Wounds, as also upon those which are made with a sword or any other kind of weapon; as shall plainly appear in the following treatise, to which it now seems high time that we betake our selves.

All contused wounds must be brought to suppuration

CHAP. I. *A division of wounds drawn from the variety of the wounded parts, and the Bullets which wound.*

ALl Wounds which are made in mans body by Gunshot, whether simple or compound, are accompanied with contusion, dilaceration, distemper and swelling. I say, all these possess either the noble parts, or ignoble, the fleshy, nervous or bony, some whiles with rending and tearing asunder the larger vessells; sometimes without harming them. Now these Wounds are only superficial, or else pierce deep and pass quite through the body. But there is also another division of these Wounds taken from the variety of the Bullets wherewith they are made. For some Bullets are bigger, some less, some between both, they are usually made of lead, yet sometimes of steel, iron, brass, tin, scarce any of Silver, much less of Gold. There arises no difference from their figure; for almost all kinds of Wounds of this nature are round. From these differences, the Chirurgeon must take his Indications what to do, and what medicins to apply. The first care must be, that he think not these horrid and malign symptoms, which usually happen upon these kinds of Wounds, to arise from combustion, or poison carried with the Bullet into the wounded part, and that for these reasons we have formerly handled at large. But rather let him judge they proceed from the vehemency of the contusion, dilaceration and fracture, caused by the Bullets too violent entry into the nervous and bony bodies. For if at any time the Bullet shall only light upon the fleshy parts, the Wounds will be as easily cured, as any other Wound usually is, which is made with a contusing and round kind of weapon, as I have often found by frequent experience, whilst I have followed the wars, and performed the part of a Chirurgeon to many Noblemen and common Souldiers, according to the counsell of such Physitians as were there overseers of the cure.

A division of wounds from the variety of the wounded parts. From the difference of Bullets, Wounds made by Gunshot are usually round.

CHAP. II. *Of the signs of Wounds made by Gunshot.*

Wounds made by Gunshot are known by their figure, which is usually round; by their colour, as when the native colour of the part decays, and in stead thereof a livid, greenish, violet or other colour succeeds; by the feeling or sense of the stroke, when in the very instant of the receiving thereof, he feels a heavy sense as if some great stone, or piece of timber, or some such other weighty thing had fallen upon it; by the small quantity of blood which issues out thereat, for when the parts are contused, within some small while after the stroke they swell up, so that they will scarce admit a Tent, whence it is that the blood is stopped, which otherwise would flow forth of the orifice of the Wound; by heat, which happens either by the violentness of the motion, or the vehement impulsion of the air, or the attrition of the contused parts, as the flesh and nerves. Also you may conjecture that the Wounds have been made by Gunshot, if the bones shall be broken, and the splinters thereof by pricking the neighbouring bodies cause defluxion and inflammation. But the cause that the Bullet makes so great a contusion is, for that it enters the body not with any points or corners, but with its round and sphericall body, which cannot penetrate but with mighty force; whence it cometh to pass that the wound looks black, & the adjacent parts livid: hence also proceed so many grievous symptoms, as pain, Defluxion, inflammation, Apostumation, Convulsion, Phrensie, Palsie, Gangrene and mortification, whence lastly death ensues. Now the Wounds do often cast forth virulent and very much stinking filth, by reason of the great contusion, and the rending and tearing of the neighbouring particles. A great abundance of humors flow from the whole body, and fall down upon the affected parts, which the native heat thereof being diminished, forsakes, and presently an unnatural heat seizes upon it. Hither also tend an univerfall or particular repletion of ill humors, chiefly if the Wounds possess the nervous parts as the joints. Verily neither a Stag with his horn, nor a flint out of a sling can give so great a blow, or make so large a Wound, as a Leaden or Iron Bullet shot out of a Gun, as that which going with mighty violence, pierces the body like a Thunderbolt.

Signs of wounds from their figure. From their colour. From the feeling the blow. From the bleeding. From the heat of the wound. Whence these wounds are so much contused.

CHAP. III. *How these Wounds must be ordered at the first dressing.*

The Wound must forthwith be enlarged, unless the condition of the part resist, that so there may be free passage forth both for the Sanies, or matter, as also for such things as are forced, or otherwise contained therein; such as are pieces of their cloaths, bombast, linnen, paper, pieces of Mail or Armour, Bullets, Hail-shot, splinters of bones, bruised flesh and the like, all which must be plucked forth with as much celerity and gentleness as may be. For presently after the receiving of the Wound the pain and inflammation are not so great, as they will be within a short time after. This is the principall thing in performance of this work, that you place the Patient just in such a posture as he was in at the receiving of the Wound; for otherwise the various motion and turn-

Strange bodies must first be pulled forth.

The manner how to draw them forth.

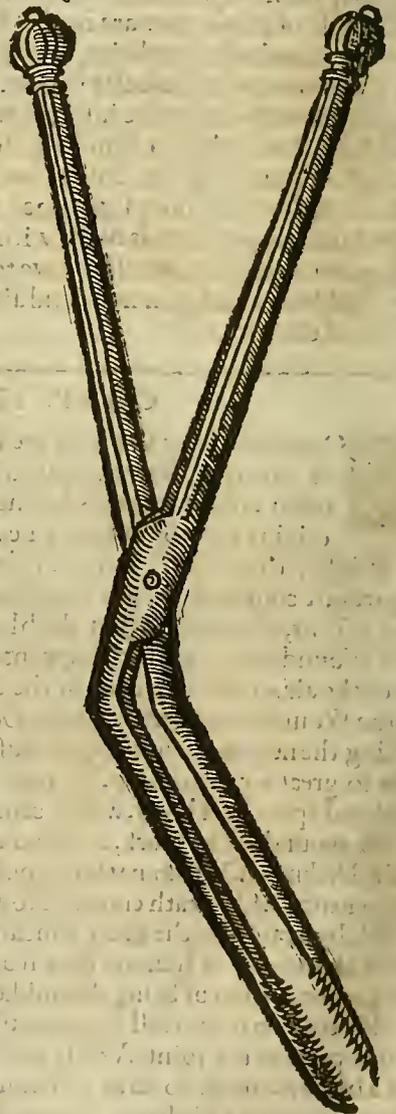
ing of the Muscles will either hinder or straiten the passage forth of the contained bodies. You shall if it be possible, search for these bodies with your finger, that so you may the more certainly and exactly perceive them. Yet if the bullet be entred somewhat deep in, then you shall search for it with a round and blunt probe, lest you put the Patient to pain; yet oftentimes you shall scarce by this means find the Bullet. As it happened to the Marshall of *Brissac* in the siege of *Parpignan*, who was wounded in his right shoulder with a Bullet, which the Chirurgeons thought to have entered into the capacity of his body. But I, wishing the Patient to stand just in the same manner as he did when he received the Wound, found at length the place where the Bullet lay, by gently pressing with my fingers, the parts near the Wound, and the rest which I suspected; as also by the swelling, hardness, pain and blackness of the part, which was in the lower part of the shoulder near unto the eight or ninth spondill of the back. Wherefore the Bullet being taken forth by making incision in the place, the Wound was quickly healed, and the Gentleman recovered. You shall observe this, and rather beleve the judgment of your fingers, than of your Probe.

CHAP. IIII. A description of fit Instruments to draw forth Bullets and other strange bodies.

Both the magnitude and figure of Instruments fit for drawing forth of Bullets and other strange bodies, are various according to the diversity of the incident occasions. For some are toothed, others smooth, others of another figure and bigness; of all which sorts the Chirurgeon must have divers in a readines, that he may fit them to the bodies and Wound, and not the Wounds and bodies to his Instruments.

The Delineation of such like Instruments.

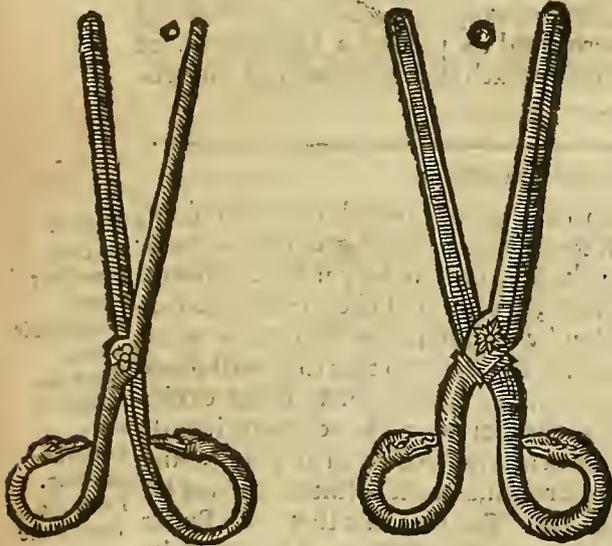
The crooked Cranes-bill, with teeth like a Saw.



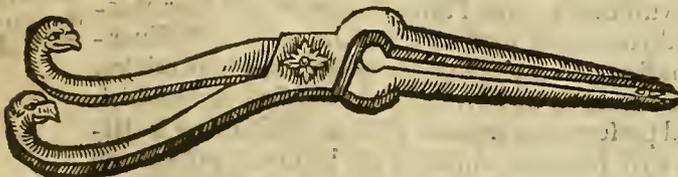
The straight Cranes-bill being also toothed, fit for drawing forth hail-shot, pieces of armour, splinters of bones, and such things as lye deep within.

The Ducks-bill.

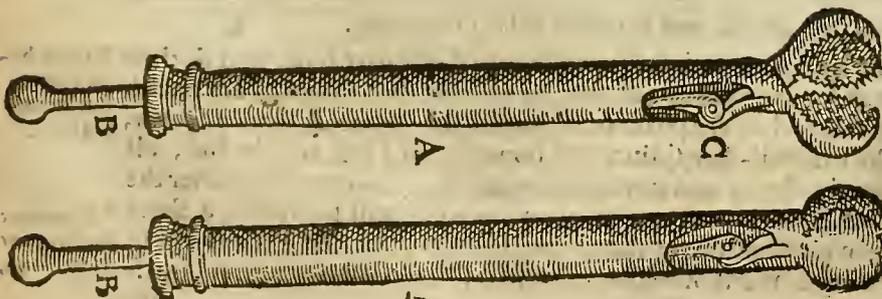
This Ducks-bill hath a large round and toothed cavity in the end, for so it more easily taketh hold of the Bullet when it lies amongst much Flesh.



A toothed Crowes-Bill.



Another Instrument fit for drawing forth of Bullets, which may be termed a Catch-Bullet.



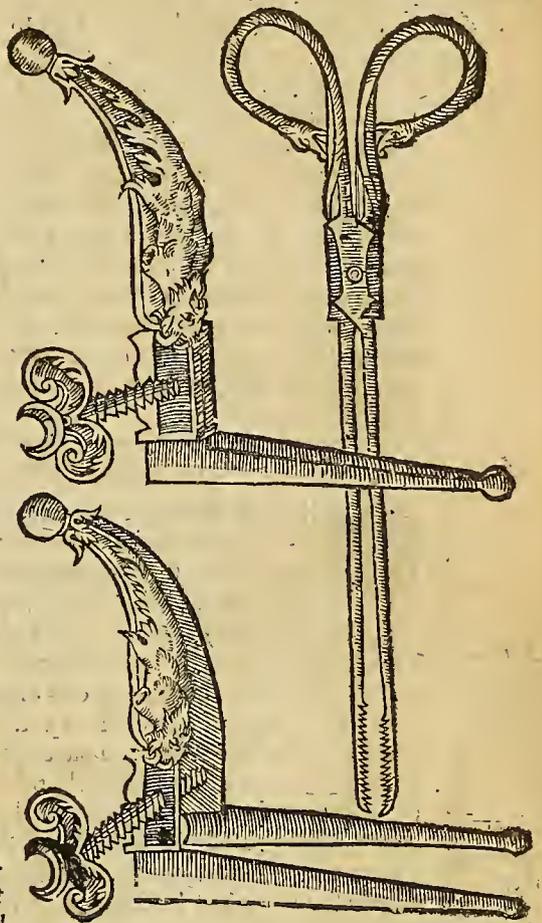
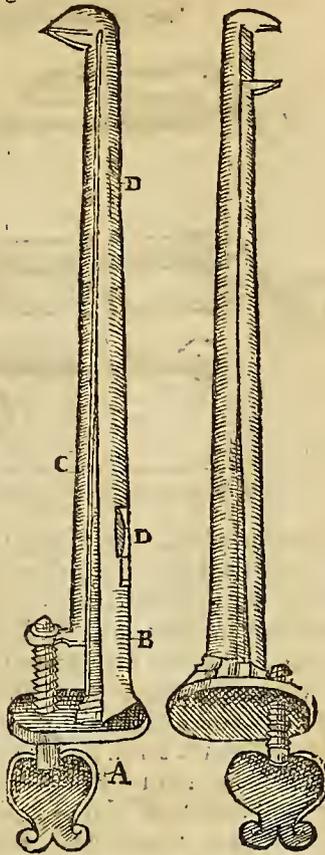
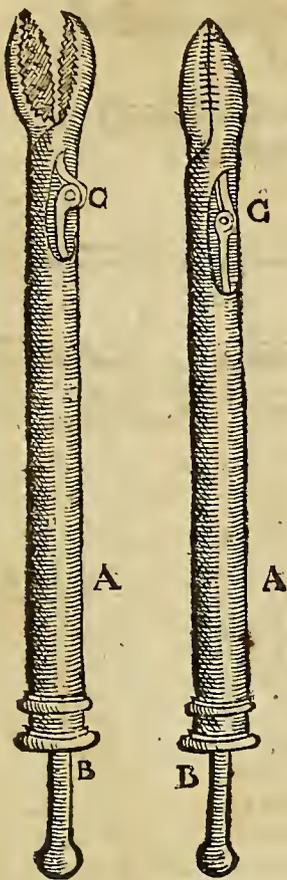
A. Shews the Trunk.
B. Shews the rod, or string which opens and shuts the joint.
C. The joint.

Another

Another Catch-Bullet called a Lizards-nose, made for drawing out of bullets which are somewhat flatted, by striking upon a bone.

The Parrots-beak is made for drawing forth pieces of mail thrust into the flesh, or bones; and this is the figure thereof.

The Swans bill opens with a screw; you may with this dilate the Wounds, and so put in a straight Cranes-bill, as pincers to pluck forth strange bodies. The figure of both are here exprest.

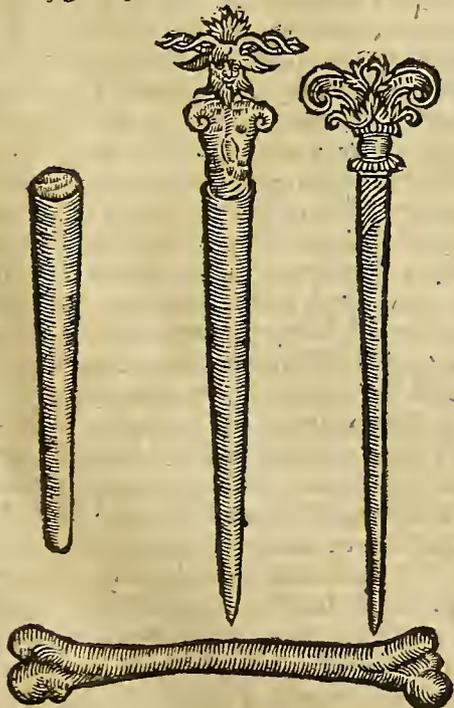


A. Shews the screw pin. B. The hollowed part which receives the round part noted with. C. Which is opened and shut by the screw. D. D. Falls, or stays, which govern the running branch.

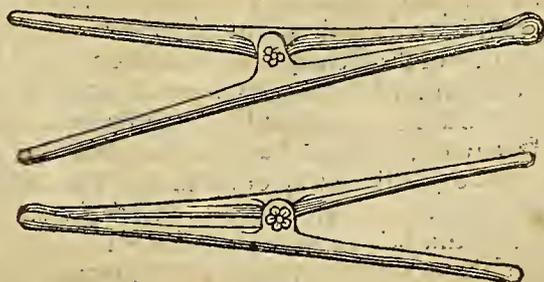
be not too deep in the Wound, they may be taken forth with your Levatory, or else by the help of these Gimblets. These Gimblets are screwed into their pipes, or canes, and enter with their screwed points into the Bullets, if that they be of Lead or Tin, and of no harder metall; and so being fastened in them, bring them out with them.

The figure of the Gimblet with his pipe or cane.

Besides the Swans-bill which we lately mentioned, there are also other instruments fit to dilate and open the Wounds, therefore called Dilaters, by whose help the Wound may be held open, that so the hidden bodies may be seen; for when you press together the two ends of this Instrument, the other two open and dilate themselves. You may also use them in dilating divers other parts of the body, as the Nostrils, Fundament, and such like.



Dilaters.



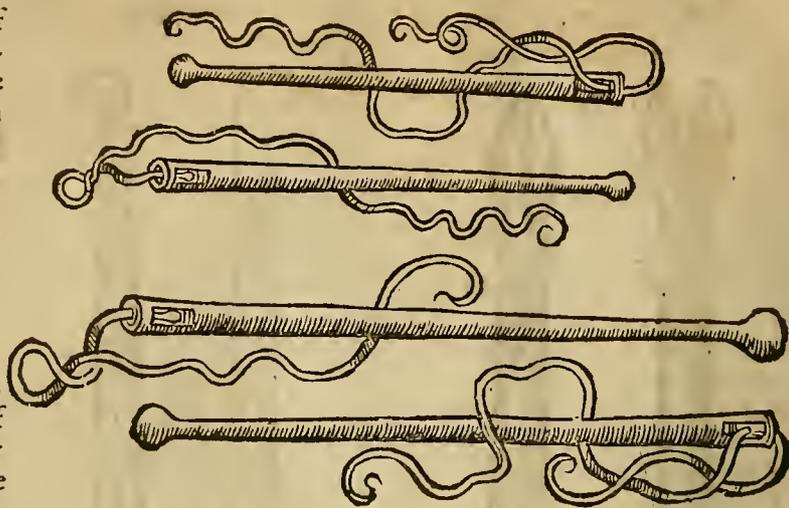
The Instruments which follow are called Seton needles, or Probes; whose use is, to draw through a flannula, so to keep the Wound open, that you may the better take forth any strange body. Besides also we use the same needles to search, or as it were to sound the deepness of the Wounds, and to find out the Bullets. For they cannot

put one to much pain because they have smooth and round ends. So also all Probes wherewith we

What probes fit to search the fe wounds,

search for Bullets, must have somewhat large, smooth and round ends. For seeing that the verges of the Wound meet together presently after the hurt, if the Probes be too smal or slender, they will stick in the inequality of the flesh, neither will they be able to come to the Bullet. But if they be sharp & pointed, they will cause and renew the pain by pricking the flesh they meet withall, & so hinder your intention of finding the Bullet; Now you must be furnished with these instruments of a different length, according to the various thicknesse of the parts; for you cannot put any through the thigh but such as are of good length.

Probes for to put flammulaes through a Wound withall.



CHAP. IX. *What dressing must first be used, after the strange bodies are pluckt or drawn out of the Wound.*



When the strange bodies are drawn or pluckt out of the Wound, by these means we have formerly recited, the chief of the cure must be to heal the contusion, and amend the distemper of the air if it be hot and moist, that is, subject to putrefaction. This shall be done by medicins taken inwardly, applied outwardly, and put into the Wound. Things to be inwardly used in diet and Pharmacy I leave to the judgment of learned Physitians; for the particular and topick medicins, (unless from the present constitution of the air, the condition of the wounded part, or from some other cause there be danger of a Gangrene) you must use suppuratives, as you usually do in contusions; such as are oil of Whelpes and that which we call a digestive; you must chiefly forbear suppuratives, when as the wounded part is of a nervous nature. For all nervous parts require dryer medicins than fleshy, as we have formerly delivered speaking of Wounds of the joints; wherefore in Wounds of the joints and nervous parts you shall use more venice Turpentine than oil. *Laurentius Iobertus* the Kings Physitian & Chancellour of the University of Mompelier, in a treatise which he writ of Wounds made with Gunshot, forbids the use of Escharoticks both actual and potentiall, in these Wounds, if simple; for that they induce pain, inflammation, a fever, Gangrene and other deadly symptomes. Besides also an eschar will hinder suppuration, which is to be desired in this kind of Wounds, that so the contused flesh may be severed from the sound, lest it be drawn to putrefaction by contagion. Which easily happens when an Eschar is drawn, as a bar over it, for then the excrementitious humor remains longer in the part, and the putredinous vapours hindered from passing forth, are encreased, and carryed from the lesser vessels to the bigger, and so over all the body. Wherefore, when you suspect putrefaction, letting alone suppuratives, use in the first place such things as resist putrefaction, as this following ointment. *Rx pulver. alumin. rocha, viridis aris, vitrioli romani, mellis rosat. an. ʒij. aceti boni quantum sufficit, bulliant omnia simul secundum artem, & fiat medicamentum ad formam mellis.* This by reason of the heat and subtlety of the substance, hath a faculty to induce and attenuate the humors, as also to call forth the native heat drawn in & dissipated by the violent and forcible entrance of the Bullet into the body; furthermore also it corrects the venomous contagion of the virulent humor. Now this medicine shall be used, dissolved in Venegar or *aqua vitæ*, and be put into the Wound with tents, or pledgets. The tents which shall be used at the first dressing must be somewhat long and thick, that by dilating the Wound, they may make way for application of other remedies; otherwise you may make injection with a syringe, that so it may penetrate the more powerfully. But this described *Ægyptiacum* shall be tempered according to the condition of the affected parts, for the nervous parts will be offended with it as being too acrid; but it may be qualified by admixture of oil of Turpentine & Saint Iohn-wort. Also we may well be without this *Ægyptiacum* when there is no such pestilent constitution of the air, as was seen in the late Civill wars. After the use of *Ægyptiacum* you shall with emollient & lenitive medicins procure the falling away of the Eschar, & such a medicine is this following oil, being somewhat more than warm. *Rx Olei violati lib. iiii. in quibus coquantur catelli duo nuper nati, usque ad dissolutionem ossium, addendo vermium terrestrium, ut decet preparatorum, lb. j. coquantur simul lento igne, deinde fiat expressio ad usum, addendo terebinth. venet. ʒiij. aquæ vitæ ʒj.* This oil hath a wonderfull force to assuage pain, to bring the Wound to suppuration, & cause the falling away of the Eschar. This ensuing oil is made more easily. *Rx olei seminis lini, & lilior. an. ʒiij. unguent. basilic. ʒj. liquefiant simul & fiat medicamentum;* put of this a sufficient quantity into the Wound; for this being applyed indifferent hot, hath power to assuage Pain, to soften and humect the orifice of the wound, and help forwards suppuration, which is the true manner of curing these kind of Wounds; according to the rule of *Hippocrates*, which wishes every contused wound to be presently brought to suppuration, for so it will be lesse subject to a Phlegmon; and besides, all the rent & bruised flesh must putrefie, dissolve and turn to quitture, that new and good flesh may be generated in stead thereof. *Laurentius Iaubertus* much commends this following medicine, of whose efficacy, as yet, I have made no triall. *Rx pulver. mercur. bis calcinati, ʒj. adipis porci recentis, vel butyri recentis, ʒviij. Camphoræ in aqua vitæ dissolutæ, ʒij. misce omnia simul, addendo tantillum olei liliorum, aut lini.* Experience taught him, and reason also shewes, that this kind of remedy is very commendable; for the powder of Mercury, if mixed with

A Caution in the use of suppuratives,

Why Escharoticks must be eschewed in these kinds, if they be simple.

How an Eschar may cause putrefaction.

The description of an *Ægyptiacum*.

How and when to temper this *Ægyptiacum*.

The oil of VWhelpes a digestive, anodyne, and fit medicine to procure the falling away of an Eschar. *Lib. de ulcer.*

The faculties of the powder of Mercury.

a grosse and humecting matter, doth in a short space turn the bruised flesh into *pus*, without causing any great pain. For the Camphire, whether it be hot or cold, in temper, it much conduces to that purpose, by reason of the subtlety of the parts, whereof it consists. For by means of this quality the medicines enter with more facility into the affected bodies, and perform their parts; besides also Camphire resists putrefaction. Some drop into the Wound *aqua vitæ*, wherein they have dissolved some calcined vitrioll. Which kind of remedy is not suppurative, but yet much resists putrefaction, so that we may use it with good success, when the weather is hot, moist, and foggie. But when the Wound is made very neer at hand, it cannot but be burnt by the flame of the powder; in which remedies used for burns, will be usefull, not omitting such as are fit for contusions. But for these parts which lye next the Wound, you shall not, unless at the first dressing, apply refrigerating and astringent things, but rather emollient and suppurative. For those things which have a refrigerating faculty, weaken the part, and hinder suppuration. For astringents consume the skin, which is the cause, that the putrid vapours shut up and hindered from transpiration and passage forth, a gangrene and mortification easily seize upon the part. But if the contusion be great and diffuse it self more largely over the flesh, the part must be much scarified; that so the confused and concreat blood, and therefore subject to putrefaction, may be evacuated. But for these parts, which somewhat further distant from the Wound encompass the confused flesh, they require refrigerating and strengthening medicines, so to hinder the falling down and setting of the humor in that part which is this ensuing medicine. *Rx pul. boli. armen. sanguin. Dracon. Myrrhæ, an. ʒj. succi solan. semperivi. portulac. an. ʒij. album iiii. ovorum. oxyrhodin. quantum sufficit; fiat linimentum, ut decet.* You may use this, & the like untill the suspected symptome be past fear. Neither must you have less care, of binding up and rolling the part, than of your medicines; for it doth not a little conduce to the cure, to bind it so fitly up as it may be without pain. The Wound at the beginning of the cure, must be dressed but once in 24 houres, that is, untill the Wound come to suppuration; but when the quittance begins to flow from it, and consequently the pain and feaver are encreased, it shall be dressed twice a day, that is, every twelve houres. And when the quittance flowes more abundantly than usuall, so that the collection thereof is very troublesome to the Patient, it will be requisite to dress it every 8 houres; that is, thrice a day. Now when as this abundant efflux is somewhat flaked, and begins to decrease, it will suffice to dress it twice a day. But when the ulcer is filled with flesh, and consequently casts forth but little matter, it will serve to dress it once a day, as you did at the first.

The force of calcined vitriol. How wounds made by Gunshot may be combust.

Scarification.

An Astringent repelling medicine.

The binding up.

How oft the wound must be dress in a day.

CHAP. VI. How you shall order it at the second dressing.

AT the second and following dressings, unless you suspect putrefaction, and a Gangrene, you shall only put into the Wound some of the oils formerly described, adding to them the yolks of some eggs and a little saffron; and use this medicin, untill the Wound come to perfect suppuration. Here you must note this, that these kinds of Wounds are longer before they come to suppuration, than other Wounds made by any other sort of weapon; both for that the bullet, as also the air which it violently carries before it, by much bruising the flesh, on every side, dissipates the native heat, and exhausts the spirits of the part. Which things hinder digestion, and often cause the matter to stink, as also many other pernicious symptomes. Yet most usually *pus* or quittance appears within three or four dayes, sooner and later according to the various complexion, and temperament of the Patients bodies, and the condition of the ambient air in heat and cold. Then by little and little you must come to deterfives, adding to the former medicin some Turpentine washed in Rose, Barly, or some other such like water, which may wash away the biting thereof. If the incompassing air be very cold, you may to good purpose, add some *aqua vitæ*; for by Galens prescript, we must not use hot medicines in winter, & less hot in summer. Then in the next place use deterfives, as *Rx. aquæ decoctionis hordei quantum sufficit, succi plantaginis, apii, agrimon. centaurei minoris, an. ʒj. bulliant omnia simul, in sine decoctionis adde terebinthina venetæ ʒ iij. mellis rosat. ʒ ij. farin. hordei ʒ iij. croci ʒ j.* Let them be all well mixed together and make a Mundificative of an indifferent consistence. Or *Rx succi clymeni, plantag. absinth. apii, an. ʒ ij. tereb. venet. ʒ iij. syrup. absinth. & mellis ros. an. ʒ ij. bulliant omnia secundum artem, postea coentur, in colatura adde pulver. aloes, mastiches, Ireos Florent. far. hord. an. ʒ j. fiat Mundificativum ad usum dictum.* Or else *Rx. terebinth. venet. lotæ in aq. ros. ʒ v. olei ros. ʒ j. mellis ros. ʒ iij. myrrhæ, aloes, mastich. aristoloch. rotundæ, an. ʒ i ʒ. far. hord. ʒ iij. misce.* Make a Mundificative, which you may put into the Wound with tents, but such as are neither too long, nor thick, lest they hinder the evacuation of the quittance and vapours, whence the wounded part will be troubled with erosion, pain, defluxion, inflammation, abscess, putrefaction; all which severally of themselves, as also by infecting the noble parts, are troublesome both to the part affected, as also to the whole body besides. Wherefore you shall put into the Wound no tents, unless small ones, and of an indifferent consistence; lest (as I said) you hinder the passing forth of the matter, or by their hard pressing of the part, cause pain, and so draw on malign symptomes. But seeing tents are used both to keep open a Wound so long, untill all the frange bodies be taken forth, as also to carry the medicines, wherewithall they are anointed: even to the bottom of the Wound. Now if the Wound be sinuous and deep, that so the medicin cannot by that means arrive at the bottom and all the parts thereof, you must do your business by injections made of the following decoction. *Rx. aq. hord. lib. 4. agrimon. centaur. minor. pimpinellæ, absinth. plantag. M. ʒ. rad. aristoloch. rotund. ʒ ʒ. fiat decoctio ad lib. j. in colatura expressa dissolve aloes hepaticæ, ʒ iij. mellis ros. ʒ ij. bulliant modicum.* Inject some of this decoction three or four times into the Wound, as often as you dress the Patient; and if this shall not be sufficient to cleanse the filth, and waite the spongius, putrid and dead flesh, you shall dissolve therein as much *Ægyptiacum* as you shall think fit for the present necessity; but commonly you shall dissolve an ounce of *Ægyptiacum* in a pint of the decoction. Verily *Ægyptiacum* doth powerfully consume the proud flesh which lies in the capacity

Why wounds made by Gunshot are so long before they come to suppuration.

Why Turpentine must be washed.

Gal. lib. 3.

Meth. A detergent medicine.

Why tents must be neither too long nor thick.

When you must use injections.

An Injection.

The quantity of *Ægyptiacum* to be used in an injection.

capacity of the Wound; besides also it only works upon such kind of flesh. For this purpose I have also made triall of the powder of Mercury, and burnt Alum equally mixed together, and found them very powerfull, even almost as sublimate, or Arsenick, (but that these cause not such pain in their operation.) I certainly much wonder at the largeness of the Eschar which arises by the aspersions of these powders. Many Practitioners would have a great quantity of the injection to be left in the cavities of sinuous ulcers, or Wounds; which thing I could never allow of. For this contained humor causeth an unnatural tension in these parts, and taints them with superfluous moisture, whereby the regeneration of flesh is hindered; for that every ulcer as it is an ulcer, requires to be dried, in Hippocrates opinion. Many also offend in the too frequent use of Tents; for as they change them every houre, they touch the sides of the Wound, cause pain, and renew other malign symptoms; wherefore such ulcers as cast forth more abundance of matter, I could wish rather to be dressed with hollow tents, like those I formerly described to be put into Wounds of the Chest. You shall also press a linnen boulder to the bottom of the Wound, that so the parts themselves may be mutually condensed by that pressure and the quittance thrust forth; neither will it be amiss to let this boulder have a large hole fitted to the orifice of the Wound and end of the hollow tent and pipe, that so you may apply a sponge for to receive the quittance, for so the matter will be more speedily evacuated and spent, especially if it be bound up with an expulsive ligature, beginning at the bottom of the ulcer, and so rapping it up to the top. All the boulders and rowlers, which shall be applyed to these kinds of Wounds, shall be dipped in Oxycrate or red wine, so to strengthen the part, and hinder defluxion. But you must have a speciall care, that you do not bind the Wound too hard, for hence will arise pain, hindering the passage forth of the putredinous vapours and excrements, which the contused flesh casts forth; and also fear of an *Atrophia*, or want of nourishment, the alimentary juyces being hindered from coming to the part.

CHAP. VII. By what means strange bodies, left in at the first dressing, may be drawn forth.

 T divers times happens, that certain splinters of bones, broken and shattered asunder by the violence of the stroak, cannot be pulled forth at the first dressing, for that they either do not yeeld or fall away, or else cannot be found by the formerly described instruments. For which purpose this is an approved medicin to draw forth that which is left behind. *R̄ radic. Ireos Floren. panac. & cappar. an. ʒ iij. aristoloch. rotund. manna, thuris, an. ʒ j. in pollinem redacta incorporantur cum melle rosar. & terebinth. venet. an. ʒ ij. or R̄ resin. pini sicca ʒ iij. pumicis combusti & extincti in vino albo, radic. Ireos, aristolochias, an. ʒ β. thuris ʒ j. squame aris, ʒ ij. in pollinem redigantur, incorporantur cum melle rosato, fiat medicamentum.*

CHAP. VIII. Of Indications to be observed in this kind of Wounds.

 He ulcer being clenfed and purged, and all strange bodies taken forth; nature endeavours to regenerate flesh, and cicatrize it, must be helped forwards with convenient remedies, both taken inwardly, and applyed outwardly. To which things we may be easily and safely carryed by indications drawn, first from the essence of the disease, then from the cause; if as yet present it nourish the disease. For that which Galen sayes, *Lib. 3. Meth.* that no indication may be taken from the primitive cause and time; must be understood of the time past, and the cause which is absent. And then from the principal times of the disease, the beginning, increase, state, and declination; for each of these four require their remedies. Others are taken from the temperament of the Patient, so that no Chirurgeon need doubt, that some medicins are fit for cholerick, othersome for phlegmatick bodies. Hither refer the indication taken from the age of the Patient; also it is drawn from his diet, for no man must prescribe any slender diet to one who is alwayes feeding, as to him who is accustomed to eat once, or twice a day. Hence it is that a diet consisting only of *Panada's* is more fit for *Italians* than for *French* men; for we must give somewhat to custome, which is as it were another nature. Vocations and daily exercises, are referred to diet, for other things besit Husbandmen & labourers, whose flesh is dense and skin hardened by much labour, than idle and delicate persons. But of all other, have diligent regard of that indication which is drawn from the strength of the Patient; for we must presently, (all else being neglected) succor the fainting, or decaying strength; wherefore if it be needfull to cut off a member that is putrefied, the operation must be deferred if the strength of the Patient be so dejected, that he cannot have it performed without manifest danger of his life. Also indication may be drawn from the incompassing air, under which also is comprehended that, which is taken from the season of the yeer, region, the state of the air and soil, and the particular condition of the present and lately by-past time. Hence it is we read in *Guido*, that Wounds of the head are cured with far more difficulty at *Paris*, than at *Avignon*; where notwithstanding on the contrary, the Wounds of the legs are cured with more trouble, than at *Paris*; the cause is, the air is cold and moist at *Paris*; which constitution seeing it is hurtfull to the brain and head, it cannot, but must be offensive to the Wounds of these parts. But the heat of the ambient air at *Avignon*, attenuates and dissolves the humors, and makes them flow from above downwards. But if any object that experience contradicts this opinion of *Guido*, and say, that Wounds of the head are more frequently deadly in hot countries; let him understand that this must not be attributed to the manifest and naturall heat of the air; but to a certain malign and venenate humor, or vapor dispersed through the air, and raised out of the Seas; as you may easily observe in those places of *France* and *Italy* which border upon the Mediterranean Sea. An indication may also be drawn from the peculiar temper of the wounded parts, for the musculous parts must be dressed after one, and the bony parts after another manuer. The different sense of the parts, indicates and requires the

Why none of the injection must be left in the wound.

Hollow tents or pipes. The manner of binding up the wound.

Two causes that make strange bodies hard to be taken forth.

The Indication which is drawn from the strength of the Patient is the chiefest of all other.

Why wounds of the head at Paris, and of the legs at Avignon are hard to be cured.

the like variety of remedies; for you shall not apply so acrid medicins to the Nerves and Tendons, as to the ligaments which are destitute of sense. The like reason also for the dignity and function of the parts needfull for the preservation of life; for oft-times wounds of the brain, or of some other of the naturall & vitall parts, for this very reason that they are defixed in these parts, divert the whole manner of the cure, which is usually and generally performed in wounds. Neither that without good cause, for oft-times from the condition of the parts, we may certainly pronounce the whole success of the disease; for wounds which penetrate into the ventricles of the brain, into the heart, the large vessels, the chest, the nervous parts of the midriffe, the liver, ventricle, small guts, bladder, if somewhat large are deadly; as also these which light upon a joynt in a body repleat with ill humors, as we have formerly noted. Neither must you neglect that indication which is drawn from the situation of the part, and the commerce it hath with the adjacent parts, or from the figure thereof; seeing that *Galen* himself would not have it neglected. But we must consider in taking these forementioned Indications, whether there be a composition, or complication of the diseases; for as there is one and that a simple indication, of one and that a simple disease, so must the indication be various of a compound and complicate disease. But there is observed to be a triple composition, or complication of affects besides nature; for either a disease is compounded with a disease, as a wound, or a phlegmon with a fracture of a bone; or a disease with a cause, as an ulcer with a defluxion; or a disease with a symptome, as a wound with pain, or bleeding. It sometimes comes to pass, that these three, the disease, cause, and symptome, concur in one case or affect. In artificially handling of which, we must follow *Galen's* counsell, who wishes in complicated and compounded affects, that we resist the more urgent; then let us withstand the cause of the disease, and lastly that affect, without which the rest cannot be cured. Which counsell must well be observed; for in this composition of affects, which distracts the Emperick; but on the contrary, the rati-
 onall Physitian hath a way prescribed in a few & these excellent words, which if he follow in his order of cure, he can scarce miss to heal the Patient. Symptomes truly as they are symptomes, yeeld no indication of curing, neither change the order of the cure; for when the disease is healed, the symptome vanishes, as that which follows the disease, as a shadow follows the body. But symptomes do oftentimes so urge and press, that perverting the whole order of the cure, we are forced to resist them in the first place, as those which would otherwise increase the disease. Now all the formerly mentioned indications may be drawn to two heads; the first is, to restore the part to its native temper; the other is, that the blood offend not either in quantity or quality; for when those two are present, there is nothing which may hinder the repletion, or union of wounds nor ulcers.

CHAP. IX, *What remains for the Chirurgion to do in this kind of Wounds.*



He Chirurgion must first of all be skilfull and labour to assuage pain, hinder defluxions, prescribe a diet in these six things we call not naturall, forbidding the use of hot & acrid things, as also of wine; for such attenuateth humors and make them more apt for defluxion. Therefore at the first let his diet be slender, that so the course of the humors may be diverted from the affected part; for the stomach being empty and not well filled, draws from the parts about it, where- by it consequently follows, that the utmost and remotest parts are at the length evacuated; which is the cause, that such as are wounded, must keep so spare a diet for the next dayes following. Venery is very pernicious, for that it inflames the spirits and humors far beyond other motions; whereby it happens that the humors waxing hot, are too plentifully carried to the wounded and over heated part. The bleeding must not be stanchd presently upon receiving of the wound, for by the more plentiful efflux thereof the part is freed from danger of inflammation and fulness. Wherefore if the wound bleed not sufficiently at the first, you shall the next day open a vein, and take blood according to the strength and plenitude of the Patient; for there usually flows no great store of blood from wounds of this nature; for that by the greatness of the contusion and vehemency of the moved air, the spirits are forced in, as also I have observed in those who have one of their limbs taken away with a Cannon bullet. For in the time when the wound is received, there flows no great quantity of blood, although there be large veins and arteries torn in sunder thereby. But on the 4, 5, 6. or some more dayes after, the blood flows in greater abundance, and with more violence, the native heat and spirits returning into the part. The belly must be so qualified, that he may have at the least one stool a day, either by nature, or Art; and if by Art, than rather with a Clyster than purging medicins taken by the mouth, for that the agitation of humors, chiefly in the first dayes of the disease, is to be suspected, lest we increase the defluxion falling down upon the wounded part. Yet *Galen* writes that both the evacuations are here needfull, that is, blood-letting and purging; though the Patient be neither plethorick, nor repleat with ill humors. But the care hereof must be committed to the judgment of the learned Physitian; pain, if joynd with inflammation shall be mitigated, by anointing the parts neer unto the wound with *unguent. nutritum*, composed with the juyce of Plantain, Houfleeke, Nightshade, and the like. *Vnguentum Diacalcithe- os* described by *Galen* dissolved with vinegar, oil of Poppyes and Roses is of no less efficacy; nor *unguent. de bolo*, nor divers other things of the same faculty, though properly no anodynes, as those which are not hot and moist in the first degree, but rather cold, but yet not so as to have any narcotick faculty. Now these forementioned things assuage pain for that they correct the hot distemper, and stay the acrid and cholerick defluxions, whose violence is more than cold. After the use of repercussives, it will be good to apply this following cataplasmi. *R. Mica panis infuse in lacte vaccino lb̄ j̄ β. bulliant parum addendo olei violacei, & rosar. an. ℥ iij. vitellos ovorum nu. iij. pulver. rosar. rub. stor. chamem. & meliloti, an. ℥ ij. farin. fabar. & hordei an. ℥ j. misce, fiat cataplasma secundum artem.* Also in this case you may easily make a medicin, of bread crums boyled in Oxycrate and oil of Roses. The cure of Tumors if any associate the wound, may

An indica-
tion to be
drawn from
the quick
and dull
sense of the
wounded
part.

Gal. lib. 7.
Meth. c. 2.
ad Glau.

Gal. lib. 7.
Meth.

How and
when we
must take
indication
of curing
from a
symptome.

Why such
as are
wounded
must keep a
slender di-
et.

Why we
must open
a vein in
such as are
wounded
by Gunshot.

Gal. Lib. 4.
Meth. cap. 6.

Gal. Lib. 1.
de comp.
Med. secund.
gen. c. 6.

An anodine
and ripe-
ning Cata-
plasm.

be found in their proper place. Natures motion, whether to suppuration, or any such thing, must still be observed, and helped by the Physician and Chirurgeon, as the ministers and servants thereof.

CHAP. X. Of Bullets which remain in the body, for a long time after the Wound is healed up.

Why Lead
Bullets
lye in the
body so
many years
without
doing any
harm.



Lead Bullets lye in some parts of the body some whiles seven, eight or more years, so that they neither hinder the agglutination of the Wound, neither doth any other symptom happen thereupon, as I have divers times observed; untill at length by the strength of nature forcing them; and their proper weightiness bearing them downwards, they shew themselves in some lower part, by their swelling or bunching forth, and so must be taken forth by the hand of the Chirurgeon. For they say lead hath a certain sympathy and familiarity with mans body, chiefly the fleshy parts thereof. Wherefore it neither putrefies it self, nor causeth the flesh to putrefie; besides it hath an excellent faculty in cicatrizing old ulcers. But bullets of stone, iron and of any other metall, are of another nature, for they cannot remain any long time in the body without hurt; for Iron will grow rusty, and so corrode the neighbouring bodies, and bring other malign symptoms. Yet a Leaden bullet cannot remain any long time in nervous, or noble parts without danger.

CHAP. XI. How to correct the constitution of the air, so that the noble parts may be strengthened, and the whole body besides.



Ut because as we have formerly told you, there are some times wherein even small Wounds made by Gunshot prove deadly, not by their own fault, but the fault of the air; therefore also the Chirurgeon must have this care, that he correct the aire with all diligence, & reduce it to a certain quality and moderation of substance, and strengthen the noble parts and whole body besides, which may be performed by the following medicins, which are to be taken inwardly and applyed outwardly. In the morning three houres before meat let the Patient take some certain quantity as the Physitian shall think fit of the electuary *Diarrhodon Abbatis*, or *Aromaticum rosatum*, *triasantaloni*, *biamoschum*, *letificans Galeni*, or some such other like. And you shall apply some such Epitheme as is here described to the heart and Liver. *Rx aqua rosar. ℥iiij, aqua buglossæ, aceti boni, an. ℥ij. coriandri preparati ℥β. caryophyll. cortic. citri an. ℥j. sant. rub. ℥β. coralli utriusque ℥β. camphoræ ℥j. croci ℥β. pulver. diarrhod. abbat. ℥ij. theriacæ & Mithridatii an. ℥β. pul. flo. chamem. & meli. an. ℥ij. misce, fiat epithema.* Let it be applyed warm by dipping a scarlet cloath therein. You shall frequently put odoriferous and refrigerating things to the Patients nose, to strengthen the animall faculty, as; *Rx aqua rosar. & aceti boni an. ℥ij. caryophyllorum, nucis moschat. cinamomi conquassatorum, & Theriacæ Galeni, an. ℥j.* Let a linnen rag dipped herein, be now and then put to the Patients nose; for the same purpose he shall carry a Pomander about him, and often smell there. As *Rx ros. rub. violar. an. ℥ij. baccarum myrti, juniperi, santal. rub. an. ℥ij. styracis calamit. ℥ij. aq. rosarum. quantum satis est: liquefiat simul cum cera alba quod sufficit, fiat ceratum ad comprehendendos supra dictos pulveres cum pistillo calido, & ducatur in pomum.* Or *Rx rad. Ireos Florent. major an. calam. aromat. ladani, benzoini, rad. cyperi, caryophyll. an. ℥ij. Moschi, gra. 4. fiat pulvis cum gummi tragacanth. quod sufficit.* Or else. *Rx ladani puri ℥j. Benzoini ℥β. styracis calamit. ℥vj. ircos Flor. ℥β. caryophyll. ℥ij. major an. ros. rub. calami aromat. an. ℥β. in poltinem redigantur omnia, & bulliant cum aqua ros. quantum sufficit; colentur, colata liquefiat cum justa cera alba quantitate, styracis liquidæ, ℥j, fiat ad modum cerati, & cum pistillo fiat pomum, addita moschi ℥j.* Also you may corroborate the animall faculty by application of frontalls, as also procure sleep, and ease the pain of the head; as *Rx aq. ros. ℥ij. olei ros. & papav. an. ℥ij. aceti boni, ℥j. trochis. de camphora, ℥β. fiat frontale.* Linnen rags dipped herein may be applyed to the temples of the forehead, and often renewed; otherwise by their heat, drynesse, and hardness, they will cause watching in stead of sleep. Neither must you in the mean time bind the head too hard, lest by intercepting and hindring the pulsation of the temporall Artery, you encrease the pain of the head. You shall make a fire, in the Patients chamber of odoriferous woods, as Juniper, Bay-tree, the prunings or cuttings of Vines, Rosemary, and Orris roots. For the same purpose, you may sprinkle the floore with sweet water; if the Patient be able to undergoe such cost. As, *Rx majorana, menthe, radic. cyperi, calami aromat. salvia, lavendula, fanicul. thymi, stachad. flor. chamem. melilot. satureia, baccarum lauri, & juniperi, an. M. iiij. pulv. caryophyll. nucis Moschat. an. ℥j. aqua rosar. & vite, an. lib. ij. vini albi boni & odorifici. ℔. x. bulliant omnia in balneo Mariæ ad usum dictum.* You may also make perfumes to burn in his chamber, as thus; *Rx carbonis salicis ℥vij. ladani puri ℥ij. thuris masculi, ligni & baccarum Juniperi, an. ℥j. xyloa- loes, benjoini, styracis calamit. an. ℥β. Nucis moschatæ, santal. citrin. an. ℥ij. caryophyll. styracis liquidæ, an. ℥j. zedoaria, calami aromat. an. ℥j. gummi tragacanth. aqua rosar. soluti, quod sit satis; Make hereof perfumes in what fashion you please. For the rottenness and corruption of bones we will treat thereof hereafter in its due place.*

Cordials to
strengthen
the noble
parts.

A cordiall
Epithem.

Pomanders.

Frontalls to
cause rest,
and streng-
then the
animall fa-
culty.

A sweet wa-
ter.

Perfumes to
burn.

The malign
symptomes
which usu-
ally happens
upon
wounds
made by
Gunshot,

CHAP. XII. Certain memorable Histories.



Here I thinke good for the benefit of young practitioners, to illustrate by examples the formerly prescribed Method of curing Wounds made by Gunshot. The famous and most valiant Count of Mansfelt, Governour of the Duchy of Luxembourg, Knight of the order of Burgundy, comming to the aide of the French King, was at the battell of Moncontour, where in the conflict he received so great a Wound at the joint of the left arme with a Pistoll bullet, that the bones were shivered and broken in so many peeces, as if they had been laid upon an Anyill and struck with an hammer: hence proceeded many malign symptoms, as cruell and tormenting pain, inflammation, a fever, an œdematous and statulent tumor of the whole arm even to the fingers end, and a certain inclination to a Gangræne: which to resist, *Nicolas Lambert*, and *Richard Hubert* the Kings Chirurgeons, had

had made many and deep scarifications. But when I came to visit and dress him, by the Kings appointment, and had observed the great stench, and putrefaction, I wished that they would use lotions of *Ægyptiacum* made somewhat stronger than ordinary, and dissolved in vinegar and *aqua vitæ*; and do other things more largely spoken of in the chapter of a Gangrene. For the Patient had also a *Diarrhœa* or flux, whereby he evacuated the purulent, and stinking filth which flowed from his Wound. Which how it might come to pass we will show at large when we come to treat of the suppression of the Urine. For this seemed very absurd to many, because that if this purulent humor flowed out of the arm into the belly, it must needs flow back into the veins, be mixed with the blood, and by its pernicious and contagious passage through the heart and liver, cause exceeding ill symptoms, and lastly death. Indeed he often swooned by the ascent of the filthy vapours raised from the ulcer to the noble parts; which to resist, I wished him to take a spoonfull of *aqua vitæ* with some Treacle dissolved therein. I endeavoured to repress the œdematous and flatulent Tumor, possessing all the arme with stoups dipped in oxycrate, to which was put a little salt and *aqua vitæ*; these stoups I stayed and held to the part with double cloaths, sowed as strait as I could. Such a compression held the broken bones in their places, pressed their *Sanies* from the ulcers, and forced back the humors flowing to the part into the center of the body. If at any time I omitted this compression, the tumor was so' encreased, that I was in a great deal of fear, lest the native heat of the part should be suffocated. Neither could I otherwise bind up the arm by reason of the excessive pain which molested the Patient upon the least stirring of the Arm. There were also many Abscesses about his elbow and over all his arm besides. For the letting forth of whose matter I was forced, to make new incisions; which he endured very stoutly. At length I cured him with using a vulnerary potion, and by cleansing the ulcers, and correcting the putrefaction with *Ægyptiacum* dissolved in wine or honey of roses, and so poured into the ulcers, and repressing the growth of proud flesh, with the powder of burnt Alum, drying it after the detersion with liniments. Now this I can truly affirm and profess, that during the time of the cure, I took out above threescore splinters of bones, and those necessarily, amongst which there was one of the length of ones finger; yet by Gods assistance at length he became sound in all things, but that he could not put forth, or draw in his arm.

Matter may flow from the wound - ded limbs into the belly.

A brief recital of the manner of the cure.

Not long after by the Kings command I went to see *Charles Philip* of Croy, Lord of Auret, the Duke of Aschos brother, not far from Mounts a City of Henalt. He kept his bed seven months by reason of a Wound made by a Bullet the space of three fingers above his knee. When I came to him, he was afflicted with these symptoms, intolerable pain, a continuall fever, cold sweats, watchings, excoriation of the hippes by reason of his long lying upon them, his appetite dejected with much thirst. He oft sunk down as if he had the falling sickness, had a desire to vomit, and a continuall trembling or shaking so that he could not put one hand to his mouth without the assistance of the other: he swooned frequently by reason of the vapours ascending to the noble parts. For the thighbone was broken long-ways and sideways with many splinters of bones, whereof some were plucked out and others remained sticking fast in. He besides also had an ulcer in his groin which reached to the midst of his thigh, & many other sinuous ulcers about his knee. All the muscles of his thigh and leg were swoln with a flegmatick, cold and flatulent humor, so that almost all the native heat of those parts seemed extinct. All which things being considered, I had scarce any hope to recover him, so that I repented my coming thither. Yet at length putting some confidence in his strength, and prime of youth, I began to have better hopes. Therefore with his good liking, first of all I make two incisions, so to let forth the matter, which lying about the bone did humect the substance of the muscles. This had happy success, and drew out a great quantity of matter; then I with a syringe injected much *Ægyptiacum* dissolved in wine, and a little *aqua vitæ* into these incisions, so to restrain and amend the putrefaction, repress the spongie, loose and soft flesh, resolve the œdematous and flatulent tumor, asswage the pain, and stir up and strengthen the native heat almost oppress by the abundance of excrementitious humors, so that it could scarcely assimilate any nourishment and adjoin it to the parts. Then I fomented the affected part with Sage, Rose-mary, Time, Lavander, Chamomile and Melilot flowers and Red-rose leaves boyled in white wine, and lye made of Oake-ashes, adding thereto as much salt and vinegar as I judged requisite. This fomentation did attenuate & draw forth the morbid humor. Now we used them long & often, so to waite the humor more by drying up and breathing thorow the passages of the skin, more thereof than fell into the part. For this same purpose, we ordained that he should use frictions with hot linnen clothes, and that these should be made from above downwards, from below upwards, and so on every side, and somewhat long withall: For a short friction drawes more humor into the part than it can resolve: I wished that each other day they should lay bricks heated hot in the fire about his leg, thigh, & soal of his foot; but they were to be somewhat quenched, and sprinkled with wine and vinegar, with a small quantity of *aqua vitæ*. Much watrish moisture by this moist heat, did sweat out of these parts, the tumor was lessened, and the native heat by little and little restored. Then stoups dipped in lye made of Oake-ashes, wherein Sage, Rosemary, Lavander, salt, and cloves, were boyled, some *aqua vitæ* added, were applied thereto; but the rowlers were so gently, and artificially wrapped about, that he did easily endure them without any pain, and that with such happy success, that if they were omitted but for one day, the tumor became very great. But thick linnen boulders were laid upon the lower cavities of the ulcers; that so the *sanies* or filth might be more easily pressed forth: But I had alwayes a speciall care that the orifices of the ulcers should be kept open with hollow Tents or pipes put therein: and sometimes this following cataplasim was applied to resolve the tumor. *R. Far. hord. fabar. & orobi, an. ℥vj. mel. lis com. & tereb. an. ℥ij. flo. cham. em. melil. & ros. rub. an. ℥ss. pulv. rad. Ireos, Flor. cyper. Mast. an. ℥iij. oxymel. simp. quantum sufficit; fiat cataplasma ad formam pultis satis liquida.* And *emplastrum de Vigo* without Mercury was applied thereto, whereby the pain was much asswaged, and the tumor lessened: yet were they not applied before the parts were thoroughly heated by the fomentation, frictions, and evaporations; for

Horrid symptome occasioned by a wound made by Gunshot.

Incisions wherefore made.

Wherefore I used fomentations.

Mixed or sound frictions, as they terme them.

A medicated Lye.

A discussing Cataplasim.

otherwayes this Emplaster could never have been activated, by reason of the excessive coldness of the affected parts. Neither did we omit catapmatick powders, for the taking, & drawing forth of broken bones. He used a vulnerary potion for 15 dayes. Also besides the particular frictions of the affected parts, I appointed other generall frictions of the whole body, which was become very lean; for by these, blood together with the spirit was drawn to the parts, and the acrid, and fuliginous vapours were breathed forth. To conclude, his feaver and pains being asswaged, his appetite restored, by feeding plentifully upon good meats according to his strength, he in a short time became more lusty; and lastly by the singular mercy of God, recovered his health perfectly, but that he could not very well bend his knee. I thought good to recite these things, not to glory or brag, of the happy successe of those Patients, which have recovered by my means, and the favour of God; but that thus I may more fully and perfectly by familiar examples instruct young practitioners, in the operations of Chirurgery.

CHAP. [XIII]. *An Apologie concerning wounds made by Gunshot.*



Here lately came to my hands a book written by a certain Physitian, whereby he endeavours to disprove and overthrow, that which I have hitherto writ, of the cure of wounds made by Gunshot. Assuredly if there were no other harm, but the loss of my credit ensuing thereon, I would willingly hold my peace, and stop his mouth by modest silence. But seeing the safety of so many men, lyes upon the judgement of this point, I have thought good to withstand this error, lest it, to the great destruction of mankind, spread and diffuse it self any further. The use (saith he) of suppurative medicins, have killed many who have been but lightly wounded with Gunshot, but acrid medicins, as *Ægyptiacum*, have killed more. Neither is the counsell of *Hippocrates* to be observed in curing this sort of wounds, who bids that every contused wound be brought to suppuration. For seeing this is a new kind of wound, it requires new, and not anciently used medicins. Now the temper of the air changed from the naturall constitution ought not to indicate change of medicins; but much lesse must thunder, and lightning be compared to the shooting of Great Ordinance. These are the chief heads of this his book, which because they dissent from the truth, and these things I have formerly delivered, I have thought good here to confute. First, seeing Leaden Bullets which are usually shot out of Guns are round, obtuse and weighty, they cannot wound the body without contusion and attrition; Now no contusion can be cured without suppuration, not only according to the opinion of *Hippocrates*, but also of *Galen* and all others who have written of Physick. Neither must we invent new remedies, for these new kinds of wounds; for the lawes of the sacred and divine Art of Physick are not obnoxious to change, nor subject to the humor of men or times, as the decrees of Kings and Emperours are. For these are stablished with immutable necessity, which constancy neither consuming time, nor age, nor tyranny can pervert. Wherefore neither these who with great praise are Physitians to Kings and Princes, I mean *Iouber* and *Potallus*, think it lawfull for them to depart from the rules of *Hippocrates*. And this they not only do and follow in curing and doing the works of Art, but much and highly commend, confirm and propound to be diligently observed by all, in their books which they have published concerning the cure of these kinds of wounds. And yet these Physitians are such, as dayly conversant in Armies and Kings houses have healed and dayly cure as many wounded by Gunshot as this Physitian our Antagonist hath seen in all his life. Neither only do these whom I have named thus cure these wounds, but almost all that dresse such kind of wounds do the like, so that if there be nothing which may hinder, or indicate to the contrary, they presently apply suppuratives. And I wonder that he hath not observed how his neighbour *Doublet* the Emperick cures desperate wounds of this nature, with no other than a suppurative medicine, composed of Lard, the yolk of an Egge, Turpentine and a little Saffron. In the year 1538. there was at *Turin* whilest I was Chirurgeon there to the Marshall of *Montejan* the Kings Lieutenant Generall in *Piemont* a certain Chirurgeon wondrous famous for curing these wounds, and yet he used nothing else but the oil of Whelpes, (the description whereof I at length obtained of him with much intreaty and expence) and he used it not scalding hot, as some have imagined, but powred it scarce warm into their wounds, and so did mitigate their pain, and happily bring them to suppuration. Which afterwards almost all Chirurgeons, after they had got the description hereof, when I first published this Work, have used and daily doe use with happy successe.

But in contemning and condemning *Ægyptiacum*, I think he hath no partaker; seeing there as yet hath been found no medicine more speedy and powerfull to hinder putrefaction, if beginning; or correct it, if present. Now these wounds often degenerate into virulent, eating, spreading, and maligne ulcers, which cast forth a stinking and carion-like filth, whence the part gangrenates, unless you withstand them with *Ægyptiacum* and other acrid medicins, being greatly approved by the formerly named Physitians and all Chirurgeons. But (saith he) this unguent is poysonous, and therefore hath been the death of many who have been wounded by Gunshot. Verily it any diligently enquire into the composition of this ointment, and consider the nature of all and every the ingredients thereof, he shall understand that this kind of Unguent is so far from poyson, that on the contrary it directly opposes and resists all poyson and putrefaction which may happen to a fleshy part, through occasion of any wound.

It is most false and dissonant from the doctrine of *Hippocrates* to affirm, that the seasons of the year swerving from the Law of nature, and the air, not truly the simple and elementary, but that which is defiled and polluted by the various mixture of putrid and pestilent vapours, either raised from the earth, or sent from above, make not wounds more malign and hard to cure at some times than they are at othersome. For the air eithtr very hot, or cold, drawn into the body by inspiration or transpiration, generates a condition in us like its qualities. Therefore why may it not, when defiled with

The occasion of writing this Apologie.

The chief heads of our adversaries Treatise.

All wounds made by Gunshot are contused.

A suppurative medicine of tried efficacy.

The force of *Ægyptiacum* against putrefaction.

The force of the air in breeding and augmenting diseases.

the putredinous vapours, of bodies lying unburied after great battails, and shipwracks of great Armadoes, infect with the like quality our bodies and wounds?

In the year 1562. when the civill wars concerning Religion first begun in France, at Pene a Castle lying upon the River *Lot*, many slain bodies were cast into a Well, some hundred cubits deep, so stinking and pestilent a vapour arose from hence some two months after, that many thousand of people dyed all over the Province of *Aginois*, as if the Plague had been amongst them, the pernicious contagion being spread twenty miles in compass; which none ought to think strange, especially seeing the the putrid exhalations by the force of the winds may be driven and carried into divers and most remote regions, dispersed like the seeds of the Pestilence; whence proceeds a deadly corruption of the spirits, humors, and wounds, not to be attributed to the proper malignity, or perverse cure of wounds, but to be the fault of the air. Therefore *Francis Dalechampe* in his *French Chirurgery*, in reckoning up these things which hinder the healing of Ulcers, hath not omitted that common cause which proceeds from the air defiled or tainted with the seeds of the pestilence. For he had learnt from his Master *Hippocrates* that the mutations of times chiefly bring diseases, and he had read in *Guido*, that this was the chief occasion, that wounds of the head at *Paris*, and of the legs at *Avignon*, were more difficultly healed. Lastly, even Barbers and such as have least skill in Chirurgery know, that wounds easily turn into a Gangrene in hot and moist constitutions of the air. Wherefore when the wind is southerly, the Butchers will kill no more flesh than to serve them for one day. I have formerly declared the malignity of the wounds occasioned by the air in the siege of *Roven*, which spared none, no not the Princes of the blood, who had all things which were requisite for their health. Which caused me, made at length more skilfull by experience, to use *Vnguentum Aegyptiacum* and medicins of the like faculty in stead of suppuratives, to wounds during all that season, that so I might withstand the putrefaction and Gangrene which so commonly assailed them. But if the various motion of the stars, can by their influx send a Plague into the air, why then may it not by depravation of their qualities infect, and as by poysoning corrupt both wounds and wounded bodies obnoxious to their changes and that of the air? We learnt long since by experience, that all pains but principally of wounds, grow worse in a rainy and moist season, specially because in that southerly constitution the air replete with thick and foggy vapours, causes the humors to abound in the body, which forthwith easily fall upon the affected parts, and cause increase of pain. But saith our Adversary, in the battell at *Dreux*, and at *S. Dennis* which were fought in winter, there dyed a great number of men who were wounded by Gunshot: This I confess is true; but this I deny, that it was occasioned by applying suppuratives; or corrosives, but rather by the vehemency and largeness of their wounds, & the spoil the bullet made in their members, but above all by reason of the cold. For cold is most hurtfull to wounds and ulcers, (as *Hippocrates* testifies) it hardens the skin and causes a Gangrene. If this my Gentleman had been with me in the siege of *Metz*, he might have seen the Legs of many souldiers to have rotted, and presently taken with a Gangrene to have fallen away, by the only extremity of cold; if he will not beleve me, let him make tryall himself; and go in winter to the Chappell at Mount *Senis* one of the Alpine hills, where the bodies of such as were frozen to death in passing that way are buried, and he shall learn and feel how true I speak. In the meantime I think it fit to confute the last point of his reprehension.

He cavills for that I compared Thunder and Lightning with the discharging peeces of Ordnance. First he cannot deny but that they are alike in effects. For it is certain that the flame arising from Gunpowder set on fire, resembles Lightning; in this also that you may see it before you hear the crack or report. I judg for that the eye almost in a moment perceives its objects; but the ear cannot but in some certain space of time, and by distinct gradations. But the rumbling noise is like in both, and certainly the report of great Ordnance may be heard sometimes at forty miles distance, whilst they make any great battery in the besieging of Cities. Besides also, Iron Bullets cast forth with incredible celerity by the fired Gunpowder, throw down all things with a horrid force, and that more speedily and violently by how much they resist the more powerfully by their hardness. They report that Lightning melts the money not hurting the purse; Now many by the only violence of the air agitated and vehemently moved by shooting a peece of Ordnance, as touched with Lightning have dyed in a moment, their bones being shivered and broken, no sign of hurt appearing in the skin. The smell of Gunpowder when it is fired, is hurtfull, fiery and sulphurous, just like that which exhales or comes from bodies killed with Lightning. For men do not only shun this smell, but also wild Beasts leave their Dens if touched with Lightnings. Now the cruelty of great Ordnance makes no less spoil amongst buildings, nor slaughter amongst men and beasts, than Lightnings do, as we have formerly shown by examples, not only horrid to see, but even to hear reported, as of Mines, the Arcenall of *Paris*, the City of *Malignes*. These may seem sufficient to teach, that thunder and lightning have a great similitude with the shooting of great Ordnance, which notwithstanding I would not have a like in all things. For they neither agree in substance, nor matter, but only in the manner of violent breaking asunder the objects.

Now let us see and examin what manner of cure of wounds made by Gunshot our adversary substitutes for ours. For he would have suppuratives used and applyed, yet such as should not be hot & moist in quality, or of an Emplastick consistence, but hot and dry things. For (saith he) here is not the same reason as in Abscesses, where the Physitian intends nothing but suppuration. But here because a contusion is present with the wound, this requires to be ripened with suppuratives, but the wound to be dried.

Now to answer this objection, I will refer him to *Galen*, who will teach him the nature of suppuratives; from whom also he may learn that great regard is to be had of the cause and more urgent order in the cure of compound diseases; then would I willingly learn of him, whether he can heal a wound made by Gunshot, not first bringing that which is contused to perfect maturity. If he affirm he can, I

A. History.

Hip. Aph. l. 1. sect. 3.

In our second discourse.

The power of the stars upon the air and our bodies.

Apher. ad. sect. 1.

The similitude between Thunder and great Ordnance maintained.

Our adversary's method, and manner of cure reproved.

Gal. lib. 9. simpl. 10. Method.

will be judged by whatsoever Practitioners he will, to judge how obscure these things are. Whereby you may the better understand there is nothing more commodious than our *Basilicon* and oil of Whelps to ripen wounds made by Gunshot, if so be that putrefaction, corruption, a Gangrene or some other thing do not hinder. Then would he have *Oxycrate* poured into these wounds to stay their bleeding; which if it cannot so be stayed, he would have a medicin applied consisting of the white of an Egge, Bole Armenick, oil of Roses and salt. But I leave it to other mens judgment, whether these medicins have power to stay bleeding if put into the wound; certainly they will make it bleed the more. For vinegar seeing it is of a tenuious substance and biting, it is no doubt but that it will cause pain, defluxion and inflammation. To which purpose I remember I put to stanch bleeding, for want of another remedic, a medicin wherein was some Vinegar, into a wound received by a Moor, an attendant of the Earl of Roissy, hurt with a Lance, run through his arm before *Bologne* by an *English* horseman. But he comes again to me a little after, complaining and crying out that all his arm burnt like fire; wherefore I was glad to dress him again, and put another medicin into his wound, and laid an astringent medicin upon the wound, but poured it not therein. And then above all other remedies he extols his Balsam composed of oil of Wax, and Myrrh beaten together with the white of an Egge; which he saith is equall in operation to the naturall Balsam of *Peru*. For he affirms that this hath a faculty to consume the excrementitious humidity of wounds, and so strengthens the part that no symptom afterwards troubles them. Yet he saith, this doth not so well heal and agglutinate these wounds, as it doth others which are cut. Verily it is ridiculous to think that contused wounds can be healed after the same manner as simple wounds may, which only require the uniting of the loosed continuity.

Vinegar
put into a
wound doth
not stay but
causes bleed-
ing.
A History.

Balsams are
fit to heal
simple but
not contu-
sed wounds.

Therefore neither can these Balsams be fit remedies to heal wounds made by Gunshot, seeing by reason of their dryness they hinder suppuration, which unless it be procured the Patient cannot be healed. Wherefore such things ought not be put into wounds of this nature, before they be ripened, washed and clenfed from their filth. Yet can I scarce conceive, where we shall be able to find out so many Chymists which may furnish us with these things sufficiently to dress so many wounded souldiers as usually are in an Army, or whence the souldiers have sufficient means to bear the charge thereof. Also that which he saith is absurd, that these Balsams must be put into the wounds without Tents; and presently forgetting himself, he saith, it will not be amiss, if there be a little and slender Tent put into the wound, which may only serve to hinder the agglutination thereof. But how can these Balsams come to the bottomes of wounds without Tents, when as it is their chief property to carry medicins even to the innermost parts of the wounds, and alwayes keep open a free passage for the evacuation of the quittance? But it is not worthy, that after he hath rejected *unguentum Aegyptiacum*, he nevertheless bids to apply it, from the beginning untill the contusion come to perfect maturation, dissolving it in a decoction of the tops of wormwood, *S. Iohn Wurt*, the lesser Centory and Plantain, and so injecting it into the wound. Besides also a little after he gives another way of using it, which is, to boil a quantity of Hony of Roses in plantain water, carefully skimming it, untill it be boiled to the consistence of Hony, and then to add as much *Aegyptiacum* thereto, and so to make an ointment most fit to bring these wounds to suppuration. But I leave it for any skilful in Chirurgery to judge, whether such medicins can be suppuratives, or whether they be not rather deterfives. Last of all he writes, that these wounds must be dressed but every fourth day. And if there be a fracture of the bone joyed with the wound, then to move nothing after the first dressing untill the eighth day after; then presently in another place he saith, it will be good, and expedient, to drop ten or twelve drops of the formerly described Balsam every day into the wound. Verily such doctrine which neither agrees with its self nor the truth, cannot but much puzzle a Novice and young Practitioner in Chirurgery, who is not yet in versed the Art, or the operations thereof.

Aegyptiacum
howsoever
made is a
clenset, not a
suppurative.

CHAP. XIII. Another Apologie, against those who have laboured with new reasons to prove that wounds made by Gunshot are poysoned.

The occasi-
on of this
Apology.



Some few months ago, I visited a Patient together with some learned Physitians and skilfull Chirurgeons. Now they, as it oft-times happens, in way of discourse, begun to argue of the condition & quality of wounds made by Gunshot; & indeavoured to prove that they might be poysoned by five reasons. Not truly through the occasion of the Gunpouder, for they all confessed that it was free from poyson, whether you have regard to its essence, or to its composition; but by the Bullet, into which the poyson may be transfused and incorporated. The first reason is, that Lead seeing it is of a rare and spongius nature, which the easiness of melting and softness argues, is very fit to drink and soak in what liquors so ever you please. But me thinks this conclusion is very weak; for in all mixtures made by Art, such as this is whereof we speak, there are two things to be considered; that is to say, the matter of the things which enter into the mixture, and the form: for the matter, such bodies must be either liquid, or soft, or friable; and lastly such as may be broken and divided into small particles, that so they may easily in all parts concur and be conjoyed and united. But for their form, there ought to be a certain affinity, consent and sympathy. You may perceive this by water and oil; for each of them though of a liquid substance, and such as may easily be mixed with divers other things, yet cannot they be mixed the one with the other by reason of their antipathy of forms. For thus gold and silver are so agreeing with lead, that as oft as they are molten lead is mixed with them. But brass shuns lead as much as gold and silver fly tin and white lead. If therefore brass and lead being melted cannot be mixed together, though contained under the same *Genus*, and common nature of Metals; how then can it be commixt with another thing distinct in the whole kind, much more in *species*, and form, to wit, poyson? Their second reason is this; Iron, say they, which is more dense,

The reason
of our ad-
versaries
that the Bul-
lets may be
poysoned,
set down
and confu-
led.

dense, solid, and les porous, may receive some venenate substance and quality, as the Arrows of the Ancients which were dipped in poyson, testifie; therefore must Lead much more be capable thereof. I answer, that the surface of Iron may be poysoned, but not the inner part or substance by mixture therewith. But here the question is of union, but not of anointing or inunction. The third reason is thus framed; though (say they) lead cast off and purges it self from the dross and unpure parts, yet that is no argument that it will not commix, or soak it self in some strange liquor or body; for thus Steel, being the most solid Iron, receives the temper which hardens it by the artificial pouring upon it or quenching it in liquors contrary thereto in their whole kind. I answer, that Steel admits into it by that quenching and tempering, none of the juyces or liquors wherewith it is watered or quenched. For if that were necessary, it might be better & more easily performed, when the metall is first cast, than when it is beaten into plates or bars; which answer shal serve to confute their fourth reason; wherin they say, that bullets may be made so poysonous by the commixture of the juyces of [Muncks-hood, Oleander, Crow-foot, and other such like things which in their whole substance are contrary to ours, that the wound wh^{ch} is made with them cannot but be poysoned. But I on the contrary affirm, that mixture is only of these things, which may not only be put, but also stick thereto, & be mutually united but how can water or any other liquid juice so much as only stick to lead, as that which is a solid & firm body, it is so far from being united, therewith? You may give more certain judgment hereof by experience, than by reason; wherefore let melted lead be put into the foresaid juyces or the like; then when the lead is cold, weigh each of them severally and you shal find, that both of them retain the same weight they formerly had. Which is a most certain argument that neither the lead hath mixed or united it self with the juyces, nor the juyces lost any part of their substance. Their fifth reason is thus; A bullet shot out of a Gun against some hard stone, grows not so hot, but that you may presently without any harm take it up in your hand. Therefore it is false, that the poyson commixt & united with the bullet can be dissipated by the fire and flash of Gunpowder. The answer to this objection is easie. For when we say, that although the Bullet may be infected by poyson perfectly commixt with the lead, yet all the force of the poyson would be dissipated by the fire, we would have you thus to understand us, that we do not mean this of that fire which is made by the powder at the discharging of the Peice, but of that by force whereof the molten lead is mixed and conjoined with the venenate juice, so to make one of many. For this fire exercising its force upon the venenate juyces hindered by the intercourse of no *Medium*, and that for some space of time, and not for an instant, it may, if not consume, yet much weaken their strength. If there be any, who will not be satisfied by these reasons, let him consult, & read *Mathiolus*. There are (saith he) some of these later times wholly ignorant of things, who (if we may say the truth) have been so madly foolish, that they said it was fit and requisite to put Treacle and Mithridate and such like antidotes amongst gold and silver that was melted to make cups, that so receiving the faculties of the Antidote they might resist poyson. But how absurd and ridiculous their opinion is, let them judg (for it needs no clearer reproof) who have but a little knowledg in naturall things, but chiefly in metallis. These are my reasons, these the authorities of men excelling in learning & judgment, that confirm me in my ancient & former opinion, that wounds made by Gunshot do not partake of any venenate quality.

In praesent. 6 Diascor.

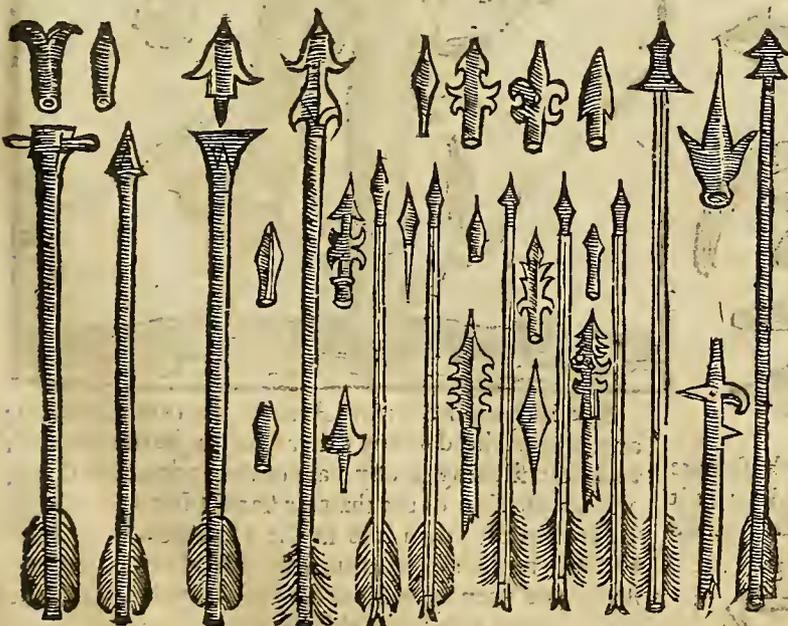
CHAP. XV. How wounds made by Arrows differ from such as are made by Gunshot.

Wounds made by arrows and bolts shot out of Cross-bows and such like things, differ chiefly in two things, from these which are made by gunshot. The first is, for that they are oft-times without contusion, which the other never are. The other is, for that they oft-times are poysoned. In both these respects, their cure is different from the other. But the cure of these wounds made by arrows is different in it self, by reason of the variety and divers sorts of Darts or Arrows.

Wounds made with Arrows and such like things, are often without our contusion. But are oft-times poysoned. The differences of Arrows.

The figure of divers sorts of Arrows.

CHAP. XVI. Of the diversities of Arrows and Darts.



Arrows and Darts are different amongst themselves both in matter and in form or figure, in number, making, faculty or strength; In matter, for that some of them are of wood, some of reeds, some are blunt headed, others have piles or heads of iron, brass, lead, tin, horn, glasse, bone. In figure, for that some are round, others cornered, some are sharpe pointed, some barbed, with the barbs standing either to the point, or shafts, or else acrosse, or both waycs, but some are broad and cut like a Chissell. For their bignesse, some are three foot long, some lesse. For their number, they differ in that, because some have one head, others more. But they vary in making; for that some of them

In matter; In sign. In bignesse. In number. In making.

In force. have the shaft put into the head, others the head into the shaft; some have their heads nailed to the shaft, others not, but have their heads so loosely set on, that by gentle plucking the shaft, they leave their heads behind them, whence dangerous wounds proceed. But they differ in force, for that some hurt by their Iron only, others besides that, by poyson, wherewith they are infected. You may see the other various shapés represented to you in the preceding Figure.

CHAP. XVII. *Of the difference of the wounded parts.*

You must not leave the weapon in the wound.

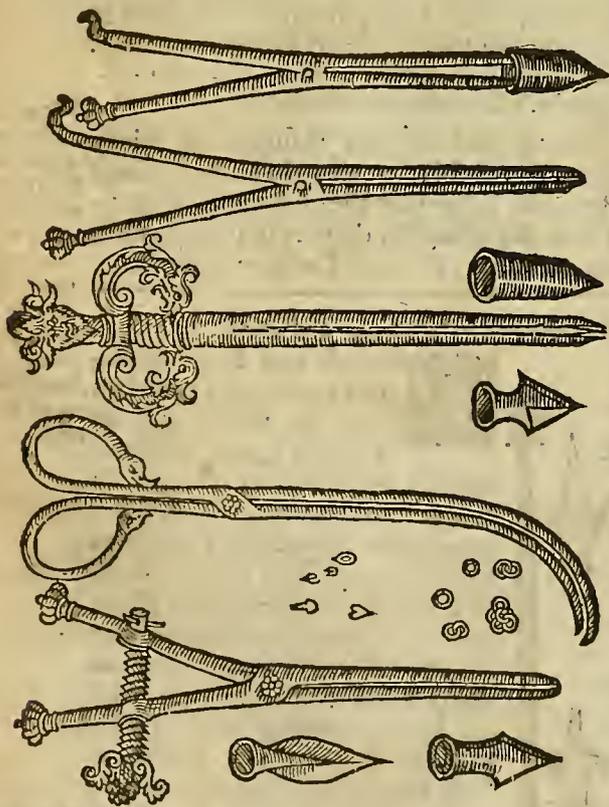
The wounded parts are either fleshy or bony; some are neer the joints, others seated upon the very joints; some are principall, others serve them; some are externall, others internall. Now in wounds where deadly signs appear, it's fit you give an absolute judgment to that effect; lest you make the Art to be scandalled by the ignorant. But it is an inhumane part, and much digressing from Art, to leave the Iron in the wound; it is sometimes difficult to take it out, yet a charitable and artificiall work. For it is much better to try a doubtfull remedy, than none at all.

CHAP. XVIII. *Of drawing forth Arrows.*

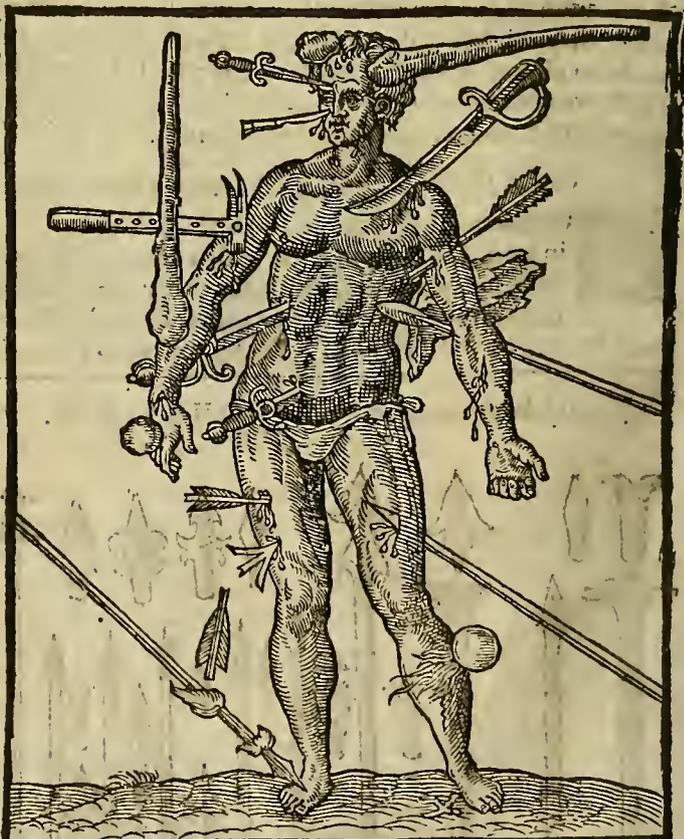
The manner of drawing forth Arrows, and such weapons.

You must in drawing forth Arrows shun incisions and dilacerations of Veins and Arteries, Nerves and Tendons. For it is a shamefull and bungling part to do more harm with your hand, than the Iron hath done. Now Arrows are drawn forth two wayes, that is, either by extraction, or impulsion. Now you must presently at the first dressing pull forth all strange bodies, which that you may more easily and happily perform, you shall set the Patient in the same posture, as he stood when he received his wound; and he must have also his Instruments in a readinesse, chiefly that which hath a slit pipe and toothed without, into which there is put a sharpe Iron style, like the Gimblets we formerly mentioned for the taking forth of Bullets; but that it hath no scrue at the end, but is larger and thicker, so to widen the pipe, that so widened it may fill up the hole of the Arrows head whereinto the shaft was put, and so bring it forth with it, both out of the fleshy as also out of the bony parts, if so be that the end of the shaft be not broken, and left in the hole of the head. That also is a fit Instrument for this purpose, which opens the other end toothed on the outside, by pressing together of the handle. You shall find the Iron or head that lies hid by these signs, there will be a certain roughnesse and inequality observable on that part if you feel it up and down with your hand; the flesh there will be bruised, livid, or black, and there is heavinesse and pain felt by the Patient both there and in the wound.

A delineation of Instruments fit to draw forth the heads of arrows, & darts, which are left in the wound without their shafts.



A hooked Instrument fit for to draw forth strange bodies, as pieces of Male, and such other things as it can catch hold of, which may also be used in wounds made by Gunshot.



But if by chance either Arrows, Darts or Lances, or any winged head of any other weapon, be run through and left sticking in any part of the body, as the thigh, with a portion of the shaft or staffe slivered in pieces, or broken off; then it is fit the Chirurgion with his cutting mullets should cut off the end of the staffe or shaft, and then with his other mullets pluck forth the head, as you may see by this Figure.

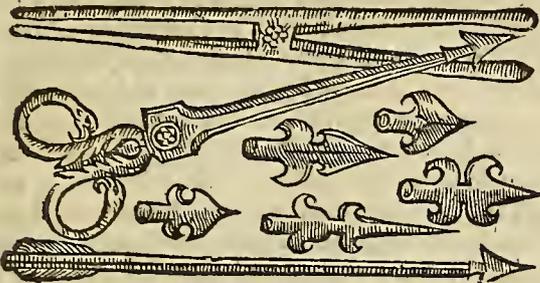
CHAP. XIX. How Arrows broken in a wound may be drawn forth.



Ut if it chance that the weapon is so broken in the wound, that it cannot be taken hold on by the formerly mentioned Mallets, then must you draw, or pluck it out with your Crane, or Crows bill, and other formerly described Instruments: But if the shaft be broken near the head, so that you cannot take hold thereof with your Cranes bill, then you shall draw it forth with your Gimblet which we described before to draw forth bullets; for if such a Gimblet can be fastned in bullets, it may far better take hold of wood. But if the head be barbed, as usually the English arrows are, then if it may be conveniently done, it will be very fitting to thrust them through the parts. For if they should be drawn out the same way they went in, there would be no small danger of breaking or tearing the Vessels and Nerves by these hooked barbes. Wherefore it is better to make a section on the other side whither the head tended, and so give it passage forth if it may be easily done; for so the wound will be the more easily clenfed and consolidated. But on the contrary, if the point tend to any bone, or have many muscles or thick flesh against the head thereof, as it happens sometimes in

VWhen to draw forth the weapon on the contrary side

A Dilater hollowed on the inside, with a Cranes-bill to take hold of the barbed head.



the Thighs, Legs and Armes; then you must not thrust the head through, but rather draw it out the same way it came in, dilating the wound with fit Instruments, and by skill in Anatomie, shunning the larger Nerves and Vessels. Therefore for this purpose put a hollow Dilater into the wound, and therewith take hold of both the barbs or wings of the head; and then take fast hold of the head with your Cranes-bill, and so draw them forth all three together.

VWhen by the same way it went

CHAP. XX. What to be done, when an Arrow is left fastned or sticking in a bone.



Ut if the weapon be so depect and fastned in a bone that you cannot drive it forth on the other side, neither get it forth by any other way than that it entred in by; you must first gently move it up and down, if it stick very fast in, but have a special care that you do not break it, & so leave some fragment thereof in the bone; then take it forth with your Crows bill, or some other fit Instrument formerly described. Then press forth the blood, and suffer it to bleed somewhat largely, yet according to the strength of the Patient and nature of the wounded part. For thus the part shall be eased of the fulness and illness of humors, and less molested with inflammation, putrefaction and other symptomes which are customarily feared. When the weapon is drawn forth, and the wound once dressed, handle it, if simple, as you do simple wounds; if compound, then according to the condition and manner of the complication of the effects; Certainly the Oil of Whelpes formerly described is very good to assuage pain. To conclude, you shall cure the rest of the Symptomes according to the method prescribed in our Treatise of wounds in generall, and to that we have formerly delivered concerning wounds made by Gunshot.

A Caution. The benefit of bleeding in wounds.

CHAP. XXI. Of poysoned wounds.



These wounds at any time prove poysoned, they have it from their primitive cause, to wit, the empoisoned Arrows, or Darts of their enemies. You may find it out both by the property of the pain, if that it be great and pricking, as if continually stung with Bees, for such pain usually ensues in wounds poysoned with hot poyson, as Arrows usually are; Also you shall know it by the condition of the wounded flesh; for it will become pale and grow livid, with some signs of mortification. To conclude, there happen many and malign symptomes upon wounds which are empoisoned, being such as happen not in the common nature of usuall wounds. Therefore presently after you have plucked forth the strange bodies, encompass the wound with many and deep scarifications, apply ventoses with much flame, that so the poyson may be more powerfully drawn forth; to which purpose the sucking of the wound, performed by one whose mouth hath no soariness therein, but is filled with oil, that so the poison which he sucks may not stick, nor adhere to the part, will much conduce. Lastly, it must be drawn forth by rubefying, vesicatory and caustick medicines, and assailed by ointments, cataplasmes, emplasters, and all sorts of locall medicins.

The signs of poysoned wounds.

Remedies in poysoned wounds.

The end of the Eleventh Book.



Of Contusions and Gangrenes.

THE TWELFTH BOOK.

CHAP. I.

Gal. Lib. de
artis consti-
tuti.
Sect. 2. lib.
de fracturis.
Causes of
Bruises and
Sugillati-
ons.



Contusion according to *Galen*, is a solution of continuity in the flesh or bone, caused by the stroak of some heavy and obtuse thing, or a fall from an high. The symptome of this disease is by *Hippocrates* called *Peliosis*, and *Melasma*, that is to say, blackness and blewness; the Latins term it *Sugillatum*. There are divers sorts of these Sugillations or blacknesses, according as the blood is poured forth into the more inward or outward part of the body. The blood is poured forth into the body, when any (for example) falls from an high, or hath any heavy weight falls upon him, as it often happens to such as work in Mines, or are extremely racked or tortured; and sometimes by too loud and forcible exclamation. Besides also by a Bullet shot through the body, blood is poured forth into the bellie, and so often evacuated by the passages of the Guts and bladder. The same may happen by the more violent and obtuse blowes of a hard Trunchion, Club, Stone, and all things which may bruise and press the blood out of the vessells either by extending or breaking them. For which causes also the exterior parts are contused, or bruised sometimes with a wound, sometimes without, so that the skin being whole, and as far as one can discern, untoucht, the blood poures it self forth into the empty spaces of the muscles, and between the skin and muscles; which affect the Ancients have tearmed *Echymosis*; *Hippocrates* calls it by a peculiar name *Nausiosis*, for that in this affect the swoln veins seem as it were to vomit, and verily do vomit or cast forth the superfluous blood which is contained in them. From these differences of Contusions are drawn the indications of curing, as shall appear by the ensuing discourse.

Sect. 2. lib.
de fract.

CHAP. II. Of the generall cure of great and enormous Contusions.



The blood poured forth into the body, must be evacuated by visible and not visible evacuation. The visible evacuation may be performed by blood-letting, Cupping-glasses, horns, scarification, horseleeches and fit purgative medicins; if so be the Patient have not a strong and continuall fever; The not visible evacuation is performed by resolving and sudorifick potions, baths, and a slender diet. Concerning Blood-letting *Galen*'s opinion is plain, where he bids, in a fall from an high place, and generally for bruises upon what part soever they be, to open a vein, though the parties affected are not of a full constitution; for that unless you draw blood by opening a vein, there may inflammations arise from the concreat blood, from whence without doubt evill accidents may ensue. After you have drawn blood give him foure ounces of *Oxycrate* to drink; for that by the tenuity of its substance hinders the coagulation of the blood in the belly, or in stead thereof you may use this following potion. *Rx rad. Gentiane* \mathfrak{z} iiij. bulliant in *Oxycrate*; in colatura dissolve *rhei electi* \mathfrak{z} j. fiat potio. These Medicins dissolve, and cast forth by spitting and vomit the congealed blood, if any thereof be contained in the ventricle or lungs; it will be expedient to wrap the Patient presently in a sheeps skin, being hot and newly taken from the sheep, and sprinkled over with a little myrrhe, cresses and salt, and so to put him presently in his bed, & then cover him so that he may sweat plentifully. The next day take away the sheeps-skin, and anoint the body with the following anodyne and resolving unguent. *Rx unguent. de althæa* \mathfrak{z} vj. olei *Lumbric. chamem. anethi. an.* \mathfrak{z} ij. *terebinth. venetæ* \mathfrak{z} iiij. *farinæ fœnuigræ. rosar. rub. pulverisat. pul. myrtillorum, an.* \mathfrak{z} j. fiat litus ut dictum est. Then give this potion which is sudorifick and dissolves the congealed blood. *Rx Ligni guajaci* \mathfrak{z} viii. *radicis enulæ camp. consolid. majoris, ireos Florent. polypod. querni, seminis coriandri, anisi, an.* \mathfrak{z} ß. *glycyrrhiz. zij. nepetæ, centaureæ, caryophyl. cardui ben. verbenæ, an. m. s. aquæ fontanæ lib. xij.* Let them be all beaten and infused for the space of twelve houres, then let them boil over a gentle fire untill the one half be consumed; let the Patient drink some half pint of this drink in the morning, and then sweat some hour upon it in his bed, and doe this for seaven or eight dayes. If any poor man light upon such a mischance, who for want of means cannot be at such cost, it will be good, having wrapped him in a sheet, to bury him up to the chin in Dung mixed with some hay or straw, and there to keep him, untill he have sweat sufficiently. I have done thus to many with very good success. You shall also give the Patient potions made with syrups which have power to hinder the coagulation and putrefaction of the blood; such as syrup of Vinegar, or Lemons, of the juice of Citrons and such others to the quantitie of an ounce dissolved in scabius, or *Carduus* water. You may also presently after the fall give this drink, which hath power to hinder the coagulation of the blood, and strengthen the bowells. *Rx Rhei electi. in pul. redacti* \mathfrak{z} j. *aque rubiæ majoris, & plantagin. an.* \mathfrak{z} j. *theriacæ* \mathfrak{z} ß. *syrupi de rosis siccis, zß. fiat potus.* Let him take it in the morning for foure or five dayes. In stead hereof you may make a potion of one dram of *Sperma ceti* dissolved in bugloss or some other of the waters formerly mentioned, and half an ounce of syrup of Maiden-hair; if the disease yeeld not at all to these formerly prescribed medicins, it will be good to give the Patient for nine dayes, three or foure houres before meat some of the following powder. *Rx rhei torrefacti* \mathfrak{z} j. *rad. rub. majoris, centaurei, gentianæ, aristolo. rotundæ, an.* \mathfrak{z} ß. give \mathfrak{z} j. hereof with syrup of Vinegar and *Carduus* water. They say that the water of green Walnuts, distilled by an Alembick, is good to dissolve congealed and knotted blood. Also you may use baths made of the decoction of the roots of *Orris*, *Elecampane*, *Sorrell*, *Fennell*, *Marshmallows*, *Water-fern*, or *Ofmund*

Ad sementi
62. sect. 3.
lib. de Arti-
culis.

A potion to
dissolve and
evacuate
clotted
blood.
A hot
sheeps skin.

A discuffing
oyntment.
A sudori-
fick potion
to dissolve
congealed
blood.

Syrups hin-
dering pu-
trification &
congealing
of blood.
A drink for
the same
purpose.

A powder
for the same.
The distil-
led water of
green Wal-
nuts.
Baths.

mund the waterman, the greater Comfrey, the seeds of Fænugreek, the leaves of Sage, Marjerum; the flowres of Camomile, Melilote, and the like. For a warm bath hath power to rarifie the skin, to dissolve the clotted blood, by cutting the tough and mitigating the acrid humors, by calling them forth into the surface of the body, and relaxing the passages thereof; so that the rebellious qualities being overcome, there insues an easie evacuation of the matter by vomit, or expectoration, if it stote in the stomach, or be contained in the Chest; but by stool & urin, if it lye in the lower parts; by sweats and transpiration, if it lye next under the skin. Wherefore bathes are good for those who have a *Peripneumonia* or inflammation of their Lungs, or a Plurisie, according to the mind of *Hippocrates*, if so be that they be used, when the feaver begins to be asswaged; for so they mitigate pain, help forwards suppuration, and hasten the spitting up of the purulent matter. But we would not have the Patient enter into the bath, unless he have first used generall remedies, as blood-letting and purging; for otherwise there will be no small danger, lest the humors diffused by the heat of the bath, cause a new defluxion into the parts affected. Wherefore do not thou by any means attempt, to use this or the like remedy, having not first had the advice of a Physitian.

Lib. 3. de
vii. acur. &
lib. 3. de
morb.

CHAP. III. How we must handle Contusions, when they are joyned with a wound.

EVery great Contusion forthwith requires blood-letting, or purging, or both; and these either for evacuation, or revulsion. For thus *Hippocrates* in a contusion of the heel, gives a vomitory portion, the same day, or else the next day after the heel is broken. And then if the Contusion have a wound associating it, the defluxion must be stayed at the beginning with an ointment made of Bole Armenick, the whites of eggs, and oil of roses, and myrtles, with the pouders of red roses, allome and mastich. At the second dressing apply a digestive made of the yoalk of an eg, oil of violets and turpentine. This following cataplasim shall be applied to the near parts to help forwards suppuration. *R. rad. alth. ee, & lili, an. ʒ iiij. sol. malv. violar. senecionis, an. M. ss. coquantur complete, & passentur per setaceum, addendo butyri recentis & olei viol. an. ʒ iiij. farinæ volatilis quant. sufficit; fiat cataplasma ad formam pulvis liquida.* Yet have a care in using of Cataplasims, that you do not too much exceed; for too frequent and immoderate use of them makes wounds phlegmionous, fordid and putrid. Wherefore the wound after it is come to suppuration must be clenfed, filled with flesh and cicatrized, unless happily the contused flesh shall be very much torn, so that the native heat forsake it, for then it must be cut away. But if there be any hope to agglutinate it, let it be sowed, and other things performed according to Art; but the stiches must not be made so close together, as when the wound is simple, and without contusion; for such wounds are easily inflamed and swell up, which would occasion either the breaking of the thred or flesh, or tearing of the skin.

See lib.
fract.

A suppurative
Cataplasim.
A caution to
be observed;

How contused
wounds
must be
sowed;

CHAP. IV. Of these Contusions which are without a wound.

IF the skin being whole and not hurt, as far as can be discerned, the flesh which lies under it be contused, and the blood poured forth under the skin make an *Ecchymosis*, then the Patient must be governed according to Art untill the malign symptomes which commonly happen, be no more to be feared. Wherefore in the beginning draw blood on the opposite side, both for evacuation and revulsion. The contused part shall be scarified with equall scarificationis; then shall you apply cupping-glasses or horns, both for evacuation of the blood which causes the tumor and tension in the part; as also to ventilate and refrigerate the heat of the part, lest it turn into an Abscesse. Neither must we in the mean while omit gentle purging of the belly. The first topick medicins ought to be astringives, which must lye some short while upon the part, that so the Veins, and Arteries may be as it were straitned and closed up; and so the defluxion hindred; as also that the part it self may be strengthened. This may be the form of such a remedy, *R. Albumina ovorum nu. iij. olei myrtini & rosacei, an. ʒ j. boli armeni, & sanguin. dracon. an. ʒ ʒ. nucium cupres. gallarum, pul. aluminis usti, an. ʒ ij. incorporentur omnia addendo aceti parum, fiat medicamentum.* Then you shall resolve it with a fomentation, cataplasim and discussing emplasters.

Phlebotomy;

Scarifying
Cupping-
glasses,
Astringives
how good
in Conrusion.
After astringives
must
follow discussives.

CHAP. V. By what means the contused part may be freed from the fear and imminent danger of a Gangrene.

Great contusions are dangerous even for this cause, for that a Gangrene and mortification sometimes follows them; which *Hippocrates* teacheth to happen, when as the affected part is grown very hard and liquid. Wherefore when the part grows livid and black, and the native colour thereof, by reason of the efflux of the concreat blood, is almost extinct; chiefly to ease the part of that burden, cupping-glasses and horns shall be applyed to the part it self being first scarified with a Lancet, or else the following Instrument termed a *Scarificator*, which hath 18. little wheels sharp and cutting like a razour, which may be straitned and slacked by the pins noted by *D.* and *P.* This instrument is to be commended for that it performs the operation quickly and gently, for it makes 18 incisions in the space that you make one with a Lancet or knife.

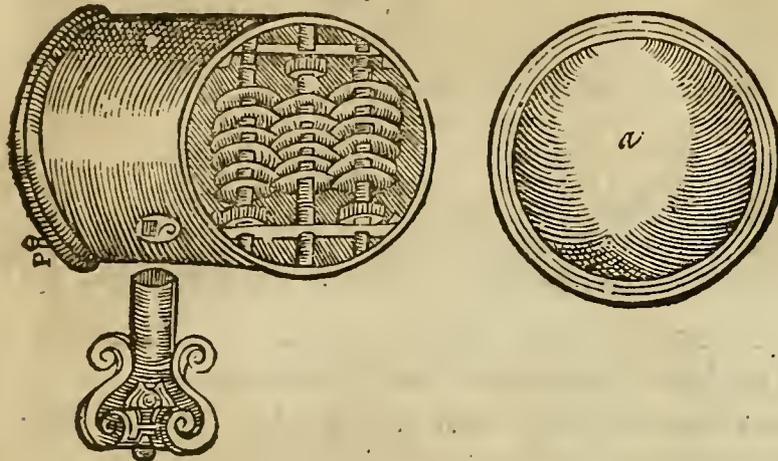
See 2. lib.
de fract.
The cause of
a Gangrene.

The use of a
Scarificator.

Then shall you foment the part with strong vinegar wherein the roots of radish or of Dragons; Cuckow-pint, Salemons Seal, *Auripigmentum* and the like have been boiled; for such acrid things do powerfully heat, resolve and draw the concreat blood from the inner part of the body unto the skin, which by its setting in the part affected, prohibits the entrance of the vitall spirits, the preservers of its integrity; yea also extinguisheth the native heat of the same part. Now we must not use these things but with great discretion, lest so we draw not only that blood which is poured forth of the vessels,

but

but also the other which is contained in the vessels. Moreover also we must not use them, unless when the defluxion is stayed. For small contusions (which *Galen* judgeth by the softnesse of the contused part) it will be sufficient to apply to discusse them, *Virgins* wax dissolved and mixed with *Cumin* seeds, *Cloves*, the root of black *Briony*, (which hath a wonderful faculty to discusse all blacknesses and fugillations:) for the same purpose, you may also apply wormwood bruised and so warmed in a dish and sprinkled over with a little white wine. Also fry wormwood with oil of camomill, bran, the powder of *Cloves*, and *Nutmegs*, adding thereto a little *aqua vite*, then put all in a linnen cloth and apply it hot to the part. The following emplaister doth powerfully discusse congealed blood.



A. Shews the cover. B. The Box, or Case.

In lib. 2. lib. de fractur.

A discussing plaister.

Rx. *Picis nigrae* ʒ ij. *Gum. Elemi* ʒ i β. *styracis liquide* & *terebinth. com. an.* ʒ β. *sulphuris vivi* ʒ j. *Liquefiant simul, fiat Emplastrum*; and let it be spread upon leather and so applied.

CHAP. VI. Of that strange kind of symptome which happens upon contusions of the ribs.

Hip sect. 3. lib. de art. sent. 58. & 65.

Remedies for a mucous and flatulent tumor of the ribs. The cause.

The flesh contused sometimes by great violence becomes mucous and swoln, or puffed up like Veal, which the butchers blow up, the skin remaining whole. This is seen and happens chiefly in that flesh which is about the ribs; for this being bruised either by a blow, or fall, or renitency, or any other such like cause; if you press it with your hand, a certain windiness goeth out thereof with a small whizzing, which may be heard, and the print of your fingers wil remain as in *œdema's*. Unless you quickly make fit provision against this symptome, there is gathered in that space which the flesh departing from the bones, leaves empty, a certain purulent *sanies*, which divers times fouls and corrupts the ribs. It will be cured, if the mucous tumor be presently pressed, & straitly bound with ligatures, yet so that you hinder not the breathing, when as the affect happens upon the ribs and parts of the Chest. Then apply to the part a plaister of *Oxycroceum* or *diachylon Ireatum* with the emplaister *de meliloto*; also discussing fomentations shall be used. The cause of such a tumor is a certain mucous flegm; seeing that nature is so weak that it cannot well digest the nourishment, and assimilate it to the part, but leaves something as it were half concocted. No otherwise than the conjunctive coat of the eye is sometime so lifted up and swoln by a stroak, that it starts as it were out of the orb of the eye, leaving such filth or matter as we see those which are blear eyed to be troubled withall; because the force and naturall strength of the eyes is become more weak, either by the fault of the proper distemperature, or the abundance of moisture which flows thither, as it happens in those tumors which are against nature. For flatulencies are easily raised from a waterish and phlegmatick humor wrought upon by weak heat, which mixed with the rest of the humor, the tumor becomes higher.

CHAP. VII. A discourse of Mumia, or Mummy.

Mummie a frequent and usuall medicin in contusions. The reason that the Author makes no mention thereof amongst his medicins. The opinion of the Arabians concerning it.

Lib. 4. cap. 84. Another opinion of Mummie.

Eradventure it may seem strange what may be the cause, why in this Treatise of curing contusions, or bruises, I have made no mention of giving Mummy either in bole, or potion to such as have fallen from high places, or have been otherwise bruised; especially seeing it is so common and usual, yea the very first and last medicin of almost all our practitioners at this day in such a case. But seeing I understood, and had learnt from learned Physicians, that in using remedies, the indication must alwayes be taken from that which is contrary to the disease, how could I? how can any other give Mummie in this kind of disease, seeing we cannot as yet know what Mummie is, or what is the nature and essence thereof? So that it cannot certainly be judged; whether it have a certain property contrary to the nature and effects of contusions. This how it may have, I have thought good to relate somewhat at large; neither do the Physicians who prescribe Mummie, nor the Authors that have written of it, nor the Apothecaries that sell it, know any certainty thereof. For if you read the more ancient *Serapio* and *Avicen* or the modern *Matthiolus* and *Thevet*, you shall find quite different opinions. Ask the Merchants who bring it to us, ask the Apothecaries who buy it of them, to sell it to us, and you shall hear them speak diversly hereof, that in such variety of opinions, there is nothing certain and manifest. *Serapio* and *Avicen* have judged Mummie to be nothing else but *Pissasphaltum*; now *Pissasphaltum* is a certain froth or foam rising from the Sea, or Sea waters; this same foam as long as it swims upon the water is soft and in some sort liquid: but being driven upon the shore by force of tempest, and working of the sea, and sticking in the cavities of the rocks, it concreats into somewhat a harder substance than dried pitch, as *Dioscorides* saith. *Belonius* saith, that Mummie is only known to *Egypt* and *Greece*. Others write that it is mans flesh, taken from the carcasses of such as are dead, and covered over in the sands in the deserts of *Arabia*; in which Country they say the Sands are sometimes carried and raised up with such force and violence of the winds, that they overthrow and suffocate such passengers

as they meet withall; the flesh of these dried by the sand and wind they affirm to be Mummie. *Mathiolus* following the more usuall and common opinion writes, that Mummie is nothing else than a liquor flowing from the Aromatick embalmments of dead bodies, which becomes dry and hard. For understanding whereof you must know from all manner of antiquity, that the *Aegyptians* have been most studious in burying and embalming their dead; not for that end that they should become medicins for such as live, for they did not so much as respect or imagin so horrid a wickednes; but either for that they held an opinion of the generall resurrection, or that in these monuments they might have something, whereby they might keep their dead friends in perpetuall remembrance. *Thevet* not much dissenting from his own opinion, writes that the true Mummie is taken from the monuments and stony tombs of the anciently dead in *Egypt*, the chinks of which tombs were closed, and cimented with such diligence; but the inclosed bodies embalmed with pretious spices with such Art for eternity, that the linnen vestures which were wrapt about them presently after their death, may be seen whole even to this day; but the bodies themselves, are so fresh that you would judg them scarce to have been three daies buried. And yet in those Sepulchers and Vaults from whence these bodies are taken, there have been some corps of two thousands years old. The same, or their broken members are brought to *Venice* from *Syria* & *Egypt*, and thence disperst over all *Christendom*. But according to the different condition of men, the matter of their embalmments were divers; for the bodies of the Nobility or Gentry are embalmed with Myrrh, Aloes, Saffron, and other precious spices, and Drugs; but the bodies of the common sort whose poverty and want of means could not undergo such cost, were embalmed with asphaltum or pissasphaltum.

Another.

Now *Mathiolus* saith that all the Mummie which is brought into these parts is of this last kind & condition. For the Noblemen and chief of the province so religiously addicted to the monuments of their ancestors, would never suffer the bodies of their friends, and kindred to be transported hither for filthy gain, and such detested use, as we shall shew more at large at the end of this work. Which thing sometimes moved certain of our *French* Apothecaries, men wondrous audacious, and covetous, to steal by night the bodies of such as were hanged, and embalming them with Salt and Drugs they dried them in an Oven, so to sel them thus adulterated in stead of true Mummie. Wherefore we are thus compelled both foolishly and cruelly to devoure the mangled and putrid particles of the carkasses of the basest people of *Egypt*, or of such as are hanged, as though there were no other way to help or recover one bruised with a fall from a high place, than to bury man by an horrid insertion in their, that is, in mans guts. Now if this Drug were any way powerfull for that they require, they might perhaps have some pretence, for this their more than barbarous inhumanity. But the case stands thus, that this wicked kind of Drug, doth nothing help the diseased, in that case, wherefore and wherein it is administred, as I have tryed an hundred times, & as *Thevet* witnesses, he tryed in himself, when as he took some thereof by the advice of a certain *Jewish* Physitian in *Egypt*, from whence it is brought; but it also infers many troublesome symptomes, as the pain of the heart or stomach, vomiting and stink of the mouth.

What our Mummie usually is.

Mummie is no way good for contusions.

I perswaded by these reasons, do not only my self prescribe any hereof, to my Patients, but also in consultations, endeavour what I may, that it be not prescribed by others. It is far better according to *Galens* opinion in *Method. med.* to drink some oxycrate, which by its frigidty restrains the flowing blood, and by its tenuity of substance dissolves and discusses the congealed clots thereof. Many reasons of learned Physitians (from whom I have learned this History of Mummie) drawn from Philosophy, whereby they make it apparent, that there can be no use of this or that Mummie in contusions, or against flowing or congealed blood, I willingly omit, for that I think it not much beneficiall to Chirurgeons to insert them here. Wherefore I judg it better to begin to treat of combustions, or burns.

But hurtfull, and how? The effects of oxycrate in Contusions.

CHAP. VIII. Of Combustions and their differences.



ALL Combustions whether occasioned by Gunpouder, or by scalding oil, water, some metall or what things soever else, differ only in magnitude. These first cause pain in the part, and imprint in it an unnaturall heat. Which favouring of the fire, leaves that impression, which the Greeks call *Empyreuma*. There are more or lesse signs of this impression, according to the efficacy of the thing burning, the condition of the part burned, and stay upon the same. If the combustion be superficially, the skin rises into pustules and blisters, unlesse it be speedily prevented. If it be low or deep in, it is covered with an *Eschar* or crust, the burnt flesh by the force of the fire turning into that crusty hardnesse. The burning force of the fire, upon whatsoever part it falls, leaves a hot distemper therein, condensates, contracts, and thickens the skin, whence pain proceeds; from pain there comes an attraction of humors, from the adjacent and remote parts. These humors presently turned into waterish or serous moisture, whilst they seek to passe forth, and are hindred thereof by the skin condensated by the action of the fire, they lift it up higher, and raise the blisters which we see. Hence divers Indications are drawn, whence proceeds the variety of medicins for burns. For some take away the *Empyreuma*, that is, the heat of the fire, (as we term it) & asswage the pain; other hinder the rising of blisters; other some are fit to cure the ulcer, first to procure the falling away of the *Eschar*, then to cleanse, generate flesh and cicatrize it. Remedies fit to asswage pain, and take away the fiery heat, are of two kinds; for some do it by a cooling faculty, by which they extinguish the preternaturall heat, and repress or keep back the blood and humors, which flow into the parts by reason of heat and pain. Others endued with contrary faculties, are hot and attractive; as which by relaxing the skin, and opening the pores, resolve and dissipate the serous humors, which yeeld both beginning, and matter to the pustules, and so by accident asswage the pain and heat. Refrigerating things are cold water, the water of Plantain, Night-shade, Henbane, Hemlock; the juyces of cooling hearbs, as Purslane, Lettuce, Plantain, Houfleeck, Poppy, Mandrake and the like. Of these some may be compounded, as some of the fore-

The reason and symptomes of combustions

The cause of the blisters rising upon burns.

Variety of medicins to take away the heat and asswage the pain.

named

named juices beaten with the white of an egge; Clay beaten and dissolved in strong Vinegar; rock A-lome dissolved in water, with the whites of eggs beaten therein; writing ink mixed with Vinegar, and a little Camphire; *Vnguentum nutritum*, and also *Populeon* newly made. These and the like shall be now and then renewed chiefly at the first, untill the heat and pain be gone. But these same remedies must be applyed warm, for if they should be laid, or put to cold, they would cause pain, and consequently defluxion; besides also their strength could not passe, or enter into the part, or be brought into action; but so applyed they asswage pain, hinder inflammation and the rising of blisters.

CHAP. IX. Of hot and attractive medicins to be applyed to burnes.



Mongst the hot and attractive things which by rarifying, drawing out, and dissolving, asswage the pain and heat of combustions, the fire challenges the first place, especially when the burning is but small. For the very common people know and find by dayly experience, that the heat of the lightly burnt part vanishes away, and the pain is asswaged, if they hold the part which is burnt some preby while to the heat of a lighted candle, or burning coals; for the similitude causeth attraction. Thus the externall fire whilest it draws forth the fire which is internall and inuist into the part, is a remedy against the disease it caused and bred. It is also an easily made and approved remedy, if they presently after the burn apply to the grieved part raw Onions beaten with some salt. Now you must note, that this medicine takes no place, if it be once gone into an ulcer, for it would increase the pain and inflammation; but if it be applyed when the skin is yet whole and not excoriated, it doth no such thing, but hinders the rising of pustles and blisters. *Hippocrates* for this cause also uses this kind of remedy in procuring the fall of the *Eschar*. If any endeavour to gainsay the use of this remedy by that principle in Physick, which sayes, that contraries are cured by contraries, and therefore affirm that Onions according to the authority of *Galen*, being hot in the fourth degree, are not good for combustions; let him know that Onions are indeed potentially hot, and actually moist, therefore they rarifie by their hot quality, and soften the skin by their actuall moisture, whereby it comes to pass that they attract, draw forth, and dissipate the imprinted heat, and so hinder the breaking forth of pustles. To conclude, the fire, as we formerly noted, is a remedy against the fire. But neither are diseases alwayes healed by their contraries (saith *Galen*) but sometimes by their like; although all healing proceed from the contrary, this word *contrary*, being more largely and strictly taken, for so also a Phlegmon is often cured by resolving medicins, which healeth it by dissipating the matter thereof. Therefore Onions are very profitable for the burnt parts, which are not yet exulcerated or excoriated. But there are also many other medicins good to hinder the rising of blisters; such as new horse-dung fryed in oil of Wal-nuts or Roses, and applyed to the parts. In like manner the leaves of Elder or Dane-wort boyled in oil of nuts, and beaten with a little salt. Also quenched lime powdered and mixed with *Vnguentum Rosatum*. Or else the leaves of Cuckow-pint and Sage beaten together with a little salt. Also Carpenters Glue dissolved in water and anointed upon the part with a feather, is good for the same purpose. Also thick Vernish which polishers or sword cutlers use. But if the pain be more vehement, these medicins must be renewed 3 or 4 times in a day and a night, so to mitigate the bitterness of this pain. But if so be we cannot by these remedies hinder the rising of blisters, then we must presently cut them as soon as they rise, for that the humor contained in them, not having passage forth, acquires such acrimony that it eats the flesh which lyeth under it, and so causeth hollow ulcers: So by the multitude of causes and increase of matter the inflammation groweth greater, not only for nine dayes (as the common people prattle) but for far longer time; also some whiles for less time, if the body be neither repleat with ill humors, nor plethorick, and you have speedily resisted the pain and heat by fit remedies. When the combustion shall be so great as to cause an *Eschar*, the falling away must be procured by the use of emollient and humective medicins, as of greases, oils, butter, with a little *basilicon*, or the following ointment. *Rx Mucagin. psillii. & cydon. an. ℥iiij. gummi trag. ℥ij. extrahantur cum aqua parietariae, olei liliorum ℥iij. s. cere novae q. s. fiat unguentum molle.* For ulcers and excoriations you shall apply fit remedies, which are those that are without acrimony, such as *unguentum album camphoratum, desiccativum rubrum, unguentum rosatum*, made without Venegar, or *nutritum* composed after this manner. *Rx lithargyri auri ℥iiij. ol. rosat. ℥iij. ol. de papaver. ℥iij. s. ung. populeon. ℥iiij. camphorae ℥j. fiat unguentum in mortario plumbeo secundum artem.* Or oil of Eggs tempered in a Leaden mortar. Also unquenched lime many times washed and mixed with *unguentum rosatum*, or fresh butter without salt, and some yolks of eggs hard roasted. Or *Rx Butyri recent. sine sale, ustulati, & colati ℥vj. vitell. ovor. iiij. cerus. lot. a in aqua plantag. vel rosar. ℥ss. tuthie similiter lot. a, ℥iij. plumbi usti, & loti, ℥ij. Misceantur omnia simul, fiat linimentum ut decet.* Or elie, *Rx cort. jambuc. viridis, & olei rosat. an. lib. j. bulliant simul lento igne, postea colentur, & adde olei ovorum ℥iiij. pul. ceruss. & tuthie prepar. an. ℥j. cere albe quantum sufficit, fiat unguent. molle secundum artem.* But the quantity of drying medicins may alwayes be encreased or diminished according as the condition of the ulcer shall seem to require. The following remedies, are fit to asswage pain, as the mucilages of Line seeds, of the seeds of *Psillium*, or Flea-wort, and quinces extracted in rosewater, or fair water, with the addition of a little camphire; and lest that it dry too speedily, adde thereto some oil of Roses. Also five or six yolks of eggs mixed with the mucilages of Line seed, the seed of *Psillium*, and quinces often renewed, are very powerfull to asswage pain. The women which attend upon the people in the Hospitall in *Paris*, do happily use this medicin against burns. *Rx Lard. confisi libram unam;* let it be dissolved in Rosewater, then strained through a linnen cloath, then wash it foure times with the water of hen-bane or some other of that kind, then let it be incorporated with eight yolks of new laid eggs, and so make an ointment. If the smart be great, as usually it is in these kinds of wounds, the ulcer or sores shall be covered over with a piece of Tiffany, lest you hurt them, by wiping them with somewhat a course cloth, and so also the matter may easily come forth, and

How fire may asswage the pain of burning.

Beaten Onions good for burnes and how.

Lib. 5. fmg.

How often in a day these must be dressed.

Medicins for an Eschar.

A description of Nutritum.

A remedy for burnes commonly used in the Hospitall of Paris.

and the medicins easily enter in. Also you must have a care when the eyelids, lips, sides of the fingers, neck, the armpits, hams, and bending of the elbow are burnt, that you suffer not the parts to touch one the other, without the interposition of some thing; otherwise in continuance of time they would grow and stick together. Therefore you shall provide for this, by fit placing the parts, and putting soft linnen rags between them. But you must note, that deep combustions, and such as cause a thicker *Eschar*, are less painfull, than such as are but only superficially. The truth hereof you may perceive by the example of such as have their limbs cut off, and seared or cauterised with an hot Iron; for presently after the cauterising is performed they feel little pain. For this great combustion takes away the sense, the vehemency of the sensory or thing affecting the sense, depriving the sensitive parts of their sense; As we have formerly noted when we treated of wounds and pains of the Nerves. The falling away of such *Eschars* shall be procured by somewhat a deep scarification which may pierce even to the quick, that so the humors which lye under it may enjoy freer perspiration, and emollient medicins may the freelier enter in, so to soak, moisten and soften the *Eschar* that it may at length fall away. The rest of the cure shall be performed by detergent and sarcotick medicins, adding to the former ointments metalline powders, when the present necessity shall seem so to require. But we cannot justly say in what proportion and quantity each of these may be mixed, by reason of that variety which is in the temper and consistence of bodies, and the stubbornness and gentleness of diseases. After a burn the scar which remaineth is commonly rough, unequal, and ill favoured: therefore we will tell you in our treatise of the plague how it must be smoothed, and made even.

Why deep combustions are less painfull then superficially.

I must not here omit to tell you, that Gunpowder set on fire doth often so penetrate into the flesh, not ulcerating nor taking off the skin, and so insinuate and thoroughly fasten it selfe into the flesh by its tenuity, that it cannot be taken or drawn out thence by any remedies, no not by *Phænigmes* nor vesicatories, nor scarification, nor ventoses, nor horns, so that the prints thereof alwayes remain, no otherwise than the marks which the Barbarians burn in their slaves, which cannot afterwards be taken away or destroyed by any Art.

Marks or spots made in the face by corns of Gunpowder cannot be taken away.

CHAP. X. Of a Gangrene and Mortification.

Certainly the malign symptomes which happen upon wounds, and the solutions of Continuity are many, caused either by the ignorance or negligence of the Chirurgion; or by the Patient, or such as are about him; or by the malignity and violence of the disease: but there can happen no greater then a Gangrene, as that which may cause the mortification and death of the part, and oft times of the whole body; wherefore I have thought good in this place to treat of a Gangrene, first giving you the definition, then shewing you the causes, signs, prognosticks, and lastly the manner of cure. Now a Gangrene is a certain disposition, and way to the mortification of the part, which it seizeth upon, dying by little and little. For when there is a perfect mortification, it is called by the Greeks *Sphacelos*, by the Latines *Syderatio*; our countrymen terme it the fire of Saint *Anthony* or Saint *Marcellus*.

Galen 2. ad Glaucanem.

CHAP. XI. Of the generall and particular causes of a Gangrene.

The most generall cause of a Gangrene is, when by the dissolution of the harmony and joint temper of the foure first qualities; the part is made unapt to receive the faculties, the Naturall, Vitall, and Animall spirits; by which it is nourished, lives, feels, and moves. For a part deprived by any chance of these as of the light, languishes and presently dyes. Now the particular causes are many; and these either primitive, or antecedent. The primitive or externall are combustions caused by things either actually or potentially burning; actually, as by fire, scalding oil or water, gunpowder fired and the like. But potentially by acrid medicins; as Sublimate, vitrioll, potentiall cauteries and other things of the same nature: for all these cause a great inflammation in the part. But the ambient air may cause great refrigerations, and also a Gangrene, which caused *Hippocrates lib. de Acr.* to call great refrigerations of the brain *Sphacelisme*. Therefore the unadvised and unfit application of cold and narcotick things, a fracture, luxation and great contusion, too strait bandages, the biting of beasts, especially of such as are venomous, a puncture of the Nerves and Tendons, the wounds of the nervous parts and joints, especially in bodies which are plethorick and repleat with ill humors, great wounds whereby the vessels which carry life are much cut, whence an *aneurisma*, and lastly many other causes, which perturb that harmony of the foure prime qualities which we formerly mentioned, and so infer a Gangrene.

The generall cause of a Gangrene.

The particular cause.

Cold causeth a Gangrene.

CHAP. XII. Of the Antecedent causes of a Gangrene.

Now the antecedent or internall and corporeall causes of a Gangrene, are plentifull and abundant defluxions of humors, hot or cold, falling into any part. For seeing the faculty of the part is unapt and unable to sustain and govern such plenty of humors, it comes to passe that the native heat of the part is suffocated and extinct for want of transpiration. For the Arteries are hereby so shut or pent up in a strait, that they cannot perform their motions of contraction and dilatation, by which their native heat is preserved and tempered. But then the Gangrene is chiefly incurable when the influx of humors first takes hold of the bones, and inflammation hath its beginning from them. For in the opinion of *Galen*, all these kind of affects which may befall the flesh, are also incident to the bones. Neither only a Phlegmon or inflammation; but also a rottenesse and corruption

How defluxions cause a Gangrene.

An incurable Gangrene.

Lib. de mor. pr. at. 2. 1. 1. 1. 1.

ruption

ruption doth oft-times first invade and begin at the bones; for thus you may see many who are troubled with the Leprosie and French disease, to have their skin and flesh whole and fair to look on, whose bones notwithstanding are corrupt and rotten, and oft-times are much decayed in their proper substance. This mischief is caused by a venomous matter, whose occult qualitie we can scarce expresse by any other name than poyson inwardly generated. Oft-times also there is a certain acrid and stinking filth generated in flesh with a malign and old ulcer, with which if the bones chance to be moistened they become foul and at length mortified: of which this saying of *Hippocrates* is extant, Ulcers of a years continuance or longer, must necessarily foul the bone, and make the scars hollow. Whither also belongs this saying of the same party; An *Erisipelas* is ill in the laying bare of a bone. But this flowing venenate and gangrenous matter is somewhiles hot, as in pestilent Carbuncles, which in the space of four and twenty hours by causing an *eschar*, bring the part to mortification: otherwhiles cold, as we see it divers times happens in parts which are possess'd with a Gangrene, no pain, tumor, blackness, nor any other precedent sign of a Gangrene going before. For *John de Vigo* saith, that happened to a certain gentlewoman of *Genoa* under his cure.

Aph. 5. sect. 6.

A Gangrene by efflux of a cold matter.

A notable History.

Simple cold may cause a Gangrene.

A History.

What parts are usually taken by a Gangrene occasioned by cold.

I remember the same happened to a certain man in *Paris*, who supping merrily and without any sense of pain, went to bed, and suddainly in the night time a Gangrene seized on both his legs, caused a mortification without tumor, without inflammation; only his legs were in some places spread over with livid, black and green spots, the rest of the substance retaining his native colour: yet the sense of these parts was quite dead, they felt cold to the touch; and if you thrust your lancet into the skin no blood came forth. A Councell of Physicians being called, they thought good to cut the skin, and flesh lying under it, with many deep scarifications; which when I had done, there came forth a little black, thick and as it were congealed blood; wherefore this remedy, as also divers other, proved to no purpose, for in conclusion a blackish colour coming into his face, and the rest of his body, he dyed frantick. I leave it to the Readers judgement, whether so speedy, and suddainly cruell a mischief could proceed from any other than a venenate matter; yet the hurt of this venenate matter is not peculiar, or by its self. For oft-times the force of cold, whether of the encompassing air, or the too immoderate use of Narcotick medicins, is so great, that in a few hours it takes away life from some of the members, and divers times from the whole body, as we may learn by their example, who travell in great snowes, and over mountains congealed, and horrd with frost and ice. Hence also is the extinction of the native heat and the spirits residing in the part, and the shutting forth of that which is sent by nature to aid or defend it. For when as the part is bound with rigid cold, and as it were frozen, they cannot get nor enter therein. Neither if they should enter into the part, can they stay long there, because they can there finde no fit habitation, the whole frame and government of nature being spoiled, and the harmony of the four prime qualities destroyed, by the offensive dominion of predominant cold their enemy, whereby it cometh to passe that flying back from whence they first came; they leave the part destitute and deprived of the benefit of nourishment, life, sense and motion.

A certain Briton an Hostler in *Paris*, having drunk soundly after supper, cast himself upon a bed; the cold air coming in as a window left open, so took hold upon one of his legs, that when he waked forth of his sleep, he could neither stand nor goe. Wherefore thinking only that his leg was numb, they made him stand to the fire; but putting it very nigh, he burnt the sole of his foot without any sense of pain, some fingers thickness, for a mortification had already possessed more than halfe his leg. Wherefore after he was carryed to the Hospitall, the Chirurgion who belonged thereto, endeavoured by cutting away of the mortified leg to deliver the rest of the body from imminent death; but it proved in vain; for the mortification taking hold upon the upper parts, he dyed within three dayes, with troublesome belching and hicketing, raving, cold sweat, and often swoounding. Verily all that same winter, the cold was so vehement that many in the Hospitall of *Paris* lost the wings or sides of their nostrills, seized upon by a mortification without any putrefaction. But you must note, that the Gangrene which is caused by cold, doth first and principally seize upon the parts most distant from the heart, the fountain of heat; to wit, the feet and legs; as also such as are cold by nature, as gristly parts, such as the nose and eares.

CHAP. XIII. Of the signs of a Gangrene.



The signs of a Gangrene which inflammation or a phlegmon hath caused, are pain and pulsation without manifest cause, the sudden changing of the fiery and red colour into a livid or black, as *Hippocrates* shewes where he speaks of the Gangrene of a broken heel. I would have you here to understand the pulsifick pain not only to be that which is caused by the quicker motion of the Arteries, but that heavy and pricking which the contention of the naturall heat doth produce by raising a thick cloud of vapours from these humors which the Gangrene sets upon. The signs of a Gangrene caused by cold, are, if suddainly a sharp pricking and burning pain assaileth the part; for *penetrabile frigus adurit*, (i) piercing cold doth burn: if a shining redness as if you had handled snow, presently turn into a livid colour; if in stead of the accidentall heat which was in the part, presently cold and numbness shall possess it, as if it were shook with a quartain fever. Such cold if it shall proceed so far as to extinguish the native heat, bringeth a mortification upon the Gangrene; also oft-times convulsions & violent shaking of the whole body, wondrous troublesome to the brain & the fountains of life. But you shall know Gangrenes caused by too strait bandages, by fracture, luxation, and contusion, by the hardness which the attraction and flowing down of the humors hath caused, little pimples or blisters spreading or rising upon the skin by reason of the great heat, as in a combustion; by the weight of the part occasioned through the defect of the spirits not now sustaining the burden

See a lib. de fractur.

What a pulsifick pain is.

Signs of a Gangrene proceeding of cold.

Signs of Gangrenes proceeding from strait bandages, or ligatures, &c.

den of the member; and lastly from this, the pressing of your finger upon the part, it will leave the print thereof as in an *oedema*; and also from this, that the skin cometh from the flesh without any manifest cause.

Now you shall know Gangrenes arising from a bite, puncture, *aneurisma*, or wound in plethorick and ill bodies, and in a part indued with most exquisite sense, almost by the same signs as that which was caused by inflammation. For by these and the like causes, there is a far greater defluxion and attraction of the humors than is fit, when the perspiration being intercepted and the passages stoppt, the native heat is oppressed and suffocated. But this I would admonish the young Chirurgion, that when by the fore-mentioned signs he shall find the Gangrene present, that he do not defer the amputation for that he finds some sense, or small motion yet residing in the part. For oft-times the affected parts are in this case moved not by the motion of the whole muscle, but only by means, that the head of the muscle is not yet taken with the Gangrene: with moving it self by its one strength, also moves its proper and continued tendon and tail though dead already; wherefore it is ill to make any delay in such causes.

Signs of a Gangrene occasioned by a bite, puncture, &c.

CHAP. XIII. Of the Prognosticks in Gangrenes.

Having given you the signs and causes to know a Gangrene; it is fit we we also give you the prognostick. The fierceness and malignity thereof is so great, that unlesse it be most speedily withstood the part it self will dye, and also take hold of the neighbouring parts by the contagion of its mortification: which hath been the cause that a Gangrene by many hath been termed an *Esthiomenos*. For such corruption creeps out like poyson, and like fire eats, gnaws, and destroyes all the neighbouring parts, untill it hath spread over the whole body. For as Hippocrates writes, *Lib. de vulner. capit. 15*; *Mortui & viventis nulla est proportio*, (i) there is no proportion between the dead and living. Wherefore it is fit presently to separate the dead from the living; for unlesse that be done, the living wil dye, by the contagion of the dead. In such as are at the point of death a cold sweat flows over all their bodies: they are troubled with ravings, and watchings, belchings and hicketing molest them; and often swoundings invade them, by reason of the vapours abundantly and continually raised from the corruption of the humors and flesh, and so carried to the bowells and principall parts, by the Veins, Nerves, and Arteries. Wherefore when you have foretold these things to the friends of the Patient, then make haste to fall to your work.

Why a Gangrene is called *Esthiomenos*.

The quick impatient of the dead.

CHAP. XV. Of the generall cure of a Gangrene.

The Indications of curing Gangrenes are to be drawn from their differences, for the cure must be diversly instituted according to the essence and magnitude. For some Gangrenes possess the whole member; others only some portion thereof; some are deep; others some superficial only. Also you must have regard to the temper of the body. For soft and delicate bodies, as of children, women, Eunuches, and idle persons, require much milder medicins, than those who by nature and custome, or vocation of life, are more strong and hardy, such as husbandmen, labourers, mariners, huntsmen, porters, and men of the like nature who live sparingly and hardly. Neither must you have respect to the body in generall, but also to the parts affected; for the fleshy and musculous parts, are different from the solid, as the nerves and joints, or more solid, as the *Vertebrae*. Now the hot and moist parts, as the privities, mouth, womb, and fundament, are easly and sooner taken hold of by putrefaction, wherefore we must use more speedy means to help them. Wherefore if the Gangrene be chiefly occasioned from an internall cause, he must have a dyet prescribed for the decent and fitting use of the six things not naturall. If the body be plethorick, or full of ill humors; you must purge, or let blood by the advice of a Physitian. Against the ascending up of vapours to the noble parts, the heart must chiefly be strengthened with Treacle dissolved in Sorrell, or *Carduus* water; with a bole of Mithridate, the conserves of Roses and Buglosse; and with Opiates made for the present purpose according to Art; this following Apozeme shall be outwardly applyed to the region of the heart. *R. aquae rosar. & nenuphar. an. ʒ iiij. aceti scillitici ʒ j. corallorum, santalorum alborum & rubrorum, rosar. rub. in pulver. redactarum, & spodii, an. ʒ j. mithrid. & theriacae, an. ʒ i j β. trochiscorum de Caphura ʒ ij. flor. cardial. in pollin. redactarum, p. ij. croci ʒ j. ex omnibus in pollinem redactis, fiat epithema.* Which may be applyed upon the region of the heart with a scarlet cloth or sponge. These are usually such as happen in the cure of every Gangrene.

Various Indications of curing a Gangrene.

What parts soonest taken hold by a Gangrene.

A cordiall Epithema.

CHAP. XVI. Of the particular cure of a Gangrene.

The cure of a Gangrene, caused by the too plentiful and violent defluxion of humors suffocating the native heat, by reason of great Phlegmons, is performed by evacuating and drying up the humors, which putrefie by delay and collection in the part. For this purpose scarifications and incisions, great, indifferent, small, deep and superficially according to the condition of the Gangrene, are much commended; that so the burdened part may enjoy the benefit of perspiration; and the contained humors, of distillation, or evacuation of their sooty excrements. Let incisions be made when the affect is great, deep in, and neer to mortification. But scarifications may be used when the part first begins to putrefie, for the greatnesse of the remedy must answer in proportion to that of the disease. Wherefore if it penetrate to the bones, it will be fit, to cut the skin and flesh with many and deep incisions, with an incision knife made for that purpose; yet take heed of cutting the larger nerves and vessels, unlesse they be wholly putrefied, for if they be not yet putrefied, you shall make your incisions in the spaces between them; if the Gangrene be lesse, we must rest

The cure of a Gangrene made by inflammation.

satisfied with only scarifying it. When the scarifications and incisions are made, we must suffer much blood to flow forth, that so the conjunct matter may be evacuated. Then must we apply and put upon it such medicins as may by heating, drying, resolving, cleansing and opening, amend and correct the putrefaction, and by piercing to the bottom may have power to overcome the virulencie already impact in the part. For this purpose Lotions made of the lye of the Ashes of fig-tree or Oak wherein Lupins have been throughly boyled are good. Or you may with lesse trouble make a medicin with salt water, wherein you may dissolve Aloes and *Aegyptiacum*, adding in the conclusion a little *Aqua vitæ*; for *aqua vitæ* and calcined vitrioll are singular medicins for a Gangrene. Or *Rx. acet. opimi ℥j. mel. ros. ℥iiij. syrup. acetosi ℥iiij. salis com. ℥v. bulliant simul, adde aqua vitæ, ℥℥. f.* Let the part be frequently washed with this medicin, for it hath much force to repress Gangrenes. After your Lotion, lay *Aegyptiacum* for a Liniment, and put it into the incisions; for there is no medicin, more powerfull against putrefaction, for by causing an *Eschar*, it separates the putrid flesh from the sound. But we must not in this kind of affect expect that the putrid flesh may of it self fall from the sound; but rather cut off with your incision knife or sissors, whatsoever thereof you can, and then put to it *Aegyptiacum* as oft as need shall require. The knowledg hereof may be acquired from the colour, smell, and sensibleness of the flesh it self. The description of the *Aegyptiacum*, whose wondrous effects I have often tryed in these causes, is this. *Rx. flor. & ris, aluminis roch. mellis com. an. ℥iiij. aceti acerrimi ℥v. salis com. ℥j. vitrioli rom. ℥℥. sublimati pul. ℥ij. bulliant omnia simul ad ignem, fiat unguent.* If the force of the putrefaction in the part be not so great, a weaker *Aegyptiacum* may serve. When you have put in the *Aegyptiacum*, then presently lay the following Cataplasme thereupon. For it hinders putrefaction, resolves, cleanses and dries up the virulent sanies, and by the dry subtilery of the parts penetrates into the member, strengthens it, and asswages the pain. *Rx. farin. fabar. bordei orobi, lent. lupin. an. ℥℥. sal. com. mellis roj. at. an. ℥iiij. succi absinth. marrub. an. ℥iiij. aloes, mastiches, myrrha, & aqua vit. an. ℥ij. oxymelitis simpl. quantum sufficit; fiat Cataplasma molle secundum artem;* Somewhat higher than the part affected, apply this following astringent, or defensitive, to hinder the flowing down of the humors into the part, and the rising up of the vapours from the putrid part into the whole body. *Rx. olei rosati, & myrtill. an. ℥iiij. succi plantag. solani, sempervivi, an. ℥ij. album ovorum 5. boli armeni, terræ sigillatæ subtiliter pulverisatorum, an. ℥j. oxycrati quantum sufficit, misce ad usum dictum.* But these medicins must be often renewed. If the grief be so stubborn, that it will not yeeld to the described remedies, we must come to stronger, to wit, Cauteries, after whose application, *Galen* bids to put upon it the juice of a Leek with salt beaten and dissolved therewith, for that this medicin hath a piercing and drying faculty, and consequently to hinder putrefaction. But if you prevail nothing with Cauteries, then must you come to the last remedy and refuge, that is, the amputation of the part; For according to *Hippocrates*, to extrem diseases exquisitely extrem remedies are best to be applied. Yet first be certain of the mortification of the part; for it is no little or small matter to cut off a member without a cause.

Therefore I have thought it fit to set down the signs, whereby you make know a perfect and absolute mortification.

CHAP. XVII. The signs of a perfect Necrosis or Mortification.

You shall certainly know that a Gangrene is turned into a Sphacell, or mortification and that the part is wholly and throughly dead, if it look of a black colour, and be colder than stone to your touch, the cause of which coldness is not occasioned by the frigidity of the air; if there be a great softness of the part, so that if you presse it with your finger it rises not again, but retains the print of the Impression. If the skin come from the flesh lying under it; if so great and strong a smell exhale (especially in an ulcerated Sphacell) that the standers by cannot endure or suffer it; if a sanious moisture, viscid, green or blackish flow from thence; if it be quite destitute of sense and motion, whether it be pulled, beaten, crushed, pricked, burnt, or cut off. Here I must admonish the young Chirurgeon, that he be not deceived concerning the losse or privation of the sense of the part. For I know very many deceived as thus; the Patients pricked on that part would say they felt much pain there. But that feeling is oft deceitfull, as that which proceeds rather from the strong apprehension of great pain which formerly raigned in the part, than from any faculty of feeling as yet remaining. A most clear and manifest argument of this false and deceitfull sense appears after the amputation of the member; for a long while after they will complain of the part which is cut away.

Verily it is a thing wondrous strange and prodigious, and which will scarce be credited, unless by such as have seen with their eyes, and heard with their ears the Patients who have many months after the cutting away of the Leg, grievously complained that they yet felt exceeding great pain of that leg so cut off. Wherefore have a speciall care lest this hinder your intended amputation; a thing pitifull, yet absolutely necessary for to preserve the life of the Patient and all the rest of his body, by cutting away of that member which hath all the signs of a Sphacell and perfect mortification; for otherwise the neglected fire will in a moment spread over all the body, and take away all hope of remedy; for thus *Hippocrates* wisheth: That Sections, Ustions, and Trephations must be performed as soon as need requires.

CHAP. XVIII. Where Amputation must be made.

It is not sufficient to know that Amputation is necessary, but also you must learn in what place of the dead part, it must be done, and herein the wisdom and judgment of the Chirurgeon is most apparent. Art bids to take hold of the quick, and to cut off the member in the sound flesh; but the same art wisheth us, to preserve whole that which is sound, as much as in us lies. I will shew thee by a familiar example how thou maist carry thy self in these difficulties. Let

The description of an *Aegyptiacum*.

Astringents that may be used in cure of a Gangrene.

Gal. 2. ad Glauconem.

Aphor. 6. sect. 11.

A note concerning the unsensibleness of the part.

A wondrous symptom.

Secl. 7. Lib. 6. Epidem.

The controversy decided.

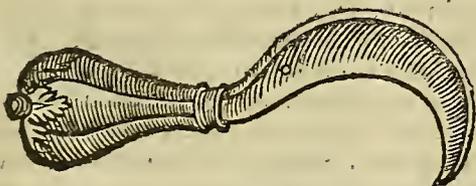
us suppose, that the foot is mortified even to the ankle; here you must attentively mark in what place you must cut it off. For unlesse you take hold of the quick flesh in the amputation, or if you leave any putrefaction, you profit nothing by amputation, for it will creep and spread over the rest of the body. It befits Physick ordained for the preservation of mankind, to defend from the iron or instrument & all manner of injury, that which enjoyes life and health. Wherefore you shall cut off as little of that which is found as you possibly can; yet so that you rather cut away that which is quick, than leave behind any thing that is perished, according to the advice of *Celsus*. Yet oft-times the commodity of the action Lib. 7. cap. 33. of the rest of the part, and as it were a certain ornament thereof, changes this counsell: For if you take these two things into your consideration they will induce you in this propounded case and example, to cut off the Leg some five fingers breadth under the knee. For so the Patient may more fitly use the rest of his Leg and with lesse trouble, that is, he may the better go on a wooden Leg; for otherwise, if according to the common rules of Art, you cut it off close to that which is perished, the Patient will be forced with trouble to use three Legs in stead of two.

For I so knew Captain *Francis Clerk*, when as his foot was stricken off with an iron bullet shot forth of a man of war, and afterwards recovered and healed up, he was much troubled and wearied with the heavy and unprofitable burden of the rest of his Leg, wherefore though whole and sound he caused the rest thereof to be cut off, some five fingers breadth below his knee; and verily he useth it with much more ease and facility than before in performance of any motion. We must do otherwise if any such thing happen in the Arm; that is, you must cut off as little of the sound part as you can. For the action of the Legs much differ from these of the Arms, and chiefly in this that the body rests not, neither is carried upon the Arms, as it is upon the feet and Legs. An observable History.

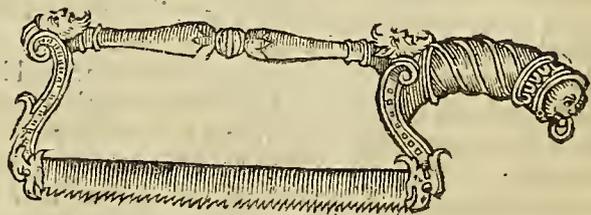
CHAP. XIX. *How the section or amputation must be performed.*

THe first care must be of the Patients strength, wherefore let him be nourished with meats of good nutriment, easie digestion, and such as generate many spirits; as with the yolks of Eggs, and bread tosted and dipped in Sack or Muscadine. Then let him be placed, as is fit, and drawing the muscles upwards towards the sound parts, let them be tyed with a strait ligature a little above that place of the member which is to be cut off, with a strong and broad fillet like that which women usually bind up their hair withall. This ligature hath a threefold use; the first is, that it hold the muscles drawn up together with the skin, so that retiring back presently after the performance of the work, they may cover the ends of the cut bones, and serve them in stead of bouldsters or pillows when they are healed up, & so suffer with lesse pain the compression in sustaining the rest of the body; besides also by this means the wounds are the sooner healed and cicatrized; for by how much more flesh or skin is left upon the ends of the bones, by so much they are the sooner healed and cicatrized. The second is, for that it prohibits the flux of blood by pressing and shutting up the veins and arteries. The third is, for that it dulls the sense of the part by stupefying it, the animall spirits by the strait compressing being hindred from passing in by the Nerves. Wherefore when you have made your ligature, cut the flesh even to the bone with a sharpe and well cutting incision knife, or with a crooked knife, such as is here expressed. The Ligature of the part.

A crooked knife fit for dismembring; or a dismembring knife.



The Figure of such a Saw.

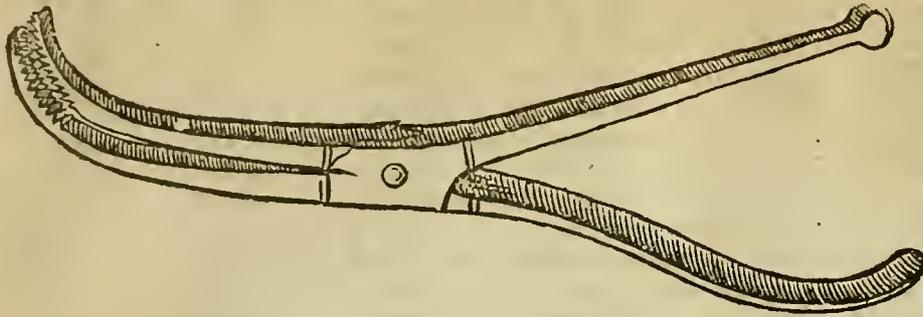


Now you must note, that there usually lies between the bones, a portion of certain muscles which you cannot easily cut with a large incision or dismembring knife; wherefore you must carefully divide it and separate it wholly from the bone, with an instrument made neatly like a crooked incision knife. I thought good to advertise thee hereof; for if thou shouldst leave any thing besides the bone to be divided by the Saw, you would put the Patient to excessive pain in the performance thereof; for oft things, as flesh, tendons and membranes, cannot be easily cut with a Saw. Therefore when you shall come to the bared bone, all the other parts being wholly cut asunder and divided, you shall nimbly divide it with a little Saw about some foot and three inches long, and that as near to the sound flesh as you can. And then you must smooth the front of the bone which the Saw hath made rough. A caution to be observed.

CHAP. XX. *How to stanch the bleeding when the member is taken off.*

When you have cut off and taken away the member, let it bleed a little according to the strength of the Patient, that so the rest of the part may afterwards be lesse obnoxious to inflammation and other symptomes; Then let the veins and arteries be bound up as speedily and straitly as you can; that so the course of the flowing blood may be stopped and wholly stayed. Which may be done by taking hold of the vessels with your Crows beak, whereof the figure follows.

The Crowes beak fit for to draw the vessells forth of the flesh wherein they lye hid, that so they may be tyed or bound fast.



How to draw forth the vessells and bind them.

The ends of the vessells lying hid in the flesh, must be taken hold of and drawn with this instrument forth of the muscles whereinto they presently after the amputation withdrew themselves, as all parts are still used to withdraw themselves to-

wards their originalls. In performance of this work, you need take no great care, if you together with the vessells comprehend some portion of the neighbouring parts, as of the flesh, for hereof will ensue no harme; but the vessells will so be consolidated with the more ease, than if they being bloodlesse parts should grow together by themselves. To conclude, when you have so drawn them forth, bind them with a strong double thred.

CHAP. XXI. How after the blood is stanch'd, you must dresse the wounded member.

How the lips of the dismembred part are to be joined together.



When you have tyed the Vessells, loose your Ligature which you made above the place of amputation; then draw together the lips of the wound with four stiches made across, having taken good hold of the flesh; for thus you shall draw over the bones that part of the skin and cut muscles drawn upwards before the amputation, and cover them as close as you can, that so the air may the lesse come at them, and that so the wound may be the more speedily agglutinated. But when we say, draw together the lips of the wound with four stiches, you must not so understand it, as that you must endeavour, to draw them so close as to touch each other, for that is impossible; for the stiches would sooner break out, and so the part would lye bare. Wherefore it will be sufficient to draw them indifferent close together, that so you may suffer the skin and flesh thereunder to enjoy its former liberty which it possesse before the drawing up, and so in fine by natures assistance, the wound may be the more casily agglutinated.

CHAP. XXII. How you must stop the bleeding, if any of the bound up vessells chance to get loose.



The business hitherto being performed as we said, if peradventure it happen that any bandage of any of the vessells be unloosed, then must you again bind the member with that kind of Ligature which you did before the amputation thereof. Or else, which is better, more easie and lesse painfull, let your servant take hold of the member with both his hands, pressing his fingers strait, stop the passage of the loosed vessell, for so he may stanch the bleeding. Then let the work-master take a needle some four fingers long, square, and having sharp edges, drawing after it a three or four doubled strong thred. With this let him bind the vessell after the following manner. Let him thrust his needle on the outside into the flesh, some half fingers breadth from the loosed vessell untill he come to the end thereof, then let him put it about it, and bring it back again, but so that there be no more than the space of a fingers breadth between the going in, and coming forth of the needle. In this space let him put a linnen rag three or four times doubled, and thereupon bind somewhat strait the two ends of the thred together. For so he shall hinder the knot from hurting the flesh which lies under it in the bindings, and also add strength thereto. For so the bound up orifice of the vessell will in short space be agglutinated to the adjoining flesh, and that so firmly, that there hath never been seen any one drop of blood to have flowed from a vessell so bound up. But if the blood which flows forth proceed from any small vessell, you must not use this future and ligature, nor make any such great matter thereof; for it will quickly be stanch'd by the only application of Astringents presently to be mentioned.

The Hemorrhagic of small vessells is norro heregarded.

CHAP. XXIII. How to perform the residue of the cure of the amputated member.

An emplasticke medicine.



Now must we shew what medicins are fitting to be applyed after the amputation of a member; which are Emplasticks, as these which exceedingly conduce to green wounds. As *Rx boli arm. ℥iiij. farin. vol. ℥iiij. picis, resine, an. ℥ij. pulverisentur omnia subtiliss. & simul mixtis fiat pulvis*; herewith let the wound be strewed, and lay thereupon dry Lint; but let the following repercussive or defensitive be applyed to the member. *Rx Album ovorum vj. boli arm. sang. drac. gypsi, terra sigill. aloes, mastiches, gallar. combust. an. ℥ij. in pollinem redigantur omnia, & bene agitentur, addendo olei rosarum & myrtil. an. ℥j. fiat defensivum ad formam mellis*. This ointment must be applyed upon stoops dipped in Oxycrate, and that so that it may not only cover the cut member; but also be spread further and cover the neighbouring parts; as when the Leg is cut off, it must be laid upon the joint, and spread higher than the knee, some four fingers upon the thigh; for it hath not only a repercussive faculty, but it also strengthens the part, hinders defluxion by tempering the blood, asswaging pain, and hindring inflammation. It will also be good to moisten your double cloths and bandages in Oxycrate; then must you place the member in an indifferent posture upon a pillow stuffed with oaten huskes or chaffe, Stags hair, or wheat bran. It must not be stirred after the first dressing (unless great necessity urge) for four dayes in winter, but somewhat

A repercussive.

How to place the member & how often to dresse it.

somewhat

somewhat sooner in summer. For the ligatures wherewith the vessells are bound, they must not be loosed, or otherwise taken away, before the mouthes of the vessells are covered with their glue or flesh, lest by too much hast you cause a new flux of blood. This agglutination will be performed by applying refrigerating, astringent, and emplastick medicins, such as this following powder. *R. boli arm. faruz. bord. An empla- picis. res. gypsi, an. ℥iij. Aloes, nucum cup. cort. granat. an. ℥j. incorporentur omnia simul, fiat pulvis subtilis:* herewith sick pow- der. let the whole ulcer be strewed over for three or four dayes space; which being ended, let only the seats of the vessells be powdred therewith, and that for eight or ten dayes, so that we need no further doubt of the agglutination of the vessells. In the mean space let the digestive be applyed to the rest of the Ulcer untill it be come to suppuration; for then you shall give over your digestive, and be- take you to detersive and mundificative medicins: As *R. terebinth. ven. lota in aqua vite ℥vj. Detersives. mellis ros. colati ℥iij. succi plantag. Apii, centaur. minoris, an. ℥ij. bulliant omnia simul usque ad con- sumptionem succorum, auferantur ab igne, addendo farinae fab. & bord. an. ℥j, theriac. Gal. ℥β. aloes, myrrhe, aristo- VWhy after dismembring the Patient complain of pain as if the part were yet remaining on. loch. an. ℥iij. croci ℥j. fiat mundificativum.* But seeing the case stands so that the Patients imagin they have their members yet entire, and yet do complain thereof (which I imagin to come to pass, for that the cut nerves retire themselves towards their originall, and thereby cause a pain like to convulsions; for as Galen writes in his book, *De motu musculorum*, that contraction is the true and proper action of a nerve and muscle: and again, extension is not so much an action as a motion:) now we must indeavour to give remedy to this symptome. Which may be done by anointing the spine of the back and all the affected part with the following Liniment, which is very powerful against Convulsions, the Palsie, num- nesses and all cold effects of the nervous bodies. *R. salvia, chamaptheos, majoranae, rorismar. menth. ruta, la- vendula, an. m. j. flor. cham. mel. melilot. summit. aneth. & hyperici, an. p. ij. baccarum lauri & juniperi an. ℥ij. radiceis py- rethri ℥ij. mastic. assae odorat. an. ℥j. terebinth. venet. lb. j. olei lumbr. aneth. catell. an. ℥vj. olei terebinth. ℥iij. acung. hum. ℥ij. croci ℥j. vini albi odoriferi lib. j. cera quantum sufficit, contundenda contundantur, pulverijanda pulverisentur, deinde maceventur omnia in vino per noctem, postea coquantur cum oleis & axungia praedictis in vase duplici, fiat lini- mentum secundum artem. in sine adde aqua vite ℥iij.* Besides, in dressing these wounds, the Chirurgion must use diligence to procure the falling away of the ends or scales of the bones, which the saw and the ap- pulse of the air never before coming hereto; have tainted; which may be done by applying to their ends actuall cauteries, that is, hot irons, in using of which you must have a speciall care that you touch not the sensible parts with fire; neither must the bones themselves be forcibly pluckt off, but gently moved by little and little, so that you shall think you and the Patient have exceedingly well perfor- med your parts if they fall away at the thirtieth day after the Amputation. All these things being per- formed, you shall hinder the growth of proud flesh with the cathæreticks, such as are burnt vitrioll, the powder of Mercury, and other things, amongst which is Alum burnt and powdered, which is excel- lent in these kind of wounds, whether by it self or mixed with others. You shall use these and such like, even unto the perfect agglutination and cicatrization of the wound, and you may of your self devie other things, such as these; as occasion shall offer its self.

CHAP. XXIII. *What just occasion moved the Author to devise this new form of remedy, to stanch the blood af- ter the amputation of a member, and to forsake the common way used almost by all Chirurge- ons; which is, by application of actuall cauteries.*

Verily I confess, I formerly have used to stanch the bleeding of members after amputation, after another manner than that I have a little before mentioned. Whereof I am ashamed, and a- **Hot Irons** **not to be** **used.** grieved; But what should I do? I have observed my masters whose method I intended to fol- low, alwaies to do the like; who thought themselves singularly well appointed to stanch a flux of blood, when they were furnished with various store of hot Irons and caustick medicins, which they would use to the dismembred part, now one, then another, as they themselves thought meet. Which thing cannot be spoken, or but thought upon without great horror, much lesse acted. For this kind of remedy could not but bring great and tormenting pain to the Patient, seeing such fresh wounds made in the quick and sound flesh are endued with exquisite sense. Neither can any caustick be applyed to nervous bodies, but that this horrid impression of the fire will be presently communicated to the in- ward parts, whence horrid symptomes ensue, & oft-times death it self. And verily of such as were burnt, the third part scarce ever recovered, and that with much adoe, for that combust wounds difficultly come to cicatrization; for by this burning are caused cruell pains, whence a Fever, Convulsion, and oft- times other accidents worse than these. Adde hereunto, that when the eschar fell away, oft-times a new hæmorrhage ensued, for stanching whereof they were forced to use other caustick and burning Instru- ments. Neither did these good men know any other course; so by this repetition there was great losse and wast made of the fleshy and nervous substance of the part. Through which occasion the bones were laid bare, whence many were out of hope of cicatrization, being forced for the remainder of their wretched life to carry about an ulcer upon that part which was dismembred; which also took away the opportunity of fitting or putting to of an artificiall leg or arm in stead of that which was taken off. Wherefore I must earnestly entreat all Chirurgeons, that leaving this old, and too too cruell way of healing, they would embrace this new, which I think was taught me by the speciall favour of the sacred Deity, for I learnt it not of my masters, nor of any other, neither have I at any time found it used by any. Only I have read in Galen, that there was no speedier remedy for stanching of blood, than to bind the vessells through which it flowed towards their roots, to wit, the Liver and Heart. This pre- cept of Galen, of binding and sowing the Veins and Arteries in the new wounds, when as I thought it might be drawn to these which are made by the amputation of members, I attempted it in many; yet so that at first in my budding practise thereof, I alwaies had my cauteries and hot Irons in a readinesse,

that if any thing happened otherwise then I expected in this my new work, I might fetch succour from the ancient practice, untill at length confirmed by the happy experience of almost an infinite number of particulars, I bid eternally adieu, to all hot Irons and cauteries which were commonly used in this work. And I think it fit that Chirurgeons do the like. For antiquity and custome in such things as are performed by Art, ought not to have any sway, authority or place contrary to reason, as they oft-times have in civill affaires; wherefore let no man say unto us, that the Ancients have alwayes done thus.

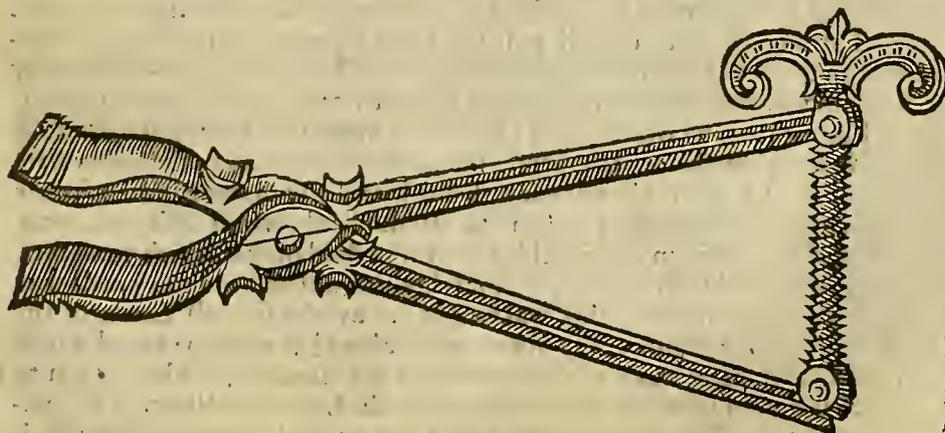
CHAP. XXV. *The practise of the former precepts is declared, together with a memorable history of a certain souldier, whose arm was taken off at the Elbow.*

A History.



Think it fit to confirm by an example the prescribed method of curing a Gangrene and Mortification. Whilst I was Chirurgeon to the Marshall of *Montejan* at *Turin*, a certain common souldier received a wound on his wrist with a musket bullet, by which the bones and tendons being much broken, and the nervous bodies cruelly torn, there followed a Gangrene and at length a mortification even to the Elbow; besides also an inflammation seized upon the middle part of his Chest, and there was as it were a certain disposition to a Gangrene, whereby it followed that he was painfully and dangerously troubled with belchings, hickettings, watchings, unquietnesse and frequent swoondings, which occasioned many Chirurgeons to leave him as desperate. But it so fell out, that I overcome by his friends intreaty, undertook the cure of this wretched person, destitute of all humane help. Wherefore knowing the mortification by its signs, I cut off the arm by the elbow as speedily as I could, making first the ligature, whereof I made mention; I say I took it off not with a saw, but only with an incision knife, cutting in sunder the ligaments which held the bones together, because the sphacell was not passed the joint of the Elbow. Neither ought this section to be counted strange, which is made in a joint; for *Hippocrates* much commends it, and saith that it is easily healed, & that there is nothing to be feared therein besides swoounding, by reason of the pain caused by cutting the common tendons & ligaments. But such incision being made, the former ligature could not hinder, but much blood must flow from thence, by reason of the large vessels that run that way. Wherefore I let the blood to flow plentifully so to disburden the part, and so afterwards to free it from the danger and fear of inflammation and a Gangrene; then presently I stanchd the blood with an hot Iron, for as yet I knew no other course. Then gently loosing the ligature I scarifie that part of the brawn of the Arm which was gangrenated, with many and deep incisions, shunning and not touching the inner part, by reason of the multitude of the large vessels and Nerves which run that way; then I presently applyed a cautery to some of the incisions, both to stanch the bleeding, and draw forth the virulent sanies which remained in the part. And then I assailed and overcame the spreading putrefaction by putting and applying the formerly prescribed medicins; I used all sorts of restrictive medicins, to stay the inflammation of the Chest; I also applyed Epithema's to the region of the heart, and gave him cordial potions and boles, neither did I desist from using them untill such time as his belching, hicketting and swoondings had left him. Whilst I more attentively intended these things, another mischief assails my Patient, to wit, Convulsions, and that not through any fault of him or me, but by the naughtinesse of the place wherein he lay, which was in a Barn every where full of chinks and open on every side, and then also it was in the midst of winter raging with frost and snow and all sorts of cold; neither had he any fire or other thing necessary for preservation of life, to lessen these injuries of the air and place; Now his joints were contracted, his teeth set, and his mouth and face were drawn awry, when as I pitying his case made him to be carried into the neighbouring Stable which smoaked with much horse dung, and bringing in fire in two chafendishes, I presently anointed his neck and all the spine of his back, shunning the parts of the Chest, with liniments formerly described for convulsions; then straight way I wrapped him in a warm linnen cloth, and buried him even to the neck in hot dung, putting a little fresh straw about him; when he had stayed there some three dayes, having at length a gentle scouring or flux of his belly, and plentifull sweat, he begun by little and little to open his mouth and teeth which before were set and close shut. Having got by this means some opportunity better to do my businessse, I opened his mouth as much as I pleased, by putting this following Instrument between his teeth.

A Dilater made for to open the mouth and teeth by the means of a screw in the end thereof.



Now drawing out the Instrument I kept his mouth open by putting in a willow stick on each side thereof, that so I might the more easily feed him with meats soon made, as with Cows milk and rear eggs, untill he had recovered power to eat, the convulsion having left him. He by this means freed from the Convulsion, I then again

begun the cure of his arm, and with an actuall cautery sear the end of the bone, so to dry up the perpetuall

Disincem-
bring at a
joint.

Seet. 4. Lib.
de Art.

Burying in
hot horse
dung helps
Convul-
sions.

petuall afflux of corrupt matter. It is not altogether unworthy of your knowledge, that he said, how that he was wondrously delighted by the application of such actuall cauteries, a certain tickling running the whole length of the arm by reason of the gentle diffusion of the heat by the applying the caustick; which same thing I have observed in many others; especially in such as lay upon the like occasion in the Hospitall of Paris. After this cauterizing there fell away many and large scales of the bone, the freer appulfe of the air than was fit making much thereto; besides when there was place for fomentation, with the decoction of red Rose leaves, Wormwood, Sage, Bay leaves, flowers of Camomil, Melilote, Dill, I so comforted the part that I also at the same time by the same means drew and took away the virulent Sanies, which firmly adhered to the flesh and bones. Lastly, it came to passe, that by Gods assistance, these means I used, and my carefull diligence, he at length recovered. Wherefore I would admonish the young Chirurgion, that he never account any so desperate, as to give him for lost, content to have let him go with prognosticks; for as an ancient Doctor writes; that as in Nature, so in diseases there are also Monsters.

A fomentation for a Convulsion.

Monsters or miracles in diseases.

The End of the Twelfth Book.



Of Ulcers, Fistula's, and Hemorrhoides.

THE THIRTEENTH BOOK.

CHAP. I. Of the nature, causes and differences of Ulcers.



Having already handled and treated of the nature, differences, causes, signs and cure of fresh and bloody wounds, reason and order seem to require that we now speak of Ulcers; taking our beginning from the ambiguity of the name. For according to Hippocrates, the name of Ulcer most generally taken may signifie all or any solution of Continuity; In which sense it is read that all pain is an Ulcer. Generally, for a wound and Ulcer properly so called; as appears by his Book, de Vlcerebus. Properly, as when he saith, it is a sign of death when an Ulcer is dried up through an Atrophia, or defect of nourishment. We have here determined to speak of an Ulcer in this last and proper signification. And according thereto we define an Ulcer to be the solution of Continuity in a soft part, and that not bloody, but sordid and unpure, flowing with quitture, Sanies or any such like corruption, associated with one or more affects against nature, which hinder the healing and agglutination thereof; or that we may give you it in fewer words according to Galens opinion; An ulcer is a solution of Continuity, caused by Erosion. The causes of Ulcers are either internall or externall. The internall are through the default of humors peccant in quality rather than in quantity, or else in both, and so making erosion in the skin and softer parts by their acrimony and malignity; now these things happen either by naughty and irregular diet, or by the ill disposition of the entrails, sending forth and emptying into the body this their ill disposure. The externall causes are, the excessse of cold seising upon any part, especially more remote from the fountain of heat, whence follows pain, whereunto succeeds an attraction of humors and spirits into the part, and the corruption of these so drawn thither by reason of the debility or extinction of the native heat in that part, whence lastly ulceration proceeds. In this number of externall causes may be ranged, a stroak, contusion, the application of sharp and acrid medicins, as causticks, burns; as also impure contagion, as appears by the virulent ulcers acquired by the filthy copulation or too familiar conversation of such as have the French disease. How many and what the differences of Ulcers are, you may see here described in this following Scheme.

The divers acceptions of an Ulcer. Sent. 34. sect. 2. lib. de fract.

Sect. I. prog.

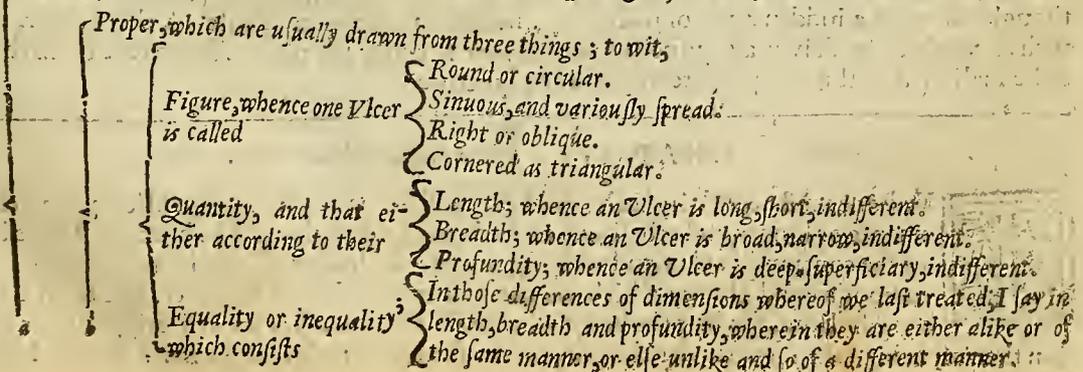
What an Ulcer properly is. Lib. de cons. sin. Artis cap. 6. The internall causes.

The externall causes.

A Table of the differences of Ulcers.

An Ulcer is an impure solution of continuity in a soft part, flowing with filth and matter or other corruption, whereof there are two chief differences; for one

Is simple and solitary without complication of any other affect against nature, and this varies in differences; either



Or common and accidentall, and these drawn, either
 From their time; whence an Ulcer is tearmed new; old, of short or long cure and duration.
 From their appearance; whence one is called an apparent Ulcer, another a hidden and occult Ulcer.
 From their manner of generation; as if it be made by a heavy, bruising, cutting, pricking or corroding things; whence a cut, torn, and mixt Ulcer.
 From their site; whence an Ulcer before, behind, above, below, in the head, tail, or belly of a Muscle.
 From that part it seises upon; whence an Ulcer in the flesh and skin, or feeding upon the gristles or bones, such as these of the nose, the palat of the mouth, and ears.
 From other common accidents; whence a Telephian Ulcer; that is, such an Ulcer as Telephus had. A Chironian, which needs the hand and art of Chiron. A Cancryous, which resembles a Cancer.

With the cause, whence an Ulcer } Is Cachoymick, Catarrhoick or venenate, that is, which a Cachoymia or Repletion of ill humors, a Catarrh, or poison cherishes or feeds.

Is compound and many and various wayes complicated, as

Distemper whether simple or compound, whence an Ulcer is } Hot. Cold. Dry. Moist. Mixt.

With the disease, as from } Swelling or Tumor, whence a } Pblegmonous Erysipelous Oedematous Scirrbus Cancrous } Ulcer.

Solution of continuity, or any other discommodity, whence a rough, callous, fistulous, cavernous, sinuous Ulcer, with luxation, fracture, &c.

With the Symptome, whence, a corroding, eating, painfull, sordid and virulent Ulcer.

With the cause and disease, With the cause and Symptome, With the disease and Symptome, With the cause, disease, and Symptome. } Examples whereof may be taken from that we have formerly delivered.

CHAP. II. Of the signs of Ulcers.

The signs of a putrid Ulcer.



Here are various signs of Ulcers according to their differences. For it is the sign of a putrid Ulcer, if it exhale a noysome, grievous, stinking and carion-like vapour, together with filthy matter. An eating Ulcer is known by the eating in, hollownesse and wearing away of the part wherein it resides, together with the adjoining parts. A sordid Ulcer may be known by the grosnesse and visciduity of the excrements it sends forth, and by the loose and spongy softnesse, or the crufted inequality of the flesh which grows over it. A cavernous Ulcer, by the straitnesse of the orifice, and largenesse and deepnesse of the windings within. A fistulous Ulcer, if to the last mentioned signs there accrew a callous hardnesse of the lips or sides of the Ulcer. A cancrus Ulcer is horrible to behold with the lips turned back, hard and swoln, flowing with virulent and stinking corruption, and sometimes also with bloody matter, together with the swelling and lifting up of the adjacent veins. An untemperate, or as they term it, a distempered Ulcer, is such as is nourished by some great distemper whether hot or cold, moist or dry, or compounded of these. An ill * natured or malign Ulcer is known by the difficulty of curing and rebellious contumacy to remedies appointed according to Art and reason. We know a catarrhus Ulcer, if the matter which feeds it flow to it from some varices thereunto adjoining, or dilated, swollen and broken veins, or from some entrail, or from the whole body being ill affected. An Apostumatous Ulcer is perceived by the presence of any tumor against nature, whose kind may be found out by sight and handling. Telephian Ulcers, are such as affected Telephus, and Chironian (in whose cure Chron excelled) are Ulcers which may be known by their magnitude not much putrid, and consequently not sending forth any ill smell, not eating, not tormenting with pain, but having their lips swoln and hard, and therefore ill to be healed. For although they may be sometimes cicatrized, yet it being but slender may easily be broken, and the Ulcer renewed. They are almost like an ulcerated Cancer, but that they are accompanied with swelling in the adjacent parts; they are also worfe than these which are termed Cacoethe, that is, ill natured, or malign; whence it is that Fernelius thought they had a hidden cause of malignity, besides the common default of the humor, and that such as can scarce be driven away; such commonly are felt after the plague. Wherefore Galen thinks such to be malign as will not suppurate or yeeld any quittance.

Gal. cap. 5. lib. 4. Meth. * Ulcus caeothet.

Com. ad aphor. 22. sect. 5.

CHAP. III. Of the Prognosticks of Ulcers.

Aph. 45. sect. 6.



He bone must necessarily scale, and hollow scars be left by malign Ulcers of a years continuance or longer, and rebellious to medicins fitly applied. The bone must scale by reason of the continuall afflux, and wearing by the acrimony of the humor, which looses the composure and glue by which the parts thereof are joined together. But the scars must become hollow, for that the bone (whence all the flesh takes its first originall) or some portion thereof, being taken from under the flesh, as the foundation thereof, so much of the bulk of the flesh

flesh must necessarily sink down, as the magnitude of the portion of the wasted bone comes unto.

You may know that death is at hand, when the Ulcers that arise in or before diseases, are suddenly either livid or dried, or pale and withered. For such driness sheweth the defect of nature, which is not able to send the familiar and accustomed nutriment to the part ulcerated. But the livid or pale colour is not only an argument of the overabundance of cholera and melancholy, but also of the extinction of the native heat. In Ulcers where tumors appear, the patients suffer no convulsions, neither are frantick; for the tumor being in the habit of the body possessed with an Ulcer, argues that the nervous parts and their originall are free from the noxious humors. But these tumors suddenly vanishing and without manifest cause, as without application of a discutient medicin, or bleeding, those who have them on their backs have convulsions and distensions, for that the spine of the back is almost wholly nervous; but such as have them on their fore parts, become either frantick, or have a sharp pain of their side, or pleuritic, or else a dysentery if the tumors be reddish; for the forepart of the body is replenished and overspread with many and large vessels, into whose passages the morbid matter being translated, is presently carryed to these parts which are the seats of such diseases. Soft and loose tumors in Ulcers are good, for they shew a mildness and gentleness of the humors, but crude and hard swellings are naught; for all digestion in some measure resembles elixation. Ulcers which are smooth and shining are ill, for they shew that there resides an humor malign by its acrimony, which frets asunder the roots of the hairs, and depraves the naturall construction of the pores of the skin; whence it is that such as are troubled with Quartain agues, the Leprosie or *Lues venerea*, have their hair fall off. A livid flesh is ill in Ulcers which cause a rottenness or corruption of the bones lying under the flesh; for it is an argument of the dying heat and corruption of the bone, whence the flesh hath its originall & integrity.

These Ulcers which happen by occasion of any disease, as a Dropsie, are hard to be cured; as also those whereinto a *varix* or swollen vessel continually casts in matter; which a present distemper fosters; which have swollen, hard and callous lips; and such as are circular or round. An *Hypercarcosis*, or fleshy excrecence usually happens to Ulcers not diligently mundified; and if they possess the arms or Legs, they cause a Phlegmon or some other tumor in the groins, chiefly if the body be full of ill humors, as *Avicen* hath noted. For these parts by reason of their rarity and weakness are fit and subject to defluxions. *Albucrasis* writes that for nine causes Ulcers are difficultly replenished with flesh and cicatrized. The first for want of blood, in a bloodlesse body; the second by reason of ill humors and the impurity of the blood; the third by the unfit application of unconvenient medicins; the fourth by reason of the sordidness of the Ulcer; the fifth by the putrefaction of the soft and carion-like flesh encompassing the Ulcer; the sixth when they take their originall from a common cause which every where rages with fury, such as are those which are left by the pestilence; the seventh by reason of the callous hardness of the lips of the Ulcer. The eighth when the heavens and air are of such condition as ministers fuel to the continuance of the Ulcer, as at Saragoza in Aragon; the ninth when the bones which lye under it are wasted by rottenness. An Ulcer that casts forth white, smooth, equall quittance, and little or no stinking, is easily healed; for it argues the victory of the native heat, and the integrity of the solid parts. We terme that smooth quittance which is absolutely concocted, neither yeelds any asperity to the touch, whereby we might suspect that as yet any portion of the humor remains crude; we call that equall wherein you can note no diversity of parts; & white not that which is perfectly so, but that which is of an ash colour, as *Galen* observes. But it is ill, if when the cure is indifferently forward, a flux of blood suddenly break forth in those Ulcers which beat strongly by reason of the great inflammation adjoynd therewith. For as *Hippocrates* observes, an effusion of blood happening upon a strong pulsation in Ulcers is evill; for the blood breaking out of an Artery cannot be stayed but by force; and also this blood is so furious by reason of the heat and inflammation the nourishers of this Ulcer that it breaks its receptacles, and hence ensues the extinction of the native heat, whence the defect of suppuration and a Gangrene ensues. Now for that there flowes two sorts of excrements from malign Ulcers, the more thin is termed *Ichor* or *sanies*, but the more grosse is named *sordes*; that is virulent and flowes from pricked nerves, and the *periosteum* when they are evill affected; but the other usually flowes from the Ulcers of the joints, and it is the worser if it be black, reddish, ash-coloured, if muddy or unequall like wine Lees, if it stink. *Sanies* is like the water wherein flesh hath been washed; it argues the preternaturall heat of the part, but when it is pale coloured, it is said to shew the extinction of the heat.

CHAP. IV. Of the Generall cure of Ulcers.

AN Ulcer is either simple or compound. A simple Ulcer, as an Ulcer hath one and that a simple indication, that is, exsiccation; and that more than in a wound, by how much an Ulcer is moister than a wound. There are many indications proposed for the cure of a compound Ulcer, in respect of which *Galen* would have us to keep this order, that we have the first regard of the most urgent, then of the cause, then of that, which unlesse it be taken away, the Ulcer cannot be healed. By giving you an example you may easily understand the meaning hereof. Imagin on the inside of the Leg a little above the ancle, an Ulcer very painfull, hollow, putrid, associated with the rottenness of the bone, circular, having hard and swollen Lips, and engirt with the inflammation and *varices* of the neighbouring parts. If you take this to cure, before you do any thing about the Ulcer, unlesse you be called upon by that which urges, as by vehemency of pain, you must first use generall means by calling and advising with a Physitian; For in *Galen*'s opinion, if the whole body require a preparation, then must that be done in the first place; for in some Ulcers purgation only will be sufficient; in some blood-letting; others are better by using both means, which is as the cause of the Ulcer proceeds from a

Hip. progn. lib. 1. cap. 8. Aph. 55. sect. 5.

Aph. 97. sect. 5.

Aph. 4. sect. 6.

Hip. Lib. de ulc. Gal. cap. 2. & 5. lib. Meth. 4.

For what causes Ulcers are hard to heal.

What part of matter is smooth, equall and white. Ad sentent. 32. sect. 2. de frast. Aph. 21. sect. 7.

Two sorts of excrements flow from a malign Ulcer;

The curing of a simple Ulcer consists in exsiccation. Gal. 7. Meth. cap. 12.

Gal. lib. 4. de comp. med. secund. gen.

repletion

repletion or ilnesse of humors. Now by these means having taken away the cause of the Ulcer, you must come to the particular cure thereof, beginning with that which is most urgent. Wherefore you must first assuage the pain by application of things contrary to the cause thereof, as if it proceed from a Phlegmonous distemper, which hath long possesse, distended and hardened the part, it must be eased by evacuation. First, baching it with warm water, to mollifie and relax the skin, that so you may the more easily evacuate the contained humors; then shall you draw away portion of the matter causing the swelling and pain by scarification, if the Patient shall be of sufficient courage, or else by application of horse-leaches if he be more faint-hearted; and then you shall temper the heat thereof by applying *Unguentum refrigerans Galeni*. To conclude, you shall attempt all things which we have formerly delivered (in our treatise of Tumors) to take away the swelling thereof. When you have brought this to that passe you desire, you shall come to those which are such, that it cannot be taken away or healed without them, which shall be done by orderly helping the defects against nature which were conjoined with the Ulcer, to wit, the rottenesse of the bone, which you shall help by actuall cauteries; and in the mean while you shall draw the Ulcer into another form, to wit, cornered, and you shall cut away the callous hardnesse, and help the rottenesse. Then must you procure the falling away of the Eschar, and then provide for the scaling of the bone by the means formerly prescribed, lastly the mundified Ulcer must be filled with flesh. For generating of flesh two causes must concur, the efficient, and materiall; The efficient is, the good temper both of the whole body, as also of the Ulcerated part. For this prevailing, there will be an attraction, digestion, opposition and assimilation of the laudable juice to the part affected; verily the laudable temper is preserved by like things, but the vicious is amended by contraries. The matter to be spent upon flesh is laudable blood, which offends neither in quality, nor quantity. In this regeneration of the flesh there appear two kinds of excrements, the one more thin and humid called *Sanies*, the other more grosse termed *Sordes*. Both of these for that they are contrary to nature, do therefore hinder the regeneration of flesh, and therefore must be taken away by applying their contraries, as by things drying in the first degree, and more strongly or weakly detergent, according to the complexion of the part and the whole body, and the plenty and quality of the excrementitious humor, and the uncleanness of the Ulcer. For the part must be preserved by the use of the like, but the Ulcer overcome by application of things contrary thereto. After that by nature's endeavour and the Chirurgeons help the ulcer is replete with flesh, it must be cicatrized, that is, covered with a callous skin in stead of the true and native skin. It may be cicatrized by strewing of very drying powders having very little or no acrimony. Thus Alum and Vitrioll being burnt & made into powder, and thinly strewed upon the part do quickly cicatrize the former fleshy work. To this purpose also serve, the root of *Aristolochia*, Aloes, burnt Lead, Pomegranat pills burnt, Litharge, *Tutia*, and also plates of Lead besmeared with quicksilver, whose efficacy for this purpose Chirurgeons sometimes find more certain and powerfull than any other remedies.

The things
conducting
to the ge-
nerating of
flesh.

What a Scar
is.

Things
causing ci-
catrization.

CHAP. V. Of a distempered Ulcer.

BEfore we speak of a distempered ulcer, it is meet, lest that the Chirurgeon take one distemper for another, briefly to relate the signs of each. You may know that an ulcer is associated with a dry distemper by your sight, as if the ulcer be as it were wrinkled, if it send forth little or no moisture; also it is known by touch, if it feel rough and hard. You shall correct this distemper by humecting medicins, as fomenting it with warm water according to *Galen's* opinion, or else with *Hydreleum* (i.) Oil and water mixt, but alwayes you must first purge, if the body shall abound with ill humors, or use Phlebotomie if the body be plethorick; otherwise you shall draw more humors into the part than it can bear. Now you shall so long foment it, untill the flesh which is about it begin to look red, wax soft and moist, and the part it self be a little swoln. If you proceed further, you will resolve all the humor which you have drawn thither, and so your labour is in vaine. After the fomentation apply such a remedy to the ulcerated part. *Rx. cremoris hordei ʒij. fol. malve in aq. coct. ʒj. pingued. porci ʒiʒ. mellis com. ʒʒ. misce in mortario & fiat unguentum.*

You shall know a moist distemper associates the ulcer by the plenty of the excrementitious humor, which the ulcer sends forth, by the spongy and fungous softnesse and growth of the flesh about it. You shall amend this by drying remedies, such as these are, which we term sarcoticks, having alwayes regard to the plenty of the humor, the proper temper of the part, and other indications formerly mentioned. Amongst other remedies *Galen* much commends Alum water, for it dries, clenfes and corroborates the affected part. Also this ensuing fomentation may be applied to good purpose. *Rx. rosar. rub. absinth. beton. tarsi barbati an. m. j. gallarum, nucum cupressi, an. ʒij. aluminis roche ʒj. fiat decoctio in vino austero, instituatursotus.* Then let *Empl. de verussa* or *De minio* be applied to the ulcer. Also I have found by experience that the powder of burnt alum lightly strewed upon the ulcer is very effectually in this case. You shall know that an hot distemper associates the ulcer by rednesse, or yellownesse thereof, by the heat manifest to your touch, and the propriety of your pain. Then must you have recourse to refrigerating things, such as *ung. Rosatum Mes. Refrigerans Gal. Populeon;* stoops and clothed dipped in Plantain water, Night-shade water, or Oxycrate. I have oft found by experience that scarification, or Leaches being applyed, did more conduce than any other remedy. For so the chafed blood, which by that means is apt to corrupt, is drawn away, and the part it self is also freed of that burden.

We know a cold distemper by the whitish or pale colour, by the touch of the Chirurgeon, and speech of the Patient complaining of the coldnesse of the ulcerated part. You shall correct this by applying and putting bottles filled with water about the part, or else swines bladders half filled with the following decoction. *Rx. origani, pulegii, chamæmeliloti, an. m. j. absinth. majorane, salvia, rorismar. an. m. ʒ. fiat. decoctio*

Signs of a
distempe-
red ulcer.

Remedies
for a dry
distempe-
red ulcer.

Signs of too
moist an ul-
cer.

Gal. lib. I.
simp. cap. 7.

Signs of a
hot distem-
pered ulcer.

Signs of a
cold di-
stempered
ulcer.

decoctio in vino generoso, addendo aque vitæ quod sufficit. Also the Ulcer may be conveniently fomented with sponges dipped in the same decoction, and let there be applyed thereto *Empl. Oxycroceum; emp. de meliloto; de Vigo cum mercurio, and sine mercurio.* But if a mixt and compound distemper be joined to the Ulcer, the medicins must in like manner be mixt and compos'd. The residue of the Chirurgeons care and pains must be spent upon the proper and peculiar cure of the Ulcer, as it is an Ulcer; which we said in the former Chapter was contained in detersion, regenerating flesh and cicatrization thereof.

CHAP. VI. *Of an Ulcer with pain.*



Here oft-times so great pain accompanieth Ulcers, that it calls thereto the counsell of the Physitian. Wherefore if it proceed from any distemper, it shall be taken away by remedies proper against that distemper, such as we mentioned in the former Chapter. But if it do not so cease, we must go on to Narcoticks. Such are cataplasms of the leaves of Mandrakes, Water lillies, Henbane, Nightshade, Hemlock, the seeds of Poppy and oils of the same; to which also may be added *Opium, Populeon,* and other things of like faculties. But if a malign acrimony and virulency of an humor corroding and eating the flesh lying under it and the lips about it, cause and make the pain, you shall neither assuage it by anodynes, nor Narcoticks; for by application of gentle medicins it will become worse and worse. Wherefore you must betake you to Cathæreticks; For strong medicins are fittest for strong diseases. Wherefore let a pledget dipped in strong and more than ordinarily powerfull *Ægyptiacum,* or in a little oil of Vitriell, be applyed to the Ulcer; for these have power to tame this raging pain, and virulent humors. In the mean season let refrigerating things be put about the Ulcer, lest the vehemency of acrid medicins cause a defluxion.

The matter of Narcotick cataplasms.

Cathæreticks have power to assuage pain.

CHAP. VII. *Of Ulcers with overgrowing or proudnesse of flesh.*



Ulcers have oft-times proud or overgrowing flesh in them, either by the negligence of the Chirurgeon, or fault of the Patient. Against this, drying and gently eating or consuming medicins must be applyed; such as are *Galls, cortex thuris, Aloes, Tutia, Antimony, Pompholix, Vitrioll, Lead,* all of them burnt and washt if need require. Of these powders you may also make ointments with a little oil and wax; but if the proud flesh, as that which is hard and dense, yeeld not to these remedies, we must come to causticks, or else to iron, so to cut it off. For in *Galens* opinion, the taking away of proud flesh is no work of nature, (as the generating, restoring and agglutinating of the flesh is) but it is performed by medicins which dry vehemently, or else by the hand of the Chirurgeon; wherefore amongst the remedies fit for this operation, the powder of Mercury with some small quantity of burnt Alum, or burnt Vitriol alone, seem very effectually to me. Now for the hard and callous lips of the Ulcer, they must be mollified with medicins which have such a faculty, as with *Calves, Goose, Capons or Ducks grease,* the oils of *Lillies, sweet Almonds, Worms, Whelps, Oesopus,* the mucilages of *Marsh-mallows, Linseed, Fænugreek seed, Gum Ammoniacum, Galbanum, Bdellium,* of which being mixed may be made Emplaisters, unguents, and liniments: or you shall use *Empl. Diachylon, or de Mucilagibus, De Vigo cum mercurio.* To conclude, after we have for some few dayes used such like remedies, you may apply to the Ulcer a plate of Lead rubbed over with Quicksilver; for this is very effectually to smooth an Ulcer and depreesse the lips: if you shall prevail nothing by this means, you must come to the causticks, by which if you still prevail nothing, for that the lips of the Ulcer are so callous that the causticks cannot pierce into them, you must cleave them with a gentle scarification, or else cut them to the quick, so to make way, or as it were open a window for the medicina to enter in, according to *Galen.* Neither in the interim must you omit *Hippocrates* his advice, which is, that by the same operation we reduce the Ulcer if round, into another figure, to wit, long or triangular.

Things waiting superfluous flesh.

Lib. 3. Meth. cap. 6.

For the callous lips of Ulcers.

Lib. 4. Meth. cap. 2.

CHAP. VIII. *Of an Ulcer putrid and breeding Worms.*



Wounds are divers times bred in ulcers, whence they are called wormy ulcers; the cause hereof is the too great excrementitious humidity prepared to putrefie by unnaturall and immoderate heat. Which happens, either for that the ulcer is neglected, or else by reason of the distemper and depraved humors of all the body, or the affected part; or else for that the excrementitious humor collected in the ulcer, hath not open and free passage forth; as it happens to the ulcers of the ears, nose, fundament, neck of the womb, and lastly, to all sinuous & cuniculous ulcers. Yet it doth not necessarily follow that all putrid ulcers must have worms in them; as you may perceive by the definition of a putrid ulcer which we gave you before. For the cure of such ulcers after generall means, the worms must first be taken forth, then the excrementitious humor must be drawn away, whence they take their originall. Therefore you shall foment the ulcer with the ensuing decoction, which is of force to kill them; for if any labour to take forth all that are quick he will be much deceived; for they oft times do so tenaciously adhere to the ulcerated part, that you cannot pluck them away without much force and pain. *Rx. absinth. centaur. majoris, marrubii, an. M. j. fiat decoctio ad lb. ss. in qua dissolve aloes ʒ β. unguenti ægyptiaci ʒ j.* Let the ulcer be fomented and washed with this medicin, and let pledgets dipped herein be put into the ulcer; or else if the ulcer be cuniculous or full of windings, make injection therewith which may go into all parts thereof.

The cause of worms breeding in Ulcers.

A fomentation to kill the worms.

Achigenes much commends this following medicin. *Rx. Ceruse polii montani, an. ʒ β. picis navalis liquide Gs. l. a. comp. quantum sufficit, misce in mortario pro linimento.* If the putrefaction be such that these medicins will not suffice for the amendment thereof, you must come to more powerfull, or to cauteries also, or hot Irons, or

to section; yet you must still begin with the more gentle, such as this of Galens description. *R. ceræ, ℥ij. cerusæ ℥j. olei ros. ℥ij. salis ammon. ℥ss. squamæ eris ℥ij. thur. alum. erug. malicor. calcis vivæ, an. ℥j. fiat emplastrum.* Or *R. terebinth. lotæ ℥ij. ceræ albæ ℥ss. liquefiant simul addendo sublimati, ℥ss. salis torrefacti, & vitrioli calcinati, an. ℥j. fiat mundificativum.* Or you must use our *Ægyptiacum* alone, which hath Sublimate entering into the composition thereof; but in the interim the circuit of the Ulcer must be defended with refrigerating and defensative things for fear of pain.

CHAP. IX. Of a sordid Ulcer.



A Sordid Ulcer after the cure of the body in generall, shall be healed with detergent medicins; the indication being drawn from the grosse and tough excrement, which with the excrementitious *sanies*, as it were besieging, and blocking up the ulcerated parts, weakens and as it were dulls the force of medicins though powerfull, which causeth us to begin the cure with fomentations and lotions, as thus. *R. Lixivii com. ℥b. j. absinth. marrub. apii, centaur. utriusque, hypericonis, an. M. ss. coquantur, colaturæ, quæ sufficiat, adde mellis rosati ℥j. unguenti ægyptiaci ℥ss. fiat fons.* Then use the following deterfive medicin: *R. succi apii, & plantag. an. ℥ij. mellis com. ℥j. terebinth. ℥ss. pul. Ircos Florent. & aloes an. ℥ss. fiat medicamentum.* The Chirurgeon must well consider, at how many dressings he shall be able to wash away the grosse *sordes* or filth sticking close to the Ulcer, and dry up the excrementitious *sanies*. For oftentimes these things may be done at one dressing; but in others who have more quick sense or feeling, not so soon. But when the Ulcer is freed of such grosse *Sordes* or filth, you must forbear to use more acrid things for fear of pain, defluxion, inflammation, and erosion, whereby the Ulcer would become more hollow. Wherefore then we shall be content to apply remedies which dry and cleanse without acrimony that we may so help natures indeavours in generating flesh. Such remedies are the pouders of Aloes, Mastich, Myrrh, Orris, Litharge, Antimony, roots of Gentian, Barly flower, and the like, which being strewed upon the Ulcer, you shall cover it with Lint, and put over that a plate of Lead, rubbed over with quicksilver; and you shall put on these deterfives and desiccatives more or lesse strong, as you shall find it requisite and necessary. For the too plentiful use of drying and deterfive things, doth in time hollow the Ulcers, whereby it comes to passe that in short time in like sort, a greater quantity of *Sanies* flows from the Ulcer, the proper substance of the flesh being dissolved by the force or acrimony of deterfive medicin; as also the proper alimentary humor, which flowed to the part, being in the like sort, a greater quantity of *Sanies* flowed from the Ulcer, the proper substance of the flesh being dissolved by the force or acrimony of the deterfive medicine, as also the proper alimentary humor, which flowed to the part, being in like sort defiled: which thing beguiles the unskillfull Chirurgeon. For by how much he sees the Ulcer flow more plentifully with *Sanies*, he endeavours by so much the more to exhaust and dry up with more acrid medicins these humidities as if they were excrementitious; But *Galen* hath long ago admonished us to take heed hereof, setting forth a History of a certain Emperick who dressing a sordid Ulcer with a green, acrid and eating medicin, dissolved the flesh, and so consequently made the Ulcer more hollow, and caused more pain and defluxion; whereby it happened that continually adding more acrid medicins, he continually by his ignorance and unskillfulnesse increased the colliquation of the flesh, the largeness of the ulcer and excrementitious humidity. Wherefore we must take speciall care whether the sordid Ulcer grow each day worse, by its proper fault and the impurity of the whole body besides, or else by the colliquation of the flesh and corruption of the benign and alimentary humor sent thither for the nutrition of the part, by the too frequent and unskillful use of too acrid a medicin. You may conjecture this by the increase of the pain without reason, and by the heat and redness of the lips of the Ulcer. Therefore you must principally have regard to this, that you give each of your Patients his fit measure, that is, a convenient and agreeable medicin to each of their strengths, taking indication from the strength, distemper, and consistence of the whole body and affected part; for there is a great deal of difference whether you apply a medicin to a plowman or labourer, or to an Eunuch and woman, or whether to the Leg, or eyes. For these medicins which to a dense and hard body and part are only detergent and drying, the same are to delicate and tender bodies and parts cathæretick and eating, by colliquation of the flesh, and corruption of the nourishment, making an increase of *Sordes* or filth; on the contrary those things which do laudably and sufficiently cleanse the flesh in a soft body and dry up the *Sanies*, these same things applied to a hard body encrease the *Sordes* and *Sanies* by suffering them to breed, neither are they of sufficient power to wash away the tenacious impurity of a dense body. Wherefore the skillfull Chirurgeon will see when he must betake himself from too strongly cleansing and eating medicins, to these which are more milde.

CHAP. X. Of a virulent, eating and malign Ulcer which is tearmed Cacoethes, and of a Chironian Ulcer.



Virulent and eating Ulcers differ not unlesse in *magis* and *minus*, for we tearm it a virulent Ulcer, which sends forth a virulent *sanies*, which is properly called *Virus*. This *Virus*, or virulency, when it becomes more malign, gnawes and feeds upon the parts which lye under, and are adjoining to the Ulcer, and makes an eating Ulcer. Such Ulcers are by *Galen* called *Dyspolutica*, that is, difficultly to be cicatrized; for, saith he, it happens that the Ulcer is *Dyspolutick*, either for that the part affected may be vitiated either in the habit or temper thereof, so that it may corrupt the humor which flows thither; such an Ulcer is by a particular name tearmed *Cacoethes*; or for that by reason of the evill quality of the blood flowing thither and eating the part, the part affected being too moist cannot heal up. He further adds that a Chironian

A detergent
lotion.

Detergent
medicins
without a-
crimony.

A caution
very ob-
servable in
use of deter-
gent things.

A distincti-
on to be
observed
concerning
the impuri-
ty of ulcers.

Diligent re-
gard must
be had of
the patients
bodies and
the affected
part.

How viru-
lent and ea-
ting ulcers
differ.

Gal. lib. 4. de
comp. med.
sec. genera.

How a Chi-
ronian ulcer
differs from
an eating,
see before,
Cap. 2.

ulcer is far more malign than these Ulcers which are termed *Cacoethe*. For the cure; by reason that all these Ulcers have a large extent, for some are more malign and ill to be cicatrized than othersome; it is also necessary to have divers medicins ready and at hand distinct both in their faculties and the degrees thereof, so that it is no marvail if they oft fail of their purpose, who with the same medicin dresse and think they shall heale all malign Ulcers. This following medicin described by *Aesclepiades* is much commended by *Galen*. *R. squame aris, eruginis, rase, an. ℥ij. cere lb. β. resinae laricis. ℥ij. β. quæ liquari possunt aridis affundantur,* and make an emplaister to be laid only upon the Ulcer; for you must lay a defensative about the Ulcer for fear of inflammation. But *Galen* saith that the following Epulotick of *Primion* excels the rest, as that which to desperate Ulcers (which many have taken in hand and left as incurable,) was of certain and approved use. *R. soreos ℥ij. aluminis scissilis, calcis vine, an. ℥ij. thuris gallarum, an. ℥iiij. cere lb. j. & ℥iiij. sevi vitulini lb. j. & ℥vij. olei veteris quantum sufficit, fiat emplastrum.*

Gal. lib. 4.
see Gen.
Cap. 5.

Gal. lib. 4.
de comp.
med. see
Gen. Cap. 6.

CHAP. XI. An advertisement to the young Chirurgion touching the distance of times wherein malign Ulcers are to be dressed.

O shew the use of *Aesclepiades* his medicins described in the former Chapter, and convince the error of these Chirurgions, who think they do well for their Patients, if they twice or thrice on a day dresse malign ulcers; I have here thought good to digresse a little from my purpose and to interpose *Galens* authority. Rightly (saith *Galen*) hath *Aesclepiades* added these words to the formerly described medicin: And loose this after three dayes, and foment the ulcer, and fasten the same emplaister being washed, and apply it again; for unlesse the medicin adhere long to the skin, it will do no good. Which thing notwithstanding many Physicians have been ignorant of, thinking if they wiped away the sanies from the ulcer thrice on a day, they should do better than those who did the same but twice a day. But those who dresse it but once a day, are reproved by the Patients as negligent. But they are much mistaken; for you must remember, as we have delivered in most of our writings, that the qualitics of all neighbouring bodies do mutual actuate and affect each other in some degree, although the one thereof be much more powerfull; for by this reason in space of time they become somewhat alike, though they otherwise differ much; But when the quality of the medicin shall be like the species to the body to be cured, there follows the better successe. Wherefore he which moved by these reasons first appointed to use the emplaister formerly applyed, is worthy of commendations; and we ought to follow him much the rather, seeing that which he found out by reason, is approved by experience. Neither did he unadvisedly command to foment the wound every third day, that is, every dressing; for seeing it is a powerfull medicin, therefore it stands in need of mitigation. Thus much *Galen*, whose opinion grounded on reason, he can again confirm with another reason. It is already sufficiently known, that medicins can do nothing in us unlesse by the force of the native heat, which stirs up the faculty of the medicin to operation. But in ulcers which are absolutely malign, the native heat of the affected part is very languid, being broken and debilitated by the presence of the preternaturall heat; so that it stands in need of a great space of time to actuate the vertue and faculty of the medicin. Wherefore, if in that time, when as the native heat hath much moved and stirred up the faculty of the medicin, the ulcer be loosed or opened, and that emplaister cast away which was laid upon the part, and a fresh one laid in stead thereof; the heat implanted in the part is either dissipated by the contact of the air, or is weakened and driven in; and that endeavour which was made by the emplaister was to no purpose, being as it were stopped in the midst of the course. But a new emplaister being laid on, the heat of the part must undergo a new labour, so to stir up the faculty to bring it to act.

Gal. lib. 4.
de comp. med.
see Gen.
Cap. 5.

Galens reason further explained.

For all medicins are, what they are, in faculty. Equall to this is their error, who by too oft renewing their emplaisters on the same day; do too powerfully clense; for so they do not only take away the excrementitious humors, both *sordes* and *sanies*, but also the alimentary juice; to wit, the *Rob*, *Cambium*, and *Gluten*, which are the next matter for procreating of laudible flesh. Wherefore it is not good to dresse ulcers so often in one day, and to loose them to apply new emplaisters, unlesse some greivous symptome (as pain) force us to do it, which requires to be asswaged and mitigated by the often changing and renewing of Anodyne medicins.

Medicins are only such in faculty.

CHAP. XII. How to bind up Ulcers.

Or the binding up of ulcers, you must alwayes begin your bandage at the ulcer. Now the Rowler must be so large that it may not only cover and comprehend the ulcer, but also some portion of the adjacent parts above and below; and let it presse the ulcer with that moderation, that it may only presse out the excrementitious humors. For so the ulcer will become dry, and consequently more neer to healing, as it is observed by *Hippocrates*. Let this be the measure of your binding, that it be neither too strait for hence would ensue pain and defluxion; nor too lax, for such is of no use. You may moisten your bouldsters and Rowlers in oxycrate or in red and astringent wine, especially in Summer; when you have bound it up the part must be kept quiet. For according to *Hippocrates*, those who have an ulcer in the leg, ought neither to stand, nor sit, but to lye on a bed. Wherefore when the legs are ulcerated the arms must be exercised, by handling, lifting up and casting downe of divers things. But on the contrary if the arms be ulcerated, the legs must be exercised with walking, or frictions from above downwards, if the Patient cannot endure to walk. So the humors and spirits which with more violence and greater plenty run down to the part affected, may be drawn back and diverted.

The beginning of your binding must be at the Ulcer.

Hip. lib. de ali.

Revulsion into contrary parts.

CHAP. XIII. Of the cure of particular ulcers, and first of those of the eyes.

4. Meib.



or that (in Galens opinion) the divers indication in curing diseases is drawn from the condition of the part, to wit, the temper, complexion, site, figure, use, dull or quick sense; Therefore having briefly handled the generall cure both of simple and compound and implicit ulcers, I think it fit to treat of them now as they are distinguished by the parts, beginning with these of the eyes. These according to *Celsus*, are sometimes caused by pustules, or a sharp defluxion which frets or eats in funder the coats thereof, or else by a stroak.

Lib. 5. cap. 6. lib. 3. Botryon. Celoma. Argemon. Epicauma. The cure.

A Collyrium to

cleanse the ulcers of the eyes.

A Sarcotick Collyrium.

An Epulotick Collyrium.

Lib. 6. cap. 6.

A Collyrium for hollow scars. The scars of the Horny coat are white, and these of the Adapted.

Paulus sets down these differences of the ulcers of the eyes; If (saith he) a small, little and hollow ulcer be upon the horny coat, it is by the Greeks termed *Botryon*; but if it be broader and lesse deep, it is termed *Celoma*; about the circle of the *Iris* or Rainbow, it is called *Argemon*. If it be crusty and sordid, it is termed *Epicauma*. These in generall require the same cure as the former, that is, to be mundified, incarnated, dried and cicatrized; but the part affected indicates more gentle medicins. Wherefore having purged the Patient and taken some blood both from his arm, as also from his veins and temporall Arteries, and bathed him if it be needfull; to divert the defluxion you shall to his shoulders apply cupping glasses with scarification; or else bread newly drawn out of the oven, and sprinkled with *aqua vite* or some good wine shall be applyed to the originall of the spinall marrow. But you shall apply to the forehead and temples an astringent emplaster made of *emplastrum contra rupturan, ung. Comitisse*, and *resiccativum rubrum* mixed together. But this ensuing *Collyrium* described by *Celsus* and approved by *Höllerius*, shall be dropped into the eye. *Rx. eris usti, cadmie uste & lotæ, an. ʒj. ex aqua fingatur collyrium quod liquore ovi dissolvatur*. But in the mean time you must diligently observe whether you put the eye to any great pain. Wherefore now and then by putting anodyne medicins thereto, it will be good to comfort it. Also you may make *collyria* of the decoction of Plantain, *sænugreek*, wormwood, with a little quantity of Sugar-candy, *tutra*, gum *tragacanth*, myrrh and vitrioll dissolved therein. When the ulcer is mundified, the following sarcotick will be of good use. *Rx. sarcocollæ in lacte muliebri nutritæ, ʒiij. pul. diaireos simplicis, gum. arabici, tragacanth. an. ʒʒ. mucilaginis sænugræci quantum sufficit ut inde fiat collyrium*. But you must note that for moist ulcers, powders are more convenient than *Collyria*. When the ulcer is plained or filled with its proper flesh, it may be cicatrized with the following *collyrium*. *Rx. tutiæ, cadmiæ ut decet preparatæ, cerusæ, antimonii, olibani, an. ʒʒ. myrrhæ, sarcocollæ, sanguinis Draconis, aloes, opii, an. ʒʒ. cum aqua plantaginis fiat collyrium*; or the powder only may be conveniently strewed thereon.

Celsus hath noted that the cicatrizing of the eyes is incident to two dangers, that is, lest they be too hollow, or else too thick. If too hollow, they must be filled by the following remedy, *Rx. Papaveris lachrymæ, ʒʒ. jagapeni, popanacis, an. ʒʒ. aruginis ʒj. cumini ʒiij. pipëris ʒij. cadmiæ lotæ & cerusæ, an. ʒʒ. cum aqua pluviali fiat collyrium*. But if the scars be thick or grosse, the following remedy will extenuate them. *Rx. cinamon. acaciæ, an. ʒʒ. cadmiæ elotæ, croci, myrrhæ, papaveris lachrymæ, gum. arabici, an. ʒj. pipëris albi, thuris, an. ʒʒ. eris combusti, ʒiij. cum aqua pluviali fiat collyrium*. But if the scar be upon the cornea or horny coat, so that it cover the pupilla or sight, the sight will be intercepted by the denseness of the membrane. Here you must also observe, that the scars that are on the Cornea are white, but these on the Adnata are red, because this is spread over with more little veins than that.

CHAP. XIII. Of the Ozæna and Ulcers of the Nose.

Lib. 6. cap. 8. Gal. lib. 3. de comp. med. secund. locos cap. 3. The cure.



He *Ozæna* is a deep and stinking ulcer in the inside of the nose, sending forth many crusty and stinking excrementions. *Celsus* saith that such ulcers can scarcely be healed. It is caused (as *Galén* saith) by the distillation of acrid and putrid humors from the head into the nostrills about the mammillary processes. For the cure, the Patient must eat sparingly, and his meat must neither be sharp nor strong; the humor being prepared must be purged, the head dried and strengthened, that so it may neither admit the excrementitious humors, nor send them down; then must we come to the part affected with the ulcer. The ulcer must be dried with a repelling medicine, such as is the juice of Pomegranats boiled to the half in a brasse vessell; the powder of Calamint, Cresses, white Hellebore, the juice of Cresses with Alum and other things which you may read in *Celsus*. *Galén* out of *Archigenes* wishes, to draw up into the nostrills the juice of Calamint, or that the Calamint it self being dried, and made into powder, may be blown with a quill into the nose. Others use this following powder. *Rx. ros. rub. mint. calam. arom. rad. angelicæ, gentian. macis, cariop. an. ʒʒ. camph. anbræ, an. gr. iij. mosch. gr. vj. fiat pulvis subtilissimus*. *Marardus* writes that the Urine of an Ass, though a nasty medicine, is an excellent remedy in this affect. But if the inveterate and contumacious evill do not yeeld to these remedies, then you must have recourse to Coprose, Verdigreece, *sal ammoniacum*, and Alum with Vinegar. It divers times happens that the ulcer spreading on, comes to take hold of the *Ossa ethmoidea* or five-like bones; in which case you must not forcibly pluck them out, but refer the whole business to nature, and expect when they shall come away of themselves, making in the mean while injections into the nostrills of *aqua vite*, wherein Cephalick powders have been steeped for the greater drying.

Lib. 20. epist. 5. An injection when the Ozæna shall come to the Ossa Ethmoidea.

CHAP. XV. Of the Ulcers of the mouth.

Aph. 24. sect. 3. Celsus lib. 6. cap. 11. Gal. com. ad 3. lib. epidem.



F this tribe are the *Aphthæ*, ulcers familiar to little children, according to *Hippocrates*. They oft-times begin at the gums, and by the palat of the mouth creep into the uvula, throtle, and over all the mouth, as *Celsus* saith. *Galén* makes two kinds of *Aphthæ*'s; the one of easie cure, such as that which usually troubles children by reason of the acrimony of the nurses milk; the other is malign by reason of an afflux of an evill humor (that is, venerated and malign) into the mouth.

mouth. For the cure, it shall be good to abstain from all acrid things, and if it be a sucking child, it will not be amiss to temper the nurses milk with refrigerating meats, bathing the whole body, and fomenting the dugs with warm water; for all the members in children are most tender, and as it were mucous, and their mouths are unaccustomed to meats and drinks. For topick medicins, you must make choice of such which may quickly and readily work the effect; for here the condition of the affected part is such, that they cannot long remain and adhere thereto. Therefore if the ulcer be malign, it must be lightly touched with *aqua fortis* which hath been used in separating metalls and which besides is tempered with six parts of common water. You may for the same purpose use the oils of Vitrioll, Sulphur, Antimony, Mercury water and the like. *Aetius* wishes you to touch and correct such ulcers with a lock of wooll dipped in scalding oil, and so fastned to the end of a probe, untill they wax white and become smooth or plain. For so their eating and spreading force will at length be bridled, and laudable flesh grow up in place of that which is eaten. After such burning it will be good to wash the mouth with the following gargarism, which also of its self alone will serve to cure Aphtha's, which are not malign. *Rx hordei integri p. j. plantag. ceterach. piloselle. agrimonie. an. M. j. fiat decoctio ad lb. j. in qua dissolve mel- lis rosati ʒj. dianoron. ʒʒ. fiat gargarisma.* You may also make other gargles, of Pomegranate pills, Balau- sties, Sumach, Berberies, red roses being boyled, and dissolving in the strained liquor *Dianoron* and *Dia- nucum* with a little Alum. For *Galen* writes, that simple ulcers of the mouth are healed with things which dry with moderation; now *Dianoron* and *Dianucum* are such. But others stand in need of strong medicins, with such like. If the palat be seized upon, we must use the more diligence and care; for there is danger, lest being the part is hot and moist, the bone which lyes under which is rare and hu- mide, may be corrupted by the contagion and fall away, and the voice or speech be spoiled. If the ulcer be pocky, omitting the common remedies of ulcers, you must speedily betake your self to the proper antidote of that disease, to wit, quick-silver. Fistulous ulcers often take hold on the Gums, whence the root of the next tooth becomes rotten, and so far that the acrimony of the *Sanies* oft-times makes its self a passage forth on the outside under the chin; which thing puts many into a false conceit of the *scrophule* or Kings evill, and consequently of an incurable disease. In such a case *Aetius*, and *Celsus* counsell is, to take out the rotten tooth, for so the *Fistula* will be taken away, the Gum pressing and thrusting its self into the place of the tooth which was taken forth; and so the cause nourishing the putrefaction being taken away, (that is, the tooth) the rest of the cure will be more easy. The ulcers of the tongue may be cured by the same remedies by which the rest of the mouth; yet those which breed on the side thereof endure very long, and you must look whether or no there be not some sharp tooth over against it, which will not suffer the ulcer in that place to heal; which if there be, then must you take it away with a file.

The cure.

A gargarism for the Aphthæ. Lib. 6. meth. Cap. 10. Ulcers of the palat must be quickly and carefully dressed. *Aetius* Lib. 6. cap. 3. *Celsus* lib. 6. cap. 13.

CHAP. XVI. Of the Ulcers of the Ears.

Ulcers are bred in the auditory passage both by an externall cause, as a stroak, or fall, as also by an internall, as an abscess there generated. They oft-times flow with much matter, not there generated, for such ulcers are usually but small and besides in a spermatick part, but for that the brain doth that way disburden its self.

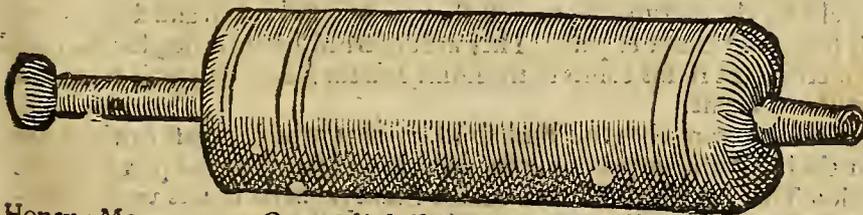
Their cau- ses.

For the cure, the chief regard must be had of the antecedent cause, which feeds the ulcer, and it must be diverted by purging medicins, Masticatories, and Errhines. This is the form of a Masticatory. *Rx Mastich. ʒj. staphi sagr. & pyreth. an. ʒj. cinam. & caryoph. an. ʒʒ. fiant Masticatoria, utatur mane & vesperi.* But this is the form of an Errhin: *Rx succi betonic. mercurial. & melissæ, an. ʒʒ. vini albi ʒj. misce & frequenter naribus attrahatur.* For topick medicins we must shun all fatty and oily things, as *Galen* set down in *Method. medendi*, where he finds fault with a certain follower of *Thessalus* who by using *Tetrapharmacum*, made the ulcer in the ear grow each day more filthy, than other, which *Galen* healed with the *Trochis- ces* of *Andronius* dissolved in Vinegar, whose composure is as followeth. *Rx balauft. ʒij. alumin. ʒj. atrament. ʒator. ʒij. myrthe ʒj. thur. aristoloch. gallarum, an. ʒij. salis Ammon. ʒj. excipiantur omnia melicrato, & fiant trochisci.*

The cure. A mastica- tory.

An Errhin. The com- position of *Andronius* his trochis- ces. Scales of Iron.

The figure of a Pyoulcus, or matter-drawer.



Galen in the same place wit- nesseth, that he hath healed inveterate ulcers & of two years old of this kind, with the scales of Iron made into powder, and then boiled in sharp Vinegar untill it ac- quired the consistence of

Of the Py- oulcos *Galen* makes men- tion 2 dd *Glauconem.*

Honey: Moreover an Oxes gall dissolved in strong Vinegar, and dropped in warm, amends and dries up the putrefaction wherewith these ulcers flow. Also the scales of Iron made into powder boyled in sharp Vinegar, dryed and strewed upon them. But if the straitness of the passages should not give leave to the matter contained in the windings of the ears to passe forth, then must it be drawn out with an In- strument thereupon called a *Pyoulcus*, or matter-drawer, whereof this is the figure.

CHAP. XVII. Of the ulcers of the windpipe, weazon, stomach and Guts.

These parts are ulcerated either by an externall cause, as an acrid medicine, or poyson swal- lowed down; or by an internall cause, as a malign fretting humor which may equall the force of poyson generated in the body, and restrained in these parts. If the pain be increased by swallowing or breathing, it is the sign of an ulcer in the weazon, or windpipe joining there- to. But the pain is most sensibly felt when as that which is swallowed is either sour or acrid, or the

The Cau- ses. Signs.

air breathed in, is more hot or cold than ordinary. But if the cause of pain lye fastned in the stomach, more grievous symptomes urge; for sometimes they swoond, have a nauseous disposition and vomiting, convulsions, gnawings, and pain almost intolerable, & the coldness of the extreame parts; all which when present at once, few scape unless such as are young, and have very strong bodies. The same affect may befall the whole stomach, but because both for the bitterness of pain, and greatness of danger, that ulcer is far more grievous which takes hold of the mouth of the Ventricle, honoured by the Ancients with the name of the Heart; therefore Physitians do not make so great a reckoning of that which happens in the lower part of the stomach. Now we know that the Guts are ulcerated if Pus, or much purulent matter come forth by stool; if blood come that way with much griping; for by the Pus staying and as it were gathered together in that place, there is as it were a certain continuall *Tenesmus*, or desire to goe to stool. Now all such ulcers are cured by meats and drinks, rather than by medicins, according to *Galen*. Therefore you must make choice of all such meats and drinks as are gentle, and have a lenitive faculty, shunning acrid things; for *Tutia*, *Lytharge*, *Ceruse*, *Verdigreece* & the like, have no place here, as they have in other ulcers. But when as the ulcer shall be in the Gullet or Weazon, you must have a care that such things may have some viscidty or toughnesse, and be swallowed by little and little, and at divers times; otherwise they will not much avail, because they cannot make any stay, in these commune wayes of breath and meat; therefore they presently slip down and flow away; wherefore all such things shall be used in form of an *Eglegma*, to be taken lying on the back, and swallowed down by little and little, opening the muscles of the throat, lest the medicin passing down suddainly and in great quantity, cause a cough, a thing exceeding hurtfull to these kinds of ulcers. When they must be clenfed, you shall have crude honey, which hath a singular faculty, above all other detergent things, in these kind of ulcers. But when they can conveniently swallow, you shall mix Gum *Tragacanth* dissolved in some astringent decoction. In ulcers of the stomach all acrid things (as I have formerly advised) must be shunned, as those which may cause pain, inflammation and vomit, and besides hinder the digestion of the meat. Therefore let them frequently use a ptisan, and sugred gellyes wherein gum *Tragacanth*, and bole *Armenick* have been put, the decoction of *Prunes*, *Dates*, *Figs*, *Raisons*, *Honey*, *Cowes milk* boyled with the yolks of eggs, and a little common honey. When they are to be agglutinated, it will be convenient to make use of austere, astringent, and agglutinative things which want all acrimony, and ungratefull tast, such as are *Hypocistis*, *Pomegranate flowres* and pills, *terra sigillata*, *sumach*, *acacia*, a decoction of quinces, the *Lentisk wood*, the tops of *Vines*, of *brambles*, *myrtles*, made in astringent wine, unlesse there be feare of inflammation. Their drink shall be *Hydromel* water with *Sugar*, *syrup of Violets* and *Iujubes*. *Honey* mixed with other medicins is a very fitting remedy for ulcers of the guts and other parts, more remote from the stomach; for if you shall use astringent medicins alone of themselves, they will stick to the stomach; neither will they carry their strength any further; but honey mixed with them, besides that it distributes them to the rest of the body, and helps them forwards to the affected parts, also clenfes the ulcers themselves. Here also *Asses milk* may with good success be used in stead of *Goats* or *Cowes milk*. The use of a vulnerary potion is also commendable, if so be that it be made of such hearbes and simples, as by a certain tacit familiarity have respect to the parts affected. But the ulcers of the Guts have this difference amongst themselves; that if the greater guts be affected, you may heal them with a *Clyster* and injections, made also sharp to correct the putrefaction; such as are those which are made of *Barly water*, or wine with *Aegyptiacum*. But if the small guts be ulcerated, they must be rather healed by potions and other things taken at the mouth, for that (as *Galen* saith) these things which are put up into the body by the *Fundament*, do not commonly ascend to the small or slender guts, but such as are taken at the mouth cannot come unlesse with the losse of their faculty, so far as the great guts.

CHAP. XVIII. Of the Ulcers of the Kidneys and Bladder.

Causes.

Signes.



Ulcers are caused in the Kidneys and Bladder, either by the use of acrid meats, drinks, or medicins, as *Cantharides*; or else by the collection of an acrid humor bred in that place, sent or falln thither; or else by the rupture of some vessell, or an abscesse broken and degenerated into an ulcer, as it sometimes comes to passe. They are discerned by their site, for the pain and heavinesse of ulcers of the Reins comes to the Loins, and the Pus or matter is evacuated well and thoroughly mixed with the Urine.

Hip Aphor. 81. sect. 4.
Aphor. 76. sect. 4.
Aphor. 77. sect. 4.

Neither doth the Pus which flows from the reins stink so ill, as that which is cast forth of the bladder; the reason is, for that the bladder being a bloodlesse, fleshlesse and membranous part, hath not such power to resist putrefaction. That Pus which flows from the Kidneys never flows without water; and although by long keeping in an Urinall, it at length subsides or falls to the bottome, and may be seen separated; yet when it is first made, you may see it perfectly mixed with the Urine; but that Pus which flows from the bladder is oftentimes made alone without Urine; and usually it comes to passe that the Pus, or matter which flows from the ulcerated Kidneys, hath in it certain caruncles, or as it were haire, according to the rule of *Hippocrates*. Those who in a thick Urine have little caruncles, and as it were hairs come forth together therewith, they come from their Kidneys; but on the contrary those who have certain bran-like scales come from them in a thick Urine, their bladder is scabby or troubled with a scabby ulcer.

The cure.
Why we must shun strong purges.

For the cure; it is expedient that the belly be soluble either by nature or Art, and the use of mollifying Clysters. And it is good to vomit sometimes, so to draw back the humors by whose conflux into the affected part the ulcer might be fed and made more sordid and filthy. You must beware of strong purgations, lest the humors being moved and too much agitated, the matter fit to nourish the ulcer

Ulcer may fall down upon the kidneys or bladder. The ensuing potion is very effectually to mundifie those kind of Ulcers. *R. Hordei integri, M. ij. glycyrrhizæ ras. & contus. ℥β. rad. acetosæ & petrosel. an. ℥vj. fiat decoctio ad lb. j. in colatura dissolue mellis dispensum. ℥ij.* Let him take every morning the quantity of four ounces. *Gordonius* exceedingly commends the following Trochisces. *R. quatuor sem. frig. maj. mundatorum, sem. papaveris albi, sem. malvæ, portul. cydon. baccarum myrti, tragacanth. gum. arab. nucum pinearum mund. pistach. glycyrrhizæ mund. mucaginis sem. psilii, amygd. dulc. hordei mund. an. ℥ij. bol. armeni. sang. drac. spodi. rosarum. myrrhæ, an. ℥β. excipiantur hydromelite, & fingantur trochisci singuli ponderis ℥ij.* Let him take one thereof in the morning dissolved in Barley water or Goats milk. *Galen* bids to mixe honey and diuretick things with medicines made for the Ulcers of the reins and bladder, for that they gently move urine, and are as vehicles to carry the medicines to the part affected. Ulcers of the bladder are either in the bottome thereof, or at the neck and urinary passage. If they be in the bottome, the pain is almost continuall; if in the neck, the pain then pricks and is most terrible when they make water and presently after. The ulcer which is in the bottome sends forth certain scaly or skinny excrements together with the urine; but that which is in the neck, causes almost a continuall *Tentigo*. Those which are in the bottome are for the most part incurable, both by reason of the bloodless and nervous nature of the part, as also for that the ulcer is continually chased and troubled by the acrimony of the urine, so that it can hardly be cicatrized. For even after making of water some reliques of the urine alwayes remain in the bottome of the bladder, which could not therefore pass forth together with the rest of the urine, for that for the passing forth of the urine, the bladder being distended before, falls and is complicated in its selfe. Ulcers of the bladder are healed with the same medicins as those of the reins are; but these not only taken by the mouth but also injected by the urinary passage. These injections may be made of *Gordonius* his Trochisces formerly prescribed, being dissolved in some convenient liquor; but because ulcers of the bladder cause greater and more sharpe pain than those of the kidneys, therefore the Chirurgeon must be more diligent in using Anodynes. For this purpose, I have often by experience found, that the oil of henbane made by expression gives certain help. He shall do the same with Cataplasms and liniments applyed to the parts about the *Pecten* and all the lower belly and *perineum*, as also by casting in of Clysters. If that they stink, it will not be amisse to make injection of a litle *Ægyptiacum* dissolved in wine, plantain, or rose water. For I have often used this remedy in such a case with very prosperous success.

Things to cleanse these ulcers. Trochisces for the ulcers of the kidneys and bladder. 4. Method.

Signs to know what part of the bladder is ulcerated. Why ulcers in the bottome of the bladder are incurable.

Ægyptiacum for the ulcers of the bladder.

CHAP. XIX. Of the Ulcers of the Womb.

Ulcers are bred in the womb either by the conflux of an acrid, or biting humour; fretting the coats thereof, or by a tumour against nature degenerating into an abscesse, or by a difficult and hard labour; they are known by pain at the *perineum*, and the efflux of *Pus* and *Sanies* by the privity. All of them in the opinion of *Avicen* are either putrid, when as the *Sanies* breaking forth is of a stinking smell, and in colour resembles the water wherein flesh hath been washed; or else sordid, when as they flow with many virulent and crude humours; or else are eating or spreading ulcers, when as they cast forth black *Sanies*; and have pulsation joined with much paine. Besides they differ amongst themselves in site, for either they possess the neck and are known by the sight, by putting in a *speculum*, or else are in the bottome, and are manifested by the condition of the more liquid and serous excrements, and the site of the pain. They are cured with the same remedies wherewith the ulcers of the mouth, to wit, with *aqua fortis*, the oil of Vitriol and Antimony, and other things made somewhat more milde, and corrected with that moderation, that the ulcerated parts of the Womb may be safely touched with them; it is requisite that the remedies which are applyed to the ulcers of the womb, do in a moment that which is expected of them, for they cannot long adhere or stick in the womb, as neither to the mouth. *Galen* saith that very drying medicins are exceeding fit for the ulcers of the womb, that so the putrefaction may be hindred or restrained, whereto this part as being hot and moist is very subject; besides that the whole body unto this part as unto a sink sends downe its excrements. If an ulcer take hold of the bottome of the womb, it shall be cleansed and the part also strengthened by making this following injection. *R. hordei integri p. ij. guajaci. ℥j. rad. Ireos. ℥β. absinth. plant. centaur. utriusque, an. M. j. fiat decoct. in aqua fabrerum ad lb. ij. in quibus dissolue mellis rosati, & syrupi de absinthio, an. ℥ij. fiat injectio.* For amending the stinking smell I have often had certaine experience of this ensuing remedy. *R. vini rub. lb. j. unguent. egyptiaci ℥ij. bulliant parum.* Thus the putrefaction may be corrected, and the painfull malicioufness of the humour abated. Ulcers when they are cleansed must presently be cicatrized; that may be done with Alum water, the water of Plantain wherein a litle Vitriol or Alum have been dissolved. Lastly, if remedies nothing availing, the ulcer turn into a *cancer*, it must be dressed with anodynes and remedies proper for a *cancer*, which you may finde set down in the proper treatise of *Cancers*. The cure of ulcers of the fundament was to be joined to the cure of these of the womb; but I have thought good to referre it to the treatise of *Fistula's*, as I do the cure of these of the urinary passage to the treatise of the *Lues venerea*.

The causes. Lib. 3. sect. 12. tract. 2. cap. 5. Signes.

The cure

Why strongly drying things are good for ulcers of the womb. An injection for an ulcer in the bottome of the womb. An injection hindring putrefaction.

CHAP. XX. Of the Varices and their cure by cutting.

Varix is the dilatation of a vein, some whiles of one and that a simple branch, other whiles of many. Every *varix* is either streight or crooked, and as it were infolded into certaine windings within its selfe. Many parts are subject to *Varices*, as the temples, the region of the belly under the navill, the testicles, womb, fundament, but principally the thighs and legs. The matter of them is usually melancholy bloud, for *Varices* often grow in men of a melancholy temper, and which usually feed on gross meats, or such as breed gross and melancholy humours. Also women with child are commonly troubled with them, by reason of the heaping together of their suppressed mensuall evacuation.

What a *Varix* is, and what be the differences thereof.

The matter.

The causes. The precedent causes are a vehement concussion of the body, leaping, running, a painful journey on foot, a fall, the carrying of a heavy burden, torture or racking. This kind of disease gives manifest signs thereof by the largeness, thickness, swelling and colour of the veins. It is best not to meddle with such as are inveterate; for of such being cured there is to be feared a reflux of the melancholly blood to the noble parts, whence there may be imminent danger of malign ulcers, a cancer, madness or suffocation. When as many *Varices* and diversly implicit are in the legs, they often swell with congealed and dried blood, and cause pain which is increased by going and compression. Such like *varices* are to be opened by dividing the veine with a Lancet, and then the blood must be pressed out, and evacuated by pressing it upwards and downwards; which I have oft-times done, and that with happy success to the Patients, whom I have made to rest for some few dayes, and have applyed convenient medicins. A *varix* is often cut in the inside of the leg a little below the knee, in which place commonly the originall thereof is seen. He which goes about to intercept a *varix* downwards from the first originall and as it were fountain thereof, makes the cure far more difficult. For hence it is divided as it were into many rivulets, all which the Chirurgeon is forced to follow.

The cure.

The cutting of *Varices*.

For what intention a *Varix* must be cut.

Paulus cap. 82. lib. 6.

The manner how to cut it.

A *varix* is therefore cut or taken away so to intercept the passage of the blood and humours mixed together therewith, flowing to an ulcer seated beneath, or else lest that by the too great quantity of blood, the vessel should be broken, and death be occasioned by a hæmorrhagic proceeding from thence. Now this is the manner of cutting it. Let the Patient lye upon his back on a bench or table, then make a ligature upon the leg in two places the distance of some four fingers each from other, wherein the excision may be made, for so the vein will swell up and come more in sight, and besides you may also mark it with inke; then taking the skin up between your fingers cut it long wayes according as you have marked it, then free the bared vein from the adjacent bodies, and put thereunder a blunt pointed needle (lest you prick the vein) thred with a long double thred, and so bind it fast; and then let it be opened with a Lancet in the middle under the ligature just as you open a vein, and draw as much therehence as shall be fit. Then straight make a ligature in the lower part of the forementioned vein, and then cut away as much of the said vein as is convenient between the ligatures, and so let the ends thereof withdraw themselves into the flesh above and below, let these ligatures alone untill such time as they fall away of themselves. The operation being performed, let an astringent medicine be applyed to the wound and the neighbouring parts; neither must you stir the wound any more for the space of three dayes. Then do all other things as are fit to be done to other such affects.

CHAP. XXI. Of Fistula's.

What a Fistula is.



Fistula is a sinuous, white, narrow, callous, and not seldome unperceivable ulcer. It took its denomination from the similitude of a reeden (*Fistula*) that is, a pipe, like whose hollownes it is. A *Fistula* is bred in sundry parts of the body, and commonly followes upon abscesses or ulcers not well cured.

What a Callosus is.

The differences of *Fistula's*.

A *Callosus* is a certain fleshy substance, white, solid, or dense and hard, dry and without pain, generated by heaping up of dried excrementitious phlegmie, or else adust melancholy encompassing the circuit of the ulcer, and substituting it selfe into the place of laudable flesh. The *Sinus* or cavity of a *Fistula* is sometimes dry, and other while drops with continuall moisture: sometimes the dropping of the matter so dainly ceases, and the orifice thereof is shut up, that so it may deceive both the Chirurgeon and the Patient with a false shew of an absolute cure; for within a while after it will open again and run as formerly it did. Some *Fistula's* are bred by the corruption of a bone, others of a nerve, others of membranes, and others of other parts of the body. Some run straight in, others and that the greater part, have turnings and windings; some have one, others have more orifices and windings, some are at the joints, others penetrate into some capacity of the body, as into the chest, belly, guts, womb, bladder; some are easily, others difficultly cured, and some wholly incurable. There are divers signs of *Fistula's* according to the variety of the parts they possess; for if that which you touch with the end of your probe make resistance, and rebound, then you may know that it is come to the bone, and then if the end of the probe slip up and down as on a smooth and polite superficies, it is a sign that the bone is yet sound, but if it stop and stay in any place as in a rough way, then know that the bone is eaten, rough and perished, sometimes the bone lies bare, and then you need not use the probe. Besides also it is a sign that the bone is affected, if there be a purulent efflux of an unctuous or oily matter, not much unlike that marrow wherewith the bone is nourished. For every excrement shewes the condition of the nourishment of the part whence it is sent; in a *Fistula* which penetrates to a nerve, the Patient is troubled with a pricking paine, especially when you come to search with a probe, especially if the matter which flowes down be more acrid. Oft-times if it be cold, the member is stupified the motion being weakened; besides also the matter which flowes from thence is more subtle, and somewhat like unto that which flowes from the bones, yet not oily nor fat, but sanious and viscous, resembling the condition of the alimentary humour of the nerves. The same usually appears and happens in *Fistula's* which penetrate to the Tendons and those membranes which involve the muscles. If the *Fistula* be within the flesh, the matter flowing thence is more thick and plentiful, smooth, white, and equall. If it descend into the veins or arteries, the same happen as in those of the nerves, but that there is no such great pain in searching with your probe, nor no offence or impediment in the use of any member: yet if the matter of the fistulous ulcer be so acrid, as that it corrode the vessels, blood will flow forth; and that more thick if it be from a vein, but more subtle and with some murmuring if from an artery. Old *Fistula's* and such as have run for many years, if suddainly shut up, cause death, especially in an ancient and weak body.

The signes.

The signe that the bone is bare from the condition of the matter which is cast forth.

Aerius 117. 4. sect. 2. cap. 55.

Old *Fistula's* if closed prove mortal.

CHAP. XXII. Of the cure of Fistula's.

FOr the cure; in the first place it will be expedient to search the Fistula; and that either with a wax size, a probe of lead, gold or silver, to find out the depth and windings or corners thereof. But if the Fistula be hollowed with two or more orifices, and those cuniculous, so that you cannot possibly and certainly search or find them all out with your probe; then must you cast an injection into some one of these holes, and so observe the places where it comes forth, for so you may learn how many, and how deep or superficially cavities there be; then by making incisions you must lay open and cut away the callous parts. You must make incisions with an incision knife or razor, or else apply actually or potentially canteries; for nature cannot unless the callous substance be first taken away, restore or generate flesh or agglutinate the distant bodies. For hard things cannot grow together, unless by the interposition of glue, such as is laudable blood; but a callous body on all sides possessing the surface of the ulcerated flesh, hinders the flowing of the blood out of the capillary veins for the restoring of the lost substance and uniting of the disjoined parts. If you at any time make caustick injections into the Fistula, you must presently stop the orifice thereof, that so they may have time to worke the effect, for which they are intended. Which thing we may conjecture by the tumor of the part, the digesture of the flowing matter, and its lesser quantity. Then you must hasten the falling away of the Eschar, and then the ulcer must be dressed like other ulcers. But oftentimes the *Callous* which possesses the sinuous cavity of a Fistula, overcome by the power of acrid and escarotick medicins comes whole forth, and falls out like a pipe, and so leaves a pure ulcer underneath it. Which I observed in a certain Gentleman, when I had washed with strong *Aegyptiacum* divers times a Fistulous ulcer in his thigh shot through with a bullet; then presently by putting in my Balsam formerly described, he grew well in a short time. Fistula's which are neer great vessels, Nerves or principall intrailles, must not be meddled with unless with great caution. When a Fistula proceeds by the fault of a corrupt bone, it is to be considered whether that fault in your bone be superficially, or deeper in, or whether it is wholly rotten and perished. For if the default be superficially it may easily be taken away with a desquamatory Trepan; but if it penetrate even to the marrow, it must be taken forth with cutting mallets, first having made way with a *Terebellum*. But if the bone be quite rotten and perished, it must be wholly taken away, which may be fitly done, in the joints of the fingers, the *radius* of the Cubit and Leg; but no such thing may be attempted in the socket of the Huckle bone, the head of the Thigh bone, or any of the Rack bones when they are mortified, neither in those Fistula's, which are of their own nature incurable; but you shall think you have discharged your duty and done sufficiently for the Patient, if you leave it with a prognostick. Of this nature are Fistula's which penetrate even to the bowells, which come into the parts overspread with large vessels or Nerves, which happen to effeminate and tender persons, who had rather dye by much, then to suffer the pain and torment of the operation. Like caution must be used, when by the cutting of a Fistula there is fear of greater danger, as of convulsion if the disease be in a nervous part. In these and the like cases the Chirurgion shall not set upon the perfect cure of the disease, but shall think it better to prevent by all means possible that the disease by fresh supplies become no worse, which may be done if he prevent the falling down of any new defluxion into the part; if by an artificiall diet he have a care that excrementitious humors be not too plentifully generated in the body; or so order it, that being generated they may be evacuated at certain times, or else diverted from the more noble to the base parts. But in the mean space it shall be requisite to wast the faulty flesh, which growes up more then is fitting in the ulcer, and to cleanse the *sordes* or filth, with medicins, which may do it without biting or acrimony and putrefaction.

How to find out the windings and cavities of Fistula's.

Caustick injections.

Celsus lib. 5.

Remedies for a Fistula proceeding from a corrupt bone.

The cure of what Fistula's may be attempted, and which may not. A palliative cure of a Fistula.

CHAP. XXIII. Of the Fistula's in the Fundament.

Fistula's in the Fundament are bred of the same causes as other kinds of Fistula's are; to wit, of a wound or absesse not well cured, or of a hemorrhoid which is suppurated. Such as are occult, may be known by dropping down of the *sanious* and purulent humor by the Fundament and the pain of the adjacent parts. But such as are manifest by the help of your probe you may find whither they goe and how far they reach. For this purpose the Chirurgion shall put his finger into the Fundament of the Patient, and then put a Leaden probe into the orifice of the Fistula, which if it come to the finger without interposition of any *medium*, it is a sign it penetrates into the capacity of the Gut. Besides also then there flowes not only by the Fundament but also by the orifice which the malign humor hath opened by its acrimony, much matter, somewhiles *sanious*, and oftentimes also breeding Worms. Fistula's may be judged cuniculous, and running into many turnings and windings, if the probe do not enter far in, and yet notwithstanding more matter flowes thence then reason requires should proceed from so small an ulcer. You may in the orifices of all Fistula's, perceive a certain callous wart, which the common Chirurgions tearm a *Hens arse*. Many symptomes accompany Fistula's which are in the Fundament, as a *Tenesmus*, strangury and falling down of the Fundament. If the Fistula must be cured by manuell operation, let the Patient lye so upon his back, that lifting up his legs, his thighs may presse his belly, then let the Chirurgion, having his nail pared, put his finger besmeared with some ointment into the Patients Fundament; then let him thrust in at the orifice of the Fistula a thick Leaden needle drawing after it a thread consisting of thread and horse hairs woven together, and then with his finger taking hold thereof and somewhat crooking it, draw it forth at the Fundament, together with the end of the Thread. Then let him knit the two ends of the thread with a draw or loose knot, that so he may straiten them at his pleasure.

The causes.

Signs.

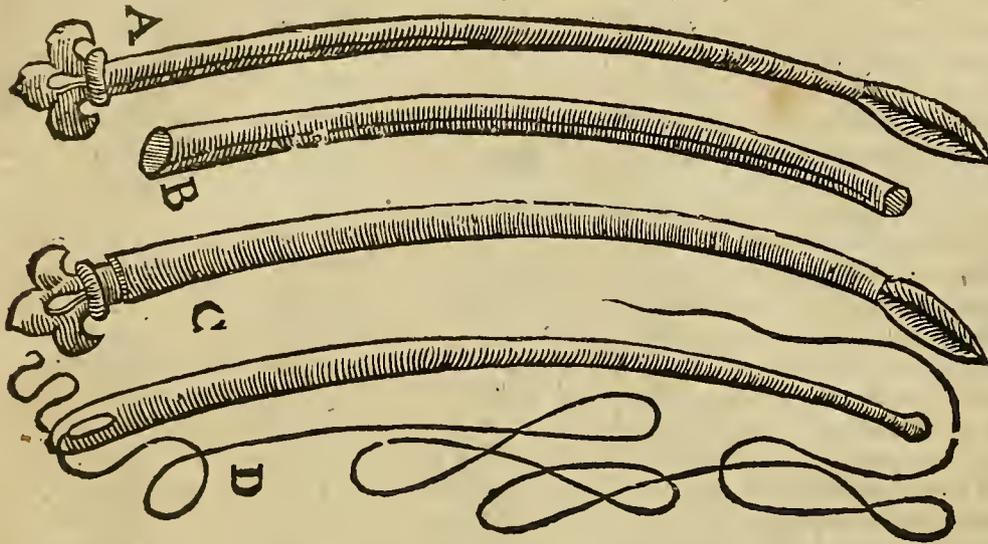
Symptomes.

The art of binding and cutting a Fistula of the Fundament.

But

But before you bind them you shall draw the thread somewhat roughly towards you as though you meant to saw the flesh therein contained, that you may by this means cut the Fistula without any fear of an Hæmorrhage, or flux of blood. It sometimes happens that such Fistula's penetrate not into the Gut; so that the finger by interposition of some callous body cannot meet with the needle or probe. Then it is convenient to put in a hollow Iron or silver probe so through the cavity thereof to thrust a sharp pointed needle, & that by pricking and cutting may destroy the *Callus*; which thing you cannot perform with the formerly described leaden probe, which hath a blunt point, unless with great pain.

The description of a hollow silver Probe to be used with a needle, as also a Leaden Probe.



A. Shewes the Needle.

B. The hollow probe.

C. The needle with the probe.

D. The Leaden needle drawing a thread after it.

The *Callus* being wasted, the Fistula shall be bound as we formerly mentioned. That which is superficial needs no binding, onely it must be cut with a crooked scal-

prum, and the *Callus* being consumed, the rest of the cure must be performed after the manner of other ulcers. But you must note, that if any parcell of the *Callous* body remain untoucht by the medicin or Instrument, the Fistula reviving again will cause a relapse.

CHAP. XXIII. Of Hæmorrhoides.

Hæmorrhoides, as the word is usually taken, are tumors at the extremities of the veins encompassing the Fundament, caused by the defluxion of an humor commonly melancholick, and representing a certain kind of *Varices*. Some of these run at an hole being opened, which sometimes in space of time contracts a *Callus*; others only swell, and cast forth no moisture; some are manifest, other lye only hid within. Those which run, commonly cast forth blood mixed with yellowish serous moisture, which stimulates the blood to break forth, and by its acrimony opens the mouths of the veins. But such as do not run, are either like blisters, such as happen in burnis, and by practitioners are usually called *vesicales*, and are caused by the defluxion of a phlegmatick and serous humor; or else represent a Grape, whence they are called *Vvales*, generated by the afflux of blood laudable in quality, but overabundant in quantity; or else they expresse the manner of a disease, whence they are termed *morales*, proceeding from the suppression of melancholick blood; or else they represent warts, whence they are stiled *Verrucales*, enjoying the same materiall cause of the generation as the *morales* do. This affect is cause of many accidents in men; for the perpetuall efflux of blood extinguisheth the vivid and lively colour of the face, calls on a dropsie, overthrowes the strength of the whole body. The flux of Hæmorrhoides is commonly every moneth, sometimes only foure times in a yeare. Great pain, inflammation, an Abscesse which may at length end in a Fistula, unlesse it be resisted by convenient remedies, do oft-times forerun the evacuation of the Hæmorrhoides. But if the Hæmorrhoides flow in a moderate quantity, if the Patients brook it well, they ought not to be stayed, for that they free the Patients from the fear of imminent evils, as melancholy, leprosie, strangury and the like. Besides, if they be stopped without a cause, they by their reflux into the Lungs cause their inflammation, or else break the vessells thereof, and by flowing to the Liver cause a dropsie by the suffocation of the native heat; they cause a dropsie; and universall leanness on the contrary, if they flow immoderately, by refrigerating the Liver by losse of too much blood; wherefore when as they flow too immoderately, they must be stayed with a pledget of haire down dipped in the ensuing medicin. *Rx pul. aloes, thuris, balaust. sang. draconis, an. ʒβ. incorporentur simul cum ovi albumine; fiat medicamentum ad usum.* When they are stretched out and swoln without bleeding, it is convenient to beat an Onion roasted in the embers with an Oxes gall; and apply this medicin to the swoln places, and renew it every five houres. This kind of remedy is very prevalent for internall Hæmorrhoides; but such as are manifest may be opened with horseleaches, or a Lancet. The juice or masse of the hearb called commonly Dead-nettle or Arkangell, applyed to the swoln Hæmorrhoides opens them, and makes the congealed blood flow thence. The *Fungus* and *Thymus* being diseases about the fundament are cured by the same remedy. If acrimony, heat and pain do too cruelly afflict the Patient, you must make him enter into a bath, and presently after apply to the ulcers (if any such be) this following remedy. *Rx Olei ros. ʒiiij. ceruse ʒi. Litharg. ʒβ. cera nova, ʒvj. opii ʒj. fiat unguent. secundum artem.* Or else, *Rx thuris, myrrhæ, croci, an. ʒj. opii ʒj. fiat unguentum cum oleo rosarum & mucagine sem. psillii, addendo vitellum minus ovi.* You may easily prosecute the residue of the cure according to the generall rules of Art.

The end of the Thirteenth Booke.

What they are.

Their differences.

Symptomes.

Senr. 37 sect. 6. epid.

A remedy for the immoderate flowing of the Hæmorrhoides. For suppress Heamorrhoides

OF BANDAGES, OR, LIGATURES.

THE FOURTEENTH. BOOK.

CHAP. I. *Of the differences of Bandages.*



Bandages, wherewith we use to bind, do much differ amongst themselves. But their differences (in Galens opinion) are chiefly drawn from six things; to wit, their matter, figure, length, breadth, making, and parts whereof they consist. Now the matter of Bandages is threefold; Membranous or of skins, which is accommodated peculiarly to the fractured grilles of the Nose; of Woollen, proper to inflamed parts, as those which have need of no astringency; of Linnen, as when any thing is to be fast bound: and of Linnen cloaths, some are made of flax, other some of hemp, as Hippocrates observes. But Bandages do thus differ amongst themselves in structure, for that some thereof consist of that matter which is sufficiently close and strong of it self, such are the membranous; others are woven, as the linnen ones. But that linnen is to be made choice of for this use, and judged the best, not which is new and never formerly used, but that which hath already been worn and served for other uses; that so the Bandages made thereof may be the more soft and pliable: yet must they be of such strength, that they may not break with stretching, & that they may straitly contain & repell the humor ready to flow down, and so hinder it from entering the part. These, besides, must not be hemmed nor stitched, must have no lace nor seam; for hems and seams by their hardness presse into, and hurt the flesh that lyes under them. Lace, whether in the midst or edges of the rowler, makes the Ligature unequal. For the Member where it is touched with the lace, as that which will not yeeld, is pressed more hard; but with the cloth in the middle more gently, as that which is more lax. Furthermore, these Ligatures must be of clean cloth, that if occasion be, they may be moistened or steeped in liquor appropriate to the disease, and that they may not corrupt, or make worse that liquor by their moistening therein. Now the Bandages which are made of Linnen clothes must be cut long-ways, and not athwart, for so they shall keep more firm and strong that which they bind, and besides, they will be alwaies alike, and not broader in one place then in another. But they thus differ in figure, for that some of them are rowled up, to which nothing must be sowed, for that they ought to be of a due length to bind up the member: others are cut or divided, which truly consist of one piece, but that divided in the end (such are usually taken to bind up the breasts) or else in the midst; others are sowed together, which consist of many branches sowed together, and ending in divers heads, and representing divers figures, such are the Bandages appropriated to the head. But they thus differ in length, for that some of them are shorter, others longer: so in like sort for breadth; for some are broader, others narrower. Yet we cannot certainly define nor set down neither the length, nor breadth of Rowlers, for that they must be various, according to the different length and thickness of the members or parts. Generally they ought both in length and breadth to fit the parts, whereunto they are used. For these parts require a binding different each from other, the head, the neck, shoulders, arms, breasts, groins, testicles, fundament, hips, thighs, legs, feet and toes. For the parts of Bandages, we term one part their body, another their heads. By the body we mean their due length and breadth; but their ends, whether they run long-ways or a-crosse, we according to Galen, term them their heads.

CHAP. II. *Sheweth the indications and generall precepts of fitting of Bandages and Ligatures.*

Here are, in Hippocrates opinion, two indications of fitting Bandages or Ligatures; the one whereof is taken from the part affected; the other from the affect it self. From the part affected, so the leg, if you at any time bind it up, must be bound long-ways, for if you bind it overthwart, the binding will loosen as soon as the Patient begins to go, and put forth his leg, for then the muscles take upon them another figure. On the contrary the Arm or Elbow must be bound up, bending in and turned to the breast, for otherwise at the first bending, if it be bound when it is stretched forth, the Ligature will be slacked, for that (as we formerly said) the figure of the muscles is perverted. Now for this indication, let each one perswade himself thus much, that the part must be bound up in that figure, wherein we would have it remain.

Now for that indication which is drawn from the disease, if there be a hollow ulcer, sinuous and cuniculous, casting forth great store of Sanies, then must you begin the ligature and binding from the bottom of the sinus, and end at the orifice of the ulcer; and this precept must you alwaies observe, whether the sinus be sealed in the top, bottom, middle, or sides of the ulcer. For thus the filth therein contained shall be emptied and cast forth, and the lips of the ulcer too far separated, shall be joined together: otherwise the contained filth will eat into all that lyes near it, increase the ulcer, and make it

uncurable by rotting the bones which lye under it with this acrid *sanies* or filth. But some Ligatures are remedies of themselves, as those which perform their duties of themselves, and whereto the cure is committed, as are these which restore their native unitie, those parts which are disjoined: others are not used for their own sakes, but only to serve to hold fast such medicins as have a curative facultie. This kind of Ligature is either yet a doing, and is termed by *Hippocrates* *Deligatio operans*; or else done and finished, and is called, *Deligatio operata*: for the first, that the Ligature may be well made, it is fit that it be close rowled together, and besides, that the Surgeon hold it stiffe and strait in his hand, and not carelessly, for so he shall bind up the member the better. Also he must in the binding observe, that the ends of the Rowler, and consequently their fastning may not fall to be on the affected or grieved part, for it is better that they come above or below, or else on the side: besides also, he must have a specciall care that there be no knot tyed upon the same place, or upon the region of the back, buttocks, sides, joints, or back part of the head, or to conclude in any other part upon which the Patient uses to lean, rest or lye. Also on that part where we intend to sow or fasten the Rowlers, you must double in their ends, that so the fastning or future may be the stronger, otherwise how close soever they shall be wrapped or rowled about the member, yet will they not remain firm, especially if they be of a great breadth. For the second kind of Ligature, to wit, that which is already done and finished; the Surgeon, the performer thereof, must consider to what end it was done, and whether he hath performed it well and fitly, as also neatly and elegantly, to the satisfaction both of himself and the beholders. For it is the part of a skilfull Workman every where handsomely and rightly to perform that which may so be done.

In fractures and luxations and all dislocations of bones, as also in wounds and contusions, you must begin your bandage with two or three windings or wraps about upon the place, and that (if you can) more straitly than in other places, that so the set bones may be the better kept in their places, and that the humors, if any be already fallen thither, may by this strait compression be pressed forth, as also to hinder and prevent the entrance in of any other which may be ready to fall down. But in fractures (as those which never happen without contusion) the blood flowes, and is pressed forth of its proper vessels, as those which are violently battered and torn, which causes fugillation in the neighbouring flesh, which first looks red, but afterwards black and blue by reason of the corruption of the blood poured forth under the skin. Wherefore after these first windings, which I formerly mentioned, you must continue your rowling a great way from the broken or luxated part; he which does otherwise, will more and more draw the blood and humors into the affected part, and cause *Impossumes*, and other malign accidents. Now the blood which flowes, goes but one way downwards, but that which is pressed is carryed as it were in two paths, to wit, from above downwards, and from below upwards. Yet you must have a care that you rather drive it back into the body and bowels, then towards the extremities thereof, as being parts which are incapable of so much matter, and not furnished with sufficient strength to suffer that burden, which threatens to fall upon it, without danger and the increase of prenaturall accidents. But when this masse and burden of humors is thrust back into the body, it is then ruled and kept from doing harm by the strength and benefit of the faculties remaining in the bowels and the native heat.

CHAP. III. Of the three kinds of Bandages necessary in fractures.

Two sorts of Ligatures are principally necessary for the Surgeon, according to *Hippocrates*, by which the bones aswell broken as dislocated may be held firm when they are restored to their naturall place.

Of these some are called *Hypodesmides*, that is, Under-binders: others, *Epidesmides*, that is, Over-binders. There are sometimes but two under-binders used, but more commonly three. The first must first of all be cast over the fracture, and wrapped there some three or foure times about, then the Surgeon must mark and observe the figure of the fracture; for as that shall be, so must he vary the manner of his binding. For the Ligature must be drawn strait upon the side opposite to that whereto the luxation or fracture most inclines, that so the bone which stands forth may be forced into its seat, and so forced may be the more firmly there contained. Therefore if the right side be the more prominent or standing forth, thence must you begin your ligation, and so draw your ligature to the left side. On the contrary, if the left side be more prominent, beginning there, you shall goe towards the opposite side in binding and rowling it. Here therefore would I require a Surgeon to be *Ambidexter*, (i. e.) having both his hands at command, that so he may the more exquisitely perform such variety of ligations. But let him in rowling, bend or move this first ligature upwards, that is, towards the body, for the former reasons. But neither is this manner of ligation peculiar to fractures, but common to them with luxations: for, into what part soever the luxated bone flew, then when it is restored, that side must be bound the more loosely and gently whence it departed, and that on the contrary more hard unto which it went. Therefore the ligature must be drawn from the side whereunto the bone went; so that on this side it be more loose and soft, and not straitly pressed with boulders or rowlers, that so it may be more inclined to the side opposite to the luxation. If the ligation be otherwise performed, it succeeds not well, for the part is relaxed, and moved out of its natural seat; wherefore there will be no small danger, lest the bone be forced out again, and removed from its place, whereinto it was restored by art and the hand. Which thing *Hippocrates* so much feared, that on the contrary he willed that the set bone should be drawn somewhat more unto the part contrary to that whereunto it was driven by force, than the naturall and proper site thereof should require. But to return to our former discourse of the three Ligatures: The first underbinder being put on, we then take the second, with which we in like sort begin at the fracture, but having wrapped it once or twice about



Hip. cers. 4. Sect. 2. offic. Initio 2. fist. aff.

Ligatures must not be only lightly, but also nearly performed.

Gal. eor. 1. 1. Sect. 1. lib. de fract.

Sent. 24. Sect. 2. offic. e.

Hypodesmides.

about there, for that, as we formerly said, we must not force back, and presse so much blood towards the extremities, as we must do towards the body and bowels. Wherefore this Ligature shall be drawn from above downwards, gently straining it to presse forth the blood contained in the wounded part: When by rowling you shall come to the end of the part, then you shall carry back again that which remains thereof, to wit, upwards; But otherwise you may take the third under-binder, wherewith you may begin to rowle, whereas you left with the second, & you may carry it thus, rowling it from below upwards. These under-bindings thus finished, apply your boulders, after them your over or upper-bindings, which are oft-times two, but sometimes three. The first hath two heads, and is wrapped both from the right hand and the left, for the preservation of the first under-binder and the boulders, and restoring the muscles to their native figure. The two other which remain, consist of one head, and the one of them must be rowled from below upwards, the other from above downwards, after such a manner, that they may be directly contrary to the under-binders; as if they were rowled from the right hand, then these must be from the left. Now this is the manner of *Hippocrates* his Ligation, which, for that it is now grown out of use, we must here set down that which is in common use. They do not at this time use any over-binders, but that which we termed the third under-binder serves our Surgeons in stead of the three forementioned over-binders. Wherefore they carry this third under-binder, wrapped from below upwards (as we formerly said) contrary to the first and second under-binder, as if these begun on the right side, this shall be rowled from the left, and shall end whereas the first under-binder ended. And you must not only draw it indifferently hard, but also make the spires and windings more rare. This third rowler is of this use in this manner of Ligation, that is, it restores the muscles to their native figure, from whence they were somewhat altered by the drawing and rowling of the two former Ligatures. But you must always have regard, that you observe that measure in wrapping your Ligatures, which reason, with the sense of the Patient, and ease in suffering, prescribes; having regard that the tumor become not inflamed. Also the habit of the body ought to prescribe a measure in Ligation: for tender bodies cannot away with so hard binding as hard. Verily, in fractures and luxations, the humors by too strait binding are pressed into the extreme parts of the body; whence grievous and oft-times enormous Oedema's proceed; for healing whereof the Ligature must be loosed, and then the tumified parts pressed by a new rowling, which must be performed from below upwards, and so, by forcing the matter of the tumor thither, it may be helped; for there is no other hope or way to drive the humor back again. He which doth this, forsakes the proper cure of the disease, so to resist the symptome, which the Surgeon shall never refuse to do, as often as any necessary cause shall require it. For this cause *Hippocrates* bids, that the bandages be loosed every three dayes, and then to foment the part with hot water, that so the humors, which (drawne thither by the vehemency of pain) have settled in the part, may be dissolved and dispersed; and itching and other such like symptomes prevented. The fear of all accidents being past, let the Ligation be sooner or later loosed, and more slacked then it formerly was accustomed; that so the blood and laudable matter, whereof a *Callos* may ensue, may flow more freely to the affected part.

When the third under-binder is necessary. *Epidemi.*

The manner of binding now in use.

What mean to be observed in wrapping the Ligatures.

Why *Hippoc.* bids to loose the Ligatures every third day.

CHAP. III. Of the binding up of Fractures associated with a wound.

IT sometimes happens, that a Fracture is associated by a wound, and yet for all this it is fit to bind the part with a Ligature, otherwise there will be no small danger of swelling, inflammation, and other ill accidents, by reason of the too plentiful afflux of humors from the neighbouring parts. But it is not fit to endeavour to use that kind of binding which is performed with many circumvolutions or wrappings about. For seeing the wound must be dressed every day, the part must each day necessarily be stirred, and the Ligature, consisting of so many windings, loosed; which thing will cause pain, and consequently hinder the knitting and uniting which is performed by rest. Therefore this kind of binding may be performed by one only rowling about the wound, and that with a rowler which consists of a twice or thrice doubled cloth, made in manner of a boulder, and sewed with as much conveniency as you can, that it may be so large as to encompass and cover all the wound, for these reasons, which shall be delivered at large in our Treatise of Fractures. But if the wound run long-ways, let the boulders and splints be applied to the sides of the wound, that so the lips of the wound may be pressed together, and the contained filth pressed forth. But if it be made overthwart, we must abtain from boulders and splints: for that, in *Galens* opinion, they would dilate the wound, and the purulent matter would be pressed out, and cast back into the wound.

How to bind up a Fracture with a wound.

Ad sent. 12. sect. de fract.

CHAP. V. Certain common precepts of the binding up of Fractures and luxations.

IN every Fracture and Luxation, the depressed, hollow and extenuated parts, such as are neer unto the joints, ought to be filled up with boulders, or clothes put about them, so to make the part equall; that so they may be equally and on every side pressed by the splints, and the bones more firmly contained in their seats. So when the knee is bound up, you must fill the ham or that cavity which is there, that so the ligation may be the better and speedilier performed. The same must be done under the arm-pits, above the heel, in the arm neer the wrist; and, to conclude, in all other parts which have a conspicuous inequality by reason of some manifest cavities. When you have finished your binding, then enquire of the Patient, whether the member seem not to be bound too strait. For if he say, that he is unable to endure it so hard bound, then must the binding be somewhat slackned. For, too strait binding causes pain, heat, defluxion, a gangrene, and lastly, a sphacell or mortification: but too loose is unprofitable, for that it doth not contain the parts in that state we desire. It is a sign of a just ligation, that is neither too strait nor too loose, if the ensuing day the part be swoln with an oedematous tumor, caused

Hipp. sent. 37. & 38. sect. 1. de fract.
The signs of too strait and loose binding up.

caused by the blood pressed forth of the broken place; but of too strait ligation, if the part be hard swoln; and of too loose, if it be no whit swoln, as that which hath pressed no blood out of the affected part. Now if a hard tumor, caused by too strait binding, trouble the Patient, it must presently be loosed, for fear of more grievous symptoms, and the part must be fomented with warme *Hydraenum*, and another indifferent, yea verily, more loose ligation must be made in stead thereof, as long as the pain and inflammation shall continue; in which time and for which cause, you shall lay nothing upon the part which is any thing burdensome. When the patient begins to recover, for three or four dayes space, especially if you find him of a more compact habit and a strong man, the ligation must be kept firm and not loosed. If on the third day, and so untill the seventh, the spires or windings be found more loose, and the part affected more slender; then we must judge it to be for the better. For hence you may gather, that there is an expression and digestion of the humors, causing the tumor made by force of the ligation. Verily, broken bones fitly bound up, are better set, and more firmly agglutinated, which is the cause, why in the place of the fracture the ligation must be made the straiter; in other places more loosely. If the fractured bone stand forth in any part, it must there be more straitly pressed with boulders and splints. To conclud, the seventh day being past, we must bind the part more straitly then before: for thai then inflammation, pain and the like accidents, are not to be feared. But these things which we have hitherto spoken of the three kinds of Ligatures, cannot take place in each fractured part of the body, as in the chaps, collar-bones, head, nose, ribs. For, seeing such parts are not round and long, a Ligature cannot be wrapped about them, as it may on the arms, thighs, and legs, but only be put on their outsides.

Why we must make more strait ligation on the broken part.

CHAP. VI. *The uses for which Ligatures serve.*

BY that which we have formerly delivered, you may understand that Ligatures are of use to restore those things which are separated and moved forth of their places, and join together those which gape; as in fractures, wounds, contusions, sinewous ulcers, and otherlike affects against nature, in which the solution of continuity stands in need of the help of Bandages, for the reparation thereof. Besides also, by the help of Bandages these things are kept asunder or separated, which otherwise would grow together against nature; as in Burns, wherein the fingers and the hams would mutually grow together; as also the Arm-pits to the Chest, the Chin to the Breast, unless they be hindered by due ligation. Bandages do also conduce to refresh emaciated parts: wherefore if the right leg wast for want of nourishment, the left leg, beginning at the foot, may be conveniently rowled up even to the groin. If the right arm consume, bind the left with a strait Ligature, beginning at the hand, and ending at the arm-pit. For thus a great portion of blood from the bound-up part is sent back into the *vena cava*, from whence it regurgitates into the almost empty vessels of the emaciated part. But I would have the sound part to be so bound, that thereby it become not painfull; for a dolorifick ligation causes a greater attraction of blood and spirits, as also exercise: wherefore I would have it during that time to be at rest, and keep holy-day. Ligatures also conduce to the stopping of bleedings: which you may perceive by this, that when you open a vein with your lancet, the blood is presently stayed, laying on a boulder and making a Ligature. Also Ligatures, are usefull for women presently after their delivery; for their womb being bound about with Ligatures, the blood wherewith their womb was too much moistened, is expelled, the strength of the expulsive faculty being by this means stirred up to the expulsion thereof: and it also hinders the empty womb from being swoln up with wind, which otherwise would presently enter thereinto. This same Ligature is a help to such as are with child, for the more easie carrying of their burden; especially those whose Child lyes so far down-wards, that lying as it were in the den of the hips, it hangs between the thighs, and so hinders the free going of the mother. Therefore the woman with child is not only eased by this binding of her womb with this Ligature, which is commonly termed, the navill Ligature; but also, her child being held up higher in her womb, she hath freer and more liberty to walk. Ligatures are in like sort good for revulsion and derivation: as also for holding of medicins which are laid to a part, as the neck, breast or belly. Lastly, there is a triple use of Ligatures in amputation of members, as arms and legs. The first to draw and hold upwards the skin and muscles lying under it, that the operation being performed, they may, by their falling down again, cover the ends of the cut-off bones; and so by that means help forwards the agglutination and cicatrization; and when it is healed up, cause the lame member to move more freely, and with lesse pain; and also to performe the former actions, this, as it were, cushion or boulder of musculous flesh lying thereunder. The second is, they hinder the bleeding by pressing together the veins and arteries: The third is, they by strait binding intercept the free passage of the animall spirits, and so deprive the part which lyes thereunder of the sense of feeling, by making it, as it were, stupid or num.

The first benefit of Ligatures.

The second.

The third.

The fourth.

The fifth.

The sixth.

The seventh.

The eighth,

the particu-

lar use of

ligatures in

the amputa-

tion of

members.

CHAP. VII. *Of Boulders or Compresses.*

Boulders have a double use; the first is to fill up the cavities and those parts which are not of an equall thickness to their end. We have examples of cavities in the Arm-pits, Clavicles, Hams and Groins; and of parts which grow small towards their ends, in the arms towards the wrists, in the legs towards the feet, in the thighs towards the knees. Therefore you must fill these parts with boulders & linnen cloths, that so they may be all of one bigness to their ends.

The first use of Boulders

The second use of them.

The third use of them.

The second use of boulders, is to defend and preserve the first two or three Rowlers or Under-binders, the which we said before must be applyed immediately to the fractured part. Boulders, according to this twofold use, differ amongst themselves, for that when they are used in the first mentioned kind, they must be applyed athwart; but when in the latter, long-waves or down-right.

You may also use Boulders, lest the too strait binding of the Ligatures cause pain and trouble to the

new set bones. A three or four times doubled cloth will serve for the thickness of your Boulders, but the length and breadth must be more or less, according to the condition of the parts and disease for which they must be applied.

CHAP. VIII. *Of the use of Splints, Junks, and Cases.*

Having delivered the uses of Ligatures and Boulders, it remains that we say somewhat of the other things, which serve to hold the bones in their places; as Splints, Junks, Cases, and such other like. Splints are made and composed of past-board, of thin splinters of wood, of leather, such as shoe-soals are made with; of the rinds of trees, or plates of latin, or lead, and such other like, which have a gentle and yielding stiffness; yet would I have them made as light as may be, lest they by their weight become troublesome to the affected part. But for their length, breadth, and number, let them be fitted agreeable to the part whereto they must be used. Let also their figure be streight or crooked according to the condition of the member whereto they must be applied. You must have a speciall care, that they run not so far as the swellings out, or eminencies of the bones; as the ancles, knees, elbows, and the like, lest they hurt them by their pressure: also you must have a care, that they be smaller at their ends, and thicker in their middles, whereas they lye upon the broken bone. The use of splints is, to hold fast and firm, that they may stir no way the broken and luxated bones, after they be set and restored to their places. That they performe this use, it is fit there be no thick boulders under them, nor over many rowlers; for so through so thick a space, they would not so straitly presse the part. Junks are made of sticks the bigness of ones finger, wrapped about with rushes, and then with linnen cloth: they are principally used in fractures of the thighs and legs. Cases are made of plates of latin, or else of some light wood; their use is, to contain the bones in their due figure, when the Patient is to be carried out of one bed or chamber, into another, or else hath need to go to stool: lastly, if we must rest somewhat more strongly upon the broken or luxated members, these Cases will hinder the bones from stirring or flying out on the right side or left, above or below, we sleeping or waking, being willing or unwilling; and in like sort lest being not as yet well knit, or more loosely bound up for fear of pain, inflammation, or a gangrene, they hang downe, fall, or fly in sunder by reason of the inequalities of the bed. Such Cases, Junks, and the like, which serve for restoring and fast holding of broken and luxated bones, we may, according to Hippocrates his mind, call them in general *Glossocomia*. All which things, the young Surgeon, which is not as yet exercised in the works of Art, can scarce tell what they are. But in the mean time, whilst that he may come to be exercised therein, or see others perform these operations, I, as plainly as possibly I could, have in words given him their portraiture or shape.

The matter of Splints.

Their use.

What Junks are.

The matter and use of Cases.

Glossocomia, a general name for such things.

The end of the Fourteenth Booke.

OF FRACTURES.

THE FIFTEENTH. BOOK.

CHAP. I. *What a Fracture is, and what the differences thereof are.*

Fracture, in Galens opinion, is the solution of continuity in a bone, which by the Greeks is called *Catagma*. There are many sorts of hurting or offending the bones: as the drawing them asunder, luxation, or putting them out of joint; their unnaturall growing together, their cutting or dividing asunder; contusion, absesse, putrefaction, rottenesse, laying bare the *periosteum* being violated or lost; and lastly, that whereof we now treat, a Fracture. Again, the varieties of Fractures are almost infinite. For one is complete and perfect, another imperfect; one runs long-wise, another transverse, another oblique; one while it is broken into great pieces, another while into little and small scales, which have either a blunt, or else a sharp end, and prick the adjacent bodies of the muscles, nerves, veins or arteries. It sometimes happens, that the bone is not broken into splinters, that is, long-ways, but together, and at once into two peeces overthwart, which Fracture is called *Raphanodon*, that is, after the manner of a Radish. A Fracture is made *Caryedon*, or like a nut, when as the bone flies into many small peeces, severed each from other, as when a Nut is broken with a hammer, or mallet upon an Anvile: Which fracture is also termed *Alphitidon*, by reason of the resemblance it hath to meal or flour; and such is often seen in fractures made by bullets, shot out of guns and such fiery Engines. Contrary to these are those fractures which are called *Schidacidon*, as rent into splinters, or after the manner of a boord or peece of timber, that is, right-down, and alongst the bone: and these fractures are either apparent to the eye, or else not apparent, and therefore called *Capillarie*, being so small, as that they cannot be perceived by the eye, unlesse you put ink upon them, and then shave them with your Scrapers. Sometimes the bone is only pressed down with the stroke, sometimes in the contrary it flies up, as if it were vaulted. They call it attrition, when the bone is broken into many small fragments, and as it were scales or chips. The fragments of fractured bones are sometimes smooth and polished, otherwhiles unequall, and as it

Lib. 6. method.

What it is for a bone to be broken *Raphanodon*.

What *Caryedon*, or *Alphitidon*.

What *Schidacidon*.

were sharp and rough with little teeth, or pricks. Some fractures touch only the surface of the bone, fetching off only a scale; other some change not the site of fractured bones, but only cleaves them length-ways, without the plucking away of any fragment; other some penetrate even to their marrow. Furthermore some fractures are simple and alone by themselves; other some are accompanied with a troop of other affects and symptomes; as a wound, hæmorrhagie, inflammation, gangrene, and the like. Hereunto you may also adde the differences drawn from the parts which the Fractures possess; as from the head, ribs, limbs, joints, and other members of the body. Adde also these which are taken from the habit of bodies, aged, young, full of ill humors, well tempered; almost all which have their proper and peculiar indications for curing. Now the causes of Fractures, are the too violent assaults or strokes of all externall things, which may cut, bruise, break, or shake: in this number of causes may also be reckoned fals from high places, and infinite other things, which would be long and tedious to reckon up.

The causes of fractures.

CHAP. II. Of the signs of a Fracture.

WE may know by evident signs that a bone is broken: the first whereof and most certain, is, when by handling the part which we suspect to be broken, we feel peeces of the bone severed asunder, and hear a certain crackling of these peeces under our hands, caused by the attrition of the shattered bones. Another sign is taken from the impotency of the part, which chiefly bewrayes it self, when both the bones, the leg, and brace-bones, the ell and wand are broken. For if only the brace-bone or wand be broken, the Patient may go on his leg, and stir his arm: for the brace-bone serves for the sustaining of the muscles, and not of the body, as the leg bone doth. The third sign is drawn from the figure of the part changed besides nature: for it is there hollow, from whence the bone is flown or gone, but gibbous or bunching out whither it is run. Great pain in the interim torments the Patient by reason of the wronged *periosteum*, and that membrane which involves the marrow and the sympathy of the adjacent parts which are compressed or pricked.

The first sign of a broken bone.

Another.

A third.

CHAP. III. Of prognosticks to be made in Fractures.

WE must prognosticate in Fractures whether they are to end in the destruction or welfare of the Patient; or whether their cure shall be long or short, easie, or else difficult and dangerous; and lastly, what accidents & symptomes may happen thereupon. He shall easily attain to the knowledge of all these things, who is not only well seen in the anatomical description of the bones, but also in the temper, composition and complexion of the whole body.

Wherefore in the first place, I think good to admonish the Surgeon of this, that in winter when all is stiffe with cold, by a little fall, or some such sleight occasion, the bones may be quickly and readily broken. For then the bones, being dried, by the dryness of the air encompassing us, become more brittle; which every one of the Vulgar usually observe to happen both in waxen and tallow candles: but when the season is moist, the bones are also more moist, and therefore more flexible and yeelding to the violence of the obvious and offending body. Wherefore also you may gather this to the framing of your Prognosticks, That bones by reason of their naturall dryness are not so easily agglutinated and consolidated as flesh; though in Children, according to *Galen*, by reason of the abundance of their humidity, the lost substance may be repaired, according (as they term it) to the first intention, that is, by restoring of the same kind of substance or matter. But in others, about the Fractures a certain hard substance usually concreats, of that nourishment of the broken bone which abounds, which glues together the fragments thereof, being fitly put together. This substance is then termed a *Callus*, and it is so hardened in time, that the bone thereafter in the broken part is seen to be more firm and hard than it is in any other: therefore that usuall saying in Physick is not without reason; That rest is necessary for the uniting of broken bones. For the *Callus* is easily dissolved, if they be moved before their perfect and solid agglutination. The matter of a *Callus* ought to be indifferent, and laudable in quantity and quality, even as blood which flows for the regeneration of the lost flesh in wounds. It is fit, that there may be sufficient matter for such a *Callus*, that the part have a laudable temper, otherwise there either will be no *Callus*, or certainly it will grow more slowly. Fractures are far more easily repaired in young bodies than in old: for in these there is plenty of the primigenious and radicall moisture, that is laudably holding and glutinous; and in the other there is store of watrish and excrementitious. By this you may easily conjecture, that you cannot certainly set down a time necessary for the generating a *Callus*: for in some it happens later, in some sooner: the cause of which variety is also to be referred to the constitution of the year and region, the temper and diet of the Patient, and manner of Ligation. For, those Patients whose powers are weak, and blood watrish and thin, in these the generation of a *Callus* uses to be more slow: On the contrary, strong powers hasten to agglutinate the bones, if there be plenty of grosse and viscous matter; whereby it comes to passe, that meats of grosser nutriment are to be used, and medicins applied which may help forwards the endeavour of nature, as we shall declare hereafter. When the bones are broken near unto the joints, the motion afterwards uses to be more difficult, especially if the *Callus*, which is substituted, be somewhat thick and bunching forth. But if, together with the violence and force of the Fracture, the joints shall be broken and bruised, the motion will not only be lost, but the life brought in danger, by reason of the greatness of the inflammation, which usually happens in such affects, and the excesse of pain in a tendinous body. These fractures wherein both the bones of the arm or leg are broken, are more difficult to cure, than those which happen but to one of them. For they are handled and kept in their places with more difficulty.

Why bones are more brittle in frostie weather.

Why the solution of continuity in bones is not so easily repaired. *Gal. in arte. par.*

Why bones sooner knit in young bodies.

Meats of grosse and tough nourishment conduce to the generation of a *Callus*.

Fractures at joint dangerous.

difficulty.

faculty, because that which remains whole, serves the other for a rest or stay to which it may lean. Moreover, there is longer time required to substitute a *Callus* to a great bone, than to a little one. Again these bones which are more rare and spongie, are sooner glued together by the interposition of a *Callus*, than these which are dense and solid. A *Callus* sooner grows in sanguin, than in cholerick bodies. But broken bones cannot be so happily agglutinated, nor restored in any body, but that alwayes some asperity or inequall protuberancy may be seen on that part where the *Callus* is generated. Wherefore the Surgeon ought to make artificiall Ligations, that the *Callus* may not stand out too far, nor sink down too low. That Fracture is least troublesome which is simple; on the contrary, that is more troublesome which is made into splinters: but that is most troublesome and worst of all which is in small and sharp fragments, because there is danger of convulsion by pricking a nerve, or the *periosteum*. Sometimes the fragments of a broken bone keep themselves in their due place: they also oft-times fly forth thereof, so that one of them gets above another; which when it happens, you may perceive an inequality by the depression of the one part and the bunching forth of the other, as also pain by the pricking: besides also the member is made shorter than it was, and than the sound member on the opposite side is, and more swoln by the contraction of the muscles towards their originall. Wherefore when a bone is broken, if you perceive any thing so depressed, presently putting your hand on both sides above and below, stretch forth the bone as forcibly as you can; for otherwise, the muscles and nerves, stretched and contracted, will never of their own accord suffer the bones to be restored to their proper seat and themselves. This extension must be performed in the first dayes, for afterwards there will happen inflammation: which being present, it is dangerous to draw the nerves and tendons too violently; for hence would ensue an impostume, convulsion, gangrene and mortification. Therefore *Hippocrates* forbids you to defer such extension untill the third, or fourth day. Fractures are thought dangerous, whole fragments are great, and fly out, especially in these bones which are filled with marrow on the inside. When broken or dislocated bones cannot be restored to themselves and their naturall place, the part wasts for want of nourishment; both for that the naturall site of the veins, arteries and nerves is perverted, as also because the part it self lies immovable, or scarce movable: whereby it cometh to passe, that the spirits do not freely flow thereto, as neither the nutritive juice cometh thither in sufficient plenty. When the dislocated or broken member is troubled with any great inflammation, it is doubtfull whether or no a convulsion will happen, if we attempt to restore it, or the parts thereof to their seat: therefore it is better, if it may be done, to defer the reducing thereof so long, untill the humor which possesses the part be dissolved, the tumor abated, and the bitterness of pain mitigated.

Ligations
conduce to
the band-
omnes of a
Callus.

Extension
must pre-
sently be
made after
the bone is
broken.

Sen. 36. *sect.*
3. *de fract.*

In inflam-
mations the
restoring of
the bone
must not be
attempted.

CHAP. IV. The generall cure of broken and dislocated bones.

TO cure a broken and dislocated bone, is to restore it to its former figure and site. For the performance whereof, the Surgeon must propose three things to himself: The first is, to restore the bone to its place: The second is, that he contain or stay it being so restored: The third is, that he hinder the increase of malign symptoms and accidents; or else if they do happen, that then he temper and correct their present malignity. Such accidents are pain, inflammation, a fever, absesse, gangrene and sphacell. For the first intention, you may easily restore a broken or dislocated bone, if presently, as soon as the mischance is got, or else the same day, you endeavour to restore it: for the bitterness of pain or inflammation, which may trouble the Patient, is not as yet very great, neither is the contraction of the muscles upwards as yet very much or stubborn. Therefore first of all, the Patient with his whole body, but especially with the broken or dislocated part, as also the Surgeon, must be in some place which hath good and sufficient light. Then let trusty and skilfull attendants be there, good ligatures, and also, if need so require, good engins. His friends which are present, let them see and hold their peace, neither say, nor do any thing which may hinder the Work of the Surgeon. Then putting one hand above, that is, towards the center of the body, and the other below, as near as he can to the part affected, let him stretch forth the member: for if you lay your hand any distance from the part affected, you will hurt the sound part by too much compression, neither will you much avail your self by stretching it at such a distance. But if you only endeavour below with your hand or ligature, assisting to make extension thereof, it will be dangerous if there be nothing above which may withstand or hold, lest that you draw the whole body to you. This being done, according as I have delivered, it is fit the Surgeon make a right or streight extension of the part affected: for when the bone is either broken or out of joint, there is a contraction of the muscles towards their originall, and consequently of the bones by them, as it is observed by *Galen*. Wherefore it is impossible to restore the bones to their former seat, without the extension of the muscles. But the part being thus extended, the broken bones will sooner and more easily be restored to their former seat. Which being restored, you shall presently with your hand presse it down, if there be any thing that bunches or stands out. And lastly you shall bind it up, by applying bouldsters and splints as shall be fit. But if the bone be dislocated or forth of joint, then presently after the extension thereof, it will be requisite to bend it somewhat about, and so to draw it in. The Surgeon is sometimes forced to use engins for this work, especially if the luxation be inveterate, if the broken or luxated bones be great; and that in strong and rustick bodies, and such as have large joints: for that then there is need of greater strength, than is in the hand of the Surgeon alone. For, by how much the muscles of the Patient are the stronger, by so much will they be contracted more powerfully upwards towards their originals. Yet have a care that you extend them not too violently, lest by rending and breaking asunder the muscles and nerves, you cause the forementioned symptoms, pain, convulsion, a paffie and gangrene: all which sooner happen to strong and aged bodies, than to children, eunuches, women, youths, and generally all moist bodies,

Three
things to be
performed in
curing bro-
ken and dis-
located
bones.

How to put
the bones in
their places.

Hipp. sent.
60. *sect.* 2. *de
fract.*

Ad sent. 1.
sect. 1. *de
fract.*

When in-
struments or
engins are
necessary.

What bod-
ies are
sooner hurt
by violent
extension.
Signs of a
bone well
set.

for that they are less hurt by violent extension and pulling, by reason of their native and much humidity and softness. For thus skins of leather, moistened with any liquor, are easily retched, and drawn out as one pleaseth: but such as are dry and hard, being lesse tractable, will sooner rend and tear, than stretch further out. Therefore the Surgeon shall use a mean in extending and drawing forth of members, as shall be most agreeable to the habits of the bodies. You may know the bone is set, and the setting performed as is fit, if the pain be asswaged; to wit, the fibres of the muscles, and the other parts being restored to their former site, and all compression, which the bones moved out of their places have made, being taken away; if, to your feeling there be nothing bunching out, nor rugged, but the surface of the member remain smooth and equall; and lastly, if the broken or dislocated member compares with its opposite in the composition of the joints, as the knees and ancles answer justly and equally in length and thickness. For which purpose it must not suffice the Surgeon to view it once, but even as often as he shall dresse it. For it may happen, that the bone which is well set, may by some chance, as by the Patients unconsiderate turning himself in his bed, or as it were a convulsive twitching of the member or joints whilst he sleeps, the muscles of their own accord contracting themselves towards their originals, that the member may again fall out; and it will give manifest signs thereof by renewing the pain, by pressing or pricking the adjacent bodies: which pain will not cease, before it be restored to its place: and hereof the Surgeon ought to have diligent care. For if, whilst the *Callus* is in growing, one bone ride over another, the bone it self will afterwards be so much the shorter, and consequently the whole member; so that if this error shall happen in a broken leg, the Patient will halt ever after, to his great grief, and the Surgeons shame. Wherefore the Patient shall take heed, as much as in him lyes, that he stir not the broken member, before that the *Callus* be hardened. Such diligent care needs not be had in dislocations. For these once set, and artificially bound up, do not afterwards so easily fall forth as broken bones. The second scope is, that the bones which shall be restored may be firmly kept in their state and place. That shall be done by Bandages; as ligatures, boulders, and other things, whereof hereafter we shall make particular mention. Hither tend proper and fit medicins, to wit, applying of oil of Roses with the whites of Eggs, and the like repelling things; and then resolving medicins, as the present necessity shall require. It will be convenient, to moisten your rowlers & boulders in oxycrate for this purpose, or else in Rose vinegar, if the Fracture be simple, or with red wine, or the like liquor warm (in *Galens* opinion) if a wound be joined to the fracture; and it will be fit to moisten fractures oftner in Summer: For so the part is strengthened, the defluxion being repelled, whereby the inflammation and pain are hindred. You must desist from humecting and watering the part when the symptomes are past, lest you retard the generating of a *Callus*; for which you must labour by these means which we shall hereafter declare. To this purpose also conduces the rest and lying of the part in its proper figure and site accustomed in health, that so it may the longer remain in the same place unstirred. Besides also, it is expedient then only to dresse the part, when it is needfull, and with those things that are requisite, shunning, as much as may be, inflammation and pain. That figure is thought the best, which is the middle, that is, which contains the muscles in their site, which is without pain; so that the Patient may long endure it without labour or trouble. All these things being performed, the Patient must be asked, whether the member be bound up too strait? If he answer, No, (unlesse peradventure a little upon the fracture or luxation, for there it is fit it should be more straitly bound) then may you know that the binding is moderate. And this same first ligation is to be kept in fractures without loosing for three or four dayes space, unlesse peradventure pain urge you to the contrary. In dislocations the same binding may be kept for seven or eight dayes, unless by chance some symptome may happen, which may force us to open it before that time: for the Surgeon must with all his art have a care to prohibit the happening of evill accidents and symptomes, which, how he may bring to passe, shall be declared in the following Chapter.

Causes and
signs of the
relapse of a
set bone.

Ad. sent.
21. sect. 1. de
fract.

What the
middle fi-
gure is and
why best.

Fit time for
loosing of
Ligatures
in fractures
and dislo-
cations.

CHAP. V. By what means you may perform the third intention in curing fractures and dislocations, which is, the hindring and correction of accidents and symptomes.

Four choice
means to
hinder acci-
dents.



The causes
and differ-
ences of
itching.

Ad. sent. 4.
sect. 1. de
fract.

Remedies
against the
itching.

That we may attain unto this third scope, it is requisite we handle as gently and without pain, as we may, the broken or dislocated member, we drive away the defluxion ready to fall down upon the part by medicins, repelling the humor, and strengthening the part; we, by appointing a good diet, hinder the begetting of excrements in the body, and divert them by purging and phlebotomy. But if these accidents be already present, we must cure them according to the kind and nature of each of them: for they are various. Amongst which is reckoned itching, which in the beginning torments the Patient: this ariseth from a collection and suppression of subacid vapours, arising from the blood, and other humors under the skin. Whence a light biting, which causeth a simple itch, or else a more grievous and acrid one, from whence (in *Galens* opinion) proceeds a painfull itching. Wherefore such matter, as the cause, being evacuated, all itching ceaseth. But this cannot easily and freely be evacuated and breathed out, because the pores of the part are shut up, and as it were oppressed with the burden of the emplasters, boulders, and ligatures, which are put about the part. Hereunto may be added, that the part its self doth not so perfectly perform and enjoy its wonted faculties and actions: by which it commeth to passe, that the heat thereof is more languid than may suffice to discusse the fuliginous matter there collected. Wherefore it will be convenient to loose the ligatures every third day, that as by loosing their eyes, their sanious and fuliginous excrements, shut up under the skin, may freely passe forth, lest in continuance they should fret and ulcerate it; as it happens to most of those who provide not for it by loosing their ligatures. Besides also, the part must be long fomented with hot water alone, or else with a decoction of sage, chamomile, roses,

roses, and melilot made in wine and water : for long fomenting attenuates and evacuates, but shorter sils and mollifies, as it is delivered by *Hippocrates*. Also gentle frictions, performed with your hand, or a warm linnen cloth upwards, to the right side and left, and circularly to every side, are good. But if the skin be already risen into blisters, they must be cut, lest the matter contained thereunder may corrode and ulcerate the skin: then must the skin be anointed with some cooling and drying medicin; as, *ung. album Camphoratum Rhasis, Desiccativum rubrum, unguentum rosatum sine aceto*; adding thereto the powder of a rotten post, or prepared *Tutia*, or the like. Other accidents more grievous than these, do often happen, but we will treat of them hereafter. But if the scales of the bone underneath be quite severed from the whole, then must they be presently taken forth, especially if they prick the muscles: but if the bone be broken into splinters, and so prominent out of the wounded flesh as that it cannot be restored into its seat, it must be cut off with your cutting mallets, or parrats beak, as occasion shall offer its self. In the interim, you must have a care that the part enjoy perspiration, and by change of place and rising, now and then it may be as it were ventilated : also you must see that it be not over-burdened, neither too strait bound, otherwise it will be apt to inflammation. Thus much concerning fractures and dislocations in generall : now we must descend to particulars, beginning with the fracture of the Nose.

Hipp. sent. 46. sect. 3. de fract.

CHAP. VI. Of the Fracture of the Nose.



The Nose is gristly in its lower part, but bony in the upper. Wherefore it suffers no fracture in the gristly part (unless peradventure a *Sedes*) but only a depression, distortion or contusion. But a fracture often happens to the bony part, and so great a depression to the inner side, that unless it be provided for by diligent restoring it, the nose will become flat, or wrested aside, whence there will be difficulty of breathing. That this kind of fracture may be restored, that bone which stands too far out, must be pressed down; but that which is deprest, must be lifted up with a spathern, or little stick handsomely fashioned and wrapped about with cotten or a linnen rag, so to avoid pain. Therefore you shall hold the spathern in one hand, and reduce and order it with the other. The bone being restored, directories or tents of a convenient bigness shall be put into the nose; which tents shall be made of sponge, or flax, or a peece of a beasts or sheeps lungs. For these things are soft, and do not only hinder the bones of the Nose that they fall no more, but also lift them up higher. And then the Nose shall be in some sort stayed with boulders on each side, even untill the perfect agglutination of the bones, lest the figure and straitness should be vitiated and spoiled. I have oft-times put golden, silver and leaden pipes into fractured noses, and fastned them with a thred to the Patients night-cap, which, by one and the same means, kept the bones from being again deprest, gave the matter free passage forth, and nothing hindred the breathing. In the meantime we must see, that we do not presse the Nose with too strait binding, unlesse peradventure some other thing perswade; lest they become either too wide, too flat, or crooked. If any wound accompany the fracture, that shall be cured after the same manner, as the wounds of the head. The fracture restored, the following medicin, which hath a faculty to repel and repress the defluxion, to strengthen and keep the part in its due posture, and to dry up and wast the matter which hath already fallen down, shall be applied to the Nose, and all the other dry parts. *R thuris, mastiches, boli armenie, sanguinis draconis, an. ʒʒ. aluminis roche, resinae pini. an. ʒij. pulverisentur subtilissime: Or else, R farine volatilis ʒʒ. albuminum ovorum quantum sufficit, incorporentur simul, & fiat medicamentum.*

How to reduce the nose into its naturall figure.

A fit astrigent and drying medicin.

Neither shall you use any other art to cure the cartilagineous part of the nose being fractured. Wherefore *Hippocrates* termes that solution of continuity that there happens, A fracture, as if it were in a bone; because he could find no other name fitly to expresse it: for a gristle, next to a bone, is the hardest of all the parts of our body. A *Callus* uses to grow in fractured noses, unlesse something hinder within the space of twelve or fifteen dayes.

Sent. 47. sect. 2. de art. Galien Com.

CHAP. VII. Of the fracture of the lower Jaw.



The lower Jaw runnes into two, as it were, horns or tops: the one whereof ends sharp, and receives a tendon from the temporall muscle; the other ends blunt and round under the mammillary process, and it is there implanted in a small cavity; it is joined together in the middle of the chin by *Symphysis*, and is marrowie within. The Fracture, which happens thereto, is restored by putting your fingers into the Patients mouth, and pressing them on the inside and outside, that so the fractured bones put together may be smoothed and united. But if they be broken wholly athwart, so that the bones lye over each other, extension must be made on both sides on contrary parts, upwards and downwards, whereby the bones may be composed and joined more easily to one another. The teeth in the mean while, if they be either shaken or removed out of their sockets, must be restored to their former places, and tyed with a gold or silver wyer, or else an ordinary thred, to the next firm teeth, untill such time as they shall be fastened, and the bones perfectly knit by a *Callus*. To which purposed the ordered fragments of the fractured bone shall be stayed, by putting a splint on the outside, made of such leather as shoe soles are made; the midst thereof being divided at the Chin, and of such length and breadth as may serve the Jaw: then you shall make ligation with a ligature two fingers broad, and of such length as shall be sufficient, divided at both the ends; and cut longways in the midst thereof; that so it may engirt the chin on both sides. Then there will be four heads of such a ligature so divided at the ends; the two lower whereof being brought to the crown of the head, shall be there fastned and sowed to the Patients night-cap. The two upper

A description of the lower Jaw. The manner of restoring a broken Jaw.

The description of a ligature for the under Jaw.

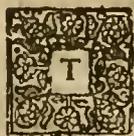
drawn athwart shall likewise be sowed as artificially as may be, to the cap in the nape of the neck. It is a most certain sign, that the Jaw is restored and well set, if the teeth fastened therein stand in their due rank and order. The Patient shall not lye down upon his broken jaw, lest the fragments of the bones should again fall out, and cause a greater defluxion. Unless inflammation, or some other grievous symptome shall happen, it is strengthened with a *Callus* within twenty dayes; for that it is spongy, hollow, and full of marrow, especially in the midst thereof: yet sometimes, it heals more slowly, according as the temper of the Patient is, which takes also place in other fractured bones. The agglutinating and repelling medicin, described in the former chapter, shall be used; as also others, as occasion shall offer it self. The Patient must be fed with liquid meats, which stand not in need of chewing, untill such time as the *Callus* shall grow hard, lest the scarce or ill-jointed fragments should fly in sunder with the labour of chewing. Therefore shall he be nourished with water-grewell, ponadoes, cullasses, barley creams, gellies, broths; rear eggs, restaurative liquors, and other things of the like nature.

CHAP. VIII. *Of the fracture of the Clavicle or Collar-bone.*



S the nature and kind of the fractured Clavicle shall be, so must the cure and restoring thereof be performed. But howsoever this bone shall be broken, alwayes the end fastned to the shoulder and shoulderblade, is lower than that which is joined to the chest; for that the arm draws it downwards. The collar-bone, if broken athwart, is more easily restored and healed, than if it be cloven long-ways. For, every bone broken athwart doth more easily return into its former state or seat, whiles you lift it up on this or that side with your fingers. But that which is broken *schidacidon*, or into splinters, or long-ways, is more difficultly joined and united to the ends and fragments: for those peeces, which were set, will be plucked asunder, even by the least motion of the arms; and that which was knit with the shoulder, will fall down to the lower part of the breast. The reason of which is, the collar-bone is not moved of its self, but consents in motion with the arm. In restoring this or any other fracture, you must have a care that the bones ride not one over another, neither be drawn nor depart too farre in sunder: therefore it will be here convenient, that one servant draw the arm backwards, and another pull the shoulder towards him the contrary way; for so there will be made, as I may so term it, a counter-extension. While which is in doing, the Surgeon with his fingers shall restore the fracture, pressing down that which stood up too high, and lifting up that which is pressed down too low. Some, that they may more easily restore this kind of fracture, put a clew of yarn under the Patients arm-pit; so to fill up the cavity thereof: then they forcibly presse the elbow to the ribs, and then force the bone into its former seat. But if it happen, that the ends of the broken bones shall be so deprest, that they cannot be drawn upwards by the forementioned means: then must the Patient be laid with his back; just between the shoulders; upon a pillow hard stuffed, or a tray turned with the bottome upwards, and covered with a rug or some such thing. Then the servant shall so long presse down the Patients shoulders with his hands, untill the ends of the bones, lying hid and pressed down, fly out and shew themselves. Which being done, the Surgeon may easily restore or set the fractured bone. But if the bone be broken so into splinters that it cannot be restored, and any of the splinters prick and wound the flesh, and so cause difficulty of breathing, you then must cut the skin even against them, and with your instrument lift up all the depressed splinters, and cut off their sharp points; so to prevent all deadly accidents, which thereupon may be feared. If there be any fragments, they, after they are set, shall be covered with a knitting medicin made of wheat floure, frankincense, bole armenick, *sanguis draconis*, *resina pini*, made into powder, and mixed with the whites of eggs, putting upon it splints, covered with soft worn linnen rags; covered over likewise with the same medicin, and then three boulders dipped in the same; two whereof shall be laid upon the sides, but the third and thickest upon the prominent fracture, so to repress it and hold it in. For thus the fragments shall not be able to stir or lift themselves up further than they should, either to the right side or left. Now these boulders must be of a convenient thickness and breadth, sufficient to fill up the cavities which are above and below that bone. Then shall you make fit ligation with a rowler, having a double head cast crosse-wise, of a hands breadth, and some two ells and a half long, more or less, according to the Patients body. Now he shall be so rowled up, as it may draw his arme somewhat backwards, and in the interim his arm-pits shall be filled with boulders, especially that next the broken bone; for so the Patient may more easily suffer the binding. Also you shall wish the Patient, that he of himself bend his arm backwards, and set his hand upon his hip, as the Country Clownes use to do, when they play at leap-frog. But how great diligence soever you use in curing this sort of fracture, yet can it scarce be so performed, but that there will some deformity remain in the part: for that a ligature cannot be rowled about the collar-bone, as it may about a leg or an arme. A *Callus* oft-times growes on this bone, within the space of twenty dayes, because it is rare and spongyous.

CHAP. IX. *Of the fracture of the shoulder-blade.*



The Greeks call that *Omplata*, which the Latines terme *Scapula*, or *Scapula patella*, that is, the shoulder-blade. It is fastned on the back to the ribs, nowle, the *Vertebra* of the chest and neck; but not by articulation, but only by the interposition of muscles, of which we have spoken in our Anatomic. But on the forepart it is articulated after the manner of other bones with the collar-bone, the shoulder, or arm-bone: for with its processe, which represents a prick or thorn, and by some, for that it is more long and prominent, is called *Acromion*; (that is, as you would say, the top or spire of the said shoulder-blade) it receives the collar-bone. Therefore some Anatomists, according to *Hippocrates*, as they suppose, call all this articulation of the collar-bone with the hollowed processe

In what time it may be healed.

Hipp. sent. 63 sect. 1. de art.

How to restore the fractured Clavicle. The first way.

The second way.

The third way.

How to bind up the fractured clavicle.

It is a difficult matter perfectly to restore a fractured clavicle.

An anatomical description of the shoulder-blade.

cess of the shoulder-blade, *Acromion*. There is another process of the said blade-bone, called *Cervix omoplatae*, or the neck of the shoulder-blade; this truly is very short, but ending in a broad insinuated head, provided for the receiving of the shoulder or arm bone. Not far from this process is another, called *Coracoïdes*, for that the end thereof is crooked like a Crows beak. This keeps the shoulder bone in its place, and conduces to the strength of that part. The shoulder blade may be fractured in any part thereof, that is, either on the ridge, which runs like a hill, amongst the midst thereof for its safety, as we see in the *vertebrae* of the back. So also in the broader part thereof it may be thrust in and depressed; and also in that articulation, whereby the top of the shoulder is knit to it. According to this variety of these fractured parts, the happening accidents are more grievous or gentle.

We know the spine or ridge of the shoulder-blade to be broken, when a dolbricke inequality is perceived by touching or feeling it. But you may know, that the broader or thinner part thereof is depressed, if you feel a cavity, and a pricking paine molest the part, and if a numnesse trouble the arme, being stretched forth. The fragments, if they yet stick to their bones and do not prick the flesh, must be restored to their state and place, and there kept with agglutinative medicines, and such as generate a *Callus*, as also with boulders and rowlers fitted to the place. But if they do not adhere to the bone, or pricke the flesh lying under them, then must you make incision in the flesh over against them, that so you may take them out with your Crows beak. But although they stir up and down, yet if they still adhere to the *periostemum* and ligaments, (if so be that they trouble not the muscles by pricking them) then must they not be taken forth: for I have oftner, than once observed, that they have within some short time after grown to the adjacent bones. But if they, being wholly separated, do not so much as adhere to the *periostemum*, then must they necessarily be plucked away, otherwise within some short space after, they will be driven forth by the strength of nature, for that they participate not any more in life with the whole. For that which is quick, saith *Hippocrates*, uses to expell that which is dead far from it. The truth whereof was manifested in the Marques of *Villars*, who at the battell of *Drenx* was wounded in his shoulder with a Pistoll bullet, certain splinters of the broken bone were plucked forth with the pieces of his harness, and of the leaden bullet; and within some short space after, the wound was cicatrized, and fully and perfectly healed. But more than seven years after, a defluxion and inflammation arising in that place by reason of his labour in arms, and the heaviness of his armour at the battell of *Mont-contour*, the wound broke open again; so that many shivers of the bone, with the residue of the leaden bullet, came forth of themselves. But if the fracture shall happen in the neck of the shoulder-blade or dearticulation of the shoulder, there is scarce any hope of recovery; as I have observed in *Anthony of Bourbon*, King of *Navarre*; *Francis of Lorraine*, Duke of *Guise*; the Count *Rhingrave Philibert*, and many other in these late civill Wars. For there are many large vessels about this dearticulation; to wit, the axillary vein and artery, the nerves arising from the *Vertebrae* of the neck, which are thence disseminated into all the muscles of the arm. Besides, also inflammation and putrefaction arising there are easily communicated by reason of their neighbour-hood to the heart and other principal parts, whence grievous symptoms, and oft-times death it selfe ensues.

How many ways the shoulder blade may be broken.

The cure.

Lib. de vul. capitis. A history.

Nature of its own accord makes it selfe way to cast forth strange bodies and matters. Why a fracture in the joint of the shoulder is deadly.

CHAP. X. Of the fracture and depression of the Sternum, or Breast-bone.

THe *Sternum* is sometimes broken, other whiles only thrust in without a fracture. The inequality perceivable by your feeling, shewes a fracture, as also the going in with a thrust with your finger, and the sound or noise of the bones crackling under your fingers. But a manifest cavity in the part, a cough, spitting of blood, and difficulty of breathing by compression of the membrane investing the ribs and the lungs, argue the depression thereof. For the restoring of this bone, whether broken or depressed, the Patient must be laid on his back with a cushion stuffed with tow or hay under the *vertebrae* of the back, as we set down in the setting of the collar bone. Then a servant shall lie strongly with both his hands on his shoulders, as if he would press them down, whilest the Surgeon, in the mean time pressing the ribs on each side, shall restore and set the bone with his hand; and then the formerly described medicines shall be applied for to hinder inflammation, and assuage pain; boulders shall be fitted thereto, and a ligature shall be made crosse ways above the shoulders, but that not too strait, lest it hinder the Patients breathing. I by these means, at the appointment of *Anthony of Bourbon* King of *Navarre*, cured *Anthony Benand* a Knight of the order, who had his breast-plate bended and driven in, with an iron bullet shot out of a Field-peece, as also his *sternum* together therewith, and he fell down as dead with the blow; he did spit blood for three months after I had set the bone; yet for all this he lives at this day in perfect health.

Signs that the sternum is broken. Signs that it is depressed. The cure.

A history.

CHAP. XI. Of the fracture of the ribs.

THe true ribs, for that they are bony, may be broken in any part of them. But the bastard ribs cannot be truly broken unlesse at the back bone, because they are only bony in that part, but gristly on the fore-side toward the breast bone; wherefore there they can only be folded or crooked in. These which are subject to fractures, may be broken inwards and outwards. But oft-times it comes to pass, that they are not absolutely broken, but cleft into splinters, and that sometimes inwards, but not outwards. Thus the fissure doth oft-times not exceed the middle substance of the rib; but sometimes it so breaks through it all, that the fragments and splinters do prick and wound the membrane, which invests and lines them on the inside, and then there is great danger. But when the fracture is simple without a wound, compression, puncture of the membrane, and lastly, without any other symptoms, when the danger is lesse. Therefore *Hippocrates* wiltheth, that these, who are thus affected, fill themselves

In what place the short ribs may be broken.

more

Sent. 56. sect. 3. de art.
 VVhy an internal fracture of the ribs is deadly.

The signes.

The cause of spitting blood when the ribs are broken.

Sent. 15. sect. 3. de art. Paulus lib. 6. cap. 96. Avicen. 4. The cure.

more freely with meat; for that moderate repletion of the belly, is (as it were) a certain prop or stay for the ribs, keeping them well in their place and state, which rule chiefly takes place in fractures of the bastard ribs. For such as have them broken, usually feel themselves better after, than before meat. For emptiness of meat, or of the stomach, makes a suspension of the ribs, as not underpropped by the meat. Now that fracture which is out wardly, is far more easie to heal, than that which is inwardly; for that this pricketh the membrane or *Pleuræ*, and causeth inflammation, which may easily end in an *Empyema*. Adde hereunto, that this is not so easily to be handled or dealt withall, as the other: whereby it commeth to pass, that it cannot be so easily restored; for that these things cannot be so fully and freely performed in this kinde of fracture, which are necessary to the setting of the bone, as to draw it out, hold it and join it together. It is therefore healed within twenty dayes, if nothing else hinder. The signs of fractured ribs are not obscure; for by feeling the grieved part with your fingers, you may easily perceive the fracture by the inequality of the bones, and their noise or crackling, especially if they be quite broke asunder. But if a rib be broken on the inside, a pricking pain, far more grievous then in a plurisie, troubles the Patient; because the sharpe splinters prick the Costall membrane: whence great difficulty in breathing, a cough, and spitting of blood ensue. For blood, flowing from the vessels broken by the violence of the thing causing the fracture, is (as it were) sucked up by the lungs, and so by a dry cough carryed into the weazond, and at length spit out of the mouth. Some, to pull up the bone that is quite broken and deprest, apply a cupping glasse, and that is ill done; for there is caused greater attraction of humours, and excess of pain by the pressure and contraction of the adjacent parts, by the cupping glasse, wherefore *Hippocrates* also forbids it. Therefore it is better to endeavour to restore it after this following manner. Let the Patient lye upon his sound side, and let there be laid upon the fractured side an emplaitter made of Turpentine, Rolin, black Pitch, wheat flour, mastick, and aloes; and spread upon a strong and new cloth. When it hath stuck there some time, then pluck it suddenly with great violence from below upwards; for so the rib will follow together therewith, and be plucked and drawn upwards. It is not sufficient to have done this once, but you must do it often, untill such time as the Patient shall finde himselfe better, and to breath more easily. There will be much more hope of restitution, if, whilst the Surgeon do this diligently, the Patient forbear coughing, and hold his breath. Otherwise if necessity urge, as if sharp splinters with most bitter tormenting pain prick the Costall membrane overspread with many nerves, veins, and arteries, which run under the ribs, whence difficulty of breathing, spitting of blood, a cough and fever ensue; then the only way to deliver the Patient from danger of imminent death, is to make incision on the part where the rib is broken, that so laying it bare, you may discern the pricking fragments, and take them out with your instrument, or else cut them off. And if you make a great wound by incision, then shall you sew it up, and cure it according to the common rules of curing wounds. Now diet, phlebotomy, and purgation, which (as *Hippocrates* saith) are not very needfull in a simple fracture, for that there are no symptomes which may require such remedies; yet they, by reason of the complicated symptomes, as a convulsion, seaver, *Empyema*, and the like, must here be prescribed by the advice of the Physitian which oversees the cure. A Cerate, and other remedies fitting the occasion, shall be applyed to the grieved part: no other ligatures can be used, than such as are fit to hold fast and stay the locall medicins. There is no other rule of site and lying, than such as is taken from the will and content of the Patient.

CHAP. XII. Of certain preternaturall affects which ensue upon broken ribs.

The cause.

The signes.

The cure.

MAny symptomes ensue upon fractured and contused ribs; but amongst the rest, there are two which are not common, whereof we will treat in this place. The first is, the inflation, or rising up of the contused flesh, which also ensues upon light affects of the bone, which have been neglected at the beginning. But the flesh is not meerly puffed up of it selfe, but also with a certain phlegmatick, glutinous and viscous humour gathering thereinto. The cause hereof is, the weakness of the digestive faculty of the part, occasioned by the stroak and distemper; which therefore cannot assimilate the nourishment flowing more plentifully than it was wont, either drawn thither by means of the pain, or sent thither by a blinde violence of nature, stirred thereto by a desire of its own preservation. Wherefore this halfe crude humor remaining there, raiseth much flatuling from its selfe, or else wrought upon by the weaker heat, it is resolved into cloudy vapours; whence it cometh to pass, that the flesh is swoln up in that place, and the skin on the contrary grows soft, as if it were blown up with a quill. Therefore laying your hand thereon, you may hear the noise of the winde going forth thereof, and see a cavity left in the part, as it is usually seen in œdematous tumors. Unless you remedy this inflation, there will ensue an inflammation, seaver, abscess, difficulty of breathing; and lastly, that second kind of affect whereof we have determined to treat in this chapter, to wit, the putrefaction, corruption, or blasting of the ribs. An absesse, and the separation of the flesh from the bone is the cause hereof: for hence it cometh to pass that the bone, despoiled of its naturall and fleshly cloathing wherewith it was cherished, is easily offended by the touch of the entring air, which it never formerly felt, and so at length it becometh (as it were) blasted: which when it happens, they spit up filth, and so fall into a consumption, and at length die.

To withstand all these inconveniencies, you must as speedily as you can, restore the fractured bones by the former delivered means. And then this mucous tumor must be resolved by proper heating and discutting medicins, and kept down by bouldsters and rowlers; that so the flesh may touch the bone, and cover it as it usually did. But the ligature shall not be made so strait, as to hinder the ribs from their wonted motion in expiration and inspiration. If the tumor degenerate into an abscess, it shall be speedily opened, lest the matter, kept in too long, corrupt the bone which lyes under it, by the contagion of its putrefaction. The ulcer being opened, the matter shall be evacuated by putting a pipe into the ulcer; the end whereof shall be bound about with a thred, lest it fall into the capacity of the chest, and that it may be drawn forth at your pleasure.

CHAP. XIII. *Of the fracture of the Vertebrae; or rack bones of the back, and of their processes.*

THe *vertebrae* are some whiles broken, other whiles bruised, or strained on the inside, whereby it cometh to pass, that the membranes which invest the spinall marrow, as also the spinall marrow it self, are compressed and straitned, which cause many malign accidents; which, whether they be curable or not, may be certainly foretold by their magnitude. Amongst these symptoms, are the stupidity, or numbness and palse of the arms, legs, fundament, and bladder, which diminish, or else take away from them the faculty of sense and motion; so that their urine and excrements come from them against their wils and knowledg, or else are wholly suppress. Which when they happen (saith *Hippocrates*) you may foretell that death is at hand, by reason that the spinall marrow is hurt. Having made such a prognostick, you may make an incision, so to take forth the splinters of the broken *vertebrae*, which driven in, press the spinall marrow, and the nerves thereof. If you cannot do this; at least you shall apply such medicins as may assuage pain, and hinder inflammation; and then the broken bones shall be restored to their places, and contained therein by those means which we shall mention when we come to treat of the luxation of the spine. But if that the processes only of the *vertebrae* be broken, the fragments shall be put in their places, unless they be quite severed from their *periosteum*. But if they be severed, you shall open the skin and take them forth, and then dress the wounds as is fit. We understand that only the processes of the *vertebrae* are broken, if in the absence of the fore-mentioned symptoms of numbness and the palse, you laying your finger upon the grieved part, feel something, as a bony fragment, shaking and moving thereunder, with a certain crackling noise, and cavity, and depression; and then, if when the Patient holds down his head, and bends his back, he feel far more pain, than when he stands up streight upon his feet. For in stooping, the skin of the back is somewhat stretched forth, and extended, and also forced upon the sharp splinters of the fragments, whence proceeds a dolorifick solution of continuity, and a pricking: in standing streight up, on the contrary, the stretched skin is relaxed, and consequently less molested by the sharp fragments. The fractured processes of the *vertebrae* easily heal, unless they be associated with some other more grievous symptome which may hinder; such as is a certain great contusion, and the like. For as we formerly said out of *Hippocrates*, all rare and spongy bones are knit by a *Callus* within a few dayes.

The affectis
of the ver-
tebrae.Sect. 2)
Prorb.
The cure of
fractured
vertebrae.The cure of
the proces-
ses.
Signs that
onely the
processes
are fractu-
red.CHAP. XIV. *Of the fracture of the holy-bone.*

THe holy bone in a certain part thereof, which may be easily healed, may be broken by the blow of bruising things, as by a bullet shot out of a musket, as I have observed in many. But if the fracture violate, together with the *vertebrae* thereof, the spinall marrow contained therein, then the Patient can scarce scape death, for the reasons shewed in the former chapter.

Whar fra-
cture of the
holy bone
curable, and
what not.CHAP. XV. *Of the fracture of the rump.*

THe Rump is composed of four bones; the first whereof hath a cavity, wherein it receives the lowest *vertebrae* of the holy bone; the other three are joined together by *Symphysis* or Coalition; at the end of these hangs a certain small gristle. The fracture of these bones shall be cured by putting your finger into the Patients fundament, and so thrusting it even to the fractured place. For, thus you may thrust the fragment forth, and fit and restore it to the rest of the bones by your other hand lying upon the back. But that it may be the sooner healed, it is fit the Patient keep his bed, during all the time of the cure. But if there be a necessity to rise, he shall so sit in a perforated seat, that there may be nothing which may press the broken part; and sitting remedies for healing fractures shall be applied as occasion shall offer it selfe.

The de-
scription of
the rump.
The cure.CHAP. XVI. *Of the fracture of the Hip, or Os Ilium.*

THe Hip consists of three bones: the first is named *Os Ilium*, the haunch bone; the other, *Os Ischion*, the huckle bone; the third *Os pubis*, the share bone. These three bones in men of full growth are so fast knit and joined together, that they can by no means be separated, but in children they may be separated without much ado. This bone may be broken in any part thereof, either by a stroak, or by a fall from high upon any hard body. You shall know the fracture by the same kind of signs, as you know others, to wit, pain, pricking, a depressed cavity, and inequality, and also a numbness of the leg of the same side. The splinters of the bones (if quite broke off) must by making incision be taken away at the first dressing; in performance of which operation, you must have a care that you hurt not with your instrument the heads of the muscles, nor any vessels, especially which are great; nor lastly, that large nerve which is sent into the muscles of the thigh and leg. On the contrary, such fragments as are not broken severed from their *periosteum*, shall be smoothed and set in order with your fingers, as is fitting. things shall be done according as art and necessity shall perswade and require.

The de-
scription of
the hip.The signes.
The cure.CHAP. XVII. *Of a fracture of the shoulder, or arm bone.*

THe Arm bone is round, hollow, full of marrow, rising up with an indifferent neck, ar on the upper part into somewhat a thick head. On the lower part it hath two process before, the other behind; between which there is (as it were) an half circle, or the pulley, each end whereof leads into its cavity, of which one is interior, another exte by these (as it were) hollow stops, the bending and extension of the arm might be limited, le-

The cure.

How the arm must be placed when the bone is set.
See 3. offic. sect. 1. de fract.

In what time it will knit.

bone of the cubit, if the circle should have been perfect, sliding equally this way and that way, might, by its turning, have gone quite round, as a rope runs in a pulley; which thing would much have confused the motion of the cubit. For so the extension, or bending it back, would have been equal to the necessary bending it inwards. It is very expedient that a Surgeon know these things, that so he may the better know how to restore the fractures and luxations of this part. If one of the fragments of this broken bone shall lye much over the other, and the Patient have a good strong body, then the arm shall be much extended, the Patient being so set upon a low seat, that he may not rise, when the fracture shall be a setting, and so hinder the begun work; and also, that so the Surgeon may the more easily perform his operation upon the Patient seated under him; yet *Hippocrates* regarding another thing, would have the Patient to sit higher. But you must have a care that the shoulderbone it self be drawn directly downwards, and the cubit so bended as when you put it into a scarf. For if any one set this bone, lifting the arm upwards, or otherwise extending it, then must it be kept in that posture; for otherwise, if the figure be changed, the setting will quickly be spoiled, when as you come to put the arm in a scarf. Wherefore the Surgeon must diligently and carefully observe that in setting a broken arm, he put it in such a posture, that resting on the breast, it look down towards the girdle. You must have a care in laying the splints, and rowling your ligatures, that they hurt not, nor press too hard upon the joints. For, in the opinion of *Hippocrates*, by the pressure of parts which are nervous, fleshless, and consequently endued with exquisite sense, by the splints there is danger of most grievous pain, inflammation, denudation both of the bone and nerve; but chiefly, if such compression hurt the inner part, towards which the arm is bended; wherefore the splints made for this place must be the shorter. Therefore after the arm-bone is set, the arm shall be laid upon the breast in a right angle, and there bound up in a scarf, lest that the Patient, when he hath need to stir, spoil and undo the setting, and figure of the broken bone. But the arm must be kept in quiet, untill such time as the fragments shall be confirmed with a *Callus*, which usually is in forty dayes, sooner or later, according to the different constitutions of bodies.

CHAP. XVIII. Of the fracture of the Cubit, or the Ell and Wand.

The differences.

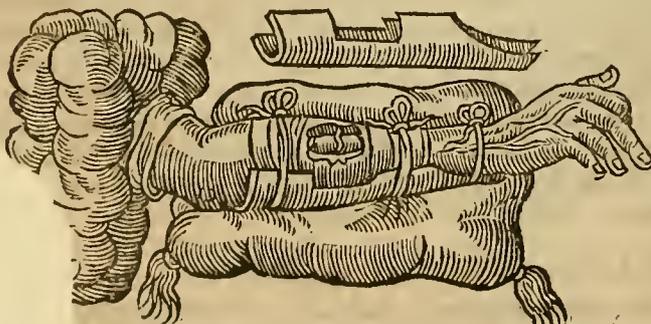


sometimes happeneth, that the cubit and wand are broken together and at once, and otherwhiles that but the one of them is fractured. Now they are broken either in their midst or ends; their ends (I say) which are either towards the elbow, or else towards the wrist. That fracture is worst of all, wherein both the bones are broken, for then the member is made wholly impotent to perform any sort of action, and the cure is also more difficult; for the member cannot so easily be contained in its state: for that bone which remains whole, serves for a stay to the arm, and hinders the muscles from being drawn back, which usually draw back and shrink up themselves, whensoever both bones are broken. Hence it is, that that fracture is judged the worst, wherein the cubit or ell bone is broken. But that is easiest of all, wherein only the wand is broken, for so the fractured part is sustained by the ell bone; when both the bones are broken, there must be made a stronger extension, for that the muscles are the more contracted. Therefore, whensoever either of them remains whole, it doth more service in sustaining the other, then any either ligatures or splints, for that it keeps the muscles right in their places. Wherefore, after the bones shall be set and rowled up with ligatures and splints, the arm must be so carried up in a scarf put about the neck, that the hand may not be much higher than the elbow, lest the blood and other humours may fall down thereinto. But the hand shall be set in that posture which is between prone and supine, for so the wand shall lye directly under the ell, as we have read it observed by *Hippocrates*. The reason is, for that by a supine figure or situation, both the bone and muscles are perverted: for first, for the bone, the *Apophysis styloides* and *Olecranon* of the cubit, ought to be in an equal plain, and to be seated each against others; which is not so in a supine figure, as wherein the *Processus styloides* of the cubit is set against the inner process of the arm bone. But in muscles, for that, like as the insertion and lite of the head of a muscle is, such also is the site of the belly thereof, and lastly, such the insertion of the tail thereof; but by a supine figure, the muscles arising from the inner process of the arm bone and bending the cubit, shall have the tail placed in an higher and more exterior site. In the interim, you must not omit, but that the Patients arm may, with as little pain as possible you can, be bended

The cure.

See 3. sect. 1. de fract.

The figure of a fractured arm, with a wound bound up, and seated, as is fit.



and extended now and then, lest by the too long rest of the tyed up part, and the intermission of its proper function, the bones of the joint may be sowed together by the interposition, and as it were glue of the defluxion which falls abundantly into the joint of the elbow, and neighbouring parts, whence the stiffness and unmoveableness thereof, as if there were a *Callus* grown there: from whence it may happen that the arm thereafter may neither be bended, nor extended, which I have observed to have happened to many. Whereof also *Galen* makes mention, and calls this vitiated conformation *Ancyle* and *Ancylosis*. If a wound also associate a fracture of the arm, then see put about it plates of Latin, or Past-board, and make a convenient ligature, and that the fragments be kept in the same state wherein they were set and restored. Moreover, let him lay his arm on a soft pillow, or cushion, as the precedent figure shewes you.

CHAP. XIX. Of the fracture of a Hand.

The bones of the Wrist, and After-wrist, may be broken: but, in *Hippocrates* opinion, chiefly by that kind of fracture which is called a *Sedes*; now if they shall happen to be broken, this shall be the manner of restoring them. Let the Patient lay forth his hand upon some even and smooth table, then let your servant stretch forth the broken bones, and the workmaster restore them thus extended, and put them in their proper seats. But being restored, they must be kept in their places by such remedies as are used in other fractures; to wit, cerates, compresses, linnen cloths, and splints. Now the fractured fingers shall be tyed or bound to their neighbours, that so they may the more easily, as bound to a stake, be kept in that state wherein they have been put by the hand of the Workman. But these bones, seeing they are of a rare and spongie nature, are in a short time and easily strengthened, or knit by a *Callus*. These things being done, the hollownes or palm of the hand shall be filled with a Tennis ball, for thus the broken bones shall not only be more easily kept in their places, but also the fingers themselves shall be kept in a middle posture, that is, not wholly open, nor quite shut. If they be kept in any other figure, the ensuing *Callus* will either deprave or quite abolish that action of the hand, whereby we take hold of any thing. The case stands otherwise with the fractured Toes; for they shall be kept streight and even out, lest they should hinder our going or standing.

The cure,

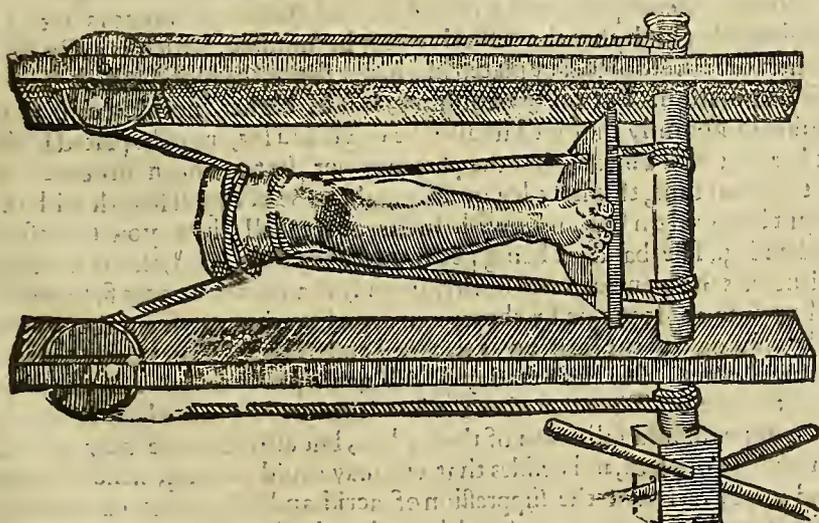
To what purpose the carrying of a ball in a fractured hand serves,

CHAP. XX. Of the fracture of the Thigh.

It is a hard thing to bring the fragments of the broken thigh together to be set, by reason of the large and strong muscles of that part, which whilst they are drawn back towards their original, by a motion both naturall and convulsive, they carry together with them the fragment of the bone, whereinto they are inserted. Therefore, when as the fracture of this bone shall be restored, the Patient must lye upon his back with his leg stretched forth, and the Surgeon must strongly and with great force extend the thigh; but if he alone shall not be able sufficiently to extend it, he shall inploy two other strong attendants, by whose joint-help the fragments may be fitted and set each against other. For this purpose, when as the strength of the hand was not sufficient, the Ancients used an Instrument, called a *Glossocomium*, whereof this is the figure.

Why the bone of the thigh is more difficultly set.

The figure of a Glossocomium, or Extender.



it may stay and keep the bones and muscles in that state, wherein the Surgeon hath placed them. For, seeing that the muscles of the thigh are large and strong, they overcome the ligation, and are not kept under by it. The Surgeon, in setting it, shall also consider, that the thigh-bone is hollowed on the inner side, but gibbous on the outside, therefore it must be set in its native figure. Otherwise, if any, unmindfull of this consideration, would have it streight, he shall make his Patient halt all his life after: wherefore this inner and native hollownes must be filled up and preserved by putting in a compress or boulster, spread over with *unguentum rosatum*, or the like glutinous thing that it may not fall off: for thus also the ligation shall the more faithfully keep the fragments of the bone in their places. Moreover, Compresses shall be applyed to the more slender and less protuberating parts of the thigh, as those which are next the ham and knee, that so the whole ligation may be alike, and consequently the more firm. Now ligatures, as we formerly noted, are ordained for three things. The first is, that the bones may be kept in that state wherein they were set, untill they be strengthened by a *Callus*. The second is, to hinder defluxion, which easily falls into the broken and luxated parts, both by reason of pain, as also by weakness. The third is, to stay and hold fast the splints and medicins which are applyed. Inflammation is hindered by repressing and hindring the blood and other humors, ready to flow down, from entering into the part, and by repressing those humors, which are preternaturally contained in the part, into the neighbouring parts above & below. Wherefore there must no small care be had of preparing ligatures, to wit, that they be made of choice and well woven cloth, yet not coarse or rough; and let them be of such length and breadth, as the Surgeon, perswaded by an artificiall conjecture, shall judge to be fit for the thickness and length of the member, and greatness of the fracture: for ligatures ought to be of breadth to involve and cover all the fractured part, & a great part of that which is sound. But seeing that in my Book of Bandages, I have

In stead of this Glossocomium, Sent. 67. & 68. sect. 2. de fract.

you may make use of my Pulley; for *Hippocrates* in this bone when it is broken, doth approve of extension so great, that although by the greatness of the extension the ends of the fragments be somewhat distant asunder, an empty space being left between; yet notwithstanding would he have ligation made. For it is not here as it is in the extensions of other bones, whereas the casting about of Ligatures keeps the muscles unmoveable: but here, in the extended thighs, the deligation is not of such force, as that

The naturall and internal crookednesse must be preserved in setting the bone. The part to be bound up, must be made plain either by nature or art.

med chiefly to set down and approve the manner of binding used by *Hippocrates*, now I thing good here in this place to describe that which is in common use amongst our Surgeons. Our Surgeons therefore at this day require three Ligatures for fractures, the first whereof they presently cast upon the hurt part, whether broken or dislocated, or only strained, making the first wrappings upon it; so that they most and straitliest bind it there, but lesse and more loosely on both sides thereof. Such circumvolutions, or wrappings, are drawn upwards, and there ended. They must be rowled thick, and not wide; for so if they presently follow, and lye one upon another, they will hold the bones more firmly, and more far and wide presse forth and repress the superfluous blood from the sound part. They presently in like sort cast the second ligature upon the very fracture, giving it two wraps, then going downwards; yet so, as that they are opener or wider, and farther distant each from other, and not so close together, as the circumvolutions of the first ligature; that so they may prels the humors the lesse to the extremities of the part, as those which cannot receive and bear, without inflammation and danger of a gangrene, such a-bundance of humors, for that they are not sufficiently spacious; as also more remote from the fountain of native heat, which is greater in the center than in the circumference. At the lower end of the hurt part the circumvolutions either end, or else are twined thence back again. They cast on the third ligature in that lower end of the hurt part, and rowl it smoothly and gently upwards, the windings being made contrary to the windings of the first and second ligatures; that they may so draw back into their natural state the muscles, which peradventure have been drawn aside by the force of the former wrappings. These ligations finished, they apply three splints of past-board, or some such matter; the first below the fracture, and that truly more broad, and of sufficient length; and then two others, one on each side, distant each from other some fingers breadth, to the end to keep the bone that it do not stir to this side or that, being wrapped about with Tow or Cotton. Then they think of placing or laying the part, to which purpose they propound to themselves three scopes. The first is, that the part may lye soft; the second, smooth, or even; the third, somewhat high. The hurt part ought truly to lye soft, for that hard lying presses it, and causes pain and inflammation; which whiles the Patient cannot patiently endure, he is forced to change his place, whilst he every way seeks ease for his pain: and thus he now and then moves the fractured part, which ought to be kept quiet without any motion. It must lye smooth or even, because an unequal or uneven site distorts or draws awry the part, whilst one portion of the hurt part is born up, and sustained by that which lyes under it; but the other hanging down hath nothing thereunder, whereupon it may rest. Therefore *Hippocrates* bids us diligently to take heed that the heel do not hang down, nor the foot remain without a pillow, for hence pain and a troublesome defluxion of humors is to be feared. But the part ought to lye somewhat high, that the defluxion may be hindred, which is easily stirred up by a prone and declining site: for if the foot shal be placed in a lower figure, the blood which flowes thither from the leg, will cause inflammation. But on the contrary, if it be higher, nothing can flow down thercinto. Therefore absolutely not only the foot, but also the thigh and leg, are to be placed higher than the rest of the body: yet keeping such a mean, that the part may not be too much distended, as *Hippocrates* admonisheth us. In the mean time, this hurt leg or side, ought to be of equall length with the sound, and for that purpose it must be stayed on both sides with Junks, as we shall shew you hereafter, when we come to speak of a broken leg. The bandage being performed as we have said, the following night, and the next day the Patient feels the member more straitly bound, than when it was first wrapped; yea, verily the knee is lifted up into a soft tumor by the expression of the humor from the wounded part: but on the contrary, the ensuing day the ligation is slackned and relaxed, some portion of the humor contained in the part being digested. Also the next day all things are perceived more loose, there being made a larger resolution of the humor. Then therefore the bandages must be loosed, and that not only, lest that the fragments of the bones should fall forth of their place, but also that we may gratifie the Patient by that alteration or change of place, and besides that we may avoid itching, which usually happens to parts too long bound up, by reason of the suppression of acrid and fuliginous excrements, which use to be gathered in great quantity in a part at rest and bound up, both from the excrementitious humors, wherewith the part is moistened, and the alimentary humors, in a part which is idle and at quiet; by reason the distillation and transpiration are hindred by want of exercise, and the pores of the skin shut up by the abundance of the ligatures: so that by the suppression thereof, many have not only an itching, but also the skin being broke by the acrimony of these, as well vapours as humors, which are kept shut and pent up, have ulcers break forth. Therefore when such accidents shall be feared, the part shall so long be fomented with warm water and oil, as you shall think fit: for, such fomenting asswageth pain, relaxeth that which was too much straitned by the binding, and amends the refrigeration of the part, caused by the repercussion and expression of the blood and spirits, the native and internall heat being by this means revived. If, together with the tumor, there be a contusion and sugillation, it must be the longer fomented, that the excrementitious humor residing in the part may be digested. But if this quantity of time shall not suffice, then must you use stronger digestives: yet have a care you use them not too long; for so you should hinder the generation of a *Callus*. Therefore that saying of *Hippocrates* must here be remembred, which saith, That a weak fomentation, and the short time of using one doth attract, but not discusse; but a longer and stronger waists the flesh. Besides also, you must have regard to the temper and habit of the Patient; for fomentations, used to plethorick bodies, draw superfluous humors to the part. The Ancients bid, that the ligatures be loosed every third day untill their seventh days; but after the seventh, on every seventh day; but hereof nothing can be certainly and perpetually decreed. For, according to the accidents the patients must be dressed sooner or later, more often or seldome; renewing the ligatures, and the rest of the dressing. Therefore, if no symptomeurge, I would have none of these things, which are done to the Patient at the first dressing, to be moved, unlesse as slowly and seldome as you may: For you hinder the knitting of the bone, if you never so little move the ends of the fragments thereof:

The manner of binding used by Surgeons at this day.

Why the windings of the upper ligatures must be thicker and straiter than the lower.

Why the third ligature must be rowled contrary to the two first.

The Surgeon must be mindfull of three things in placing the member.

Secl. 2. de Jact.

Sent. 33. by 56. secl. 2. de fract.

When the first ligation must be loosed.

Sent. 15. secl. 3. de offic.

for, as you see wood is joined together by glue, and pewter with solder; so the fragments of bones are, by a providence of nature, glued and soldered together by a *Callus*. Wherefore broken bones have very much need of rest, to the generating of a *Callus*; otherwise, the matter thereof flowing down, quickly flows away, and nothing is done. You may much help forwards the generation of a *Callus*, which is begun about the thirteenth or fifteenth day, by applying an emplaster made with the white of an egg, having the powder of red rose leaves, and wheat flour mixed therewith, and other catagmatick plasters, which shall hereafter be described in speaking of the fracture of a leg.

Rest necessary for the knitting of set bones.

CHAP. XXI. *Of the fracture of the Thigh nigh to the joint, or the upper or lower head of the bone.*

A Fracture sometimes happens at the joint of the hip in the neck of the thigh bone, as I once observed in an honest matron. I being called to her, when I had observed the hurt thigh to be shorter than the whole, with the outward prominency of the *Ischium*, which at the first sight I supposed to proceed from the head of the thigh bone, I presently perswaded my self it was a dislocation and no fracture; I then therefore extended the bone, and forced (as I thought) the head thereof into its cavity. The equality of both the legs in bigness which followed upon this extension, encreased my persuasion that it was a dislocation. The next day I visited her the second time, and found her in great pain, her hurt leg the shorter, and her foot wrested inwards. Then I loosed all her ligatures, and perceived such a prominency as I did formerly. Wherefore I endeavoured again to force in the head of the bone, as I formerly did. But as I was busied therein, I heard a little crackling, and also I considered, that there was no cavity nor depression in the joint, by which signs I certainly perswaded my self, that the bone was broken; and not dislocated. Neither only such kind of fractures, but also the separation of the *appendix* or head of this bone from its place, may induce one to think it a dislocation; which thing hath sometimes deceived some heedless Surgeons, who have not dreamt of the divulsion or separation of the *appendix* from the top of the thigh bone, but have judged it only a dislocation. Then therefore (that I may return to my former narration) I set the bone, and joined the fragments together, laid thereupon splints with compresses, made ligations with a rowler, having two heads wrapped about the joint, and the body cross-wise, and I defended her foot with a case, that none of the cloths might press it. I fastned a rope to a post, and so let it come down into the midst of the bed, and tyed many knots thereon, for the better taking hold and lifting up her self; the which thing you must alwayes do in fractures and dislocations of the thigh and leg, that so your Patients may have some stay, whereby they may succour themselves with their hands, as oft as they desire to rise, or lift themselves up in their beds, or go to stool; as also, that they may give perspiration, and as it were ventilation to the loins, buttocks, rump, and other parts, compressed and wearied with long lying, for want whereof they are molested with heat and pain, whence ulcers arise, which oft-times torment the Patient with such tormenting heat and pain, that he is even consumed by a fever, watchings, and want of rest. This opportunity of raising the body out of the bed, is by so much the more needfull in this place, by how much the fracture is nearer the joint; for there it is more dangerous than in the midst of the thigh, and consequently more difficult to dress and heal, for that the part is bloodless, and by reason of the multitude of the nerves, tendons and ligaments, which are obnoxious to many malign symptomes. But the Surgeon must have diligent care in this kind of fracture, and must look often that the bone, which is set, do not fall forth again, which easily happens here by any light stirring of the body, and the like occasion, for that the thigh hath but one only bone. Therefore, as oft as the Bandages shall be loosed, and the fracture dressed, he shall attentively view the figure of the bone, and the magnitude of the affected part, comparing it with the sound; for the set and composed fragments of the broken bone, can scarce fall asunder, but that the one must lye upon the other. But before it be knit, the part must be extended and restored to its state, that so the Patient may not halt during the residue of his life. For I have read it written in *Avicen*, that scarce any do so well recover a fractured thigh, that they do not halt thereof; therefore the Patient must be careful, that he move himself, or his body as little as he can. Many of the Ancients have set downe the time of the consolidation of this bone to be fifty dayes: but (as I formerly said) there can be no certain or determinate time hereof. But in what time soever this bone shall be knit, the Patient must not stand or go thereon presently upon it; for that there remains a weakness in the part a long time after, so that the Patients are forced to use crutches to go withall, in the mean space while they recover more strength.

A History.

Another fracture of the thigh, resembling a luxation.

Why the fracture of a bone near a joint is more dangerous.

Lib. 3. sent. 6. tract. 1. c. 14. In what space the thigh bone may be knit.

CHAP. XXII. *Of the fracture of the Patella, or whirle bone of the knee.*

The whirl bone of the knee is oft-times contused, but not so frequently broken; yet when that happens, it goes into two or three pieces, sometimes long-wise, sometimes athwart. Sometimes it is broken in the midst, and some whiles shivered into many splinters, and all these either with, or without a wound. The signs are, impotency in going, a hollownes in that place, and a sensible separation of the fragments of the hurt part, and the crackling of these parts under your hand. It is set after this manner, with the Patient to stretch forth his leg, yea, he must keep it extended all the while, untill it be knit; and therefore lest he should bend it unawares, the hollownes of the ham shall be filled with a boulster; for by bending of the knee, the set fragments of the whirle-bone would again fly in sunder. This being done, the fragments shall by the hand of the Surgeon be set as is fitting, and be kept so set by the application of convenient remedies, making ligatures, and applying junks, as we said must be done in the fracture of the thigh bone. And lastly, you must observe and do in this as in the fracture of a leg. For the prognostick this I affirm, that I have seen none of those who have had this bone fractured, who have not halted during the rest of their lives. The cause hereof is, the knitting

The Differences.

Signs.

Cure.

Why those halt who have had this bone fractured. ting by the concretion of a *Callus* hinders the free bending of the knee; going, especially on even ground, is more easie to the Patient, but an ascent is far more difficult, and absolutely painfull. The Patient must necessarily for this kinde of fracture lye or keep his bed, at the least for forty dayes.

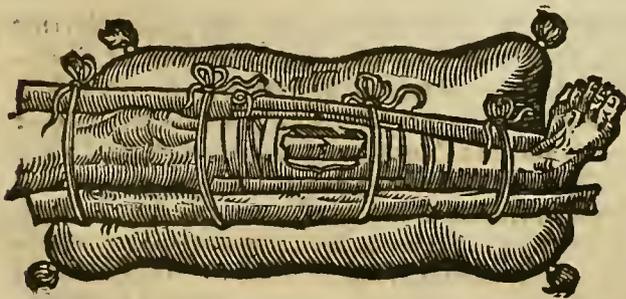
CHAP. XXIII. Of a broken leg.

Sent. 65. sect. 2. de fract.



His kind of fracture is cured after the same manner as that of the arm or cubit. *Hippocrates* admonisheth us, that the *Tibia*, or leg bone is more dangerous to be broken, and more difficult and slow to be healed than the *Fibula*, or shin bone; because that is the thicker, and as it were the upholder of the whole bulke of the body; but this other is but as it were a certain additament or assistant, provided for the staying or bearing up of the muscles of the leg, by which the foot is moved. The leg bone being only broken, the signs thereof are perceived only in the inner part of the leg; for that the shin bone being whole, suffers it not to throw or cast forth it selfe. On the contrary, when the shin bone only is broken, the signs thereof appear only in the externall part of the leg, because the leg bone, being opposed thereto, doth not suffer it to cast in its selfe, and with its fragments to turn inwards. But when both the bones are broken, the signs of the fracture may equally appear both here and there. But when only one of these bones are broken, the fracture is far more easie to dresse and heal, because that which remains whole, is a much more firm stay to that which is hurt, than any splints can be. But that I may the better instruct and make ready the Surgeon for the restoring of this fracture, I will illustrate the matter by an example from my self. *John Nestor*, Doctor of Physick, *Richard Hubert*, and I, went together to visit a Patient at the place of the Frier Minorites. Wherefore intending to pass over the Sein within sight of the place, I endeavoured to make my horse take boat, and therefore swithed him over the buttocks. The Jade, madded herewith, so struck at me with his heels, that he brake both the bones of my left leg, some four fingers breadth above my ancle. Then I, fearing some worse mischief, and lest the Jade should double his blow, flew back; and as I fled back, the broken bones flew in sunder, and breaking through the flesh, stocking, and boot, shewed themselves, whereby I felt as much pain, as it is credible a man was able to endure. Wherefore I was presently carried into the boat, that so I might be carryed to the other side of the water to be dressed; but the stirring of the boat as they rowed, almost killed me with bitterness of pain, for that the sharp fragments of the bones were rubbed against the flesh which lay next them. Being ferried over, as I was conveyed into the next houses, my pain was much increased, whilst lifted by the hands of divers persons, one while up, another down, sometimes to the left side, other whiles to the right with my whole body, and all the parts thereof. When at the length I was laid upon a bed, I was somewhat freed from the bitterness of my pain, and had time to wipe off the sweat, which ran down over all my body. Then was I dressed with such a medicine, as the time and place would afford, we composed it of the white of an egge, wheat flour, foot of a chimney, and melted butter. For the rest, I entreated *Richard Hubert*, that he would handle me, as if he knew me not, neither that, moved for love of me, he should remit any thing of the severity of art, but chiefly, that he would stretch my foot straight out, and if the wound were not sufficiently wide, that he would enlarge it with his incision knife, that so he might the more easly set the broken bones in their due places; that he would with his fingers (whose judgment is far more certain than the best made instruments) search, whether the splinters which were in the wound were quite severed from the bone, and therefore to be taken forth; that he would with his hand press forth the blood, and the clods of blood which were in a great quantity concrete at the mouth of the wound, that he would bind up and place my leg in that site and manner, as he thought best: which is, that he should have three rowlers in a readines, the first whereof he should cast directly upon the wound, so that he should begin his ligation at the wound: also he should put splints about it, some three, but others two fingers breadth, of the length of half a foot, somewhat depressed and hollowed, whereby they might be the more easly put about the leg, more straitly at their ends, and a fingers distance each from other, which at the last he should bind with fillets, like those wherewith women use to bind up their hair; yet so that the binding might be more strait upon the wound: and that he would fill the cavity of the ham, and of the ancles with boultiers made of flaxe wrapped in linnen clothes: that he would fortifie the sides of my leg with Junks made of bents or little sticks, and lined with linnen cloth, stretched from my heel to my groin, and bound over in four places; so that the strait figure of the leg might scarcely be perverted by any force: that he would gently, and smoothly, lift up my leg to an indifferent height: and lastly, that he should arm it from the violence of externall injuries, by putting it

The figure of a Leg fractured with a wound, and bound up.



thereto; which I finding by experience, not knowing the cause, wisd them ever now and then to lift up my heel, whereby it might enjoy the benefit of perspiration, and the spirits have free entrance thereinto,

Signs that both the bones are broken.

A History.

A soone made medicine. What to do when the leg is broken.

and the contained vapours passing forth. To conclude, my hurt leg was laid upon a cushion after the manner you see described in the page precedent.

CHAP. XXIV. *Of some things to be observed in ligation, when a fracture is associated with a wound.*



His, taken out of the doctrine of the Ancients, ought to be kept firm and ratified, that ligation must be made upon the wound; otherwise the wounded part will presently lift it self up into a great tumor, receiving the humors pressed thither by the force of the ligation made on this & that side, above and below, whence ensue many malign symptoms. You may make tryall hereof upon a sound fleshy part; for if you bind it above and below, not touching that which is in the midst, it will be lifted up into a great tumor, and change the flourish-

ing and native colour, into a livid or blackish hue, by reason of the flowing and abundance of the humors pressed forth on every side from the neighbouring parts. Therefore such things will happen much the rather in a wounded or ulcerated part. But for this cause, the ulcer will remain unspurred and weeping, crude and liquid *sanies* flowing there-hence, like unto that which usually flows from inflamed eyes. Such *sanies*, if it fall upon the bones, and make any stay there, it, with the touch thereof, burns and corrupts them, and so much the more, if they be rare and soft. These will be the signs of such corruption of the bones; if a greater quantity, and that more filthy *sanies*, flow from the ulcer, than was accustomed, or the nature of a simple ulcer requires; if the lips of the ulcer be inverted; if the flesh be more soft and flaccid about them; if a sorrowfull sense of a beating, and also deep pain torment the Patient by fits; if, by searching with your probe, you perceive the bone to be spoiled of its *periosteum*; and lastly, if you find it scaly and rough; or also if your probe be put down somewhat hard, it run into the substance of the bone. But we have treated sufficiently hereof in our particular Treatise of the rottenness of the bones. But certainly such rottenness will never happen to the bone, if the hurt part be bound up, as is fit, and according to art. Wherefore I judge it not amiss, again to admonish the Surgeon of this, that as far as the thing shall suffer, he make his rowlings upon the wound; unless by chance there be such excessive pain and great inflammation, that, through occasion of such symptoms and accidents, he be diverted from this proper and legitimate cure of the disease. Therefore then, because nothing more can be done, let him only do this, which may be done without offence; that is, let him supply the defect of ligation and rowlers, with a linnen cloth, not too weak, nor too much worn, being twice or thrice doubled, and which may serve to compass the wound and neighbouring parts once about: let him sew the edges thereof at the sides of the wound, lest he be forced to stir the fragments of the bones (which once set ought to be kept unmoved) as often as the wound comes to be dressed. For, broken bones do not require such frequent dressing, as wounds and ulcers do. By this it appears, that as want of binding, and too much looseness in absence of pain and a phlegmon, so also too strait ligation, when pain is present, brings a phlegmon and abscess to the wound. Therefore let all things here, according to the forementioned rules and circumstances, be indifferent. I have for this purpose thought good to reiterate these things, because you shall as yet find many, who follow the practise of *Paulus*, and make many circumvolutions here and there, above and below the wound, which presently they carry cross-wise. But this cross or lattice-like kind of ligation is wholly to be disliked, and that only to be used which we have described, according to the mind of *Hippocrates*. Now it is time that I returne to the former history of my mishap, and declare what was done to me after that first dressing, which I have formerly mentioned.

That the ligation must be most strait upon the wound. What symptoms ensue the want of binding upon the wounded part.

Signs of the corruption of the bones:

When the wounded part must be omitted in ligation.

Lattice-like binding to be shunned:

CHAP. XXV. *What was used to the Authors leg after the first dressing.*



Being brought home to mine own house in *Paris* in the afternoone, they took from me, out of the Basilica of the left arm, some six ounces of blood. And then at the second dressing the lips or edges of the wound and places thereabout were annointed with *unguentum rosatum*, which by a joint consent of the Ancients, is much commended in the beginnings of fractures: for it will

alswage pain, and hinder inflammation, by repelling the humors far from the wounded part: for it is cold, astringent and repelling, as the composition thereof shewes; for it is made *ex oleo amygdacino, aqua rosacea, pauco aceto, & cera alba*. Therefore I used this ointment for six dayes; I dipped the compresses and rowlers somewhiles in oxycrate, otherwhiles in thick and astringent red wine, for the strengthening of the part, and repressing the humors; which two things we must have a care of in *Hippocrates* opinion, in fractures especially with a wound. Wherefore if at any time the compresses or rowlers seemed to dry, I now and then moistned them with the oxycrate, or rose vinegar: for, by their too much driness, pain and inflammation happen; and if they bind the part somewhat more strait, they hurt it also by their hardness. You shall see many Surgeons, who in this kind of affect, from the beginning to the end, use only astringent and emplastick medicins, wholly contrary to the method set down by *Hippocrates*, and commended by *Galen*. For, by the continued use of such things, the pores, and breathing places of the skin are shut up; whence the fuliginous excrement being suppressed, the externall heat is increased, and itching caused, and at length an ulcer by the fretting of the acrid and serous humour long suppressed. Whereby you may learn, that astringent and emplastick medicins must not be used above six dayes. In stead hereof you shall use the emplasters, which I shall presently describe. In the beginning of my disease I used to spare a diet, that for nine dayes I ate nothing each day, but twelve stewed prunes, and six morsels of bread, and dranke a *Paris* pint of sugred water, of which water this was the composition. *R. sacc. albis. ℥xij. aquæ fori. ℥xij. cinam. ℥ij. bulliant simul secundum artem*: Otherwhiles I used syrup of maidens-hair with boiled water: Otherwhiles, the divine drink (as they term it) whereof this is the composition. *R. aquæ coctæ ℥vj. sacc. albis. ℥iv. succ. lim. ℥j. agitentur & transfusentur sepius in vasis vitreis*. I was purged when need required

Unguentum rosatum, wherefore good in fractures.

You must have a care, that the compresses and rowlers grow not hard by driness.

The description of a sugred water.

with a bole of *Cassia* with *Rubarb*. I used also suppositories of *Castile soap* to make me go to stoole, for, if at any time I wanted due evacuation, a preternaturall heat presently seized upon my kidnies. With this, though exquisite manner of diet, I could not prevail, but that a fever took me upon the eleventh day of my disease, and a defluxion, which turned into an abscess, long flowing with much matter. I think the occasion hereof was some portion of the humor suppressed in the bottome of the wound, as also by too loose binding, by reason that I could not endure just or more strait binding; and lastly, scales or shivers of bones quite broke off, and therefore unapt to be agglutinated: for these therefore putrefying, drew by consent the proper nourishment of the part into putrefaction, and by the putredinous heat thence arising, did plentifully administer the material and efficient cause to the defluxion and inflammation. I was moved to think they were scales severed from their bone, by the thin and crude *sanies* flowing from the wound, the much swollen sides of the wound, and the more loose and spongy flesh thereabouts. To these causes, this also did accrew, one night amongst the rest, as I slept, the muscles so contracted themselves by a violent motion, that they drew my whole leg upwards; so that the bones, by the vehemency of the convulsion, were displaced, & pressed the sides of the wound, neither could they be perfectly composed or set, unless by a new extension and impulsion, which was much more painfull to me than the former. My feaver when it had lasted with me seven dayes, at length enjoyed a *crisis* and end, partly by the eruption of matter, and partly by sweat, flowing from me in a plenteous manner.

The causes of a fever and abscess, ensuing upon a fracture.

Signs of scales severed from their bones.

CHAP. XXVI. *What may be the cause of the convulsive twitching of broken members.*

This contraction, and (as it were) convulsive twitching, usually happens to fractured members in the time of sleep. I think the cause thereof is, for that the native heat withdraws its self while we sleep, into the center of the body; whereby it commeth to pass, that the extreame parts grow cold. In the mean while, nature, by its accustomed providence, sends spirits to the supply of the hurt part. But because they are not received of the part evill affected and unapt thereto, they betake themselves together, and suddenly, according to their wonted celerity, thither from whence they came, the muscles follow their motion: with the muscles, the bones, whereinto they are inserted, are together drawn; whereby it comes to pass, that they are againe displaced, and with great torment of pain, fall from their former seat. This contraction of the muscles is towards their originall.

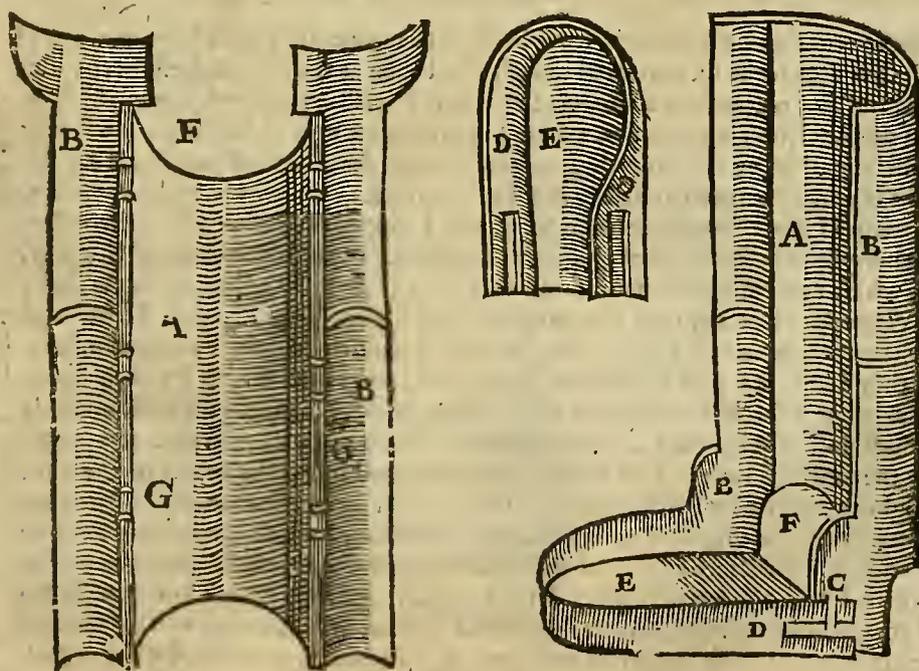
Why the extreame parts are cold when we sleep.

CHAP. XXVII. *Certain documents concerning the parts, whereson the Patient must necessarily rest, whilest he lyes in his bed.*

Those who have their leg or the like bone broken, because they are hindered by the bitterness of pain, and also wish for their cure or consolidation, are forced to keep themselves without stirring, and upon their backs in their beds for a long time together. In the mean space, the parts whereupon they must necessarily lye, as the heel, back, holy-bone, rump, the muscles of the broken thigh or leg, remain stretched forth and unmovable, set at liberty from their usual functions. Whereby it comes to pass, that all their strength decays, and grows dull by little and little. Moreover also, by the suppression of the fuliginous and acrid excrements, and want of perspiration, they grow preternaturally hot; whence defluxion, an abscess and ulcer, happen to them, but principally to the holy bone, the rump, and heel: to the former, for that they are defended with small store of flesh; to the latter, for that it is of more exquisite sense. Now the ulcers of these parts are difficultly healed, yea, and oft-times they cause a gangrene in the flesh, and a rottenness and mortification in the bones there-under, and for the most part

The natural faculties languish in the parts by idleness, but are strengthened by action. How and what ulcers happen upon the fracture of the leg, to the rump and heel.

The figure of a Casse.



AA. Shew the bottome or belly of the Casse. BB. The wings or sides to be opened and shut at pleasure. C. The end of the wings, where to the sole or arch is fitted. DD. The Arch. EE. The sole. FF. An open space, whereat the heel hangs forth of the Casse.

a continued feaver, delirium, convulsion, and (by that sympathy, which generally accompanies such affects) a hicketing. For the heel and stomach are two very nervous parts, the latter in the whole body thereof, and by a large portion of the nerves of the sixth conjugation; but the other by the great tendon passing under it, the which is produced by the meeting, and as it were growing together, of the three muscles of the calf of the leg. All which are deadly, both by dissipation of the native heat, by the feaverish, and that which is preternaturall; as also by the infection of the noble

noble parts, whose use the life cannot want, by carrion-like vapours. When as I considered all these things with my self, and (become more skilfull by the example of others) understood how dangerous they were, I wished them now and then to lift my heel up out of the bed; and taking hold of the rope which hung over my head, I heaved up my self, that so the parts, pressed with continuall lying, might transpire, and be ventilated. Moreover also I rested these parts upon a round cushion, being open in the middle, and stuffed with soft feathers, and laid under my rump and heel, that they might be refreshed by the benefit and gentle breathing of the air: and I did oftentimes apply linnen clothes spread over with *unguentum rosatum*, for the asswaging of the pain and heat. Besides also, I devised a Casse of Lattin, wherein the broken leg being laid, is kept in its place, far more surely and certainly than by any Junks; and moreover also it may all be moved to and again at the Patients pleasure. This Cask will also hinder the heel from lying with all its body and weight upon the bed, putting a soft and thick boulster under the calf, in that place where the Cask is hollow: besides also, it arms and defends it against the falling down and weight of the bed clothes, having a little arch made over and above of the same matter. All which shall be made manifest unto you by the precedent figure. Now it remains, that I tell you what remedies I applied to the abscess which happened upon my wound. When therefore I perceived an abscess to breed; I composed a suppurative medicin of the yolks of eggs, common oil, turpentine, and a little wheat flour, and I used it untill it was opened; then to cleanse it I used this following remedy. *R. syrapi rosati & terebinth. venetae, an. ℥ij. pulveris radices iroos florentiae, aloes, mastiches, farinae hordei, an. ℥ss. incorporentur omnia simul & fiat mundificativum:* but I had a care, that the place, whereat I conjectured the quite severed scales of the bones must break forth, should be filled with tents made of sponge or flax, that so, by this means, I might keep the ulcer open at my pleasure. But I put into the bottome of the ulcer catagmatick and cephalick powders, with a little burnt alum, to procure the egress of the formerly mentioned scales. These at length cast forth, I cicatrized the ulcer with burnt alum. For, this having a drying and astringent faculty, confirms and hardens the flesh, which is loose and spongy, and flowing with liquid *sanies*, and helps forward natures endeavor in cicatrization. For, the fragments of the bones, they, by reason of their naturall dryness and hardness, cannot be joined and knit together by themselves without a *medium*: but they need a certain substance, which, thickning and concreting at their ends, doth at length glue them together, and (as it were) fasten them with soder. This substance hath its matter of the proper substance and marrow of the bones; but the former from the native heat, and emplasticke medicins, which moderately heat. For, on the contrary, these medicins, which, by their too much heat, do discass and attenuate, do (as it were) melt and dissolve the matter of the *Callus*, and so hinder the knitting. Wherefore for this purpose, I would wish you to make use of the following emplasters, of whose efficacy I have had experience; for, hence they are called knitting or consolidating plaisters. *R. olei myrrill. & rosarum oimphac. an. ℔. ℞. rad. altheae ℔. ij. rad. fraxini, & sol. ejusdem, rad. consolid. majoris & sol. ejusdem sol. salicis, an. m. j. fiat decoctio in sufficienti quantitate vini nigri, & aqua fabrorum, ad medietatis consumptionem, adde in colatura pulveris myrribe & zburis an. ℥ss. adipis birci, ℔. ℞. terebinth. lotie ℥iv. mastiches ℥ij. lithargyri auri & argenti, an. ℥. ij. boli armenia, & terra sigillata, an. ℥. ℞. minii ℥vj. cere albe quantum sufficit: fiat emplastrum, in aris est. In stead hereof you may use the black emplaster, whereof this is the description. *R. lithargyri auri ℔. j. olei & aceti ℔. ij. coquantur simul lento igne donec nigrum & splendens reddatur emplastrum, & non adhaereat digitis. Or else, R. olei rosati & myrrill. an. ℥ij. nucum cupressi, boli armen. sanguinis drac. pulveris auri an. ℥. ℞. emplastri diacalcithei ℥iv. liquefaciant simul, & fiat emplastrum secundum artem. In defect of these, you may use a Cere-cloth, or tela Gualteri, whereof this is the description. *R. pulveris thuris, farinae volatilis, mastiches, bozarm. resinae pini, nucum cupressi, rubiae tinctorum, an. ℥ij. sevi arietini & cere albe an. ℔. ℞. fiat emplastrum: into which (whilest it is hot) dip a warm linnen cloth, for the forementioned use. Emplastrum Diacalcithei, by the common consent of all the Ancients, is much commended for fractures; but it must undergo different preparations, according to the condition of the time; for in the summer it must be dissolved in the juice of plantain and night-shade, lest it should heat more than is fit. It is convenient, in the interim, to have regard to the temper of the affected bodies; for neither are the bodies of children to be so much dried as these of old men: otherwise if such drying medicins should be applied to young bodies as to old, the matter of the *Callus* would be dissolved, it would be so far from concreting; wherefore the Surgeon must take great heed in the choice of his medicins. For, oftentimes remedies, good of themselves, are by use made not good, because they are used and applied without judgement: which is the cause that oftentimes pernicious accidents happen, or else the *Callus* becomes more soft, hard, slender, crooked, or lastly, concretes more slowly by the great error, and to the great shame of the Surgeon.***

Remedies for the prevention of the foresaid ulcers.

The use of a Lattin Casse.

A suppurative medicine. A detensive.

Catagmatick powders have power to cast forth the scales of bones.

The cause both efficient and material of a *Callus*.

Medicins conducing to the generation of a *Callus*.

The black plaister.

The Description of a Sparadrachum, or Cere-cloth.

Medicins good of themselves, not good by event.

CHAP. XXVIII. By what means we may know the *Callus* is a breeding.

Then I knew that my leg begun to knit, when as less matter than was usuall came from the ulcer, when the pain slackened, and lastly, when as the convulsive twitchings ceased; which caused me to judge it fit to dress it seldomer than I was used to do. For, by the frequent detersion in dressing an ulcer, whilest a *Callus* is breeding, the matters whereof it is to be made, are drawn away and spent, which are (as they term them) *Ros*, *Cambium*, and *Gluten*, which are the proper and genuine nourishments both of the bony, as also of the fleshy substance. I by other signs also conjectured the breeding of the *Callus*, to wit, by the sweating of a certain dewie blood out of the edges and pores of the wound, which gently dyed and bedewed the boulders and ligatures, proceeding from the efflux of the subtler and gentler portion of that matter, which plenteously flowed down for the breeding of a *Callus*. As also, by a tickling and pleasing sense of a certain vapour, continually creeping, with a moderate and gentle heat, from the upper parts even to the place of the wound. Wherefore thence forwards I somewhat loosened the ligation, lest, by keeping it too strait, I should hinder from

When the *Callus* is breeding the ulcer must be seldome dress.

Hipp. sent. 43. sect. 1. de fract.

entring to the fragments of the bones, the matter of the *Callus*, which is a portion of the blood, temperate in quality, and moderate in quantity. Then therefore I thought good, to use nourishments fit to generate more gross, thick and tenacious blood, and sufficient for generating a *Callus*, such as are the extremities, tendinous, and gristly parts of beasts, as the heads, feet, legs, and ears of Hogs, Oxen, Sheep, Kids, all which I boiled with rice, French barley, and the like, using somewhiles one, some whiles another, to please my stomach and palate. I also sometimes fed upon frumity, or wheat sodden in Capon broth with the yolks of eggs, I drank red, thick and astringent wine, indifferently tempered with water. For my second course, I ate chefnuts and medlars: neither do I without some reason, thus particularize my diet: for that gross nourishments, especially if they be friable and fragil, as beef is, are alike hurtfull (for as much as pertains to the generating of a *Callus*) as light meats are. For that makes the *Callus* too dry, these too tender. Wherefore *Galen* pronounces these meats only fit for generating a *Callus*, which are neither fragil, nor friable, neither serous and thin, nor too dry; but indifferent gross, and also viscid; fat and tough. These meats, digested by the stomach into *chylus*, are sent into the guts, and from hence, by the mesarick veins, into the gate-vein, and the hollow part of the Liver, thence into the hollow vein, and so into the veins dispersed over all the body and the parts thereof. There are also some of these veins which carry blood into the bones; but in the large cavities of the bones is marrow contained, as in the small a certain marrowy substance, proportionable thereto, being their proper nourishment. The generation of marrow is from the grosser portion of the blood, which flowes into the greater cavities of the bones by larger veins and arteries, but into the less by lesser, which end in their pores and small passages. For, in large bones you may observe large and apparent passages, by which the veins and arteries enter for the forementioned use. By the same wayes the nerves also insinuate themselves, from whence proceeds a membrane which involves the marrow of the bones, the which by that means is endued with most exquisite sense, as experience teacheth; which is the cause that makes many believe, that the marrow hath sense of feeling, because the membranes thereof being hurt cause most bitter pain. Therefore out of the marrow and the proper substance of the bone, there sweats a certain gross and terrestriall juice, whereof, by the power of the assimilating faculty, which serves in stead of the formative, a *Callus* growes and knits. Simple fractures of the leg are usually knit in fifty daies, but through the occasion of the wound and the scales quite broke off, and other accidents which befell me, it was three whole months before the fragments of the bones were perfectly knit, and it was also another month, before I could go upon my leg without the help of a crutch. Going was painfull to me for some few dayes, because the *Callus* had taken up some place of the muscles: for, before my former freedom of motion could return again to the broken and knit part, it was necessary, that the tendons and membranes should separate themselves by little and little from the scar. In the performance of all these things, I had the diligent and faithfull assistance amongst the Surgeons, to omit Physitians; of *Anthony Portal* the Kings Surgeon.

CHAP. XXIX. *Of those things which may hinder the generation of a Callus, and how to correct the faults thereof, if it be ill formed.*



AVING already spoken of the signs of a *Callus* beginning to concrete, of its generation and the manner thereof: it now remains, that we treat of those things which hinder the generation thereof, and what on the contrary help forwards the conformation and concretion thereof. Now these things which either wholly hinder, or else retard the generation of a *Callus*, have a strong and powerfull discussive and attenuating faculty; or else they are unctuous, oily, and moist. For by such, the juice, whereof the *Callus* ought to be, is either melted and consumed, or else growes soft, and is relaxed. But on the contrary, those things which help forwards a *Callus* must be drying, incrassating, thickening, hardning, and emplastick, moderately hot and astringent. But for moist and relaxing medicins, they ought to have no place here, unless when it happens that the *Callus* is ill formed, that is, too thick, or crooked, or otherwise ill shapen, whereby it may be wasted and broken, so to be restored again after a better manner. Yet notwithstanding, such things are not to be attempted, unless when the *Callus* is yet green, and so depraved, that the fault thereof doth very much pervert the native conformation of the part, and exceedingly offend the action. Then therefore in such a case, the place must be fomented with a decoction of a Sheeps head and guts, wherein shall be boiled the roots of Marshmallows, of Briony, the seeds of Line, of Fænugreek, Pigeons dung, Bayberries, and the like. You shall also use this following ointment and plaister. *R. unguenti de Alibea* ℥iv. *olei liliorum*, & *axungia anseris* an. ℥j. *aque vitæ parum*, liquefiant simul, fiat linimentum quo liniatur pars. Then apply this following emplaster. *R. emplast. de Vigo cum mercurio*, cerati *asspati* descriptione *Phylagrii*, an. ℥iij. *olei anethini* & *liliorum* an. ℥j. liquefiant omnia simul, fiat emplastrum; let it be spread upon leather for the aforesaid use. When by this means the *Callus* shall seem to be sufficiently mollified, it shall be broken, and the bones restored to their naturall state, and the cure of the fracture to be followed as at the beginning. If the *Callus* be become too hard through age, it is better not to break it, but to let it alone, lest some worse accident befall the Patient. For it may so fall out, that by your labouring to break it, the bone may break in some other part, before it break in that which is knit by the *Callus*. Therefore the discreet Patient had rather live lame, than for eschewing it, to undergo the hazzard of his life. If the *Callus* be too gross, it shall be diminished (if it be as yet fresh) with emollient, resolving, and powerfully astringent medicins, which have force to dissolve, dry and exhaust. It will also be good strongly to rub the *Callus* with oil of Bayes, wherein Salt-petre, or some other kind of Salt hath been dissolved, then wrapped about with a rowler to bind it very straitly, putting a leaden plate thereon, whereby the flowing down of the nourishing humor into the part, may be forbidden; that thus by little and little the *Callus* may decay and diminish. If on the contrary, it any wayes happen that the *Callus* be more thin and slender, and grows more slowly, for that it is too straitly

Discussing and unctuous medicins hinder the generation of a *Callus*. What helps forward the generation thereof.

What *Callus* must not be broken, though difficult, or otherwise ill conformed.

The causes of too slender a *Callus*

bound, or because the idle part is longer kept in quiet than is fit, without exercising of its proper function, (which cause is to be reckoned amongst the chief causes of the leannels, even for this reason, for that exercise stirs up the native heat of the part, the worker of digestion and nutrition) or else for that they feed upon such nourishments as offend in quality, or quantity, or both, or for that the ligature, used to the part, is too often loosed, or because the part its self is too hastily and before the time put to undergo solid offices and motions. According to the variety of causes, medicins shall be applied: For if the ligature of the part be too strait, it shall be loosed, yea verily the fractured place, the ligature being taken away, shall be quite freed from ligation, and a new kind of ligature must be made, which must be rowled down from the root of the vessels, that is, from the armpits, if the arm; or from the groin, if the leg be broken, to the fracture, yet so, as that you may leave it untouched or taken in, for thus the blood is pressed from the fountain and spring, and forced into the affected part, by a way quite contrary to that, whereby we have formerly taught, in fear of inflammation, to hinder it from entrance into the affected part. Also gentle frictions and fomentations with warm water may be profitably made, from which you must then desist when the part shall begin to grow hot and swell. If any too long continue these frictions and fomentations, he shall resolve that which he hath drawn thither. For this we have oftentimes observed, that frictions and fomentations have contrary effects, according to the shortness and continuance of time. Pications will also conduce to this purpose, and other things which customarily are used to members troubled with an *atrophia*, or want of nourishment.

Remedies
therefore:

VWhen we
must desist
from fo-
menting
and fricti-
ons.

CHAP. XXX. *Of fomentations which be used to broken bones.*

Divers fomentations are used to broken bones for severall causes. When we use warm water for a fomentation, we mean that, which is just between hot and cold, that is, which feels lukewarm to the hand of the Physitian and Patient. A fomentation of such water used for some short space doth moderately heat, attenuate and prepare for resolution, the humor which is in the surface of the body, it draws blood and an alimentary humor to the part labouring of an *atrophia*; it asswages pain, relaxes that which is too much extended, and moderately heats the member refrigerated through occasion of too strait binding, or by any other means. On the contrary, too hot fomenting cools by accident, digesting and discussing the hot humor which was contained in the member. We mean a short time is spent in fomenting, when the part begins to grow red and swell, a just space, when the part is manifestly red and swollen: but we conjecture, that much or too much time is spent thereon, if the redness, which formerly appeared, go away, and the tumor, which lifted up the part, subside. Also in fomenting, you must have regard to the body whereto it is used. For if it be plethorick, an indifferent fomentation will distend the part with plenty of superfluous humors: but if it be lean and spare, it will make the part more fleshy and succulent. Now it remains, that we say somewhat of the fracture of the bones of the feet.

VWarm
water.
The effects
thereof.

Notes of
short, just
and too
long fo-
menting.
Fomentati-
ons hurt
plethorick
bodies.

CHAP. XXXI. *Of the fracture of the bones of the feet.*

The bones of the instep, back and toes of the feet, may be fractured as the bones of the hands may. Wherefore these shall be cured like them, but that the bones of the toes must not be kept in a crooked posture, as the bones of the fingers must, lest their action should perish or be depraved. For as we use our legs to walk, so we use our feet to stand. Besides also the Patient shall keep his bed, until they be knit.

VWhy the
fractured
bones of
the foot
must be
kept in a
streight
posture:

The end of the fifteenth Book.

OF DISLOCATIONS, or LUXATIONS.

THE SIXTEENTH BOOK.

CHAP. I. *Of the kinds and manners of dislocations.*

Dislocation is the departure or falling out of the head of a bone from its proper cavity, into an accustomed place besides nature, hindring voluntary motion. There is another kind of Luxation, which is caused by a violent distention, and as it were a certain divarication, and dilatation, or extension into length and breadth of the ligaments, and all the nervous bodies, which contain, strengthen, and bind together the joints. Thus those who have been tormented and racked, have that thick ligament which is in the inner cavity of the huckle bone too violently extended. Those who have suffered the Strappado, have the ligaments encompassing the articulation of the arm bone, with the shoulder blade, forcibly and violently distended. Such also is their affect, whose foot is strained by slipping. There is a third kinde of luxation, when as those bones which are joined contiguous, and one (as it were) bound to the sides of another, gape or fly asunder: as in the arm, when the ell parts from the wand; in the leg, when the one foicle flies from the other: yet this may be referred to the second sort of dislocations, because it happens not without dilata-

VWhat a
Luxation
properly so
called is.
VWhat a
Luxation
not proper-
ly so called
is.

The third
kinde of dis-
location.

tion;

The fourth. tion, or else the breaking of the ligaments. There is also a fourth added to these, as when the *Epiphyfes* and heads of bones are plucked from the bone whereon they were placed or fastned; which unproperly called kind of Luxation, hath place chiefly in the bones of young people, and it is known by the impotency of the part, and by the noise and grating together of the crackling bones when they are handled. Now the bones of young folks are also incident to another casualty: for as the bones of old people are broken by violence by reason of their drincness and hardness, thus the bones of children are bended or crooked in by reason of their naturall softness and humidity.

CHAP. II. Of the differences of Dislocations.

What Luxations are simple. What compound. What a complete Luxation is. What a subluxation or strain.

SOME Dislocations are simple, others compound. We term them simple which have no other preternaturall affect joined with them; and such compound, as are complicated with one or more preternaturall affects, as when a dislocation is associated with a wound, fracture, great pain, inflammation, and an abscess. For, through occasion of these we are often compelled so long to let alone the luxation, until these be remitted of themselves, or by our art. Some Dislocations are complete and perfect, as when the bone wholly falls out of its cavity; other some are imperfect, as when it is only lightly moved, & not wholly fallen out, wherefore we only call them subluxations or strains. Differences of Luxations are also drawn from the place: for sometimes the bone is wrested forwards, otherwhiles backwards, upwards, downwards; somewhiles it may be wrested, according to all these differences of site, and otherwhiles only according to some of them. Differences are also taken from the condition of the dislocated Joint in greatnesse and littlenesse, from the superficially or deep excavation of the *sinus* or hollownes; and lastly from the time, as if it be lately done, or of some long continuance: I have judged it fit to see down all these, for that there are severall indications of curing, according to the variety of each of these, as we shall teach hereafter.

CHAP. III. Of the causes of Dislocations.

Internal causes of dislocations. External causes. Hereditarie causes.

THERE are three generall causes of Luxations, internal, external, and hereditarie. The internal are excrementitious humors and flatulencies, which, settling into the joints with great force and plentie, do so make slippery, soften and relax the ligaments which bind together the bones, that they easily fall out of their cavities, or else they so fill & distend these ligaments, and make them so short, that being contracted, they also contract the *appendices* of the bones from whence they arise, and so pluck them from the bone whereon they are placed, or else draw the heads of the bones out of their cavities, chiefly if the violence of a noxious humor doth also concur, which possessing and filling up the cavities of the joints, puts them from their seats, as it oftentimes happens to the joint of the hip by *Sciatices*, and to the *Vertebra* of the spine, by whose Luxation people become gibbous, or otherwise crooked. But external causes of Dislocations are, falls from high, bruising and heavy blowes, the Rack, strappado, slipping in going, and all such like things, which may force the heads of the bones to fly out of their seats, or cavities, which also happens sometimes to infants in their birth, when as they are too carelessly and violently drawn forth by the Midwife, so that either their arms or legs are put out of joint. Hereditarie causes are such as the Parents transfuse into their offspring: hence it is, that crooked not necessarily, but oftentimes are generated by crooked, and lame by lame. The truth whereof is evident by daily experience. Besides also *Hippocrates* himself avers, that infants in the very womb may have their Joints dislocated by a fall, blow and compression, and by the too much humidity and loosness of the Joints: whence also we see many crook legged and footed from their nativity; so that none need marvell or make any doubt hereof. We have read it observed by *Galen* in *librum de Artic.* that children may have impostumes in their mothers wombs, which may cast forth quitture, the ulcers being opened of their own accord; and be cicatrized by the only benefit of nature. It also happens to many from their first conformation, that the cavities of their Joints are lesse deprest than they should be, and that their verges are more dilated than they ought to be; whereby it happens that the heads of the bones can the lesse enter into them. It falls out, that other some have the ligaments, appointed by nature for fastning together the bones of the joint, whether inserted or placed about, so weak, that from their first original they are not of sufficient strength, or else abound with much Phlegm, either bred together with them, or flowing from some other place; so that by their too much slipperiness they lesse faithfully contain the knittings or articulations of the bones. In all these as the bones are easily dislocated, so they may presently be easily restored without the assistance of a Surgeon, as I have sometimes observed in some.

CHAP. III. The signs of dislocations.

The common sign of all dislocations.

SOME of the signs whereby we come to the knowledge of a luxated bone, are common to all dislocations; others are proper only to severall Luxations. It is a common sign, that there is alwaies a tumor in that part whereto the bone runs, and a hollownes on that side from whence it is flown. Now the proper signs shall be shewed, when as we come to treat of the particular kinds of Luxations. We know a perfect Dislocation by the lost action of the part, that is to say, the lost motion; pain also breeds a suspicion of a dislocation: for the head of the bone, which (moved out of its place) is forced into another, presses the flesh, and distends the nerves also moved out of their place. Hereto also conduces the comparing of the sound joint with that which is hurt, in which collation, it is fit the sound part, which is compared with the hurt, be no waies, neither by nature nor any accident, wronged, nor

deformed, nor withered or decayed, nor swollen above measure, other wise it may cozen and deceive you, if you be lesse warie. Labour and difficulty of action in moving, is a sign of an uncomplete Luxation, or itrain. Now we thus know, that the ligaments, serving to the connexion of the articulations, are extended and relaxed, if the head of the bone, pressed with your fingers, be easily driven unto the contrary part, and sodainly fly thence back again; it thrusling your finger into the joint, it easily enter, nothing resisting it, as though all were empty wichin; if the motion be difficult, or none at all.

Signs of an unperfect dislocation.

CHAP. V. Of Prognosticks to be made upon luxations.

All Joints may be perverted or luxated, but all of them cannot in like manner be restored. For the head may be dislocated, but thereupon present death entues, by reason of the compression of the whole spinal marrow presently at the original thereof; such also is the dislocation of a vertebra of the spine, and of the Jaw-bone, which, slipped forth on both sides, hath caused inflammation, and a great tumor before that it be set. The bones of other Joints, as they are more or lesse dislocated, and moved out of their seats, so may they be more easily or difficultly restored. For, by how much they are the lesse moved out of their places, by so much they are the more quickly, and by how much they are the further, by so much they are the more slowly and difficultly set. Also an indication, taken from the figure of the luxated bone, gives a sign of the easie or hard restoring of the dislocation; as in the Arm, by how much the bones be the more easily dislocated, by so much once luxated they are the more easily restored. Bones do not easily fall out of joint in fleshy bodies; but when they chance to be put out, they are not easily got in again. For in such, the articulation is straitly on every side held in by the thickness of the muscles, and the plenty of the fat lying thereabouts. On the contrarie, such as are lean, especially those who formerly have been more fat, have their joints more lax, where by it comes to passe, that their bones may easily be put forth of joint: besides also, through the default of the digestive facultie, they have their joints replete with mucous humors; whence it is, that the heads of the bones, as standing in a slippery place, are the lesse stable, as it is recorded by Hippocrates. But slender bodies, which are naturally dry, compact and dense, have their muscles and ligaments more strong and dry; wherefore their bones are the more difficultly displaced; and displaced, the more difficultly set. Some bones, joined amongst themselves, do sometimes fly asunder, as when the shoulder blade flies from the collar-bone at the *Acromium*, and in the Arm the Ell from the Wand, and in the Leg the one ficole from the other, and the Heel-bone from the Ankle. Bones thus separated will never be joined together again, will never recover their former comely figure, never their strength of action. For, then it most usually happens, that the ligaments are either broke asunder, or else resolved and become lax. Those whose bones are dislocated by an externall cause, they, after they be set, may easily fall out again, for that the ligaments, moistened and bedewed with an excrementitious humor, cannot firmly hold them: oftentimes the ligaments are not wholly broken, but only in some portion thereof; and hence the action of the part either perishes, or is debilitated. Also that dislocation is uncurable, when as the ligaments, steeped and swollen up with an excrementitious humidity, are so much shortened and contracted in their length, as they have acquired in their breadth: and thus they draw away and pluck off the appendices of the bones from whence they arise, and by reason the bone and the appendix do enter and receive each other by many cavities and prominencies, therefore they cannot, by how skillfull hand soever they be handled, be again fitly placed and put together. Old and inveterate dislocations, wherein a tough humor possessing the cavity is concrete in stead of the head of the bone, are not to be restored; as neither when the heads of the luxated bones have by continuall attrition made themselves a new cavity in the neighbouring bone; neither if they be restored, is the restitution firm and of continuance; because the naturall cavity is possessed by another matter, and the new made near thereto cannot well and faithfully contain the received head of the bone. Those who have their shoulder dislocated, may use their hand for many actions, as well as the opposite shoulder; for the weight of the body is not sustained by the hands as it is by the legs. And by how much the hand is the more exercised, by so much the arm becomes the more corpulent. Contrarily, if the thigh-bone be dislocated, especially if it be wrested inwards, the whole leg quickly decays by an *atrophia*, because the part doth absolutely lose all motion; for by the opinion of Hippocrates, the performance of the proper action encreases strength, and makes the part in better pligh; but idleness debilitates and makes it lean. If a great wound and fracture be joined with a luxation, there is danger, lest while we use extention for restoring the part, we draw the nerves too violently; and so break the nerves, veins and arteries, whence would ensue fear of inflammation, convulsion, and other malign symptoms. Wherefore Hippocrates judges it better in such a concurrence and complication of preternatural affects, absolutely not to meddle at all with the setting of the dislocated bone; for, by attempting the restitution, certain death, but by omitting it only lameness is to be feared. Every dislocation must be restored before inflammation come; but if it be already present, you must presently be careful to take it away. For other things, let the Patient rest, lest if the affect be irritated, the increase and excess of pain cause a convulsion, gangrene, and lastly death, as I remember I have sometimes observed. Therefore when inflammation, and other malign symponies shall be mitigated and corrected, then may you endeavour to restore the luxation, especially if the habit of the body and member affected may admit it. For if the body be slender, delicate and tender, then the restitution will be more speedy and facile. But on the contrary, more difficult, if it be grosse and compact; And let thus much suffice for prognosticks in Luxations.

V What luxations are uncurable.

V Why those bones which are hardly dislocated, are hard to be set.

See I. de art. sic. sem. 29.

Celsus lib. 8. cap. 11.

V Why the plucking of an appendix from a bone is uncurable.

Hipp. sent. 88. sect. 3. de art.

Sent. 10. sect. 5. lib. 6. epid. cor. sect. 3. de art.

sent. 89.

You must not endeavour to set an inflamed joint.

CHAP. VI. *Of the generall cure of Dislocations.*

Five inventions in curing dislocations.

For all that I have heretofore delivered the generall method of curing fractures and dislocations, yet it shall not be unprofitable to repeat here in this place, those things which may be accommodated to this Treatise of curing luxations. Now he that will cure dislocations, must have regard to five intentions, which it will be fitting to perform in order. The first is, of holding; the second, of drawing or extending; the third, of forcing in; the fourth, of placing in convenient figure and site; the fifth, of correcting the concomitant, or following symptoms.

The benefit of holding the member in dislocations.

The first scope, which we said was of holding, is meant either of the whole body, or else of some part thereof only. The whole body must be holden by the strong embracement of your servant or attendant, when as the shoulder, the *vertebræ*, or the thigh bones are dislocated. But in the dislocation of the collar-bone, elbow, hand, knee, or foot and leg, it is sufficient only to hold the part straitly in your hands. There is necessity of holding either the body, or else some part thereof, lest, while the dislocated bone is extended, the whole body follow by continuance of parts, if there be nothing which may hinder: for if the body should follow him that draws or extends, all the work-masters labour and endeavour to restore it, is to no purpose. The use of the second scope, that is, of drawing or extending, is, that there may be a free space and distance between the luxated bones, by which distance the dislocated bone may the more freely be forced into its cavity. But the manner of drawing or extending is different in quantity and manner, according to the various strength of the muscles and ligaments, and dislocation of the bones to this or that part. Therefore this work is almost always performed by the hands; which when they cannot suffice, we must use the assistance of instruments and engines, whose figures you shall see hereafter delineated. But that you may not do amiss, you may so far use extension, untill the head of the bone be brought just against its cavity. When the Surgeon hath brought it to this pass, then must he hasten to the third intention, which is, to put the head of the bone first moved and gently bended, into its cavity. For he must have a speciall care, that he force it no other way than into its proper cavity: for it would be dangerous, lest he should turn it from one extreame into another, and the bone, for examples sake, of the thigh, which was dislocated into the fore-part by too violent forcing, by exceeding the middle cavity, may be driven and dislocated into the hinder part. To shun this, the bone shall be put back the same way that it fell out, which may be easily done in fresh and late happening dislocations. We understand that the bone is set by the noise, or as it were a popp, or sound like that, which solid and sounding bodies, being fully and forcibly thrust into their cavities, do make; by the similitude & consent in figure, magnitude and all conformation of the affected part with the sound, and lastly, by the mitigation of the pain. The

The use of extension.

fourth scope, which is of the convenient site of the part, must be so fulfilled, that the bone after it is set may be kept in its cavity, and not fly forth again. Wherefore if the arm be dislocated, it shall be carryed bound up in a scarf: if the thigh, knee, leg, or foot be luxated, they shall be fitly laid in a bed; but in the *interim* the Surgeon, presently after he hath set them, shall have a care, that the affected joint be wrapped about with stoups and clothes, or compresses steeped in rose vinegar, and spred with convenient medicins, then let it be bound with an artificiall deligation, rowling the ligatures unto the part contrary to that whereto the dislocated bone flew. For the which purpose thicker boulders shall be there applied whence the bone came out, other wise there will be some danger, lest it should be again displaced: when these things are done, he shall for four or five daies space meddle with nothing about the dislocation, unless pain, or some such like symptome happen. For then the fifth scope will call us from that cessation and rest, which is, to correct the symptoms and complicate affections, as pain, inflammation, a wound, fracture, and others, whereof we have spoken abundantly in our Treatise of Fractures. Before we attempt to set inveterate dislocations, we must endeavour to humect the ligaments, tendons and muscles by fomentations, cataplasms, emplasters, liniments, and other remedies, that so these parts may be more obedient to the Surgeons hand; then must the dislocated bones be moved with a gentle motion up and down, to and again, that by this means the excrementitious humour, which by continuance of time hath flowed down, may wax hot, be attenuated, resolved or made slippery, and also the fibres of the muscles, ligaments, and nervous bodies, placed about the joint for the defence thereof, may be loosed, that so they may presently be more freely extended. But if a great swelling, pain, and inflammation urge, we must first think of allswaging and curing them, then of the restoring the dislocation.

The manner of setting it, or putting it into its place.

Signs that the bone is set.

The benefit of sit placing the member.

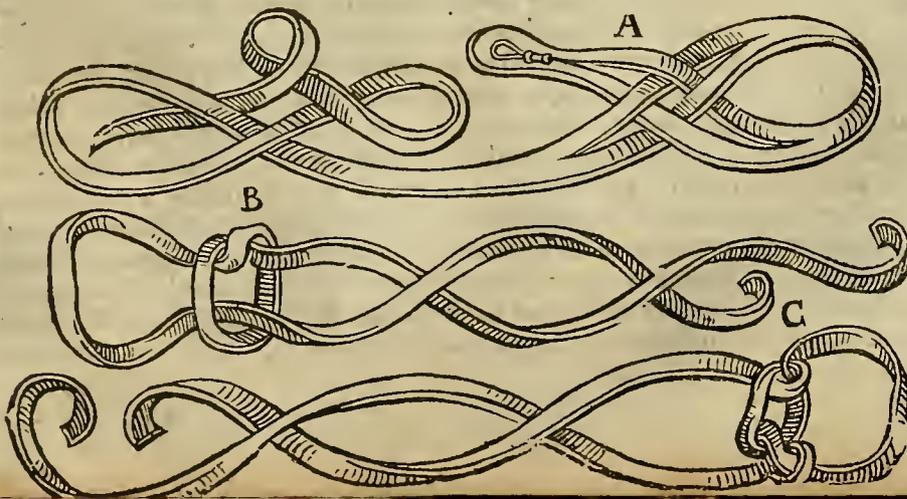
The manner of binding up the set joint.

The cure of inveterate luxations.

CHAP. VII. *The description of certain engines, serving for the restoring of Dislocations.*

The delineation of the three Ligatures.

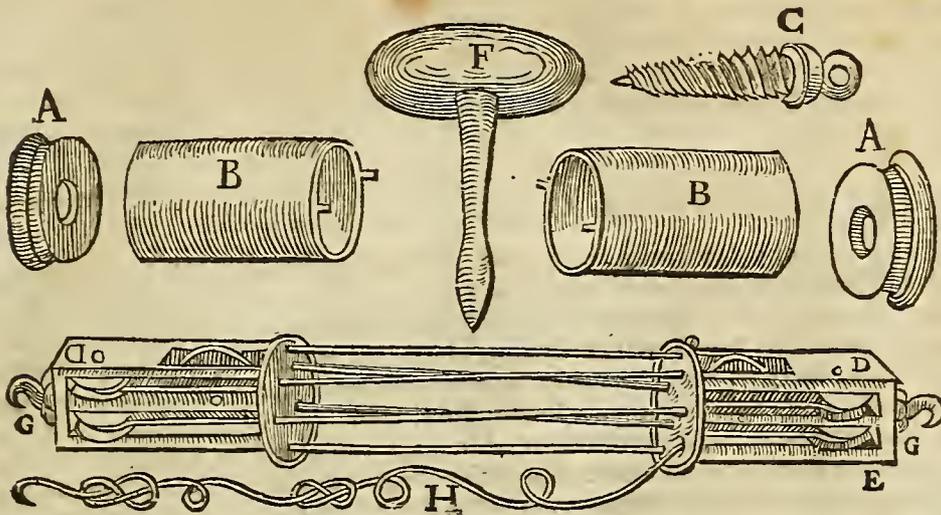
These ligatures are not for deligation, but extension.



Before I come to the particular kinds of dislocations, I think it not amiss to describe three sorts of bandages, and give you their figures, as those which are most fit to hold and extend dislocations. The first ligature, designed by this letter *A*, is made for holding the member. The second, marked with the letter *B*, is fit for

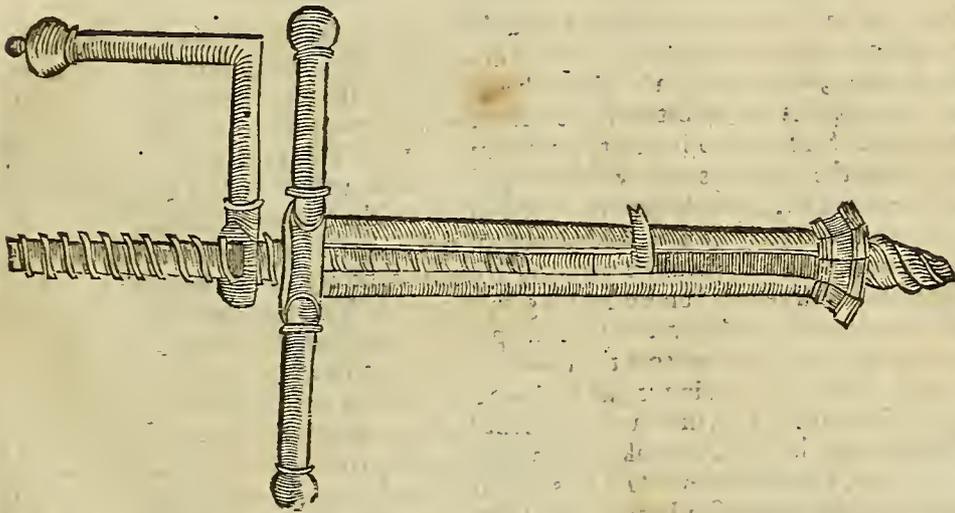
for drawing or extension, and consists of one knot. The third, whereto the letter C is put, consisting of two knots, is to hold or bind more straitly.

A Pulley.



drawn, marked with this letter H. At the ends of the pulley are hooks fastned, the one of which is to fasten the Pulley to a Post, the other is to draw the ligature fastned to the part. The Boxes or Cases whereto the Pulley is kept, is marked with BB. Their Covers are marked with AA. A screw pin which may be twined, and so fastned to a Post, that so one of the ends of the pulley may be hooked thereto, is signed with C. A Gimlet (marked by F.) to make a hole in a Post, so to let in the screw pin. You may see all these things exprest in the precedent figure.

Manubrium versatile, or, A Handvice.



screw runs into the female by twining about of the handle; and thus the ligature is drawn as much as will suffice, for the setting the dislocated bone. Having delivered these things thus in generall, now I come to treat of the Luxations of each part, from the jaw bone even to the toes of the feet.

CHAP. VIII. Of the dislocation of the Jaw bone.



The Jaw bone is dislocated by many occasions, and not seldome by yawning, and other more strong openings of the mouth. It is more frequently luxated into the fore, than into the hinder part, by reason of the mammillary additaments, which hinder it from falling backwards. The dislocation is sometimes but on one side, otherwhiles on both. If the one side only be luxated, it (together with the chin) is drawn awry unto the contrary side which is not dislocated; the place is hollow from whence it is flown, but swoln whither it is gone, the Patient cannot shut his mouth, but is forc't to gape, so that he cannot eat; the Jaw, together with the teeth therein, hangs somewhat forwards, neither do the teeth answer firmly to one another, but the dog teeth are under the shearers. But if both sides be dislocated, all the jaw and chin hang forwards and towards the breast; besides also, the temporall muscles appear distended, spittle runs out of the Patients mouth against his will, the lower teeth stand further forth than the upper, which is the occasion that the mouth cannot be shut, neither the tongue have free volubility to speak, the Patient stammering in his speech. When it is dislocated on both sides, it is more difficultly restored, and all the symptoms are more vehement; wherefore it must be set with all speed, otherwise the Patient will presently have grievous pain about his throat, inflammation, a fever, whereupon oft times death ensues within ten dayes, by reason of the five branches of nerves, which, arising from the second and fifth conjugation of the brain, are distributed into the moving muscles thereof, which too violently extended,

The causes, Differences, Signs that only one part is dislocate d.

Signs that both sides are dislocated.

Prognosticks. Why death quickly ensues upon the dislocation of both sides of the jaw.

I have thought good also to delineate the following Engine, made for to draw and extend more powerfully, when the hand will not serve. It is made like a Pulley, marked with these letters DD. Within this there lye hid 3. wheels, through whose furrowes runs the rope which is to be

Some Practitioners in stead of this Pulley, make use of this described instrument, which they terme *Manubrium versatile*, or a Handvice. The end thereof is fashioned like a Gimlet, and is to be twined into a Post. Within that handle lies a screw with a hooked end, whereto the string or ligature must be fastned. Now the screw-rod or male-

bring the forementioned symptoms. Practitioners affirm, that the Jaw twelve dayes after it is set, is free from the danger of relapse. If it have been dislocated some few dayes before you go about to restore it, you must use softning and relaxing medicins to it; but when it is put in the joint, apply a medicine made of the whites of eggs, and oil of roses to assuage pain, and apply cloths dipped in oxycrate. At the second dressing you shall apply such things as have power to agglutinate and strengthen the ligaments and other relaxed parts, and also to keep it being restored in its place. This shall be the form of such a medicine. *R. Pulv. boli armeni, sang. draconis, farine volat. mastich. pi. is, resina, an. ʒ. ʒ. albuminis ovorum q. s. fiat medicamentum;* afterwards you may use *emplast. Diacalcitbeos* dissolved in oil of roses and vinegar, and other things, as occasion shall be.

CHAP. IX. *How to set the Jaw dislocated forwards on both sides.*

The first manner of setting a jaw bone.



First of all the Patient must be placed upon the ground, or some low seat with his face upwards, and his head must be firmly held by your servant, that so it may be the more immoveable: then the Surgeon shall put both his thumbs, wrapped in cloths (lest he hurt them by rubbing them upon the Patients teeth, as also to keep them from slipping) into the Patients mouth, and press with them the larger teeth of the luxated jaw, but put his other fingers without under his chin, and so lift up the whole jaw with them. But if the operation cannot be thus done, for that the mouth on the inside is so shut and closed that the thumbs cannot be put thereinto, then must you thrust in wooden wedges made of soft wood, as hazle or firre, being cut square, and of some fingers thickness. These shall be wedged in on each side above the grinders; then cast a ligature under his chin, whose ends your servant shall hold in his hands, and setting his knees upon the Patients shoulders, shall pull them upwards; then at the same time the Surgeon shall press downwards the wooden wedges. The jaw bones thus restored, shall be kept so by convenient ligation, and dressed with medicins, as it is fitting; and in the mean space you must forbid the Patient to speak, or needlessly to open his mouth. Wherefore he must abstain from hard meats, and such as require much chewing, untill his pain be quite passed, and use only spoon meats, as Barley-creams, ponadoes, jellies, cullasses, broths, and the like.

Another.

Diet.

CHAP. X. *Of restoring the Jaw dislocated forwards but on one side.*

What the Surgeon.



He Patient must be placed on a low seat, so that he may be under the Surgeon; then your servant, standing at his back, shall hold his head firm and steady, that it may not follow the Surgeon drawing, extending, and doing other things necessary for restoring it. Then the Surgeon, putting his thumb between the grinders, shall press down the jaw, and gently drawing it aside, force it into its cavity, in the mean while also the Patient, as much as in him lyes, shall help forwards the Surgeons endeavour, in opening his mouth as little as he can, lest the muscles should be extended; and he shall only gape so wide as to admit the Surgeons thumb, for so the temporall muscles shall be restored to their place and favour the restitution. If he open his mouth as wide as he can, they will be extended after a convulsive manner; if on the contrary he shut his teeth too close, there will be no passage for the Surgeons thumb unto his grinding teeth. Some there be which affirm, that the jaw bone may sometimes be dislocated towards the hind part, and that then the mouth is so close shut, that the Patient cannot open it nor gape, and that the lower rank of teeth stands further in, and nearer the throat than the upper. Now for restoring it, the Patients head must be straitly holden behind, whilst the Surgeon, the mean while putting both his thumbs into the Patients mouth, holding his other fingers without under the Patients chin, he shall, by shaking it, draw it to him, or forwards, and so restore it to its place. For my own part, I confess I never saw this kind of Luxation, and I easily perswade my self that it can scarce ever happen, for the reason I gave in the former chapter. But nevertheless, if it by any means chance to happen, yet can it not be a perfect luxation, but an imperfect one; the jaw being only but a little thrust back to the throat to those mammillary additaments. And then it may easily be restored by lifting or drawing forth the jaw, and suddenly forcing it from below upwards.

What the Patient ought to do

Signs that the jaw is dislocated backwards. The cure.

CHAP. XI. *Of the Luxation of the Collar bone.*



As the Collar bones may be broken, wrested and crooked, so also they may be dislocated. Now they are dislocated, either against the *sternum*, or against the shoulder blade, or *acromion* thereof: yet both these kinds of dislocations are very rare, by reason of the strait and firm connexion which the collar bone hath with the foresaid parts; but chiefly where it is joined to the *sternum*, it can scarce be deprest, for that it is as it were underpropt with the first rib. But it may be dislocated inwardly, outwardly, and side-wise, and according to this variety there must be divers wayes to restore it; yet generally the collar bone is put into its place by moving or extending the arm. But if need require, the Patient shall be laid upon the ground with his face upwards, a Tray with the bottome upwards, a hard stuffed cushion, or the like thing being put under his shoulders, for thus it will so come to pass, that the shoulder and chest will stand so forth, that presently by lifting up, by pressing down, or drawing forth the arm forwards or backwards, as the bone shall be flown out to this or that part, you may restore it; for thus the prominency may be forced into its cavity. But it will be requisite to bind it up and lay boulders thereon, and to give it rest, as if it were fractured. *Galen* writes, that when he was five and thirty years old, whilst he exercised himself in the place of exercise, his collar bone was so far separated from the *Acromion*, that there was the space of three fingers between them. And that this luxation was restored in

Differences of the luxated collar bones.

The cure.

Com. ad sent. 62. lib. 1. de art.

in forty dayes space, by so strait and strong a ligation, that he perceived the motion of the beating arteries under the bone. But you shall find very few, who will suffer such strait ligation so long, though it be never so necessary. Verily, this kind of luxation is hard to be known, but far more difficult to be healed. I have known many Surgeons deceived, who have taken the luxation of the collar bone for the dislocation of the top of the shoulder. For then the *Epomis*, or top of the shoulder swells, and the place from whence the collar bone is flown, is depressed with a manifest cavity, with vehement pain, inflammation, and impotency of lifting up, or otherwise moving the arm, or performing other actions which are done by the help of the shoulder. Certainly, if this bone, when it is dislocated, be not set, the Patient shall be lame during his life, so that he shall not be able, neither to put his hand to his head nor mouth.

CHAP. XII. *Of the luxation of the Spine, or Back bone.*

THe Back bone consists of many bony *vertebrae*, like rows or wheels mutually jointed or knit together, by their smoothness and circular form conspiring to an aptness of moving or bending forwards. For if it should consist of one bone, we should stand continually with the trunk of our bodies immoveable, as thrust through with a stake. The *vertebrae* have a hole passing through the midst of them, whereby the marrow, passing this way out from the brain as by a pipe, may serve for the generation of the sensitive and motive nerves, and their distribution into all parts beneath the head. For which purpose it is perforated with many holes on the sides, through each whereof certain conjugations of the nerves pass forth into the rest of the body, and veins and arteries pass in for the propagation of nourishment and life. The whole exterior face of the Spine is rough, and as it were armed with four sorts of *apophyses*, or processes, whereof some stand up, others down, some direct, others transverse. Wherefore from these thorny and sharp processes, the whole hath acquired the name of the *Spina*. The *vertebrae* the further from the neck they are, the greater they grow, so that those which are the lowest, are the largest, for it is agreeable to reason, that that which bears, should be bigger than that which is born. Hence we see, that the holy bone is placed under the rest as a foundation. The side processes of the rack bones of the chest, besides the benefit of defending the spinall marrow shut up therein from externall injuries, have also another, which is, they firm and fasten the bones of the ribs by a strong tye. There lyes a gristle, and a tough, and (as it were) albuminous humor between the *vertebrae*, which makes them, as also all the other joints of the body, slippery, and fit for motion: the spine is flexible with notable agility forwards only, but not backwards, for that so there would be continuall danger of breaking the hollow ascendent vein, and the great descending artery running thereunder. Therefore the dearticulations of the *vertebrae*, mutually strengthened with strong ligaments, do look more backwards. I have thought good to premise these things of the nature of the spine, before I come to dislocations happening thereto: I willingly omit divers other things which are most copiously delivered by *Galen*, content only to adde thus much; that there is nothing to be found in the whole structure of mans bones, which more clearly manifests the industry of Gods great workmanship, than this composure of the spine and the *vertebrae* thereof.

An anatomical description of the Spine.

The variety of the processes of the Spine.

Gal. cap. 7. lib. 13. de usu partium.

Lib. 13. de usu partium.

CHAP. XIII. *Of the dislocation of the head.*

THe head stands upon the neck knit by dearticulation to the first *vertebrae* thereof, by the interposition of two processes which arise from the *basis* thereof, near the hole through which the marrow of the brain passes down into the back bone, and they are received by fit cavities, hollowed in this first *vertebrae*. These processes sometimes fall out of their cavities, and cause a dislocation behind, whereby the spinall marrow is too violently and hard compressed, bruised and extended, the chin is fastned to the breast, and the Patient can neither drink nor speak: wherefore death speedily follows upon this kind of luxation, not through any fault of the Surgeon, but by the greatness of the disease, refusing all cure.

The connexion of the head with the first Rack bone of the neck. Prognosticks.

CHAP. XIV. *Of the dislocation of the vertebrae, or rack bones of the neck.*

THe other *vertebrae* of the neck may be both dislocated and strained. Dislocation verily, unless it be speedily helped, brings sudden death: for, by this means the spinal marrow is presently oppressed at the very originall thereof, and the nerves, therehence arising, suffer also together therewith, and principally those which serve for respiration; whereby it cometh to pass, that the *animal* spirit cannot come and disperse its self into the rest of the body lying thereunder; hence proceed sudden inflammation, the squinzie, and a difficulty, or rather a defect of breathing. But a strain, or incomplete luxation brings not the like calamity: by this the *vertebrae*, a little moved out of their seats, are turned a little to the hind or fore-part, then the neck is wrested aside, the face looks black, and there is difficulty of speaking and breathing. Such, whether dislocation or strain, is thus restored. The Patient must be set upon a low seat, and then one must lean and lye with his whole weight upon his shoulders;

The danger hereof.

Signs and symptoms of their subluxation. The cure.

Signs of their
restitution.

and the mean while the Surgeon must take the Patients head, about his ears, betwixt his hands, and so shake and move it to every part, untill the *vertebra* be restored to its place. We may know it is set by the sudden ceasing of the pain, which before grievously afflicted the Patient, and by the free turning and moving his head and neck every way. After the restoring it, the head must be inclined to the part opposite to the Luxation, and the neck must be bound up about the dearticulation of the shoulder; but yet so, that the ligature be not too strait, lest by pressing the weazon and gullet, it straiten the passages of breathing and swallowing.

CHAP. XV. *Of the Dislocated Vertebrae of the Back.*

Differences
and signes.

Causes.



The Rack bones of the back may be dislocated inwards, outwards, to the right side and to the left. We know they are dislocated inwards, when as they leave a depressed cavity in the spine; outwardly, when they make a bunch on the back; and we know they are luxated to the right or left side, when as they obliquely bunch forth to this or that side. The *vertebrae* are dislocated by a cause either internall, or externall, as is common to all other Luxations; the internall is either the defluxion of humors from the whole body, or any part to them and their ligaments; or else a congestion proceeding from the proper and native weakness of these parts, or an attraction arising from pain and heat. The externall is a fall from high upon some hard body, a heave and bruising blow, much and often stooping, as in Dressers and Lookers to Vineyards, and Paviers, decrepit old men; and also such, as through an incurable dislocation of the thigh-bone, are forced in walking to stoop down, and hold their hand upon their thigh. But a *vertebra* cannot be forced or thrust inwards, unlesse by a great deal of violence; and if it at any time happen, it is not but with the breaking of the tyes and ligaments, for they will break rather than suffer so great extension. Such a dislocation is deadly, for that the spinall marrow is exceedingly violated by too strait compression, whence proceeds dulness, and losse of sense in the members lying thereunder. Neither is restitution to be hoped for, because we cannot through the belly force it into its place: the urine is then suppress'd, as also the excrements of the belly; sometimes on the contrary, both of them break forth against the Patients minde, the knees and legs grow cold, their sense and motion being lost. Such things happen more frequently, when the spine is luxated inwards, than when it is dislocated outwards, for that the nerves, thence arising, run and are carryed more inwardly into the body. Besides the pressed Spinall marrow becomes inflamed, and that being inflamed, the parts of the same kind, & such as are joined thereto, are also inflamed by consent, whence it happeneth, that the bladder cannot cast forth the urine. Now where the sinews are pressed, they can no more receive the irradiation of the animal faculty. Hence follows the deprivation of the sense and motion in the parts whereto they are carryed, therefore the contained excrements do no more provoke to expulsion by their troublesome sense, neither are pressed to keep them in; thence proceeds their suppression, and hence their breaking forth against their wils. But the spine outwardly dislocated, scarce causes any compression of the marrow or nerves.

The danger of
a *vertebra* dislo-
cated inwards.

Hipp. Sent. 51.
sect. 3. de art. &
Gal. in com.

CHAP. XVI. *How to restore the Spine outwardly dislocated.*

The cure.



The *vertebrae* outwardly dislocated, when as they stand bunching forth, then it is fit to lay and stretch forth the Patient upon a table, with his face downwards, and straitly to bind him about with towels under the arm-pits, and about the flanks and thighs. And then to draw and extend, as much as we can, upwards and downwards, yet without violence: for unless such extension be made, restitution is not to be hoped for, by reason of the proecesses and hollowed cavities of the *vertebrae*, whereby, for the faster knitting,

Another man-
ner of cure.



they mutu-
ally receive
each other.
Then must
you lye with
your hands
upon the ex-
tuberancies,
and force in
the promi-
nent *vertebra*.
But if it can-
not be thus re-
stored, then
wil it be con-
venient to
wrappe two
peeces of
wood, of
four

four fingers long, and one thick, more or lesse, in linnen clothes, and so to apply one on each side of the dislocated *vertebrae*, and so with your hands to press them against the bunching forth *vertebrae*, untill you force them back into their seats, just after the manner you see it before delineated.

In the mean while have a care, that you touch not the processes which stand up in the ridge of the Spine, for they are easily broken. You may know that the *vertebrae* are restored by the equall smoothness of the whole Spine. It is fit, after you have restored it, to bind up the part, and lay splints or plates of Lead neatly made for that purpose upon it; but so, that they may not press the crists or middle processes of the *vertebrae*, which I formerly mentioned, but only the sides: then the Patient shall be laid upon his back in his bed, and the splints long kept on, lest the *vertebrae* should fall out again.

How to keep the restored *vertebrae* in their places.

CHAP. XVIII. *A more particular inquirie of the dislocation of the Vertebrae, proceeding from an internall cause.*



The *vertebrae* are in like sort luxated by the antecedent cause, as we have formerly said, which is caused by the naturall imbecillitie of the parts, principally of the nervous ligament, by which all the *vertebrae* are bound each to other; this ligament comes not to the spinall marrow, but only bindes together the *vertebrae* on their outsides. For, besides the two membranes proceeding from the two *Meninges* of the Brain, wherewith the marrow is covered, there is a third strong and nervous coat put upon it, left, whilst the spine is diversly bended, the bended marrow should be broken. This third coat arises from the *pericranium*, as soon as it arrives at the first *vertebra* of the neck. Now that ligament, wherewith we said the joints of the *vertebrae* were mutually knit and fastned, is encompassed with a tough and glutinous humor for the freer motion of the *vertebrae*. Sometimes another cold, crude, gross and viscid humor, confused and mixed herewith by great defluxions and catarrhs, begets a tumor, which doth not only distend the nerves proceeding forth of the holes of the *vertebrae*, but also distends the ligaments wherewith they are bound together: which so distended, and (as it were) drawn aside, do draw together with them the *vertebrae*, one while towards the right side, another while to the left, somewhiles inwards, otherwhiles outwards, and thus move them out of their seats, and dislocate them. A dislocated *vertebrae*, standing forth and making a bunch, is termed in Greek *Cyphosis*, (Those thus affected we may call, *Bunch-backed*.) But when it is depressed, it is named *Lordosis*, (Such we may term, *Saddle-backed*.) But when the same is luxated to the right or left side, it maketh a *Scoliosis* (or *Crookedness*), which wresting the spine, draws it into the similitude of this letter S. *Galen* adds a fourth default of the *vertebrae*, which is, when their joints are moved by reason of the looseness of their ligaments, the *vertebrae* yet remaining in their places, and he calls it a *Seisis* (or shaking.) They also note another defect peculiar to the spinall marrow, which is, when as it (the *vertebrae* being not moved whereto it adheres) is plucked and severed from them: this disease is occasioned by a fall from on high, by a great stroak, and by all occasions which may much shake, and consequently depress the spinall marrow, or by any other means remove, or put it forth of its place. Scarce any recovers of this disease, for many reasons, which any exercised in the art, may easily think upon: But let us return to the internall cause of Luxations. Fluid and soft bodies, such as Childrens, usually are very subject to generate this internall cause of defluxion. If externall occasions shall concur with these internall causes, the *vertebrae* will sooner be dislocated. Thus Nurses, whilst they too straitly lace the breasts and sides of girles, so to make them slender, cause the breast-bone to cast its self in forwards or backwards, or else the one shoulder to be bigger or fuller, the other more spare and lean. The same error is committed, if they lay children more frequently and long upon their sides, than upon their backs; or if, taking them up when they wake, they take them only by the feet or legs, and never put their other hand under their backs, never so much as thinking that children grow most towards their heads.

Cyphosis.
Lordosis.
Scoliosis.

Com. ad sent. 2.
sect. 3. lib. de art.
Seisis.

The separation of the spinall marrow from the encompassing *vertebrae*.

The error of Nurses in binding and lacing of Children.

CHAP. XVIII. *Prognosticks of the Dislocated Vertebrae of the back.*

IF in Infancy it happen that the *vertebrae* of the back shall be dislocated, the ribs will grow little or nothing in breadth, but run outwards before; therefore the chest lo-
seth its naturall latitude, and stands out with a sharp point. Hence they become asthma-
matick, the lungs and muscles which serve for breathing, being pressed together and straitned; and that they may the easilier breath, they are forced to hold up their heads, whence also they seem to have great throats. Now because the weazen being thus pressed, the breath is carryed through a strait passage; therefore they whease as they breath, and snort in their sleep, for that their lungs, which receive and send forth the breath or air, be of lesse bigness: besides also, they are subject to great distillations upon their lungs, whereby it cometh to pass, that they are shorter lived. But such as are bunch-backed below the midriff, are incident to diseases of the kidneys and bladder, and have smaller and slenderer thighs and legs, and they more slowly and sparingly cast forth hair and have beards; to conclude, they are lesse fruitfull, and more subject to barrenness, than such as have their crookedness above their midriff. The Bunches which proceed from external causes are oftentimes curable; but such as have their original from an inward cause, are absolutely incurable, unless they be withstood at the first with great care

Hipp. sent. 6.
sect. 3. de art.

Why, when the spine is luxated, the parts belonging to the chest are nourished and grow the less.

Why the luxation of one vertebra is more dangerous than of many.
Sent. 1. sect. 3. lib. de arte.

and industry. Wherefore such as have it by kind, never are helped. Such as, whilst they are yet children, before their bodies be come to perfect growth, have their spine crooked and bunching out, their bodies use not to grow at the spine, but their legs and arms come to their perfect and full growth; yet the parts belonging to their breasts and back, become more slender. Neither is it any wonder, for seeing the veins, arteries, and nerves are not in their places, the spirits do neither freely, nor the alimentary juices plentifully flow by these straitened passages, whence leanness must needs ensue: but the limbs shall thence have no wrong, for that not the whole body, but the neighbouring parts only are infected with the contagion of this evil. When divers *vertebrae*, following each other in order, are together and at one time dislocated, the dislocation is less dangerous, than if one alone were luxated. For, when one only *vertebra* is dislocated, it carries the spinall marrow so away with it, that it forces it almost into a sharp angle; wherefore being more straitly pressed, it must necessarily be either broken or hurt, which is absolutely deadly, for that it is the brains substitute. But when divers *vertebrae* are dislocated at once, it must of necessity be forced only into an obtuse angle, or rather a semicircle; by which compression it certainly suffers, but not so, as that death must necessarily ensue thereof. Hereto may seem to belong that which is pronounced by *Hippocrates*; a circular moving of the *vertebrae* out of their places is less dangerous than an angular.

CHAP. XIX. Of the dislocation of the rump.

The signs.



The rump oft-times is after a sort dislocated inwards by a violent fall upon the buttocks, or a great blow; in this affect the Patient cannot bring his heel to his buttocks, neither, unless with much force, bend his knee. Going to stool is painfull to him, neither can he sit unless in a hollow chair. That this (as it were) dislocation may be restored, you must thrust your finger in by the Fundament, even to the place affected, as we have said in a fracture; then must you strongly raise up the bone, and with your other hand at the same time join it rightly on the outside with the neighbouring parts; lastly, it must be strengthened with the formerly mentioned remedies, and kept in its place. Now it will be recovered about the twentieth day after it is set. During all which time the Patient must not go to stool, unless sitting upon a hollow seat, lest the bone, as yet scarce well recovered, should fall again out of its place.

The cure.

CHAP. XX. Of the luxation of the ribs.

Causes.



The ribs may by a great and bruising stroak be dislocated, and fall from the *vertebra* whereto they are articulated, and they may be driven inwards, or sideways. Of which kind of luxation, though there be no particular mention made by the Ancients, yet they confess, that all the bones may fall, or be removed from their seats or cavities, wherein they are received and articulated. The sign of a rib dislocated and slipped on one side, is, a manifest inequality; which here makes a hollowness, and there a bunching forth; but it is a sign that it is driven in, when as there is only a depressed cavity where it is knit and fastned to the *vertebra*. Such dislocations cause divers symptoms, as difficulty of breathing, the hurt rib hindring the free moving of the chest; a painfulness in bowing down, or lifting up the body, occasioned by a pain counterfeiting a pleurisie; the rising or puffing up of the musculous flesh about the rib, by a mucous and flatulent humor there generated: the reasons whereof we formerly mentioned in our Treatise of Fractures. To withstand all these, the dislocation must be forthwith restored, then the puffing up of the flesh must be helped. Wherefore, if the dislocated rib shall fall upon the upper side of the *vertebra*, the Patient shall be set upright, hanging by his arms upon the top of some high door or window: then the head of the rib, where it stands forth, shall be pressed down untill it be put into its cavity. Again, if the rib shall fall out upon the lower side of the *vertebra*, it will be requisite, that the Patient bend his face downwards, setting his hands upon his knees; then the dislocation may be restored by pressing or thrusting in the knot or bunch which stands forth. But if the luxated rib fall inwards, it can no more be restored or drawn forth by the hand of the surgeon, than a *vertebra* which is dislocated towards the inside, for the reasons formerly delivered.

Signs.

Cure.

Gal. com. ad sent. 3. sect. 1. de arte.

CHAP. XXI. Of a dislocated shoulder.



The shoulder is easily dislocated, because the ligaments of its dearticulation are soft and loose; as also for that the cavity of the shoulder blade is not very deep; and besides, it is every where smooth and polite, no other wise than that of the shoulder bone, for that it is herein received. Adde hereunto, that there is no internall ligament from bone to bone, which may strengthen that dearticulation, as is in the leg and knee. Wherein notwithstanding, we must not think nature defective, but rather admire Gods providence in this thing; for that this articulation serves not only for extension and bending, as that of the Elbow, but besides, for a round or circular motion, as that which carries the arm round about, now up, then down, according to each difference of site. The shoulder bone; which *Hippocrates* calls the arm bone, may be dislocated four manner of wayes; upwards, downwards, or into the arm-pit, forwards and outwards, but never backwards, or to the hind part. For, seeing that there the cavity of the blade bone, which receives the head of the arm-bone, which *Hippocrates* calls a joint, lyes and stands against it; who is it that can but imagine any such dislocation? In like sort it is never dislocated inwardly

Why there is no internall ligament from the arm bone to the shoulder blade.

Differences of a luxated shoulder.

Sent. 1. sect. 1. lib. de arte.

inwardly, for on this part it hath the flesh of a strong muscle, termed *Deltoides*, lying over it, besides also the back and *acromion* of the blade, and lastly, the anker-like, or beak-like process, all which four hinder this joint from slipping inwards. Now *Hippocrates* saith, that he hath only seen one kind of dislocation of this bone, to wit, that which is downwards or to the arm-pit: and certainly it is the most usuall and frequent; wherefore we intend to handle it in the first place. When the shoulder is dislocated downwards into the arm-pit, a depressed cavity may be perceived in the upper part of the joint; the *acromion* of the blade shewes more sharp and standing forth than ordinary, for that the head of the shoulder bone is slipt down, and hid under the arm-pit, causing a swelling forth in that place; the elbow also casts it self (as it were) outwards, and stands further off from the ribs; and though you force it, yet can you not make it to touch them; the Patient cannot lift up his hand to his ear on that side, neither to his mouth, nor shoulder. Which sign is not peculiar to the luxated shoulder, but common to it, affected with a contusion, fracture, inflammation, wound, abscess, *schirrus*, or any defluxion upon the nerves, arising out of the *vertebrae* of the neck, and sent into the arm: also this arm is longer than the other. Lastly, (which also is common to each difference of a luxated shoulder) the Patient can move his arm by no kind of motion without sence of pain, by reason of the extended and pressed muscles, some also of their fibres being broken. There are six waies to restore the shoulder luxated downwards into the arm-pit. The first is, when it is performed with ones fist, or a towel; the second, with a clew of yarn, which put under the arm-pit, shall be thrust up with ones heel; the third, with ones shoulder put under the arm hole, which manner, together with the first, is most fit for new and easily to be restored luxations, as in those who have loose flesh, and effeminate persons, as children, eunuches, and women; the fourth, with a ball put under the arm pit, and then the arm cast over a piece of wood held upon two mens shoulders, or two standing posts; the fifth, with a ladder; the sixth, with an instrument, called an *Ambi*. We will describe these six waies, and present them to your view.

Signs of the shoulder dislocated downwards.

The waies to restore it.

CHAP. XXII. Of the first manner of setting a shoulder, which is with ones fist.



First, let one of sufficient strength, placed on the opposite side, firmly hold the Patient upon the joint of the shoulder, lest he move up and down with his whole body, at the necessary extension, working & putting it in: then let another, taking hold of his arm above the elbow, so draw and extend it downwards, that the head thereof maybe set just against its cavity, hollowed in the blade bone. Then at last let the Surgeon lift

Gal.com.ad sent, 23. sect. I. de carb.

An expression of the first manner of putting a shoulder into joint.



and force up with his fist the head of the bone into its cavity. Here this is chiefly to be observed, that in fresh luxations, especially in a body soft, effeminate, moist, and not over corpulent, that it sometimes comes to pass, that by the only means of just extension, the head of the bone freed from the muscles and o-

ther particles wherewith it was, as it were, entangled, will betake it self into its proper cavity, the muscles being by this means restored to their place and figure, and drawing the bone with them, as they draw themselves towards their heads, as it were with a sudden gird or twitch: wherefore in many, whilst we thought no such thing, it sufficed for restitution only to have extended the arm: But if the luxation be inveterate, and the hand cannot serve, then must the Patients shoulder be fastned to a post with the forementioned ligature, or else committed to ones charge, who may stand at his back and hold him fast. Then the arm shall presently be tyed about, a little above the elbow, with a fillet; whereto a cord shall be fastned, which being put or fastned to the pulley, shall be drawn or stretched forth, as much as need shall require. Lastly the Surgeon, with a towel, or such like ligature, fastned about his neck and hanging down, and so put under the Patients arm-pit near to the luxation, shall, raising himselfe upon his feet with the whole strength of his neck; lift up the shoulder, and also at the same time bringing his arm to the Patients breast, shall set the head of the shoulder bone, forced with both his hands into its cavity, as you may see by the precedent figures. Then must you cover all the adjacent parts with a medicine made *ex farina volatili, bols armenio, myrtillis, pice, resina & alumine*, beaten into powder, and mixed with the white

A perfect setting the luxated shoulder by extension only.

of an eg. Then must the hollownes under the arm be filled with a clew of woollen or cotten yarn, or a linnen cloth spred over with a little oil of Roses or Myrtles, a little vinegar, and *unguentum rosatum*, or *infrigidans Galeni*, lest it stick to the hairs, if there be any there. The part must afterwards be bound up with a ligature, consisting of two heads, of some five fingers bredth, and two els long; more or less, according as the body shall require. The midst thereof shall be put immediately under the arm pit, and then crossed over the lame shoulder, and so crossing it as much as shall be fit, it shall be wrapped under the opposite arm. And lastly, the arm shall be laid upon the breast, and put in a scarf, in a middle figure almost to right angles, so that by lifting up the hand he may almost touch his sound shoulder, lest the bone newly set, may fall out again; neither shall the first dressing be stirred, untill four or five dayes be past, unless the greatnes of some happening symptom divert us from this our purpose.

CHAP. XII. *Of the second manner of restoring a shoulder, that is, with the heel, when as the Patient by reason of pain can neither sit, nor stand.*

Hip. sent.
12. sect.
I. de art.

The Patient must be laid with his back on the ground upon a cover-lid, or mat, and a clew of yarn or leathern ball, stuffed with tow or cotten, of such bigness as may serve to fill up the cavity, must be put under his arm-pit, that so the bone may straight waies the more easily be forced by the heel into its cavity. Then let the Surgeon sit beside him, even over against the luxated shoulder; and if his right shoulder be luxated, he shall put his right heel to the ball, which filleth up the arm-pit; but if the left, then the left heel; then let him forthwith

The expression of the second manner of restoring a shoulder.



draw towards him the Patients arm, taking hold thereof with both his hands, and at the same instant of time strongly press the arm-pit with his heel. Whilst this is in doing, one shall stand at the Patients back, who shall lift up his shoulder with a towel, or some such thing fitted for that purpose, and also with his heel press down the top of the shoulder blade: another also shall sit on the other side of the Patient, who, holding him, shall hinder him from stirring this way or that way at the necessary extension in setting it, as you may see it exprest by the precedent figure.

CHAP. XXIV. *Of the third manner of restoring a shoulder.*

The figure of the third manner of putting a shoulder into joint.

Some one who is of a competent height and strength shall put the sharp part of the top of his shoulder under the Patients arm-pit, and also at the same time shall somewhat violently draw his arme towards his owne breast, so that the Patients whole body may (as it were) hang thereby. In the mean time another, for the greater impression, shall lay his weight on the luxated shoulder, shaking it with his whole body. Thus the shoulder, drawn downwards by the one which stands under the arm-hole, and moved and shaken by the other, who hangs upon it, may be restored into its seat, by the help of the Surgeon concurring therewith, and with his hand governing these violent motions, as this figure shewes.



CHAP.

CHAP. XXV. Of the fourth manner of restoring a dislocated shoulder.

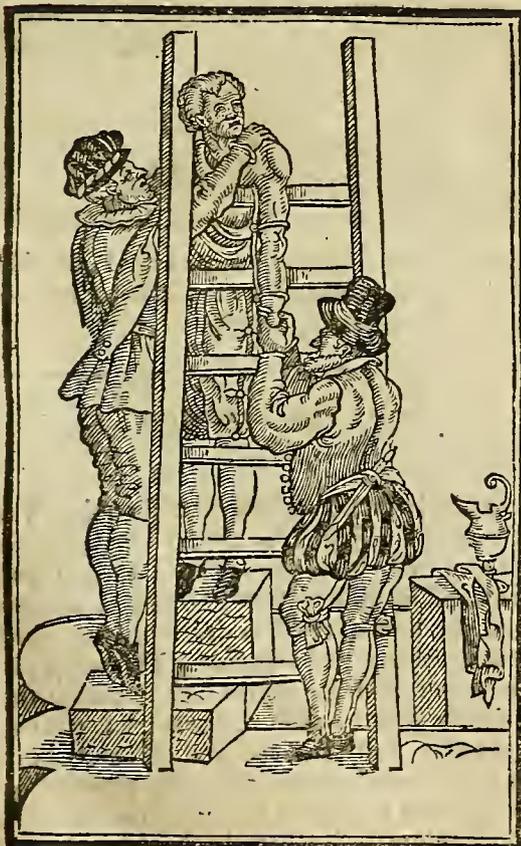
The figure of the fourth manner of restoring the shoulder.



OU must take a perch, or piece of wood (somewhat resembling that which the Water-bearers of Paris use to put on their shoulders) some two inches broad, and some six foot long; in the midst hereof let there be fastned a clew of yarn, or ball of sufficient bigness to fill up the cavity of the arm-hole. Let there be two pins put in; one on each side of the ball, each alike distant therefrom, with which, as with staves, the shoulder may be kept in, and upon the ball, that it slip not away from it. Let two strong men, taller than the Patient, either by nature or art; put this perch upon their shoulders; then let the Patient put his arm-pit upon that place where the ball stands up; the Surgeon must be ready to pull his hanging arm downwards. Thus the Patient shall (as it were) hang on the perch with his shoulder, and so the head of the bone shall be forced into its cavity, as this figure declares; wherein you may see the perch or yoke, with the two wooden pins and ball fastned in the midst, delineated by its self.

CHAP. XXVI. Of the fifth manner of putting the shoulder into joint, which is performed by a Ladder.

The delineation of the fifth manner of restoring a shoulder.



YOU may also restore a shoulder dislocated into the arm-pit, by the help of a Ladder, after this manner. Let some round body, as a ball, or clew of yarn, which (as we formerly said) may serve to fill the arm-pit, be fastned upon one of the upper steps of a Ladder; at the foot of the Ladder set a low stool, whereupon let the Patient mount; then bind both his legs, and also his sound arm behind his back, lest, when you are about your operation, he hinder and spoil all you do, by laying his hand, or setting his foot upon the ladder. Then let his arm be presently put over the step of the Ladder, and his arm-pit put upon the there fastned ball, the Patient in the meanwhile being wished to come with his whole body as near unto the steps of the Ladder as he is able; for otherwise, besides that there is no other hope of restoring the luxation, there would be no small danger of breaking the shoulder bone. Also let him take heed, that he put not his head between the steps. Then his arm, bound above the Elbow with filleting, or some other ligature fit for that purpose, shall be drawn down by the hand of some that assist you, and at the same time let the stool be plucked from under his feet, so that he may hang upon the ladder. Thus by this means the head of the shoulder will be restored by its self, the endeavour of the Surgeon assisting, and pressing down the shoulder blade, and moving it to and again. The bone being

being set, the stool, which a little before was plucked from under the Patients feet, shall be put there again, that he may, with the more ease and less pain, pull back his arm from the step of the Ladder. For if he should lift it high up to draw it over, there would be danger, lest being newly set, and not well staid, the head of the bone might fall out again. I have thought good to have all these things here expressed, that you may learn this operation, as if you see it done before you. I have not thought fit in this place to omit the industry of *Nicholas Picart*, the Duke of *Guise* his Surgeon; who being called to a certain Country-man to set his shoulder being out of joint, and finding none in the place besides the Patient and his wife, who might assist him in this work, he put the Patient, bound after the forementioned manner, to a Ladder; then immediately he tyed a staffe at the lower end of the Ligature, which was fastned about the Patients arm above his elbow, then put it so tyed under one of the steps of the Ladder, as low as he could, [and got altride thereupon, and sate thereon with his whole weight, and at the same instant made his wife to pluck the stool from under his feet: which being done, the bone presently came into its place, as you may see by the following figure.

Another figure expressing the fourth manner of restoring a dislocated shoulder.

Another figure to the same purpose.



If you have never a Ladder, you may use a peece of Wood, laid across upon two Posts. Also you may use a door, as the other figure shewes, wherein you must observe a flat peece of wood or *spatula* with strings thereat, whose use shall be shewn in the following Chapter.

CHAP. XXVII. The sixth manner of restoring a shoulder, luxated into the arm-pit.

Sect. I. lib. I. de art. sent. 19.



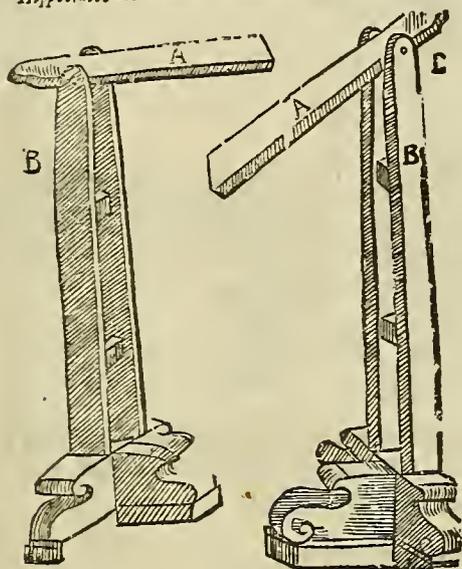
Hippocrates writes, that this is the best way of all to restore a dislocated shoulder. You must take a wooden *spatula* of some four or five fingers bredth, and some two fingers thickness or less, but some yard or thereupon long; the one end thereof must be narrow and thin, with a round head standing up and lightly hollowed, that put under the arm-pit, it may receive part of the head of the shoulder bone, the which for that purpose must not bend towards the ribs, but to the top of the shoulder. This upper part of the *spatula* must be wrapped about with a linnen or woollen rag, or some such soft thing, that it may be the softer, and hurt the less; and then it must be so thrust under the arm-pit, that it may thoroughly penetrate into the inner part between the ribs, and the head of the shoulder bone. There must, besides in this *spatula*, be two holes in three severall places, each alike distant from other, through which let soft strings be put, whereby it may be tyed to the arm, stretched all the length thereof even to the fingers, in one place a little below the head of the shoulder bone, in another

The description of the *Glossocomium*, termed *Ambi*.

another a little above the elbow, and the third at the wrist, that so they may hold it firm. Therefore let the distances of the holes be fitted to this purpose; but principally you must have a care of this, that the upper part of the *spatula*, reaching beyond the head of the arm, enter even to the innermost cavity of the arm-pit; then a crosse pin or piece of wood must be made fast through two posts or a frame, and well fastened thereto, and thereupon the Arm with the *spatula* must be so put over, that the pin may be under the arm-pit, the body weighing one way, and the arm another: which being done, the arm must be drawn down one way, and the body another about the pin. Now this crosse pin must be put on such a height that the Patient may stand on tip-toes. Now this is the very best way of restoring a shoulder. In stead of two posts or a frame, you may make shift with a ladder, doore, beds posts, and such like things as shall be there present. I have heard *Henry Arvet*, a very good Surgeon of *Orleans* say, that he never attempted this manner of putting into joint a shoulder dislocated into the arm-pit without good successe, unlesse by chance (which also is noted by *Hippocrates*) that the flesh is grown into the cavity, and the head

See l. 1. de art. sent. 2 1.

Hippocrates his Glossocomium termed Ambi.



bone will either not be restored, or else not remain in its place, but fall back notwithstanding into the new hollowed cavity, which serves it in stead of its naturall socket or cavity. But I must here admonish young Surgeons, that if the bone be not restored at the first endeavour and onset, that they doe not despair and presently desist from their intended operation, but they must wind about, and gently move the joint: for so at the length it will be more easily moved, and enter into the naturall cavity. When it is in, it must be bound up with compresses and rowlers after the forementioned manner.

To the former figures I have thought good to adde this, which expresseth the manner of restoring a shoulder luxated into the arm-pit with a *spatula* after the manner of *Hippocrates*. This *spatula* fastned with an iron pin to the standing frame may be turned, lifted up, and pressed down at your pleasure. A. shewes the wooden *spatula*. B. the frame or standing posts.

Hipp. sent. 64. 4. de artic.

The figure of an *Ambi* fitted to a dislocated shoulder.



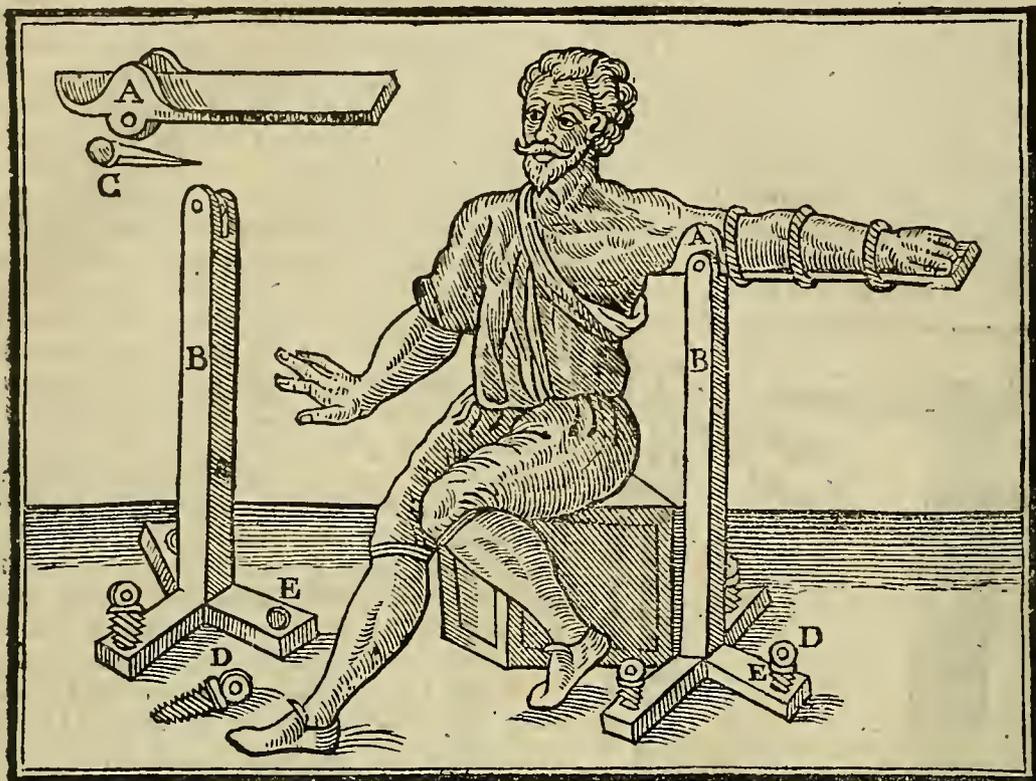
For the more certain use of this instrument the Patient must sit upon a seat which must be somewhat lower than the standing frame, that so the *spatula* which is thrust into the arm-pit may be the more forcibly deprest, so to force in the head of the shoulder bone; the Patients feet must also be tyed, that he may not raise himself up whilst the Surgeon endeavours to restore it. Now he shall then endeavour to restore it when he shall have bound the stretched forth arm of the dislocated shoulder unto the *spatula*; and thrust the one end thereof under the slipped forth head of the shoulder bone, as we have formerly shewed; for then by pressing down the other end of the *spatula* which goes to the hand, the bone is forced into its cavity. You must diligently observe the wooden *spatula*, which therefore I have caused to be expressed by it self, which *Hippocrates* calleth *Ambi*, whose head is a little hollowed where it is noted with this letter B. The whole *spatula* is marked with this letter A. with three strings hanging thereat, provided for the binding of the arm, that it may be kept steady, as you may perceive by the annexed figure.

How to make use of the *Ambi*.

There

There are other additions to this *Amibi*, whose figure I now exhibited to your view, by the invention of *Nicholas Picart* the Duke of *Lorrain's* Surgeon, the use and knowledg whereof, bestowed upon me by the inventor himself, I would not envie the studious reader.

Another figure of an Amibi with the additaments.



AA. Shew the two eares, as it were, stops made to hold and keep in the top of the shoulder, lest it should slip out when it is put into the frame or supporter.

BB. The frame or supporter whereon the *Amibi* rests.

CC. The pin or axeltree which fastens the *Amibi* to the supporter.

DD. Screw-pins to fasten the foot of the supporter that it stir not in the operation.

EE. The holes in the foot of the supporter, whereby you may fasten the screw-pins to the floor.

CHAP. XXVIII. *How to restore a shoulder dislocated forwards.*

Tis seldome that the shoulder is luxated towards the foreside; yet there is nothing so stable and firm in our bodies which may not be violated by a violent assault; so that those bones do also fall out of joint, whose articulations are strengthened for the firmer connexion with fleshly, nervous, gristly and bony stayes, or bars. This you may perceive by this kind of dislocated shoulder, strengthened as it were with a strong wall on every hand; to wit, the *Acromium* and the end of the collar-bone, seeming to hinder it, as also the great and strong muscles, *Epomis*, and *Biceps*. *Hippocrates*, shut up within the strait bounds of the lesser *Asia*, never saw this kind of dislocation, which was observed five times by *Galen*. I profess I have seen it but once, and that was in a certain Nun, which weary of the Nunnery, cast her self down out of a window, and bore the fall and weight of her body upon her elbow, so that her shoulder was dislocated forwards. This kind of dislocation is known by the depravation of the conformation or figure of the member, by the head of the shoulder wrested out towards the breast, as also the Patient cannot bend his elbow. It is restored by the same means as other luxations of other parts, to wit, by strait holding, extending, and forcing in. Therefore the Patient must be placed upon the ground with his face upwards, and then you must extend the shoulder otherwise than you do when it is luxated into the arm-pit. For when it falleth into the arm-hole, it is first drawn forwards, then forced upwards, untill it be brought just against the cavity whereinto it must enter. But in this kind of luxation, because the top of the shoulder is in the fore parts of the dearticulation shut up with muscles, opened both to the outer, as also to the inner part, you must worke to the contrary; to wit, to the hinde part. But first of all you must place a servant at the back of the Patient, who may draw back a strong & broad Bandage cast about the arm-pit (such as is the *Carchebus*, which consists of two contrary and continued strings) lest that when the arm shall be extended, the shoulder follow: also you must put a clew of yarn to fill up the arm-pit. Then must you extend the arm, casting another ligature a little above the elbow, and in the interim have a care that the head thereof fall not into the arm-pit, which may be done both by putting the forementioned clew under the arm, and drawing the head another way; then must you permit, by slacking your extension, the joint freed from the encompassing muscles, to be drawn and forced into its cavity by the muscles forcible recoiling, as with an unanimous consent, into themselves and their originals, for thus it will easily be restored, and such extension only is sufficient thereto.

CHAP.

Com. ad sent. 2
& 23, sect. 1. de
articulis.

Signs.

Cure.

Sent. 23, sect. 1.
de art.

CHAP. XXIX. *Of the shoulder luxated outwardly.*

He dislocation also of the shoulder to the outward parts seldom happens; but yet, if it may at any time happen, the extension of the arm will be very difficult, but yet more difficult towards the outward part than towards the inward; there is a depressed cavity perceived towards the chest; but externally a bunching forth, to wit, in that part from whence the head of the shoulder bone is fled. For the restoring hereof, the Patient must be laid flat on his belly, and the elbow must be forcibly drawn contrary to that whereto it is fled, to wit, inwardly to the breast; and also the standing forth head of the arm-bone must be forced into its cavity, for thus it shall be easily restored. But into what part soever the shoulder bone is dislocated, the arm must be extended and drawn directly downwards. After the restitution fitting medicins shall be put about the joint. Let there be somewhat put into the arm-pit which may fill it up, and let compresses or boulders be applyed to that part to which the luxated bone fell; then all these things shall be strengthened and held fast with a strong and broad two headed ligature put under the arm-pit, and so brought across upon the joint of the shoulder, and thence carryed unto the opposite arm-pit by so many windings as shall be judged requisite. Then the arm must be put and carried in a scarf to right angles, which figure must be observed not only in every luxation of the shoulder, but in each fracture of the arm also, for that it is less painful, and consequently, such as the arm may stand the longest therein without moving.

Signs.

The cure.

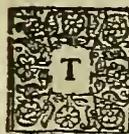
VVhat to be done to hold in the shoulder after it is restored.

CHAP. XXX. *Of the shoulder dislocated upwards.*

He head of the shoulder also may sometimes be luxated into the upper part. Which when it happens, it shewes it self by bunching forth at the end of the collar bone, the hollownes of the arm-pit is found larger than usuall, the elbow flies further from the ribs than when it fell downwards, now the arm is wholly unable to perform the usuall actions. It is fit for the restitution of such a luxation, that the Surgeon stoop down, and put his shoulder under the Patients arm, and then stand up as high as he can upon his feet, and therewithall press down the head of the shoulder bone into the cavity, or else make some other to do it. Otherwise it is fit to lay the Patient upon his back on the ground, and whilst some one extends the affected arm by drawing it downwards, the Surgeon with his own hand may force down the head of the bone into its cavity. The operation performed, the same things shall be done as in other luxations, compresses being applyed to that part whereto the bone flew, and it being also bound up with ligatures. Now you may understand in these four forementioned kinds of dislocations, that the bone which was luxated is restored, by the sound which shall be heard as you force it in, by the restitution of the accustomed actions, which are perceived by the bending, extending, and lifting it up, by the mitigation of the pain, and lastly, by the collation and comparing of the affected arm with the sound, and by its similitude and equality therewith.

Signs.

Cure.

CHAP. XXXI. *Of the dislocation of the elbow.*

He elbow may also be four manner of wayes dislocated, to wit, inwardly, outwardly, upwards, and downwards. By the part which is inwards, I mean that which looks towards the center of the body, when as the arm is placed in a naturall site, to wit, in a middle figure between prone and supine; I make the outward part, that which is contrary thereto. By the upper part I mean that which is towards the heaven, and by the lower that which is next to the earth: and by how much the joint of the elbow consists of more heads and cavities then that of the shoulder, by so much when it is luxated it is the more difficultly set, and it is also more subject to inflammation, and to grow hard thereupon, as Hippocrates saith. Now the joint of the elbow is more difficultly dislocated than that of the shoulder, and more hardly set, for that the bones of the cubit and arm do receive and enter each other by that manner of articulation which is termed *Ginglymus*, as we have formerly more at large treated in our Anatomy, and a little before in our Treatise of fractures. The elbow is therefore dislocated, for that the processes thereof are not turned about the shoulder bone in a full orb, and by an absolute turning. Wherefore if at any time the cubit be bended more straitly and closely than that the inner process can retain its place and station in the bottom of its *sinus*, the hind process falleth out and is dislocated backwards. But when as the fore process is extended more violently, and forced against the bottom of its cavity, it flies and departs out of its place as beaten or forced thence, and this kind of luxation is far more difficultly restored than the former; add hereunto that the utter extremity of the cubit, which is called *Olecranon*, is the higher, but the other inner is the lower; whence it is that every one can better and more easily bend than extend their cubits. Therefore such a dislocation is caused by a more violent force, than that which is made to the inner side. *The sign of this luxation is, the arm remains extended, neither can it be bended, for the inner processe stayes in the externall cavity which is hollowed in the bottom of the shoulder bone, which formerly was possessed by the inner part of the *Olecranon*; which thing makes the restitution difficult, for that this processe is kept, as it were, imprisoned there. But when it falleth out dislocated to the fore part, the arm is crooked, neither is it extended, and it is also shorter than the other. But if the elbow be fallen out of its place according to the other manner of dislocations, to wit, upwards or downwards; the naturall figure thereof is perverted, for the

The Author seems not to agree with Hipp. *Sens. ult. sect. 3. fract. and Celsus* in the setting down the kinds of a dislocated Elbow.

* The Author doth not agree with Hippocr. and Celsus, in setting down the notes of these dislocations: for those notes which are here attributed to an outward and inward luxation, these Celsus hath given to an elbow dislocated towards the fore and our part; and those which are here attributed to the elbow dislocated upwards and downwards;

those Celsus hath attributed to a dislocation to the out and insides,

arm

Inflammation
hinders reposi-
tion.

arm is stretched forth, but little notwithstanding bended towards that part from whence the bone went, that is, figured after a middle manner between bending and extending thereof. What kind soever of dislocation shall befall it, the action of the elbow will either not be at all, or certainly not well until that it be restored to its former place; there is a swelling in the part whereinto it is flown, and a cavity there from whence it is fled, which also happens in the dislocations of all other parts. Furthermore, one dislocation of the elbow is compleat and perfect, another imperfect. The latter as it easily happens, and through a small occasion, so it is easily restored; but on the contrary a perfect, as it hardly happens, and not unlesse with great violence, so it is not so easily restored again, especially if that you do not prevent inflammation, for being inflamed it makes the restitution either difficult, or wholly impossible, principally that which falleth outwards.

CHAP. XXXII. How to restore the elbow, dislocated outwardly.

Signe.

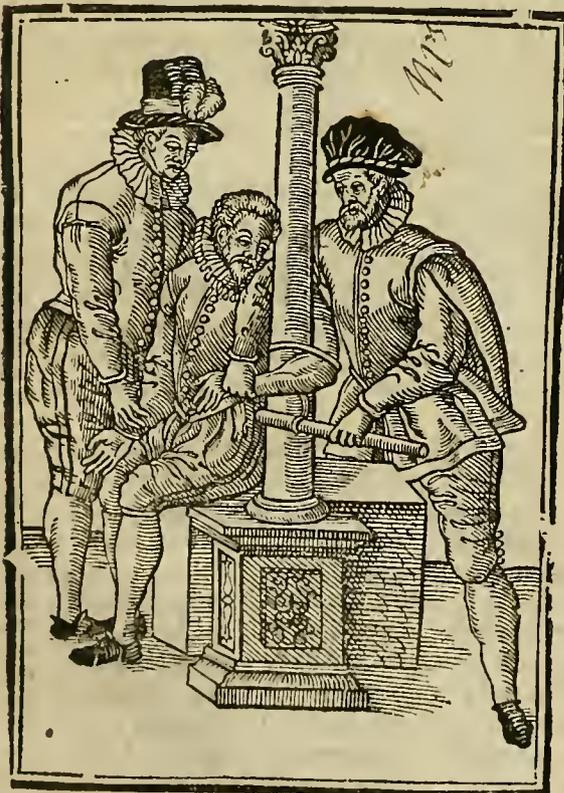


Cure.

Ou may know that the elbow is dislocated outwardly, if at any time you shall observe the arm to be distended, and not able to be bended. Wherefore you must forthwith undertake the restitution thereof, for fear of defluxion and inflammation which the bitteresse of pain usually causeth, upon what part soever the luxation happen. There is one manner of restoring it, which is, you must cause one to hold hard and stedy the Patients arm a little under the joint of the shoulder, and in the mean while let the Surgeon draw the arm, taking hold thereof with his hand, and also force the shoulder bone outwards, and the eminency of the cubit inwards, but let him by little and little draw and extend the arm, wresting it gently this way and that way, that he may bring back the bone which fell out into its cavity. I have thus expressly delivered this, that the young Surgeon may understand, that the arm must not be bended for the restoring of this kind of dislocation; for restitution cannot so be hoped for, because by this kind of luxation the inner proceffe of the cubit possesseth the place of the exterior proceffe in the cavity of the shoulder bone. Wherefore whilst the arm is bended or crooked, the cubit is only lifted up, and not drawn into its seat. But if we cannot attain to the restitution thereof with our hands alone, you must cause the dislocated arm lightly bended to embrace a poste, then must the end of the cubit called *Olecranium* be tyed or bound about with a strong ligature or line, and then wrested into its cavity by putting a battoon or staff into the ligature, as is demonstrated by this ensuing figure.

A Caution.

A figure which shows the way how to restore the elbow, by putting it about a post, with a battoon. *A figure which shows how to restore the elbow by only casting a line about it.*



There is also another more exquisite way of restoring it, which is expressed by the latter figure wherein a line of some inch bredth is cast about the *Olecranium* of the arm, embracing a post or pillar, and it is drawn so long, until the dislocated bone be brought into its seat. Now we know that the bone is returned into its place, and restored, when the pain ceaseth, and the figure and whole naturall conformation is restored to the arm, and the bending and extending thereof is easie, and not painfull.

CHAP. XXXIII.

Of the Dislocation of the Elbow to the inside, and of a
compleat and uncompleat
Luxation.



If the Elbow be dislocated to the inner part, the arme must bee strongly and powerfully extended, then bended quickly and with sudden violence, so that his hand may smite upon his shoulder. Some put some round thing into the bought of the Elbow, and upon that do suddenly force the Elbow to the shoulder, as wee have formerly said. If the Cubit bone be onely lightly moved out of its place into the upper or lower place, it is easily restored by drawing and forcing it into its cavity, after this following manner. Let two extend the arme, taking hold thereof at the shoulder and wrist, and each draw towards himselfe; and also the Surgeon (who shall there be present) shall force the bone which is dislocated from that part whereunto it is bended, unto the contrary: after he shall thus have restored it, hee shall lay the arme in a strait angle, and so binde it up, and apply fit medicins formerly mentioned, and so let him carry it in a scarfe put about his neck, as we said in the dislocation of the shoulder. Hippocrates bids, that the Patient, after it is set, shall often endeavour to bend his hand upwards and downwards, and also extend and bend his arme, yea, and also to attempt to lift up some heavy thing with his hand; for so it will come to passe, that the ligaments of this joint may become more soft, ready, and able to performe their accustomed functions, and also the bones of the cubit and shoulder shall be freed from the affect termed *Ancylosis*, whereto they are incident by the luxations of this part. Now *Ancylosis* is a certaine preternaturall agglutination, coagmentation, and as it were union of sundry and severall bones in the same joint, which afterwards hinders the bending and extension thereof. Now, a *Callus* is generated in the elbow sooner than in any other articulation, whether it remaineth out, or be put into joint, by reason that by rest and cessation from the accustomed actions, a viscid humor which is placed naturally in the joints, as also another which is preternaturall, drawne thither by paine, floweth downe, and is hardened, and gleweth the bones together, as I have observed in many, by reason of the idlenesse and too long rest of this part. Wherefore, that we may withstand this affect, the whole ligation must be loosed sooner and oftner than otherwise, that is to say, every third day, and then the Patients arme must be gently moved every way. Within the space of twenty, or twenty five dayes, these restored bones recover their strength, sooner or later, according to the happening accidents. It is necessary also that the Surgeon know that the *Radius*, or Wand; sometimes falleth out when the Cubit or Ell is wholly dislocated; wherefore hee must bee mindfull in setting the Cubit, that hee also restore the Wand to its place; in the upper part it hath a round processe lightly hollowed, wherein it receiveth the shoulder bone: it hath also an eminency which admitteth the two headed muscle.

The cure.

Sent. 63. sect. 3.
de fract.Why the elbow
is most subject
to *Ancylosis*.

CHAP. XXXIV.

Of the Dislocation of the Styliformis, or bodkin-like
processe of the cubit or ell.



THE processe of the Ell called *Styloides*, being articulated to the wrist by *Diarthrofis*, by which it is received in a small cavity, is dislocated, and falleth out sometimes inwards, somewhiles outwards. The cause usually is the falling of the body from high upon the hands. It is restored, if that you force it into its seat, diligently binde it, and apply thereto very astringent and drying medicins. But yet, though you shall diligently performe all things which may bee done in dislocations, yet you shall never so bring it to passe that this bone shall bee perfectly restored, and absolutely put into the place where hence it went: which thing wee have read, observed by Hippocrates; when (saith hee) the greater bone, to wit, the Ell, is removed from the other, that is, the wand, it is not easily restored to its owne nature againe;

Differences
and causes;

Cure;

Sent. 1. sect. 2.
& Sent. ult. sect.
3. de fract.

that, seeing that neither any other common connexion of two bones, which they call *Symphysis* or union, when it is drawne asunder and destroyed, may be reduced into its former nature, by reason these ligaments wherewith they were formerly contained, and as it were continued, are too violently distended and relaxed, whence it happens, that I have in these cases often observed, that the diligence and care of the Surgeon hath nothing availed.

CHAP. XXXV.

Of the dislocation of the Wrist.

Here, as before chap. 31. the Author dissenteth from *Celsus* and *Hippocrat.* in expressing the names and signs of these dislocations.



We understand by the Wrist, a certaine bony body, consisting of a composure of eight bones knit to the whole Cubit by *Diarthrosis*. For the Wrist considered wholly in its selfe, is knit and articulated with the Ell and Wand: with that, against the little finger; with this, against the thumb: for thus as it were by two connexions, the joint is made more firme. Yet may it be dislocated inwardly, outwardly, and towards the sides. Wee say it is luxated inwardly when the hand stands upwards, but outwardly, when it is crookt in and cannot be extended. But if it chance to be dislocated sidewayes, it stands awry either towards the little finger, or else towards the thumbe, as the luxation befalls to this or that side. The cause hereof may seeme to depend upon the different dearticulation of the Ell and Wand with the Hand or Wrist. For the Wand, which is articulated on the lower part with the Wrist at the thumbe, by its upper part, whilst it receives the outward swelling or condyle of the Ell in its cavity, performes the circular motions of the hands. But the Cubit or Ell, which in like sort is connected on the lower part by *Diarthrosis* at the little finger with the Wrist, being articulated on the upper part with the shoulder bone bends and extends, or stretches forth the hand. There is one way to restore the formerly mentioned dislocations. The arme on one side and the hand on another must be extended upon a hard resisting and smooth place, so that it may lye flat; and you must have a care that the part whence the dislocated bone fell, be the lower in its site and place, and the part whither it is gone, the higher. Then to conclude, the prominencies of the bones must be pressed down by the hand of the Surgeon, untill by the force of compression and site the luxated bones be thrust and forced into their places and cavities.

CHAP. XXXVI.

Of the dislocated bones of the Wrist.

Signe.



THE Wrist consists of eight bones, which cannot, unlesse by extraordinary violence, be put or fall out of their places. Yet if they shall at any time fall out, they will shew it by the tumour of the part whereto they are gone, and by the depression of that wherelrom they are fled. They may bee restored, if the diseased hand be extended upon a table; and if the bones shall be dislocated inwards, the hand shall bee placed with the palme upwards, then the Surgeon shall, with the

Cure.

palme of his hand, presse downe the eminencies of the bones, and force each bone into its place. But if the luxation bee outwards, hee shall lay the palme next to the table, and presse it after the same manner. To conclude, if the luxation shall be toward either side, the luxated bones shall be thrust towards the contrary, and the restored bones shall be presently contained in their places with fit remedies, binding, rowling, and carrying the hand in a scarfe.

CHAP. XXVII.

Of the dislocated bones of the After-wrest.



Here are four bones in the Palm or After-wrest, the two middlemost whereof cannot bee dislocated side-waies, becauf they are hindred and kept from falling aside by the opposition of the parts, as it were resisting them. Neither can that which answereth to the little finger, nor that whereon the forefinger rest's, bee dislocated towards that side which is next the middle bones, whereof wee now spake, but onely on the other side, freed from the neighborhood of the bones: but all of them may bee dislocated inwardly and outwardly. They may bee restored as those of the Wrest.

Celsus lib. 8. cap. 18.

CHAP. XXVIII.

Of the dislocated Finger.



Also the bones of the fingers may bee four several waies dislocated, inwardly, outwardly, and at each side. To restore them, they must bee laid straight upon a table, and so put into joint again. For thus they may bee easily restored, by reason their sockets are not deep, and their joints are shorter, and ligaments less strong. In twely daies space they will recover their strength, as also those dislocations that happen to the Wrest and After-wrest.

Why the dislocated fingers may bee easily restored.

Of a dislocated Thigh, or Hip.

CHAP. XXIX.



The Thigh or Hip may bee dislocated, and fall forth towards all the four parts. But most frequently inwards, next to that outwards, but verie seldom either forwards or backwards. A subluxation cannot happen in this joint, as neither in the shoulder, especially from an external caus, contrarie to which it usually happen's in the elbow, hand, knee, and foot. The caus hereof is, for that the heads of the thigh and shoulder-bone are exactly round, and the sockets which receive them have certain borders and edges encompassing them: hereunto may bee added, that strong muscles encompass each dearticulation, so that it cannot com to pass that part of the heads of such bones may bee contained in the cavities, and other parts stand or fall forth, but that they will quickly bee restored to their places by the motion and wheeling about of the joint, and the strenght of the encompassing muscles. But a subluxation may seem to happen in these parts from an internal caus. For then the ligaments and ties being softened and relaxed, cannot draw and carrie back the head of the bone standing forth so far as the edges of the socket. If the Hip bee dislocated towards the inner part, that leg becomes longer and larger then the other, but the knee appears somewhat lower, and looks outwardly with the whole foot, neither can the patient stand upon his leg. To conclude, the head of the Thigh-bone bewray's it self lying in the groin, with a swelling manifest both to the eye and hand; now the leg is longer then that which is sound, for that the head of the thigh is out of it's socket or cavity, and situated lower, to wit, in the groin, therefore the leg is made by so much the larger. Now the knee stands forth, becauf necessarily the lower head of the thigh-bone stands contrarie to the socket. For this is common to all dislocated bones, that when as the dislocation happen's to the one side, the other end of the bone flie's out to the contrarie. Whence it is, that if the upper-head of the thigh-bone shall fall inwards, then the other head, which is at the knee, must necessarily look outwards. The like happen's in other dislocations. The leg cannot bee bended towards the groin, for that the dislocated bone holds the extending muscles of the same part so stiffly stretched out, that they cannot yeeld, or applie themselves to the benders. For flexion or bending ought to precede extension, and extension, flexion.

Hip. sent. 68. sect. 3. de art.

Gal. com. ad sent. 47. sect. 4. de art.

A subluxation may besal the Thigh from an internal caus.

CHAP. XL.

Prognosticks belonging to a dislocated Hip.

Why the thigh-bone dislocated, is difficultly restored, or restored, easily fall's out again.



Here is this danger in the dislocations of the Hip, that either the bone cannot bee put into the place again; at least unless with very much trouble, or elf being put in, that it may presently fall out again. For if the tendons of the muscles, the ligaments, and other nervous parts of the member bee hard and strong, they, by reason of their contumacie and stiffness will hardly suffer the bone to return to its place. If that they bee soft, loof, effeminate and weak, they will not contain the restored bone in its place. Neither will it bee any better contained, if that short, but yet strong and round ligament, which fasten's the head of the Thigh-bone on the inside in the Socket or Cavities of the huckle-bone, bee broken or relaxed. Now it may bee broken by som violent shock or accident, it may bee relaxed by the congestion and long stay of som excrementitious, tough and viscuous humor lying about the joint, through which means it waxeth soft. But if it bee broken, how often soever the bone bee restored, it will presently fall out again. If it bee relaxed, there is onely this hope to contain the restored bone, that is, To consume and draw away the heaped up humiditie by application of Medicines and Cauteries of both kinds, for which purpose those are more effectual which do actually burn, for that they drie and strengthen more powerfully. Leanness of the bodie, and the want of *Aponeuroses*, that is, of broad tendons and external ligaments, whereof many encompass the knee, encrease's the difficultie of containing it in the place. But the parts adjoining to the dislocated and not-set-bone fall away by little and little, and consume with an *Atrophia* or want of nourishment; both becaus the part it self is forced to desist from the accustomed actions and functions, as also for that the veins, arteries and nervs being more straitned and put out of their places, hinder the spirits and nourishment from flowing so freely as they ought, to the part: whence it com's to pass, that the part it self is made more weak, the native heat being debilitated through idleness, it can neither attract the alimentarie juice, neither can it digest and assimilate that little thereof which flow's and falleth thereto. Verily the Thigh-bone, as long as it is forth of the cavities, grow's no more after the manner as the other bones of the bodie do, and therefore in som space of time you may perceiv it to bee shorter then the sound bone. Notwithstanding the bones of the leg and foot are not hindered of their growth, for that they are not out of their proper places. Now for that the whole leg appear's more slender, you must think that happen's onely by the extenuation and leanness of the proper muscles thereof. The same thing happen's to the whole hand, in the largest acception, when as the shoulder is out of joint, unless that the calamitie and loss hereof is the less. For the shoulder being forth of joint you may do something with your hand, whereby it will com to pass that no smal portion of nourishment may flow down into these parts. But the Thigh-bone being dislocated, especially inwards in a childe unborn, or an infant, much less alimentarie nourishment flow's to that part, becaus it can much less use the foot and leg by reason of the dislocation of the Hip, then it can do the hand by a luxation of the shoulder. But now wee must thus understand that which is said by *Hippocrates*; That dislocated bones and not restored do decreas or are hindered from their just growth, to bee onely in those who have not yet attained to their full and naturally-appointed growth in every dimension. For in men of full growth, the bones which are not restored, becom more slender, but yet no shorter, as appear's by that which hee hath delivered of the shoulder.

The breaking and relaxation of the internal ligament.

Gal. com. ad sent. 42. sect. 4. de art.

Hippocrates explained sect. 1. lib. 3. de art.

CHAP. XLI.

Of the signs of the Hip dislocated outwardly or inwardly.

The Thigh-bone or Hip when it is dislocated outwardly, and not restored, after som time the pain is allwaged, and flesh grow's about it, the head of the bone wear's it self a new cavities in the adjoining Hip, whereinto it betake's it self, so that at the length the patients may go without a staff, neither so deformed a leanness will waste their leg. But if the luxation happen inwards, a greater leanness will befall them, by reason that the vessels naturally run more inwardly, as *Galen* observ's in the dislocation of the *Vertebrae* to the inside; therefore it com's to pass that they are more grievously oppressed: besides the thigh-bone cannot wag or once stir against the share-bone: wherefore if the bone thus dislocated bee not restored to its joint again, then they must cast their leg about as they walk, just as wee see oxen do. Wherefore the sound leg whil'st they go, take's much less space then the lame, becaus this, whil'st it stirreth or mooveth, must necessarily fetch a compass about, but that performeth its motion in a right line. Besides, whil'st the patients stand upon their lame leg to put forwards the sound, they are forced to stand crooked, whereupon they are forced to stay themselves with a staff that they fall not.

Ad sent. 51. sect. 3. de art.

Further-

Furthermore those who have this bone dislocated either backwards or outwards, so that it cannot be restored, have the part it self grow stiff and hard; which is the cause why the ham may be bended without great pain, and they may stand, and go upon the tops of their toes; besides also, when they desire to go faster, they are forced to stoop, and strengthen themselves by laying their hand on their lame thigh at every step, both for that their lame leg is the shorter, as also because the whole weight of the bodie should not lie wholly or perpendicularly upon the joint or head of the thigh-bone. Yet in continuance of time, when they are used to it, they may go without any staff in their hands. Yet in the interim, the sound leg becomes more deformed in the composition and figure, because, whilst it succors the opposite and lame leg by the firm standing on the ground, it bears the weight of the whole bodie, in performance whereof the ham must necessarily now and then bend. But on the contrary, when as the head of the thigh being dislocated inwards is not put into the joint, if the patient be arrived at his full growth, after that the head of the bone hath made it self a cavities in the neighboring bone wherein it may rest, hee may be able to walk without a staff, because the dislocated leg cannot easily be bended toward the groin or ham, and hee will sooner rest upon his heel than upon his toes. This kinde of dislocation if it be inveterate, can never be restored. And these things happen, when as the thigh-bone is dislocated inwards, or when the internal ligament which fastens the dearticulation shall be broken or relaxed. But the contrary shall plainly appear if the dislocation shall happen to be outwards; for then the lame leg becomes the shorter, because the head of the thigh flies into a place higher than its cavity, and the muscles of that part are contracted towards their original, and convulsively draw the bone upward together with them. The whole leg, together with the knee and foot looketh inwards, they cannot go upon their heels, but upon the setting on of the toes. The leg may be bended, which it cannot be in a dislocation of the thigh inwards, as Paulus shew's. Therefore wee must diligently observe that sentence of Hippocrates which is read with a negative, in these words: *Sed neque confectere quemadmodum sanum crus possunt*, that they ought to be read with an affirmative after this manner: *Sed confectere &c. quin & crus ipsum &c.* But now the lame leg will better sustain the weight of the bodie in an external, than in an internal dislocation; for then the head of the thigh is more perpendicularly subject to the whole weight of the bodie. Therefore when in the success of time it shall by wearing have made it self a cavity in the neighboring bone, which in time will be confirmed, so that there will remain no hope of restoring the dislocation, nevertheless the patient shall be able to go without a staff, for that then no sense of pain will trouble him; whence it follow's, that the whole leg also will become less lean, for that going is less painful, neither are the vessels so much pressed as in that dislocation which is made inwardly.

Signs of the thigh-bone dislocated outwards.

Paul. Ag. lib. 6. c. 8. Hip. sent. 91 sect. 3. lib. de artic.

CHAP. XLII.

Of the thigh-bone dislocated forwards.



It seldom happeneth that the thigh is dislocated forwards; yet when as it shall happen, it is by these signs. The head of the thigh lieth towards the share; whence the groins swell up, and the buttock on the contrary is wrinkled and extenuated by reason of the contraction of the muscles; the patient cannot extend his leg without pain, no verily, not so much as bend it towards the groin, for the fore-muscle which ariseth from the hanch-bone is so pressed by the head of the thigh, that it cannot be distended; neither can the ham be bended with out very much paine. But the same leg is equall at the heel with the other leg, yet the patient cannot stand upon the setting on of the toes; therefore when hee is forced to go, hee toucheth the ground with his heel only, yea verily the sole of his foot is less inclined to the fore side, neither doth it seldom happen, that the urine, by this accident, is suppressed; because the head of the thigh oppresse's the greater nerves from whence those arise which are carried to the bladder, which through the occasion of this compression is pained and inflamed by consent: now when inflammation shall seize upon the Sphincter-muscle, the urine can scarcely flow out, for that it is hindered by the swelling.

Stopping of urine by reason of an internal dislocation of the thigh-bone.

CHAP. XLIII.

Of the Thigh-bone dislocated backwards.



Eldom also is the thighbone dislocated backwards, because the hind-part of the cavity of the huckle-bone is deeper and more depressed than the fore; whence it is that the dislocation of the thigh to the inner part is more frequent than the rest. The patient can neither extend nor bend his leg by reason of the much compression and tension of the muscles which encompass the head of the thigh by this kind

Signs

of luxation. But the pain is encreased when hee would bend his ham, for that then the muscles are more strongly extended. The lame leg is shorter than the sound: when the Buttocks are pressed, the head of the thigh is perceived hid amongst the muscles of that part, but the opposite groin is lax, soft, and depre't with a manifest cavitie. The heel touche's not the ground, for that the head of the thigh is plucked back again by the muscles of the buttocks amongst which it lieth hid, but principally by that which is the larger, and which is said to make as it were the pillow or cushion of the buttocks; for this is much more pressed in this kinde of dislocation then the rest: whence it is, that the patient cannot bend his knee, becaus the extension of the nervous production or large tendon which covers's the knee is so great. But if the patient will stand upon the foot of his luxated leg without a staff, hee shall fall down backwards, for that the bodie is inclined to that part, the head of the thigh being not directly underneath for the propping or bearing up of the bodie; wherefore hee is forced to sustaine himself upon a crutch on his lame side. Having premised these things of the differences, signs, symptoms and prognosticks, it now remaineth, that wee briefly describe the different waies of restoreing them, according to the difference of the parts whither it is fallen. First, you must place the patient upon a bench or table, groveling, or with his face upwards, or upon one side, laying som soft quilt or coverlid under him, that hee may lie the easier. Now you must place him so, that the part unto which the bone is flown, may be higher, but from whence it is fled, the lower. For if the thigh-bone bee dislocated outwards or backwards, then must the patient bee laid groveling; if inwardly, upon his back; if forwards, then upon his side. Then must extension and impulsion bee made towards the cavitie, that so it may bee forced thereinto: but if the dislocation bee fresh, and in a soft bodie, as a woman, childe, and such like, whose joints are more lax, it shall not bee any waies needful to make great extension with strong ligatures for the restoreing it; the Surgeon's hand shall suffice, or a list or towel cast about it. In the interim the bone shall bee kep't fast with compresses applied about the joint: then the Surgeon shall extend the thigh, takeing hold thereof above the knee, in a straight line, and so set it directly against the cavitie, and then presently thrust it thereinto. For thus shall hee restore it, if so bee that in thrusting it hee list up the head thereof somewhat higher, lest the lips of the cavitie force it back, and hinder it from entring. Now becaus unless there bee just extension, there can bee no restitution hoped for, it is far better in that part, that is, to extend it somewhat more than is necessarie, yet so, that you do not endanger the breaking of any muscles, tendon or other nervous bodie. For that as *Hippocrates* write's, when as the muscles are strong and large, you may safely extend them, if so bee that you displace nothing by the force of the extension. If your hand will not suffice to make just extension, you must use the help of an Engine, such as is our Pulley, fastned to two posts, so much of the rope beeing let forth, and drawn up again as shall suffice for the business in hand; in the performance whereof, it is fit that the patients friends absent themselves from this sad spectacle, and that the Surgeon bee resolute, and not deterred from his business by the lamentation, neither of the patient nor his friends. But for that wee write these things chiefly for the benefit of young practitioners, it seemeth meet, that haveing delivered these things in general, of restoring the thigh-bone, that wee run over these generalities in each particular, begining with that dislocation which is made inwardly.

The general
cure.

Sect. 2. lib. de
fract.

CHAP. XLIV.

Of restoreing the Thigh-bone dislocated inwards.

It is fit to place the patient after the foresaid manner, upon a table or bench, in the mid't whereof shall stand fastned a wooden pin of a foot's length, and as thick as the handle of a spade useth to bee; but it must bee wrapped about with som soft cloth, lest the hardness hurt the buttocks, betwixt which it must stand, as wee read that *Hippocrates* did in the extension of a broken leg. The wooden pin hath this use, to hold the bodie that it may not follow him that draweth or extendeth it; and that the extension beeing made as much as is requisite, it may go between the *peritoneum* and the head of the dislocated thigh. For thus there is no great need of counter-extension towards the upper parts; and besides it helpeth to force back the bone into its cavitie, the help of the Surgeon concurring, who twining somwhiles to this, and otherwhiles to that side, doth direct the whole work. But when the extension hath need of counter-extension, then it is needful you have such ligatures at hand, as wee have mentioned in the restoreing of a dislocated shoulder, to bee drawn above the shoulder. One of these shall bee fastned above the joint of the hip, and extended by a strong man; another shall bee cast above the knee by another with the like force. But if you cannot have a wooden pin, another strong and like ligature shall bee put upon the joint directly at the hip, and held stiff by the hands of a strong man, yet so that it may not touch the head of the thigh by pressing it, for so it would

Sect. 2. lib. de
fract.

How to make
extension and
counter-exten-
sion in this
kinde of fra-
cture.

would hinder the restoring thereof. This manner of extension is common to four kinds of luxation of the thigh-bone. But the manner of forcing the bone into its cavities must be varied in each, according to the different condition of the parts whereunto the head inclineth; to wit it must be forced outwards if it be fallen inwards, and contrarie in the rest, as the kind of the dislocation shall be. Some too clownish and ignorant knot-knitters fasten the lower ligature below the ankle, and thus the joints of the foot and knee are more extended than that of hip or huckle-bone, for they are neerer to the ligature, and consequently to the active force: but they ought to do otherwise; therefore in a dislocated shoulder you shall not fasten the ligatures to the hand or wrist, but above the elbow. But if the hands shall not be sufficient for this work, then must you make use of engines. Wherefore then the patient being placed as is fit, and affected part firmly held, some round thing shall be put into the groin, and the patient's knee, together with his whole leg shall be drawn violently inwards, towards the other leg. And in the mean while the head of the thigh shall be strongly forced towards the cavity of the huckle-bone, and so at length restored, as the following figure shew's.

Ligatures made for extension must be fastened near the part to be extended.

A figure which manifesteth the way of restoring the Thigh-bone dislocated inwards.



When the head of the Thigh by just extension is freed from the muscles wherewith it was infolded, and the muscles also extended that they may give way and yeeld themselves more pliant, then must the rope be somewhat slacked, and then you must also desist from extending, otherwise the restitution cannot be performed, for that the stronger extension of the engine will resist the hand of the Surgeon, thrusting and forcing it into the cavity. This precept must be observed in the restoring of this and other dislocations. You shall know that the thigh is restored by the equalitie of the legs, by the free and painless extension and inflection of the lame leg. Lastly, by the application of agglutinative medicines (whereof we have formerly spoken) the restored bone shall be confirmed in its place; to which purpose ligation shall be made, the ligature being first cast upon the place whereinto the head of the thigh fell, and thence brought to the opposite or sound side by the belly and loins. In the mean while the cavity of the groin must be filled with somewhat a thick bolster which may keep the head of the bone in the cavity. Neither must you omit junks stretched down even to the ankles, as we have observed in the fracture of the thigh. Then must both the thighs be bound together, whereby the dislocated member may be unmoovable, and more and more strengthened. Neither must this dressing be loosed, untill four or five daies be passed, unless peradventure the sudden happening of some other more grievous symptom shall perswade otherwise. To conclude, the patient must be kept in his bed for the space of a month, that the relaxed muscles, nerves, and ligaments may have space to recover their former strength, otherwise, there is danger lest the bone may again fall out by the too forward and speedy walking upon it. For the site of the thigh it must be placed and kept in a middle figure, yet this middle figure consist's in the extension, not in the flexion, as it is demonstrated by Hippocrates, for that such a figure is accustomable to the leg.

A general precept.

See. 2. lib. de fract.

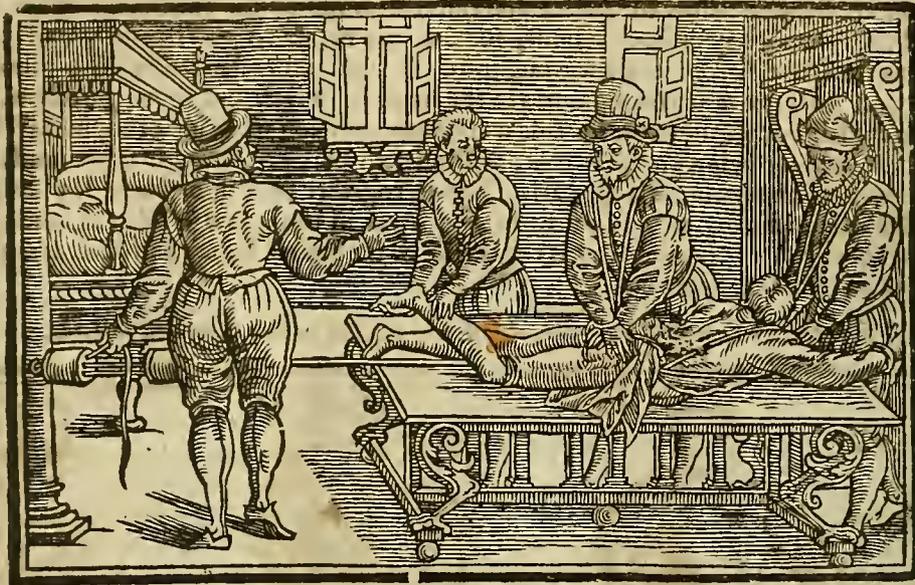
CHAP. XLV.

Of restoring the Thigh dislocated outwardly.

The patient must be placed groveling upon a table in this kinde of dislocation also, and ligatures as before, cast upon the hip and lower part of the thigh, then extension must

bee made downwards, and counter-extension upwards; then presently the head of the bone must bee forced by the hand of the Surgeon into its place. If the hand bee not sufficient for this purpose, our pulley must bee used, as the following figure sheweth.

A figure which expresseth the manner of restoreing the thigh luxated outwards.



When it is that onely extenon servs for the restoring the dislocated Thigh.

This kinde of dislocation is the easiest restored of all these which happen in the thigh or hip, so that I have divers times observed the head of the thigh to have been drawn back into its cavities by the onely regrest of the extended muscles into themselves towards their originals, somwhiles with a nois or pop, otherwhiles without, which being don, laying a compress upon the joint, you shall perform all other circumstances as before in an internal dislocation.

CHAP. XLVI.

Of restoreing the Thigh dislocated forwards.

When the Thigh is luxated forwards, the patient must bee laid upon his sound side, and tied as wee have formerly delivered. Then the Surgeon shall lay a bolster upon the prominent head of the bone, and have a care that his servant firmly hold it: then immediately just extension being made, hee shall with his hand force the bone into the cavity; but if his hand will not serv, hee shall attempt it with his knee. Then to conclude, hee shall use the rest of the things formerly mentioned to contain the restored bone.

CHAP. XLVII.

Of restoreing the Thigh dislocated backwards.

The patient shall bee placed groveling upon a table or bench, and the member extended, as in the rest, one ligature stretched from the groin, another from the knee; then the Surgeon shall endeavor to force back with his hand that which stand's up, and also to draw away the knee from the sound leg. The bone thus placed and restored, the cure require's nothing els than to bee bound up and kept long in bed, lest that the Thigh, if it should bee moved, the nervs' being yet more loof, might again fall out. For the thigh is in great danger of relaps, for that the cavity of the hucle-bone is onely deprest, as far as it goe's in, and the burden of the hanging or adjoining thigh is heavie.

CHAP. XLVIII.

Of the dislocation of the Whirl-bone of the knee.

The Whirl-bone of the knee may fall forth into the inner, outer, upper and lower part; but never to the hind-part, becaus the bones which it cover's do not suffer it. To restore it, the patient must stand with his foot firmly upon som even place, and then the Surgeon must force and reduce it with his hands from the part into which it is preternaturally

naturally flidden. When it shall bee restored, the cavities of the ham shall bee filled up with bolsters so that hee may not bend his leg, for if it bee bended, there is no small danger of the falling back of the whirl-bone. Then a case or box shall bee put about it, on the side especially whereto it fell, being made somewhat flat and round resembling the whirl-bone it self, and it shall bee bound on with ligatures, and medicines so fast that it may not stir a jot. After the part shall seem to have had sufficient rest, it is fit that the patient trie and accustom by little and little to bend his knee, until at length hee shall finde that hee may easily and safely moov that joint.

CHAP. XLIX.

Of the dislocated Knee.



He Knee also may bee dislocated three manner of waies, that is, into the inner, outer, and hind-part, but very seldom towards the fore-side, and that not without som grievous and forcible violence; for the whirl-bone lying upon it, hinder's it from slipping out, and hold's it in. The other waies are easie, because the cavities of the leg-bone is superficialie and very smooth, but the cavity of the lower end of the thigh-bone is made in the manner of a spout or gutter, and besides the head thereof is verie smooth and slipperie; but the whole joint is much more lax than the joint of the Elbow: so that as it may bee the more easily dislocated, so may it the better bee restored; and as it may bee the more easily, so may it bee the more safely dislocated, for that inflammation is less to bee feared here, as it is observed by Hippocrates. Falls from high, leaping, and too violent runing are the causes of this dislocation. The sign thereof is the disability of bending or lifting up the leg to the thigh, so that the patient cannot touch his buttock with his heel. The dislocation of the knee which is inwardly and outwardly, is restored with indifferent extension and forcing of the bones into their seats from those parts whereunto they have fallen. But to restore a dislocation made backwards, the patient shall bee placed upon a bench of an indifferent height, so that the Surgeon may bee behinde him who may bend with both his hands and bring to his buttocks the patients leg put between his legs. But if the restitution do not thus succeed, you must make a clew of yarn, and fasten it upon the mid'st of a staff, let one put this into the cavity of his ham, upon the place whereas the bone stand's out, and so force it forwards; then let another cast a ligature of som three fingers bredth upon his knee, & draw it upwards with his hands, then presently & at once they shal so bend & crook the lame leg that the heel thereof may touch his buttocks.

The differences.

Ad finem sect. 3. de fract.

How to restore a knee dislocated backwards.

CHAP. L.

Of a Knee dislocated forwards.

But if the Knee bee dislocated forwards (which seldom happen's) the patient shall bee placed upon a table and a convenient ligation made aboov, and another close beneath the knee. Then the Surgeon shall so long press down with both his hands the bone which is out of joint, until it shall return to its place again. To which purpose if the strength of the hand wil not serv to make just extension each way you may make use of our engine, as you may perceiv by this following figure.

A figure shewing the manner of restoreing a Knee dislocated forwards.



You shall know that the bone is restored by the free and painless extension of the leg; then

then will there bee place for medicines, bolsters and strengthening ligatures. In the mean space the patient shall forbear going so long as the part shall seem to require,

CHAP. LI.

Of the separation of the greater and lesser Focile.

The joining of
the leg and
shin-bones.



The *Fibula* or lesser Focile is fastned and adhere's to the *Tibia*, leg-bone, or greater Focile without any cavities, above at the knee and below at the ankle. But it may bee pluck't or drawn aside three manner of waies, that is, forwards, and to each side: this chance happen's when in going wee take no sure footing, so that wee slip with our feet this way and that way as in a slipperie place, and so wrest it inwards or outwards; for then the weight of our bodie lying open upon it, draw's the leg, as it were, in sunder, so that the one Focile is dislocated or separated from the other. The same may happen by a fall from an high place, or som grievous and bruising blow: besides also, their appendices are somtimes separated from them. For the restoring of all these into their proper places, it is fit they bee drawn and forced by the hand of the Surgeon into their seats: then shall they bee straitly bound up, putting compresses to that part unto which the *Fibula* flew; beginning also your ligation at the very luxation, for the fore-mentioned reasons. The patient shall rest fortie daies, to wit, as long as shall bee sufficient for the strengthening of the ligaments.

The cure.

CHAP. LII.

Of the Leg-bone or greater Focile dislocated and divided from the Pastern-bone.

Differences
and signs.



So the Leg-bone is somtimes dislocated and divided from the Pastern-bone, as wel inwardly, as outwardly; which may bee known by the swelling out of the bone to this or that part; if it bee onely a subluxation or strain, it may bee easily restored, by gently forcing it into the place again. After the bone shall bee restored, it shall bee kept so by compresses and fit deligation, by crosses and contrarie bindeing to the side opposite to that towards which the bone fell, that so also in som measure it may bee more and more forced into its place. In the mean time you must have a care that you do not too straitly pres the great and large tendon which is at the heel. This kinde of dislocation is restored in fortie daies, unless som accident happen which may hinder it.

CHAP. LIII.

Of the dislocation of the Heel.

Causes and
differences.



Whoever leaping from an high place have fallen very heave upon their heel, have their heel dislocated and divided from the pastern-bone. This dislocation happen's more frequently inwardly than outwardly, becaus the prominencie of the lesser Focile embrace's the pastern-bone; whence it is, that there it is more straitly and firmly knit. It is restored by extension and forcing it in, which will bee no very difficult matter, unless som great defluxion or inflammation hinder it. For the bindeing up, it must beee straitest in the part affected, that so the blood may bee pressed from thence iuto the neighboring parts; yet using such a moderation, that it may not bee painful, nor pres more straitly than is fit, the nervs and gros tendon which run's to the heel. This dislocation is not confirmed before the fortieth day, though nothing happen which may hinder it. Yet usually it happeneth that many symptoms ensue by the vehemencie of the contusion. Wherefore it will not be amifs to handle them in a particular chapter.

The cure.

CHAP. LIV.

Of the Symptoms which follow upon the contusion of the Heel.

Why blood-
letting necessa-
rie in the fra-
cture of a heel.



It happeneth by the vehemencie of this contusion, that the veins and arteries do as it were vomit up blood both through the secret passages of their coats, as also by their ends or orifices, whence an *Ecchymosis* or blackness over all the heel, pain, swelling, and other the like ensue, which implore remedies and the Surgeon's help, to wit, convenient diet, and drawing of blood by opening a vein, (of which though *Hippocrates* make's no mention, yet it is here requisite by reason of the Feaver and inflammation) and if need require, purgation; principally such as may divert the matter by causing vomit, and lastly,

Hip. sect. 3. de
fracturis.

the

the application of local medicines, chiefly such as may soften and rarifie the skin under the heel, otherwise usually hard and thick (such as are fomentations of warm water and oil) so that divers times wee are forced to scarifie it with a lancet, shunning the quick flesh. For so at length the blood poured forth into the part, and there heaped up, is more easily attenuated, and at length resolved. But these things must all be performed before the inflammation seiz upon the part, otherwise there will be danger of a convulsion. For the blood, when it fall's out of the vessels, readily putrefies, by reason the densitie of this part hinder's it from ventilation & dispersing to the adjacent parts. Hereto may be added, that the large and great tendon which cover's the heel, is endued with exquisite sens, & also the part it self is on everie side spred over with many nervs. Besides also there is further danger of inflammation by lying upon the back and heel, as wee before admonished you in the Fracture of a leg. Therefore I would have the Surgeon to bee heer most attentive and diligent to perform these things which we have mentioned, lest by inflammation a Gangrene and Mortification (for heer the sanious flesh presently fall's upon the bone) happen together with a continued and sharp Fever, with trembling, hicketting and raveing. For the corruption of this part first by contagion assail's the next, and thence a Fever assail's the heart by the arteries pressed and growing hot by the putrid heat, and by the nervs and that great and notable tendon made by the concourf of the three muscles of the calf of the leg, the muscles, brain and stomach are evilly affected and drawn into consent, and so caus convulsions, raveing and a deadlie hicketting.

Why the heel is subject to inflammation?

Gal. ad sent. 23. sect. 2. lib. de fract.

CHAP. LV.

Of the dislocated Pastern, or Ankle-bone.



The *Astragalus* or Pastern bone may bee dislocated and fall out of its place to every side. Wherefore when it fall's out towards the inner part, the sole of the foot is turned outwards, when it flie's out to the contrarie, the sign is also contrarie; if it bee dislocated to the fore side, on the hinde side the broad tendon coming under the heel is hardened and distended; but if bee luxated backwards, the whole heel is as it were hid in the foot: neither doth this kinde of dislocation happen without much violence. It is restored by extending it with the hands, and forcing it into the contrary part to that from whence it fell. Beeing restored it is kept so by application of medicines and fit ligation. The patient must keep his bed long in this case, lest that bone which sustain's and bear's up the whole bodie, may again sink under the burden, and break out, the sinews being not well knit and strengthened.

Sign.

Cure.

CHAP. LVI.

Of the dislocation of the In-step and back of the foot.



The bones also of the In-step and back of the foot may bee luxated, and that either upwards or downwards, or to one side, though seldom sidewise, for the reason formerly rendred, speaking of the dislocation of the like bones of the hand. If that they stand upwards, then must the patient tread hard upon som plain or even place, and then the Surgeon by pressing them with his hand shall force them into their places; on the contrary, if they stand out of the sole of the foot, then must you press them thence upwards, and restore each bone to its place. They may bee restored after the same manner if they bee flown out to either side. But you must note, that although the Ligatures consist but of one head in other dislocations, yet here *Hippocrates* would have such used as have two heads, for that the dislocation happen's more from below upwards, or from above downwards, then sidewise.

Cure.

Sent. 14. sect. 2. lib. de fract.

CHAP. LVII.

Of the dislocation of the Toes:



Now the Toes may bee four waies dislocated, even as the fingers of the hand; and they may bee restored just after the same manner, that is, extend them directly forth, and then force each joint into its place, and lastly, binde them up as is fitting. The restitution of all them is easie, for that they cannot far transgress their bounds. To conclude, the bones of the feet are dislocated and restored by the same means as those of the hands, but that when as any thing is dislocated in the foot, the patient must keep his bed; but when any thing is amiss in the hand, hee must carrie it in a scarf. The patient must rest twenty daies, that is, until hee can firmly stand upon his feet.

The differences.

Cure.

CHAP. LVIII.

Of the symptoms, and other accidents which may befall a broken or dislocated member.

Remedies for
a contusion.



Many things may befall broken or dislocated members by the means of the fracture or dislocation; such as are bruises, great pain, inflammation, a fever, impostume, gangrene, mortification, ulcer, *fistula*, and *atrophia*, all which require a skilfull and diligent Surgeon for their cure. A contusion happen's by the fall of some heavey thing upon the part, or by a fall from high, whence follow's the effusion of blood poured out under the skin: which if it bee poured forth in great plentie, must bee speedily evacuated by scarification, and the part eased of that burthen, lest it should thence gangrenate. And by how much the blood shall appear more thick, and the skin more dens, by so much the scarification shall be made more deep. You may also for the same purpose applie Leeches.

What may hap-
pen by pain.

Concerning pain wee formerly said, that it usually happen's by reason that the bones are mooved out of their places, whence it happeneth that they becom troublesome to the muscles and nerves, by pricking and pressing them. Hence ensue inflammations, as also impostumation and a fever, oft times a gangrene, and in conclusion a mortification corrupting and rotting the bones; otherwhiles a sinuous ulcer or *fistula*. But an *atrophia* and leanness ariseth by the sloth and idleness of the member decaying all the strength thereof, and by too straight ligation intercepting the passages of the blood, otherwise readie to fall and flow thither.

Remedies for
the leanness
or *Atrophia* of
any member.

Now the leanness which is occasioned by too straight ligation receive's cure by the slackning of the ligatures wherewith the member was bound. That which proceed's from idleness, is helped by moderate exercise, by extending, bending, lifting up, and depressing the member, if so bee that hee can away with exercise. Otherwise hee shall use frictions and fomentations with warm water. The frictions must be moderate in hardness and gentleness, in

What measure
to bee used in
fomenting.

length and shortness. The same moderation shall be observed in the warmth of the water, and in the time of fomenting. For too long fomenting resolv's the blood that is drawn. But that which is too little or short a space draw's little or nothing at all: after the fomentation, hot and emplastick medicines made of pitch, turpentine, *euphorbium*, pelitorie of Spain, sulphur, and the like, shall be applied. They shall be renewed everie day more often or seldom, as the thing it self shall seem to require.

A *dropax*.

These medicines are termed *Dropaces*, whose form is thus: *R. picis nigrae, ammoniaci, bdellii, gummi elemi in aqua vite dissolutorum an. ℥ii. olei laurini ℥i. pulveris piperis, zinziberis, granorum paradisi, baccarum lauri & juniperi, an. ℥ii. fiat emplastrum secundum artem, extendatur super alutam.*

Bindeing of
the sound part
opposite to the
emaciated.

It is also good to binde about the opposite sound part with a ligation, yet without pain; as if the right arm shall decay for want of nourishment, the left shall be bound, beginning your ligation at the hand, and continuing it to the arm-pit. If this mischance shall seize upon the right leg, then the left shall be swathed up from the sole of the foot to the groin. For thus a great portion of the blood is forced back into the *vena cava*, or hollow vein, and from this being distended and over full, into the part affected and gaping with the vessels almost emptie; beside also it is convenient to keep the sound part in rest, that so it may draw the less nourishment, and by that means there will be more store to refresh the weak part.

How to binde
up the emaci-
ated part.

Some wish also to binde up the decaying member with moderate ligation; for thus, say they, the blood is drawn thither: for when as wee intend to let blood by opening a vein with a lancet, wee binde the arm. Also it is good to dip it into water somewhat more then warm, and hold it there until it grow red, and swell; for thus blood is drawn into the veins, as they finde, which use to draw blood of the *saphena* and *salvatella*. Now, if when as these things and the like bee don, the lame part grow's hot, red and swollen, then know that health is to be hoped for; but if the contrarie happen, the case is desperate: wherefore you need attempt nothing further.

Signs that an
Atrophia is
cureable.

Furthermore, there is sometimes hardness left in the joints, after fractures and dislocations are restored. It is fit to soften this, by resolving the contained humor by fomentations, liniments, cataplasms, emplasters made of the roots of marsh-mallows, brionie, lillies, line seed, fenugreek seed, and the like, and also of gums dissolved in strong vineger, as *ammoniacum*, *bdellium*, *opopanax*, *labdanum*, *sagapenum*, *styrax liquida*, and *adeps anserinus*, *gallinaceus*, *bumannus*, *oleum liliorum*, and the like. Also you must wish the patient to moov the part ever now and then, everie day, yet so, that it bee not painful to him, that so the pent up humor may grow hot, be attenuated, and at length discussed, and lastly, the part it self restored as far as art can perform it; for oft-times it cannot be helped any thing at all. For if the member be weak and lame, by reason that the fracture happened near the joint, for the residue of his life the motion thereof useth to be painful and difficult, and oft-times none at all, especially if the *callus*, which grow's there, be somewhat thick and great; and lastly, if the joint it self shall be contused and broken by the stroke, as it oft-times happen's in wounds made by gun-shot.



Of divers other
PRETER-NATURAL AFFECTS,
 whose cure is commonly performed by Surgerie.

THE SEVENTEENTH BOOK.

CHAP. I.

Of an Alopecia, or the falling away of the hairs of the head.



AN Alopecia is the falling away of the hair of the head, and sometimes also of the eye-brows, chin and other parts; the French commonly call it the *Pelade*: Physicians term it the *Alopecia*, for old Foxes (subject, by reason of their age to have the scab) are troubled oft-times with this disease. This affect is caused either through defect of nourishment fit to nourish the hairs, as in old age through want of the radical humiditie, or by the corruption of the alimentarie matter of the same, as after long Fevers, in the *Lues venerea*, Leprosie, the corruption of the whole

Gal. 6. 2. lib. 1. de comp. med. sec. cum. locos.

The caus.

bodie and all the humors, whence follow's a corruption of the vapors and fuliginous excrements; or else by the vitious constitution of pores in the skin in raritie, and constriction or densitie, as by the too much use of hot ointments made for coloring the hair, or such as are used to take off hair, therefore called *Depilatoria*, or by the burning of the skin, or loss thereof, having a scar in stead thereof, by reason of whose densitie the hair cannot spring out; as by too much laxitie the fuliginous matter of the hair staie's not, but presently vaniseth away. The *Alopecia* which com's by old age, a consumption, burn-baldness, leprosie, a scald head, is incurable: that which admit's of cure, the caus being taken away, is helped. Wherefore if it proceed from the corruption of humors, let a Physician bee called, who, as hee shall think it fit, shall appoint diet, purging and phlebotomie. Then the Surgeon shall shave off the hair which is remaining, and shall first use resolving fomentations, applie Leeches and Horns to digest the vitious humor which is under the skin, then shall hee wash the head to take away the filth with a Lee wherein the roots of Orris and Aloës have been boiled. Lastly, hee shall use both attractive fomentations and medicines for to draw forth the humor which is become laudable in the whole bodie by the benefit of diet fitly appointed. But if the *Alopecia* shall happen through defect of nourishment, the part shall bee rubbed so long with a course linnen cloth, or a fig-leaf, or onions until it wax red; besides also the skin shall bee pricked in many places with a needle, and then ointments applied made of *Labdanum*, pigeons dung, staves-acre, oyl of bayes, turpentine and wax, to draw the blood and matter of the hairs. If the hair bee lost by the *Lues venerea*, the patient shall bee anointed with quick-silver to sufficient salivation. To conclude, as the causes of this disease shall bee, so must the remedies bee fitted which are used.

What Alopecia incurable, What cureable, and how.

scap's dyera

CHAP. II.

Of the Tinea, or Scald-head.



THe *Tinea* (let mee so term it in Latine, whil'st a fitter word may bee found) or a Scald-head, is a disease possessing the masculous skin of the head or the hairie scalp, and eating thereinto like a moth. There are three differences thereof; the first is called by *Galen* *scalie* or bran-like, for that whil'st it is scratched it cast's manie bran-like scales: som Practitioners term it a *drie scall*, because of the great adustion of the humor causing it. Another is called *Ficosa*, a fig-like scall; because when it is despoiled of the crust or scab which is yellow, there appear's grains of quick and red flesh, like to the inner seeds or grains of figs, and casting out a bloodie matter. *Galen* name's the third *Acher*, and it is also vulgarly termed the *corrosive* or *ulcerous scall*, for that the many ulcers

Lib. 1. de comp. med. sect. locos.

scars

Cap. 8. lib. citati.

cers wherewith it abound's are open with manie small holes flowing with liquid *sanies* like the washing of flesh, stinking, corrupt and carrion-like, somwhiles livid, somwhiles yellowish. These holes, if they bee somewhat larger, make another difference which is called *Cerion* or *Favosa*, (that is, like a honie-comb) becauf as *Galen* think's, the matter which floweth from these, resembleth honie in color and consistence. They all proceed of an humor which is more or less vitious, for a less corrupt humor causeth a scalie, a more corrupt; the fig-like, but the most corrupt produceth the ulcerous. If it shall happen to an infant by reason of the fault and contagion of the nurs, or elf presently after it is born, it scarce admit's of cure; neither must wee attempt that, before the childe com to that age that hee may bee able to endure the cure and medicines. But you may in the mean while applie the leavs of Colworts or Beets besmeared with fresh butter, or other gentle medicine haveing a facultie to mollifie and open the passage for the shut-up matter. Those who are of sufficient age to away with medicine, may bleed, purge, bathe, according to art by the advice of a Physician. For local medicines in a scalie scall, softening and discussing fomentations shall bee appointed, made of the roots of marsh-Mallows, Lillies, Docks, Sorrel boiled in lee with a little vinegar added thereto. The head shall bee twice in a day fomented with such a decoction, and on the sixth day the hair beeing shaven off, it shall bee scarified, and then leeches & horns put to it so scarified. Then it shal bee forthwith anointed with oyl of staves-acre mixed with black sope, both to draw and repress the malignitie of the humor impa'ct in the part. You may also use the following medicine even to the perfect cure of the diseas, as that which is much commended in this kinde of diseas by *Vigo*, *Gordonius* and *Guido*; it is thus made. *Rx* *clleb. albi & nigri, atrament. auripigmenti, lithargyri auri, calcis vivæ, vitriol. alum. galla. fulig. ciner. fecis vini usi, an* ʒ β. *argenti vivi extincti, ʒiii. eruginis æris ʒii. fiat pulvis qui incorporetur cum succo boraginis, scabiosæ, fumaris, oxylapathi, aceti, an. quart. i. olei antiqui lib. i. bulliant usque ad consumpt. succorum, in sine decoctionis cineres ponantur, addendo picis liquidæ ʒ β. ceræ quantum sufficit, fiat unguentum*: These autors testifie that this will heal any kinde of scall. Certainly none can dis-allow of it who well considereth the ingredients and composition thereof.

The cure.

For a scalie scall.

An ointment for a scolloed head.

The cure of a crustie scall. A poultis of Cresses.

Lib. 7. simpl.

A plaister to pluck away the hair at once.

The cure of an ulcerous scall.

A contumacious scall must bee cured as wee cure the *Lues venerea*.

A crustie also or fig-like scall shall bee so long fomented with the prescribed fomentation, until the crusts or scabs fall off, yet there is nothing so good and effectual as Cresses beaten or fried with hog's suet. For it will make it fall off in the space of four and twentie hours, besides, if it bee continued it will heal them throughly, as I have known by experience, and reason also stand's therewith; for according to *Galen*, Cresses are hot and drie. When the crusts shall bee fallen away, the parts affected shall bee anointed with the formerly prescribed ointment. I have cured manie with a little oyl of vitriol, and somtimes also with *Ægyptiacum* made somewhat more strong then ordinarie. But if the root of the hairs appear rotten, they shall bee plucked out one by one; yet if such putrefaction shall possess the whole hairie scalp, and trouble all the roots of the hair, that you may pluck them out the more readily, and with less pain, you may besmear a cotten-cloth on the rougher side with this following medicine. *Rx* *picis nigre ʒvi. picis res. ʒiii. pul. viridis æris, & vitriol. rom. an. ʒi. vel ʒ β sulphur. viv. ʒ β. coquantur omnia simul in aceti acerrimi quantitate sufficiente, fiat medicamentum ad usum*: let it bee applied to the head, and remain on for two daies; then let it bee quickly and forcibly plucked away against the hair, that so the hairs sticking to the plaister may by that means bee plucked away therewith: you shall use this medicine so long as need shall seem to require.

For the third kinde of Scall which is termed a Corrosive or Ulcerous, the first indication is to cleans the ulcers with this following ointment. *Rx* *unguenti enulati cum mercurio duplicato, ægyptiaci, an. ʒiii. vitriol. albi in pulverem redacti ʒi. incorporentur simul, fiat unguentum ad usum*; also you may use the formerly described ointment. But if any pain or other accident fall out, you must withstand it by the assistance and direction of som good Physician; verily these following medicines against all kindes of Scalls have been found out by reason, and approved by use. *Rx* *Campbur. ʒ β. alum. roch. vitriol. vir. æris, sulph. vivi, fulig. forn. an. ʒvi. olei amygd. dulcium & axungie porci, an. ʒii. incorporentur simul in mortario, fiat unguentum*. Som take the dung which lieth rotting in a sheep-fold; they use that which is liquid, and rub it upon the ulcerated places, and lay a double cloth dipped in that liquor upon it. But if the patient cannot bee cured with all these medicines; and that you finde his bodie in som parts thereof troubled in like sort with crustie ulcers, I would wish that his head might bee anointed with an ointment made of *Axungia*, *argentum vivum*, and a little *Sulphur*, and then fit som *emplastrum Vigonis cum mercurio* into the fashion of a cap; also som plaisters of the same may bee applied to the shoulders, thighs and legs, and so let him bee kept in a verie warm chamber, and all things don as if hee had the *Lues venerea*. This kinde of cure was first (that I know of) attempted by *Simon Blanch* the King's Surgeon, upon a certain young man, when as hee in vain had diligently tried all other usual medicines. A scalled head oft-times appeareth verie loathsome to the eie, casting forth virulent and stinking *sanies*; at the first it is hardly cured, but being old, far more difficultly. For divers times it breaketh out afresh, when you think it kill'd, by reason of the impression of the malign putrefaction remaining in the part, which wholly corrupt's the temper thereof. Moreover, oft-times being healed, it hath left an

Alopecia behinde it, a great shame to the Surgeons. Which is the reason, that most of them judg it best to leav the cure thereof to Empericks and women.

CHAP. III.

Of the Vertigo, or giddiness.

THe *Vertigo* is a sudden darkning of the eyes and sight by a vaporous and hot spirit which ascendeth to the head by the sleepe arteries, and fill's the brain, disturbing the humors and spirits which are contained there, and tossing them unequally, as if one ran round, or had drunk too much wine. This hot spirit oft-times riseth from the heart upwards by the internal sleepe arteries to the *Rete mirabile*, or wonderful net; otherwhiles it is generated in the brain it self, being more hot then is fitting; also it oft-times ariseth from the stomach, spleen, liver and other entrals being too hot. The sign of this disease is the sudden darkning of the sight, and the closing up as it were of the eyes, the bodie being lightly turned about, or by looking upon wheels runing round, or whirle-pits in waters, 'or by looking down anie deep or steep places. If the original of the disease proceed from the brain, the patients are troubled with the head-ach, heaviness of the head, and nois in the ears, and oft-times they lose their smell. *Paulus Aegineta* for the cure bid's us to open the arteries of the temples. But if the matter of the disease arise from som other place, as from som of the lower entrals, such opening of an arterie little availeth. Wherefore then som skilful Physitian must bee consulted with, who may give directions for phlebotomie, if the original of the disease proceed from the heat of the entrals; by purging, if occasioned by the foulness of the stomach. But if such a *Vertigo* bee a critical symptom of som acnte disease affecting the *Crisis* by vomit or bleeding, then the whole business of freeing the patient thereof must bee committed to nature.

What the *Vertigo* is, and the causes thereof.

The Signs.

Lib. 6.

A critical *Vertigo*.

CHAP. IV.

Of the Hemicrania, or Megrin.

THe *Megrin* is properly a disease affecting the one side of the head, right, or left. It sometimes passeth no higher then the temporal muscles, otherwhiles it reacheth to the top of the crown. The cause of such pain proceedeth either from the veins and external arteries, or from the *meninges*, or from the verie substance of the brain or from the *pericranium*, or the hairie scalp covering the *pericranium*, or lastly, from putrid vapors arising to the head from the ventricle, womb, or other inferior member. Yet an external cause may bring this affect, to wit, the too hot or cold constitution of the encompassing air, drunkenness, gluttonie, the use of hot and vaporous meats, som noisom vapor or smoak, as of Antimonie, quick-silver, or the like, drawn up by the nose, which is the reason that gold-smiths, and such as guild metals are commonly troubled with this disease. But whencesoever the cause of the evil proceedeth, it is either a simple distemper, or with matter: with matter, I say, which again is either simple or compound. Now, this affect is either alone, or accompanied with other affects, as inflammation and tension. The heaviness of head argues plentie of humor; pricking, beating and tension shew's that there is a plentie of vapors mixed with the humors, and shut up in the nervous, arterious, or membranous bodie of the head. If the pain proceed from the inflamed *meninges*, a fever followeth thereon, especially, if the humor causing pain do putrefie. If the pain bee superficialie, it is seated in the *pericranium*. If profound, deep and piercing to the bottom of the eyes, it is an argument that the *meninges* are affected, and a fever ensue's, if there bee inflammation, and the matter putrefie; and then oft-times the tormenting pain is so great and grievous, that the patient is afraid to have his head touched, if it bee but with your finger, neither can hee away with anie nois, or small murmuring, nor light, nor smells however sweet, no nor the fume of Wine. The pain is sometimes continual, otherwhiles by fits. If the cause of the pain proceed from hot, thin and vaporous blood, which will yeeld to no medicines, a verie necessarie, profitable and speedie remedie may bee had by opening an arterie in the temples, whether the disease proceed from the internal or external vessels. For, hence alwaies ensueth an evacuation of the conjunct matter, blood and spirits. I have experimented this in manie, but especially in the Prince de la *Roche-sur-you*. His Physicians, when hee was troubled with this grievous *Megrin*, were *Chaplain*, the King's, and *Castellane* the Queen's chief Physicians, and *Lewes Duret*, who notwithstanding could help him nothing by blood-letting, cupping, bathes, frictions, diet or anie other kinde of remedie either taken inwardly or applied outwardly. I being called, said, that there was onely hope one way to recover his health, which was to open the arterie of the temple in the same side that the pain was; for I thought it probable, that the cause of his pain was not contained in the veins, but in the arteries, in

The differences.

In what kinde of *Megrin* the opening of an Arterie is good?

A Historic.

No danger in opening an arterie.

which case by the testimony of the antients, there was nothing better then the opening or bleeding of an arterie, whereof I have made trial upon my self to my great good. When as the Physicians had approved of this my advice, I presently betake my self to the work, and choof out the arterie in the pained temple, which was both the more swoln and beat more vehemently then the rest. I open this, as wee use to do in the bleeding of a vein, with one incision, and take more then two sawcers of blood flying out with great violence, and leaping; the pain presently ceased, neither did it ever molest him again. Yet this opening of an Arterie is suspected by manie, for that it is troublesome to stay the gushing forth blood, and cicatrize the place, by reason of the densitie, hardness and continual pulsation of the arterie; and lastly, for that when it is cicatrized there may be danger of an *Aneurisma*. Wherefore they think it better first to divide the skin, then to separate the arterie from all the adjacent particles, and then to binde it in two places; and lastly divide it, as wee have formerly told you must be done in *Varices*. But this is the opinion of men who fear all things where there is no cause; for I have learn't by frequent experience that the apertion of an arterie, which is performed with a Lancet, as wee do in opening a vein, is not at all dangerous; and the consolidation or healing is somewhat slower then in a vein, but yet will be done at length, but that no flux of blood will happen, if so be that the ligation be fitly performed, and remain so for four daies with fitting pledgets.

CHAP. V.

Of certain affects of the Eyes, and first of staying up the upper eye-lid when it is too lax.

Differences.



F the diseases which befall the eyes, some possess the whole substance thereof, as the *Ophthalmia*, a *Phlegmon* thereof: others are proper and peculiar to some parts thereof, as that which is termed *Gutta serena* to the optick nerv. Whence *Galen* made a threefold difference of the diseases of the eyes, as that some happened to the eye by hurting or offending the chief organ thereof; that is the crystalline humor; others by hindering the animal facultie, the chief cause of sight, from entering into them; and lastly, other some by offending the parts subservient to the prime organ or instrument. Now of all these diseases, the eye hath some of them common with the other parts of the body, such as are an ulcer, wound, *Phlegmon*, contusion and the like: other some are peculiar and proper to the eye, such as are the *Eglops*, *Cataracta*, *Glaucoma*, and divers others of this kinde. Some have their upper eye-lid fall down, by reason that the upper skin thereof is relaxed more then is sufficient to cover the eye, the gristle in the mean while not relaxing it self together therewith. Hence proceed's a double trouble; the first, for that the eye cannot be easily opened, the other, because the hairs of the relaxed eye-lid run in towards the eye, and become troublesome thereto by pricking it. The cause of such relaxation is either a particular palsy of that part, which is frequent in old people, or the defluxion or falling down of a watery humor, and that not acrid or biting; which appears by this, that those who are thus affected have a rank of hairs growing under the natural rank, by reason of abundance of heaped-up humor, as it is most probable. For thus a wet and marshy ground hath the greatest plenty of grass. Now if this same humor were acrid, it would cause an itching, and consequently become troublesome to the patient, and it would also fret in sunder and destroy the roots of the other hairs, so farre it is from yielding matter for the preternatural generation of new. It is fit before you do any thing for the cure, that you mark with ink the portion there of which is superfluous, and therefore to be cut away, least if you should cut off more then is requisite, the eye-lid should remain turned up, and so cause another kinde of affect, which the antients have called *Entropion*. Then the eye being covered, take and lift up with your fingers the middle part of the skin of the eye-lid, not taking hold of the gristle beneath it, and then cut it athwart, taking away just so much as shall be necessarie to make it as it were natural; lastly, join the lips of the wound together with a simple suture of three or four stitches, that so it may be cicatrized; for the cicatrization restrains the eye-lid from falling down so loosely, at least some part thereof being taken away. There ought to be some measure and heed taken in the amputation, otherwise you must necessarily run into the one or other inconvenience, as if too much be cut away, then the eye will not be covered; if too little: then you have done nothing, and the patient is troubled to no purpose. If there shall be manie hairs grown preternaturally, you shall pluck them away with an instrument made for the same purpose; then their roots shall be burned with a gentle cauterie, the eye being left untouched, for a scar presently arising will hinder them from growing again.

Paul. Agin. lib. 8. cap. 6.

The cause.

The cure.

CHAP. VI.

Of Lagophthalmus, or the Hare-*eye*.

Ucl. as have their *eye*-lids too short, sleep with their *eyes* open, for that they cannot bee covered by the too short skin of the *eye*-lids. the Greeks term this affect, *Λαγόφθαλμος*. The caus is either internal or external: internal, as by a Carbuncle, Impostume, or Ulcer; external, as by a wound made by a sword, burn, fall, and the like. if this mishap proceed by reason of a cicatrization, it is cureable; if, so that the short *eye*-lid bee of an indifferent thickness. But if it have been from the first conformation, or by som other means, whereby much of the substance is lost, as that which happens by burning, and a carbuncle, then it is uncureable. For the cure, you shall use relaxing and amollient fomentations, then the skin shall bee divided above the whole scar, in figure of an half moon, with the horns looking downwards. Then the edges of the incision shall bee opened, and lint put into the middle thereof, that so it may hinder the lips from joyning together again. Then shall you apply a plaster upon the lint, and so binde up the part with a fitting ligature, that may somewhat press upon the whole *eye*, lest it should lift it self somewhat upwards again, and so return into its ancient, but not natural figure. But in cutting the skin, you must take care that your incision harm not the gristle; for if it bee cut, the *eye*-lid fall's down, neither can it bee afterwards lifted up. But now for the lower *eye*-lid: it is subject to fundrie diseases, amongst which there is one which answereth in proportion to that, which wee late mentioned, which is, when as it is lifted upwards little or nothing, but hang's and gape's, and cannot bee joyned with the upper, and therefore it doth not cover the *eye*, which affect is familiar to old people; it is called *Ectropion*, and it may bee helped by means formerly delivered.

Paulus Aegin.
lib. 6. cap. 10.

The cure;

Ectropion, or
the turning
up, or out of
the *eye*-lid.

CHAP. VII.

Of the Chalazion, or Hail-stone, and the Hordeolum, or Barly-corn of the *eye*-lids.

The *Chalazion* is a round and cleer pimple, which grow's upon the upper *eye*-lid; it is also moovable, and may bee stirred this way and that way with your fingers. The Latines call it *Grando*, for that it resemble's a hail-stone. Another pimple not much like this grow's somtimes upon the verges of the *eye*-lids above the place of the hairs. It is termed *Hordeolum*, by reason of the similitude it hath with a barlie-corn. The matter of these is contained in its proper cyst or skin, and therefore is hardly brought to suppuration. At the first begining it may bee resolved and disscussed. But when as it is once grown and concrete into a plaster or stone-like hardness, it is scarce cureable. Wherefore it is best to perform the cure by opening them, that so the contained matter may flow, or bee pressed forth. If the pimple or swelling bee small, then thrust it through with a needle and thread, and leav the thread therein of such length, that you may fasten the ends thereof with a little of the emplaster called *Gratia Dei*, like glue to the fore-head, if it be on the upper *eye*-lid; or to the cheeks, if on the lower. You must draw through a fresh one every second daie, as is usually done in chirurgicall setons. For thus at length the swelling will bee destroyed, and made plain.

Paul. cap. 6.
lib. 6.

The cure.

CHAP. VIII.

Of the Hydatis, or fatness of the *eye*-lids.

The *Hydatis* is a certain fattie substance, like a piece of fat seated and lying under the skin of the upper *eye*-lid. It is a disease incident to children, who are of a more humid nature: wherefore it is a soft and loof tumor, making the whole *eye*-lid, which it possesseth, oedematous; so that as if depressed with a weight, it cannot bee lifted up. It hath its name, for that it hath as it were a bladder distended with a whayish humor, which kinde of fault is observed by Galen in the liver. Those, who are thus affected, have their *eyes* look red, and flow with tears, neither can they behold the sun, or endure the light. The cure is performed by cutting off the superfluous substance, not hurting the neighbouring parts; and then presently put som salt into the place whence it was taken out (unless the vehemencie of pain hinder) that so the place may bee dried and strengthened, and the rest of the matter (if anie such bee) may bee consumed, and hindred from growing again. Lastly, you shall cover the whole *eye* with the white of an egg dissolved in rose-water, or som other repercussive.

What Hyda-
tis is.Com. ad aphor.
55. sect. 7.

The cure.

CHAP. IX.

Of the eie-lids fastened or glewed together.

Paulus cap. 1 5.
lib. 6.

The caus.

The cure.

Omtimes it cometh to pass that the upper eie-lid is glewed or fastened to the under, so that the eie cannot bee opened, or so that the one of them may stick or bee fastened to the white coat of the eie, or to the hornie. This fault is sometimes drawn from the first originall, that is, by the default of the forming facultie in the womb (for thus manie infants are born with their fingers fastened together, with their fundaments, privities and ears unperforated) the eie in all other respects beeing well composed. The caus of this affect sometimes proceed's from a wound, otherwhiles from a burn, scald or impostumation, as the breaking of the small pox. It is cured by putting in a fit instrument, and so opening them; but with such moderation, that you touch not the hornie coat, for otherwise it would fall out. Therefore you must put the end or point of your probe under the eie-lids, and so lifting them up (that you hurt not the substance of the eie) divide them with a crooked incision-knife.

The incision made, let the white of an egg beaten with som rose-water, bee put into the eie, let the eie-lids bee kept open; yea let the patient himself bee careful that hee often turn it upwards, and lift it up with his fingers, not onely that the medicine may bee applied to the ulcer, but also that they may not grow together again. In the night time let a little pledget dipped in water, and that either simple, or wherein som vitriol hath been dissolved, bee laid thereon. For thus you shall hinder the eie-lids from joyning together again. Then on the third daie the parts or edges of the eie-lids shall bee touched with waters drying without biting or acrimonie, that so they may be cicatrized. But if the eie-lid adhere to the hornie coat at the *pupilla* or apple of the eie, the patient will either bee quite blinde, or verie ill of sight. For the scar which ensue's will hinder the shapes of things from entering to the chrystalline humor, and the visive spirits from passing forth to the objects. For prognosticks, you may learn out of *Celsus*, that this cure is subject to a relaps, so that it may bee shunned neither by diligence nor indutrie, but that the eie-lid will alwaies adhere and cleav to the eie.

A disease subject to relaps.

CHAP. X.

Of the itching of the eie-lids.



A detergent Collyrium.

Anie have their eie-lids itch vehemently by reason of salt phlegm, which oftentimes excoriating and exulcerating the parts themselvs, yeeld's a *sanies*, which joyn's together the eie-lids in the night time as if they were glewed together, and make's them watric and bleared. This affect doth so torment the patients, that it oft-times make's them require the Physicians help. Wherefore general medicines beeing premised, the ulcers shall bee washed with the following Collyrium. *Rx. aquæ mellis in balneo mariæ distillatæ ℥iii. saccharii candi ℥i. aloës lotæ & in pollinem redactæ ʒβ fiat collyrium.* Which if it do no good, you may use this which follow's. *Rx. Ung. Ægyptiac. ℥i. dissolve in aquæ plantaginis quantitate sufficienti.* Let the ulcerated eie-lids bee touched with a soft linnen rag dipped therein, but with care that none thereof fall upon the eie. But when the patient goe's to bed, let him caus them to bee anointed with the following ointment, verie effectual in this case. *Rx. axungie porci & butyri recentis, an. ʒβ. tuth. præpar. ʒβ. antimon. in aqua euphrasie præparati, ℥ii. camphoræ gra.iiii. misce, & in mortario plumbeo ducantur per tres horas, constatum inde unguentum, servetur in pyxide plumbeâ.* Som commend and use certain waters fit to cleans, drie, binde, strengthen, and absolutely free the eie-lids from itching and redness; of which this is one.

Rx. aquæ euphrag. fœniculi, chelidon. an. ʒβ. sarcocal. nutritæ ℥ii. vitriol. rom. ℥i. misceantur simul, & bulliant unicâ ebullitione; postea coletur liquor, & servetur ad usum dictum. Or els, *Rx. aquæ ros. & vini alb. boni an. ʒiiii. tuth. præpar. aloës an. ℥i. flor. eni ℥ii. camphor. gra. ii.* Let them bee boiled according to art, and kept in a glâs to wash the eie-lids. Or els, *Rx. vini albi lb̄β. salis com. ℥i.* let them bee put into a clean Barbar's bason and covered, and kept there five or six daies, and bee stirred once a daie, and let the eie-lids bee touched with this liquor. Som wish that the patients urine bee kept all night in a Barbar's bason, and so the patients eie-lids bee washed therewith. Verely in this affect wee must not fear the use of acrid medicines, for I once saw a woman of fiftie years of age, who washed her eie-lids when they itched with the sharpest vinegar shee could get, and affirmed that shee found better success of this then of anie other medicine. *Vigo* prescribe's a water, whose efficacie above other medicines in this affect, hee saith, hath been proved; and that it is to bee esteemed more worth then gold, the description thereof is thus: *Rx. aq. ros. vini albi odoriferi mediocris vinositatis an. ʒiiii. myrobalan. citrini trit. ʒβ. iburis ℥ii. bulliant omnia simul usque ad consumptionem tertiæ partis; deinde immediatè addantur flores æris ℥ii. camph. gr. ii.* Let the liquor be kept in a glâs well stopped for the fore-said use.

You need not fear to use acrid medicines in the itching of the eie-lids.
Lib. 2. cap. 9.
traff. 3.

CHAP. XI.

Of Lippitudo, or Blear-eyes.



Here are manie whose eies are never drie, but alwaies flow with a thin, acrid, and hot humor, which causeth roughness, and upon smal occasions, inflammations, blear or blood-shot eies, and at length also *Strabismus* or squinting. *Lippitudo* is nothing elf but a certain white filth flowing from the eies, which oftentimes agglutinate's or join's together the eie-lids. This diseas often trouble's all the lifetime, and is to bee cured by no remedie; in som it is cureable. Such as have this diseas from their infancie, are not to bee cured, for it remain's with them till their dying day. For large heads, and such as are repleat with acrid or much excrementitious phlegm, scarce yeeld to medicines. There is much difference whether the phlegm flow down by the internal vessels under the soul, or by the external which are between the skull and the skin, or by both. For if the internal veins cast forth this matter, it will bee difficultly cured; if it bee cured at all. But if the external vessels cast forth, that cure is not unprofitable, which haveing used medicines respecting the whole bodie, applie's astringent medicines to the shaved crown, as *Empl. contra rupturam*, which may streighten the veins, and as it were suspend the phlegm, useth cupping, and command's frictions to bee made towards the hinde part of the head, and lastly, maketh a Seton in the neck. There are som who cauterize the top of the crown with an hot iron, even to the bone, so that it may cast a scale, thus to divert and staie the defluxion. For local medicines, a *Collyrium* made with a good quantitie of rose-water, with a little vitriol dissolved therein, may serv for all.

What *Lippitudo* is.A *Collyrium* of vitriol to stay the defluxions of the eies.

CHAP. XII.

Of the *Ophthalmia*, or inflammation of the Eies.

Ophthalmia is an inflammation of the coat *Adnata* and consequently of the whole eie, being troublesom by the heat, redness, beating, renitencie, and lastly pain. It hath its original either by som primitive caus or occasion, as a fall, stroke, dust, or small sand flying into the eies. For the eie is a smooth part, so that it is easily offended by rough things, as saith *Hippocrates*, *lib. de carnibus*. Or by an antecedent caus, as a defluxion falling upon the eies. The signs follow the nature of the material caus, for from blood especially cholerick and thin; it is full of heat, redness and pain; from the same alliaied with phlegm all of them are more remiss. But if a heaviness possess the whole head, the original of the diseas proceed's therefrom. But if a hot pain trouble the forehead, the diseas may bee thought to proceed from som hot distemper of the *Duramater*, or the *pericranium*; but if in the verie time of the raging of the diseas the patient vomit, the matter of the diseas proceed's from the stomach. But from whence soever it cometh there is scarce that pain of any part of the bodie, which may bee compared to the pain of the inflamed eies. Verily the greatness of the inflammation hath forced the eies out of their orb, and broken them asunder in divers. Therefore there is no part of Physick more blazed abroad then for sore eies. For the cure, the Surgeon shall consider and intend three things; diet, the evacuation of the antecedent and conjunct caus, and the overcoming it by topick remedies. The diet shall bee moderate, eschewing all things that may fill the head with vapors; and those things used that by astringion may strengthen the orifice of the ventricle, and prohibit the vapors from flying up to the head; the patient shall bee forbidden the use of wines, unless peradventure the diseas may proceed from a gross and viscid humor, as *Galen* deliver's it. The evacuation of the matter flowing into the eie, shall bee performed by purgeing medicines, phlebotomie in the arm, cupping the shoulders and neck with scarification, and without: and lastly, by frictions, as the Physician that hath undertaken the cure shall think fit. *Galen* after universal remedies for old inflammations of the eies, commend's the opening of the veins and arteries in the forehead and temples, becaus for the most part the vessels thereabouts distended with acrid, hot and vaporous blood, caus great and vehement pains in the eie.

What *Ophthalmia* is, and the causes thereof.

Signs.

The cures.

Com. ad aphor. 31 sect. 6.

Lib. 13. meth. cap. ult.

For the impugning of the conjunct caus, divers topick medicines shall bee applied, according to the four sundrie times or seasons that everie phlegmon usually hath. For in the begining when as the acrid matter flow's down with much violence, repercussives do much conduce: and tempered with resolving medicines, are good also in the increas. R. *aq. ros. & plantag. an. ʒʒ. mucagin. gum. Tragacanth. ʒii. album. ovi quod sufficit, fiat collyrium*, let it bee dropped warm into the eie, and let a double cloth dipped in the same *collyrium* bee put upon it. Or, R. *mucag. sem. psil. & cydon. extractæ in aq. plant. an. ʒʒ. aq. solan. & lactis muliebris, an. ʒi. trochisc. alb. rba. ʒ. fiat collyrium*, use this like the former. The veins of the temples may bee streightned by the following medicine. R. *hol. arm. sang. drac. et mast. an. ʒʒ. alb. ovi, aquæ ros. et acet. an. ʒi. tereb. lot. et ol. cidon. an. ʒi. ʒ. fiat defensivum*. You may also use

A repercussive medicine.

Astringent emplasters.

An anodine
cataplasm.

The efficacy
of Barbes in
pains of the
eies.

Ad apbor. sect. 7.

Detergent Col-
lyria.

Ung. de Bolo, empl. diacal. or *contra rupturam* dissolved in oyl of myrtles, and a little vineger. But if the bitterness of pain bee intolerable, the following cataplasm shall bee applied. *Rx medul. pomor. sub. ciner. coctorum ℥i. lacis muliebris ℥℥.* let it bee applied to the eie, the formerly prescribed *collyrium* beeing first dropped in. Or, *Rx mucag. sem. psil. & cidon. an. ℥℥. m. ce panis albi in lacte infusi. ℥ii. aquæ ros. ℥℥. fiat cataplasma.* The blood of a Turtle-Dove, pigeon or Hen drawn by opening a vein under the wings, dropped into the eie, allwageth pain. Baths are not onely anodine, but also also stay the defluxion by diverting the matter thereof by sweats; therefore *Galen* much commend's them in such defluxions of the eies as comby fits. In the state when as the pain is either quite taken away or allwaged, you may use the following medicines. *Rx sacroc. in lacte muliebri nutritæ ℥i. aloës lote in aq. rosar. ℥ii. trochis. alb. rba. ℥℥. sacchar. cand. ℥ii. aquæ ros. ℥iii. fiat collyrium.* Or, *Rx. sem. feniculi; & fenug. an. ℥ii. flo. chamæ. & melil. an. m. ℥. coquantur in aq. com. ad ℥iii. colaturæ adde rutbiæ prep. & sacroc. nutritæ in lacte muliebri. an. ℥i. ℥. sacchari cand. ℥℥. fiat collyrium ut artis est.* In the declination the eie shall bee fomented with a carminative decoction, and then this *collyrium* dropped thereinto. *Rx. sacroc. nutritæ ℥ii. aloës & myrrh. an. ℥i. aq. ros. & euphrag. an. ℥ii. fiat collyrium, ut artis est.*

CHAP. XIII.

Of the Proptosis, that is the falling or starting forth of the eie, and of the Phthisis and Chemosis of the same.

The caus.



He Geerks call that affect *Proptosis*, the Latines *Procidencia* or *Fixitus oculi*, when as the eie stand's, and is cast out of the orb, by the occasion of a matter filling and lifting up the eie into a great bigness, and largeness of substance. The caus of this diseas is somtimes external, as by too violent straining to vomit, by hard labor in child-birth, by excessive and wondrous violent shouting, or crying out.

The cure.

It somtimes happeneth that a great and cruel pain of the head, or the too strait binding of the forehead and temples for the easing thereof, or the palsie of the muscles of the eie, give beginning to this diseas. Certainly somtimes the eie is so much distended by the defluxion of humors, that it break's in sunder, and the humors thereof are shed, and blindness ensue's thereof, as I remember besel the sister of *Lewis de Billy* merchant, dwelling at Paris near *S. Michael's* bridg. The cure shall bee diversified according to the causes. Therefore universal medicines beeing premised, cupping-glasses shall be applied to the original of the spinal marrow, and the shoulders; as also Cauteries, or Setons: the eie shall bee pressed or held down with cloths doubled and steeped in an astringent decoction made of the juice of *Acacia*, red roses, the leaves of poppie, henbane, roses and pomgranat pills: of which things poultices may bee made by addition of barlie-meal and the like.

The Atrophia
of the eie.

The Phthisis
thereof.

Lib. 3. cap. 22.

There is somtimes to be seen in the eie an affect contrarie to this, and it is termed *Atrophia*. By this the whole substance of the eie grow's lank and decay's, and the apple it self becom's much less. But if the consumption and emaciation take hold of the pupil onely, the Greeks, by a peculiar name and different from the general, term it a *Phthisis*, as *Paulus* teacheth. Contrarie causes shall bee opposed to each affect; hot and attractive fomentations shall bee applied; frictions shall bee used in the neighboring parts, and lastly all things shall bee applied which may without danger be used to attract the blood and spirits into the parts.

The Chemosis.
Paulus l. 3. c. 2.

There is another affect of the eie, of affinity to the *Proptosis*, which by the Greeks is termed *Chemosis*. Now this is nothing else then when both the eie-lids are turned up by a great inflammation, so that they can scarce cover the eies, and the white of the eie is lifted much higher up then the black. Somtimes the *Adnata*, changing his wont, looketh red; besides also, this affect may take its original from external causes, as a wound, contusion and the like. But according to the varietie of the causes, and the condition of the present affect fixed and remaining in the part, divers remedies shall bee appointed.

CHAP. XIV.

Of the Ungula, or Web.



He *Ungula*, *Pterygion* or *Web* is the growth of a certain fibrous and membranous flesh upon the upper coat of the eie called *Adnata*, arising more frequently in the bigger, but somtimes in the lesser corner towards the temples. When it is neglected, it cover's not onely the *Adnata*, but also som portion of the *Cornea*, and coming to the pupil it self hurt's the sight thereof. Such a *Web* somtimes adhere's not at all to the *Adnata*, but is onely stretched over it from the corners of the eie, so that you may thrust a probe between it and the *Adnata*: it is of several colors, somwhiles red, somwhiles yellow, somwhiles duskish, and otherwhiles white. It hath its original either from

from external causes, as a blow, fall, and the like; or from internal, as the defluxion of humors into the eies. The *Ungula* which is inveterate, and that hath acquired much thickness and bredth, and besides doth difficultly adhere to the *Adnata*, is difficultly taken away, neither may it bee helped by medicines whereby scars in the eies are extenuated. But that which covereth the whole pupil must not bee touched by the Surgeon, for beeing cut away, the scar which is left by its densitie hindereth the entrance of objects to the crySTALLINE humor, and the egress of the animal spirit to them. But oftentimes it is accompanied with an inflammation of the eies, a burning, itching, weeping defluxion, and swelling of the eie-lids. That the cure may rightly and happily proceed, hee must first use a spare diet; purging medicines shall bee given, and blood taken away by opening a vein, especially, if there bee great inflammation. For particular remedies, this excrescence shall bee eaten away, or at least kept from growth, by dropping into the eie *collyrium* of vitriol described in wounds of the eies. But if that wee profit nothing by this means, it remaineth, that wee take it away with the hand after the following manner.

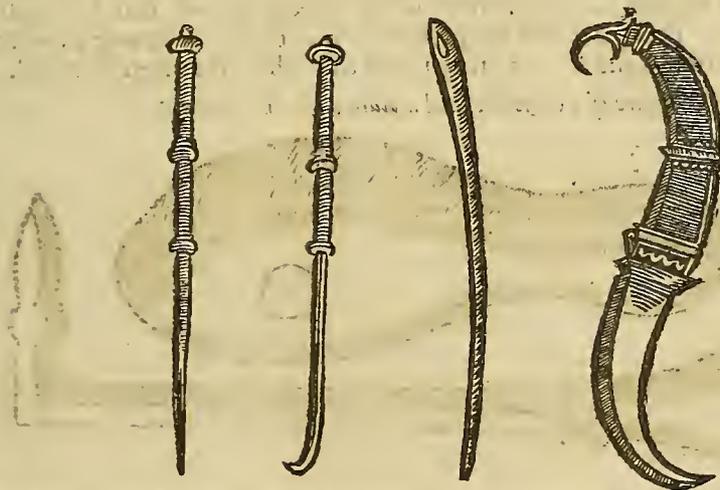
You shall set the patient upon a fourm or stool, and make him lean much back, and bee so held firmly, that hee may not fall nor stir, then must you open his sore eie, putting therein a *speculum oculi* formerly described in treating of the wounds of this part, and then must you lift up the Web it self with a sharp little hook, with the point turned a little in, and put under the mid'st of the Web; when you have lifted it a little up, thrust a needle threaded with a smooth thred between it and the *Adnata*, then takeing hold of the hook, and the two ends of the thred drawn through with the needle, and lifting up the Web by them, you shall gently begin to separate it from the substance of the eie lying there-under, beginning at the original thereof with a crooked incision-knife, and so prosecute it even to the end, yet so as you hurt no part of the *Adnata*, nor *Cornea*.

The figures of little hooks, a needle, and crooked incision-knife.

Little hooks.

A needle.

A crooked incision-knife.



Then must it bee cut off with a pair of scissers, and the white of an egg beaten with some Rose-water laid thereon, and often renewed. Afterwards the eie must everie day bee opened, least coming to cicatrization, the eie-lids shall bee glewed together in that part whereas the Web is taken away, which also shall bee hindered by putting of common salt, sage and cummin-seeds into the eie, beeing first champed and chawed in the mouth. There are some who in stead of the crooked knife separate the Web from the *Adnata* with a horse's hair, others do it with a goosquill made readie for the same purpose, takeing heed that they hurt not the caruncle at the corner by the nose, for it will follow if that you draw the Web away too violently; and if it bee cut, there will remain a hole, through which dureing the rest of the life a weeping humor will continually flow, a disease by the Greeks termed *Rhyas*. If after the cutting there bee fear of inflammation, linnen rags moistned in repelling medicines, formerly prescribed in wounds of the eie, shall bee laid thereupon.

CHAP. XV.

Of the Egilops, *Fistula lacrymosa*, or weeping *Fistula* of the Eie.

AT the greater corner of the eie there is a glandule, made for the receiving and containing the moisture which serveth for the lubricating and humecting the eye, least it should

The use of the glandule at the greater corner of the eie.

The differ-
ces.

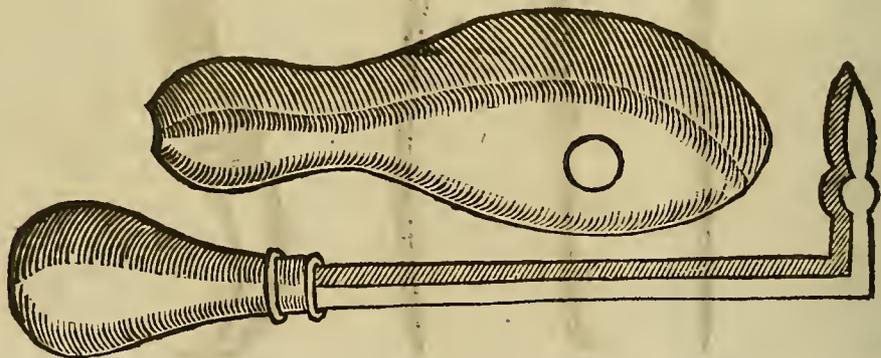
Periodical and
Typical Fistu-
lars.

The cure.

The efficacy
of an actual
cauterie.

should drie by continual motion. This glandule somtimes by a sanguin or pituitous de- fluxion falling violently from the brain, swel's, impostumate's and ulcerate's with an ul- cer, not seldom degenerateing into a fistula, so that in success of time it rotteth the bone that lieth under it: of such fistulae's, som are open outwardly, and these usually have their original from a phlegmon; other som are inwardly, and those are such as at first swelled by the defluxion or congestion of a phlegmatick matter, so that there appeareth no hole out- wardly, but onely a tumor of the bigness of a peas, this tumor beeing pressed, floweth with a sanious, serous and red or otherwise with a white and viscid matter, and that either by the corner of the eie, or by the inside of the nose. Som have this matter flowing continual- ly, others have it onely monethly, which is proper also to som fistulae's. Such weeping fistu- lae's if they becom old, causan *Atrophia* of the eie, and somtimes blindness and a stinking breath. Therefore wee must diligently and speedily by physical and chirurgical means resist the breeding diseaf. Wherefore, haveing used general medicines, wee must com to particulars. Therefore if the ulcer bee not sufficiently wide, it shall bee enlarged by putting tents of sponge therein. The flesh of the Glandule encreasing more then is fit, shall bee corrected by putting therein the cathertick pouders of Mercurie, calcined vitriol, or som *aqua fortis*, or oil of vitriol, and lastly, by a potential cauterie. If you cannot prevail by these means, and that the bone begin's to rot, and the patient bee stout hearted, then use an actual cauterie whose use is far more effectual, readie, certain and excellent, then a potential cauterie, as I have tried in manie with happie success. In my opinion it make's no matter, whether the cauterie bee of gold, silver or iron; for the efficacy it hath, proceedeth not from the matter, but from the fire. Yet if wee must religiously observ and make choice of metals, I had rather have it of Iron, as that which hath a far more drying and astringent facultie then gold, for that the element of earth beareth the chief sway therein, as appeareth by the waters which flow through iron-mines. Wherefore you shall caus to bee made a triangular Iron, sharp at the end, that it may the more speedily penetrate. And then the sound eie and adjacent parts being well covered and defended, and the patient's head firmly holden in one's hand, least the patient beeing frighted, stir himself in the verie instant of the operation. But a plate of iron somewhat depressed in the mid'st, for the cavtie of the greater corner, shall bee applied and fitted to the pained eie. This plate shall bee perforated that the hot Iron may pass thereby to the fistula lying there-under, and so may onely touch that which is to bee cauterized.

The figure of a cauterie, and a plate with a hole therein.



Things to bee
don after the
cauterizing.

After the bone is burnt with the cauterie, a *collyrium* made of the whites of eggs beaten in plantain and night-shade waters must bee poured into the hole it self, the eie and all the neighboring parts; but the patient shall bee laid in bed, with his head somewhat high, and the *collyrium* shall bee renewed as often and as soon as you shall perceiv it to grow drie. Then the fall of the Eschar shall bee procured by anointing it with fresh butter; when it is fallen away, the ulcer shall bee cleansed, filled with flesh, and lastly cicatrized.

CHAP. XVI.

Of the Staphyloma, or grape-like swelling.

What a Staphy-
loma is, and the
causes thereof.



Staphyloma is the swelling of the hornie and grape-like coat, bred through the occasion of an humor flowing down upon the eie, or by an ulcer, the hornie coat being relaxed, or thru'st forth by the violence of the pustule generated beneath. It in shape resembleth a grape, whence the Grecks style it *Staphyloma*. This tumor is somtimes blackish, otherwhiles whitish. For if the hornie coat bee ulcerated and fretted in sunder, so that the grape coat shew it self, and fall through the ulcer, then the *Staphyloma* will look black like a ripe grape, for the utter part of the *Uvea* is blackish. But if the *Cornea* bee onely relaxed and not broken, then the swelling appear's of a whitish color like an unripe grape. The Antients have made manie kindes or differences thereof. For if it bee but a small hole of the broken *Cornea* by which the *Uvea* sheweth or thrusteth forth its self, they then termed it *Myocephalon*, that is, like the

Paulus and
Aetius.

the head of a flie. But if the hole were large, and also callous, they called it *Clavus*, or a nail; if it were yet larger, then they termed it *Acinus*, or a grape. But in what shape or figure soever this disease shall happen, it bringeth two discomforts, the one of blindness, the other of deformitie. Wherefore here is no place for Surgerie to restore the sight, which is already lost, but onely to amend the deformitie of the eie; which is by cutting off that which is prominent. But you must take heed that you cut away no more then is fit, for so there would be danger of pouring out the humors of the eie.

Everie Staphy-
loma infer's in-
cureable blind-
ness.

CHAP. XVII.

Of the Hypopyon, that is the suppurate or putrefied eie.

PU S, or Quitture is sometimes gathered between the hornie and grapie coat from an internal or external cause: From an internal, as by a great defluxion, and oftentimes after an inflammation; but externally, by a stroke, through which occasion, a vein being opened hath poured forth blood thither, which may presently be turned into Quitture. For the cure, universal remedies being premised, cupping-glasses shall be applied, with scarifications and frictions used. Anodine and digestive *collyria* shall be poured from above downwards. Galen writes that hee hath sometimes evacuated this matter, the *Cornea* being opened at the *Iris*, in which place all the coats meet, concur and are terminated. I have done the like, and that with good success, James Guillemeau the Kings Surgeon being present, the Quitture being expressed and evacuated after the apertion. The Ulcer shall be cleansed with *Hydromel*, or some other such like medicine.

The cause.

Lib. 14. method.
cap. ult.

CHAP. XVIII.

Of the Mydriasis, or dilatation of the Pupil of the Eie.



MYDRIASIS is the dilatation of the pupil of the eie, and this happeneth either by nature or chance: the former proceedeth from the default of the first conformation, neither is it cureable; but the other is of sorts; for it is either from an internal cause, the offspring of an humor flowing down from the brain, wherefore Physical means must be used for the cure thereof. Now that which cometh by any external occasion, as a blow, fall, or contusion upon the eie, must be cured by presently applying repercussive and anodine medicines, the defluxion must be hindered by diet skilfully appointed, phlebotomie, cupping, scarification, frictions and other remedies which may seem convenient. Then must you come to resolving medicines, as the blood of a Turtle-dove, Pigeon, or chicken reeking-hot out of the vein, being poured upon the eie and the neighboring parts. Then this following cataplasm shall be applied thereto. *Rx. farine fabar. & bordei an. ℥i. ol. rosar. & myrtillor. an. ℥i. β. pul. ireos flor. ℥ii. cum sapa fiat cataplasma.* You may also use the following fomentation. *Rx. rosar. rub. & myrtyl. an. ℥i. i. flor. melil. & chamem. an. p. i. nucum cupr. ess. ℥i. vini austeri ℔. β. aq. rosar. & plantag. an. ℥i. i.* make a decoction of them all for a fomentation to be used with a sponge.

The Cause.

The Cure.

A digesting
Cataplasma.

CHAP. XIX.

Of a Cataract.



ACTARACT is called also by the Greeks *Hypochima*, by the Latines *suffusio*. Howsoever you term it, it is nothing else but the concretion of an humor into a certain thin skin under the hornie coat, just against the apple or pupil, and as it were swimming upon the waterie humor; and whereas the place ought to be empty, opposing it self to the internal facultie of seeing, whereby it differeth from spots and scars growing upon the hornie coat and *Adnata*. It sometimes covereth the whole pupil, otherwhiles but the one half thereof, and somwhiles but a small portion thereof. According to this varietie the sight is either quite lost, weak, or somewhat depraved, because the animal visive spirit cannot in its entire substance pass through the denitie thereof. The defluxion of the humor whence it proceed's, is either caused by an external occasion, as a stroke, fall, or by the heat or coldness of the encompassing air, troublesome both to the head and eies; or else it is by an internal means, as the multitude, or else the acrid hot and thin qualitie of the humors. This disease also sometimes taketh its original from gross and fumed humors sent from a crude stomach, or from vaporous meats or drinks, up to the brain, and so it falleth into the eies, where, by the coldness, straitness and tarrying in the place, they turn into moisture, and at length into that concretion or film which we see: The signs may be easily drawn, from that we have already delivered. For when the cataract is formed and ripe, it resembleth a certain thin membrane spread over the pupil, and

A Cataract.

The differences.

Causes.

Signes.

and appeareth of a different color, according to the varietie of the humor whereof it consisteth, one while white, another while black, blue, ash-colored, livid, citrine, green. It sometimes resembleth quick-silver, which is verie trembling and fugitive, more then the rest. At the first when it beginneth to breed, they seem to see manie things, as flies flying up and down, hares, nets, and the like, as if they were carelesly tossed up and down before their eies: somtimes everie thing appeareth two, and somwhiles les than they are; becauf the visive spirit is hindered from passing to the objects by the densitie of the skin, like as a cloud shadowing the light of the Sun. Whence it is that the patients are duller sighted about noon, and surer and quicker sighted in the morning and evening, for that the little visive spirit diffused through the air, is dispersed by the greater light, but contracted by the les. Now if this film cover half the pupil, then all things shew but by halves; but if the mid'st thereof bee covered, and as it were the centre of the chrystaline humor, then they seem as if they had holes or windows: but if it cover it all, then can hee see nothing at all, but onely the shadows of visible bodies, and of the Sun, Moon, Stars, lighted candles, and the like luminous things, and that but confusedly, and as by conjecture.

CHAP. XX.

Of the physical cure of a beginning Cataract.

Diet for such as are troubled with a Cataract.



Bread seasoned with fennel-seeds.

How bright shining things may dissipate a beginning Cataract.

A Collyrium dissipating a beginning Cataract.

A Cataract must not be couched, unless it be ripe.

Begining Cataract is hindered from growing and concretion by diet conveniently and artificially prescribed, by the abstinence from wine, especially more strong and vaporous, and forbearing the use of meats, which yeeld a phlegmatick juice and vaporous: as peas, beans, turneps, chesnuts, and, lastly, all such things as have the facultie of stirring up the humors, and causing defluxion in the bodie, such as are all salt and spiced meats, as also garlike, onions, mustard. The immoderate use of Venerie hurts more then all the rest, for that it more violently exagitate's the whole bodie, weaken's the brain and head, and beget's crude humors. Let his bread bee seasoned with som fennel seeds, for it is thought to have a facultie of helping the sight, and clearing the eies, and dissipating the mistie vapors in the stomack before they can ascend to the brain. Wherefore by the same reason it is good to use marmelade of quinces, conserv of roses, and common drige powder, or anie such like composed of things good to break winde, or corroborate the ventricle. Phlebotomie and purging, if they bee requisite, shall bee fitly appointed: Ventoses shall bee applied to the shoulders and neck; and phlegmatick matter shall bee diverted and evacuated by the mouth with using masticatories in the morning. There bee som which beleev, that a begining Cataract may bee dissipated and discussed by often rubbing the eie-lids with his fingers, and in like sort by the often and earnest beholding of the Stars, and the Moon when it is at the full, looking-glasses, diamonds, and all other such like bright shining things. I beleev, that by beams plentifully and suddenly brought and diffused over the eie, directly opposite against some bright shining thing, it may seem to have a penetrating, dividing, dissolving, as also a consuming and drying facultie. Besides, also the hot breath of him who holdeth in his mouth, and claweth fennel seeds, anis-seeds, coriander seeds, nutmeg, cinnamon, cloves, and the like, hath a great facultie, the eies beeing first gently rubbed with the finger, it beeing breathed in neer at hand, and often received, to heat, attenuate, resolv, digest and diffuse the humor which is readie to concrete. Moreover, this *collyrium* of *John Vigo* is thought verie powerful to clear the eies, strengthen the sight, hinder suffusions, and discuss them, if at anie time they concrete, and begin to gather. *Rx. hepatis hircini sani & recentis lbii. calomi aromatici & mellis an. ʒβ. succi rutæ, ʒiii. aquæ chelidoniæ, fœniculi, verbeniæ euphosiæ, an. ʒiii. piperis longi, nucis moschatiæ, caryophyllorum an. ʒii. croci ʒi. floris rorismarini aliquantum contriti, m.β. sarcocollæ, aloës hepaticæ, an. ʒiii. fellis ratæ, leporis & perdicis, an. ʒi. terantur omnia, tritisque adde sacchari albi ʒii. mellis rosati ʒvi. conjiciantur in alembicum vitreum, & distillantur in balneo Mariæ:* Let this distilled liquor bee often dropped into the eies. But if you prevail nothing by all these medicines, and that the cloudie and heaped up humor doth daily increas and thicken, then must you abstain from remedies, and expect until it bee no more heaped up, but thickned, yea until it seem to bee grown somewhat hard. For so it may bee couched with a needle; otherwise, if this same skin shall not bee ripe, but more tender then is fitting, when you shall com to the operation, it will bee broken and thrust through with the needle, and not couched. On the contrarie, if it bee too hard, it will resist the needle, neither will it suffer it self to bee easily couched. Wherefore it is requisite that the Surgeon know when it is ripe, and hee must diligently observ the signs whereby hee may discern a ripe Cataract from an unripe; and that which is cureable, from that which is uncureable. For that onely which is ripe and cureable is to bee couched; that which is unripe, that is, such an one as is more tender, and as it were crude, and that which is more hard and dens, and lastly, that is uncureable must not bee attempted at all.

CHAP. XXI.

By what signs ripe and cureable Cataracts may bee discerned from unripe and uncureable ones.

IF the sound eie beeing shut, the pupil of the sore or suffused eie, after it shall bee rubbed with your thumb, bee presently dilated & diffused, and with the like celeritie return into the place, figure, color and state, it is thought by som to shew a ripe and confirmed Cataract. But an unripe, and not to bee couched, if the pupil remain dilated and diffused for a long while after. But it is a common sign of a ripe, as also more dens, and consequently uncureable suffusion, to bee able to see nor distinguish no visible thing beside light and brightness; for to discern other objects sheweth that it is not yet ripe: Therefore the sound eie beeing shut and pressed, the pupil of the other rubbed with your thumb, is dilated, enlarged, swelleth, and is more diffused; the visive spirits by this compression beeing as it were forced from the sound into the sore eie. But these following Cataracts are judged uncureable, that is, such as are great, such as when the eie-lid is rubbed are nothing dilated or diffused, whose pupil becometh no broader by this rubbing: for hence you may gather, that the stopping or obstruction is in the optick nerv, so that how cunningly and well soever the Cataract bee couched, yet will the patient continue blinde; you shall do no more good in couching a Cataract, which is in an eie consumed and wasted with a *Phthisis*. Also that Cataract is uncureable, which is occasioned by a most grievous disease, to wit, by most bitter and cruel pains of the head, or by a violent blow. Such as are of a plaister-like, green, black, livid, citrine and quick-silver-like color, are usually uncureable. On the contrarie, such as are of a Chesnut color, or of a skie or sea-water color, with som little whiteness, yeeld great hope of a happie and successful cure.

Uncureable
Cataracts.

Cureable Ca-
taracts.

CHAP. XXII.

Of the couching a Cataract.

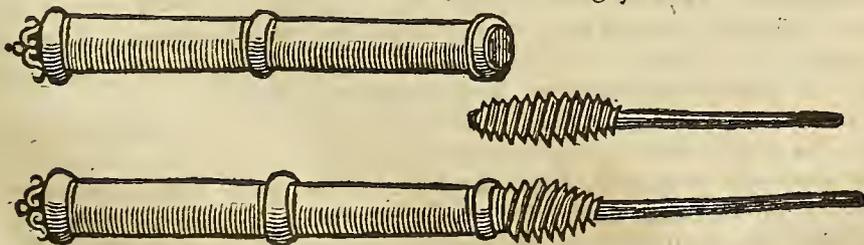


After you shall know by the fore-mentioned signs that the Cataract is cureable, it remains that you attempt the couching thereof, but so, that there bee nothing which may hinder. For if the pain of the head, cough, nauzeousness or vomiting at that time trouble the patient, you shall then bestow your labor in vain: When to
couch a Cata-
ract.

Wherefore you must expect until these symptoms be gon. Then make choice of a season fitting for that purpose, that is, in the decrease of the moon, when the air is not troubled with thunder nor lightning, and when as the Sun is not in Aries, because that sign hath dominion over the head. Then let the Surgeon consult a Physician whether purging or blood-letting bee convenient for the patient, so to resist plethorick symptoms, otherwise readie to yeeld matter for relaps. Two daies after you must make choice of a place furnished with indifferent or competent light, and the Patient being fasting shall bee placed in a straight chair, so that the light may not fall with the beams directly upon him, but side-wise. The eie which shall bee cured must bee made more steddie, by laying and bindeing wooll upon the other: Then the Surgeon shall seat and place himself directly against the patient upon a seat somewhat higher, and bidding the patient put his hands down to his girdle, hee shall hold the patient's legs between his knees. One shall stand at the patient's back, who shall hold his head, and keep it from stirring; for by a little stirring hee may lose his sight for ever. Then must you prepare and make readie your needle, and thrust it often into som strong thick cloth, that it may bee as it were smooth by this motion, and for the performance of the work in hand with the les pain somewhat warmed. It must bee made of iron or steel, and not of gold or silver, it must bee also flatted on the sides, and sharp-pointed, that so it may the better pierce into the eie, and wholly couch the Cataract once taken hold of; and least it should slip in the Surgeon's hand, and bee les steddie, it shall bee put into a handle, as you may see by the following figure. The place.

The needle.

A needle inserted in a handle for the couching of Cataracts.



All things beeing thus in a readines, you must bid the patient to turn the sight of his eie towards his nose, & the needle must bee boldly thrust (for it is received in a place that is void, & onely filled with spirits) directly by the coat *Adnata*, in the middle space between the lesser corner

Gal. lib. 10. de
usu partium. c. 5
Cels. lib. 7.

The sign of a
Cataract well
couched.

Lib. 6. cap. 21.

What to bee
don after the
couching of a
Cataract.

Of a Cataract
which is bro-
ken to peeces.

corner and the hornie coat, jutt against the mid't of the Cataract, yet so, as that you hurt no vein of the *Ahnata*, and then by stirring it as it were diversly until it com to the mid't of the pupil and suffusion. When it is com thither, the needle must bee inclined from above downwards to the suffusion, and there to bee stirred gently until by little and little it couch or bring down the Cataract as whole as may bee beneath the compass of the pupil; let him still follow it though couched with his needle, and somewhat violently deprefs and keep it down for som short space, that so it may rest and stay in that lower place whether it is depressed. The Surgeon shall trie whether it firmly remain there or no, bidding the patient presently to move his eie; for if it remain constantly so, and do not return again, the cure is perfect. Then must the needle bee lifted up by little and little, neither must it presently bee taken forth, that if the Cataract should bear up, or rise again, that it might again, and so often (whil't the work is yet hot, and all things in a readines) bee couched towards the lesser corner, until it bee fully and surely hid. Then must you draw back the needle gently, and after the same manner as you put it in; lest if you use not moderation, you bring back the Cataract from whence you couched it, or grievously offend the crystalline humor, the prime instrument of sight, or the pupil with danger of dilateing thereof. Som as soon as the work is don, give the patient somthing in his hand to look upon: but *Paulus* approv's not thereof, for hee fear's lest his endeavoring or striveing to see, may draw back the Cataract. Wherefore it is more wisdom and better, presently after the drawing forth of the needle, to put on a soft rag the white of an egg beaten in rose-water with a little choice alum, and so applie it to the eie and neighboring parts for to binde and hinder the inflammation; then also you must together therewith binde up the sound eie, lest by stirring to see, it might together therewith draw and move the fore eie, by reason of the sympathie and consent they mutually have by the optick nervs. After all things are thus performed, the patient shall bee laid in a soft bed, and so placed, that his head may lie somewhat high; let him bee laid far from nois, let him not speak, nor eat anie hard thing that may trouble his jaws, wherefore let him feed upon liquid meats, as panado, barley cream, cullisses, gellies, rear-eggs, and other meats of the like nature. At the end of eight daies the ligature that binde's up the eies shall bee loos'd, and his eies washed with rose-water, and putting on spectacles, or som taffatie, the patient shall by little and little accustom himself to the light, lest hee should bee offended by the sudden meeting with light. But if the suffusion, after som short while after, lift it self up again, it must bee couched again, but through a new hole, for the eie is pained and tender in the former place. It somtimes happen's by the touch of the needle that the Cataract is not couched whole, but is broken into manie peeces; then therefore each of them must bee followed, and couched severally: if there bee anie verie small particle which scape's the needle, it must bee let alone, for there is no doubt but that in proces of time it may bee dissolved by the force of the native heat. There are also som Cataracts which at the first touch of the needle are diffused and turn into a substance like to milk or troubled water, for that are not throgly ripe, yet these put us in good hope of recoverie, and it bee but for this, that they can never afterwards concrete into one bodie as before. Wherefore at the length they are also discuss'd by the strength of the native heat, and then the eie recover's its former splendor. If that anie other symptoms com unlooked for, they shall bee helped by new counsels and remedies.

CHAP. XXIII.

Of the stopping of the passage of the Ears, and the falling of things thereinto.

The caus.



T somtimes happeneth that children are born without anie holes in their ears, a certain fleshy or membranous substance growing in their bottom or first entrance.

The cure.

The same may also happen afterwards by accident, they beeing ulcerated by som impostume or wound, and the ear shut up by som fleshy excrecence or scar. When as the stopping is in the bottom of the cavities, the cure is more difficult then if it were in the first entrance, But there is a double way of cure; for this substance, whatsoever it bee, must either bee cut out, or else eaten away and consumed by acrid and catheretick medicines; in performance of which there is need of great moderation of the minde and hand. For it is a part endued with most exquisite sence and near the brain, wherefore by handling it too roughly, there is fear of distention of the nervs, and consequently of death.

Somtimes also the preternatural falling of som strange bodies into this passage maketh a stopping of the ears, such as are fragments of stone, gold, silver, iron and the like metals, pearls, cherrie-stones, or kernels, peas and other such like puffs. Now solid and bonie bodies still retain the same magnitude; but peas, seeds and kernels, by drawing the moisture there implanted into them, swell up, and cause vehement pain by the distention of the neighboring parts, wherefore the sooner they are drawn forth, the better it is for the patient. This shall bee don with small pincers and instruments made in the shape of ear-picks. But if you profit nothing thus, then must you use such gimblets as are made for the drawing forth
of

of bullets shot deep into the bodie. Little stones and bodies of the like stonie hardness shall bee forced forth by the brain, provoked to concussion by sneezing, and by dropping som oil of almonds first into the passage of the ear, that the way may bee the more slipperie; for it will com to pass by this sneezing, or violence of the internal air forcibly seeking passage out, that at length they may bee cast forth, the mouth and nostrils beeing stopped with the hand. But if wee cannot thus prevail, it remain's, that wee cut open the passage with an incision-knife, so much as shall bee sufficient for the putting in and using of an instrument for to extract them. If anie creeping things of little creatures, as fleas, ticks, pismires, gnats and the like, which somtimes happeneth, shall get therein, you may kill them by dropping in a little oil and vinegar. There is a certain little creeping thing, which for piercing and getting into the ears, the French call *Perse-oreille* (wee an ear-wig.) This, if it chance to get into the ear, may bee killed by the foresaid means, you may also catch it, or draw it forth by laying half an apple to your ear, as a bait for it.

The concussive force of sneezing.

CHAP. XXIV.

Of getting of little bones and such like things out of the jaws and throat.



Somtimes little bones and such like things in eating greedily use to stick, or as it were fasten themselves in the jaws or throat. Such bodies if you can com to the sight of them, shall bee taken out with long, slender and crooked mallers made like a Crane-beak. If they do not appear, nor there bee no means to take them forth, they shall bee cast forth by causing vomit, or with swallowing a crut of bread, or a drie fig gently chewed, and so swallowed; or elf they shall bee thrust down into the stomach, or plucked back with a leek, or som other such long and stiff crooked bodie anointed with oil, and thrust down the throat. If anie such like thing shall get into the weazon, you must caus coughing, by taking sharp things, or elf sneezing, so to cast forth whatsoever is there troublesome.

The cure different according to the places where they stick.

CHAP. XXV.

Of the Tooth-ache.



O' all pains, there is none which more cruelly tormenteth the patients then the Tooth-ache. For wee see them oft-times after the manner of other bones to suffer inflammation, which will quickly suppurate, and they becom rotten, and at length fall away piece-meal; for wee see them by daily experience to bee eaten and hollowed, and to breed worms, som portion of them putrefying. The caus of such pain is either internal, or external and primitive. The internal is a hot or cold defluxion of humors upon them, filling their sockets, and thence consequently driving out the teeth; which is the reason that they stand somtimes so far forth, that the patient neither dare's, nor can make use of them to chaw for fear of pain: for that they are loof in their sockets by the relaxation of the gums, caused by the falling down of the defluxion. When as they are rotten and perforated even to the roots, if anie portion of the liquor in drinking, fall into them, they are pained as if you thrust in a pin or bodkin, the bitterness of the pain is such. The signs of a hot defluxion are sharp and pricking pain, as if needles were thrust into them, a great pulsation in the root of the pained tooth and the temples, and som eas by the use of cold things. Now the signs of a cold defluxion are a great heaviness of the head, much and frequent spitting, som mitigation by the use of hot remedies. In the bitterness of pain wee must not presently run to Tooth-drawers, or caus them presently to go in hand to pluck them out. First consult a Physician, who may prescribe remedies according to the varietie of the causes. Now heer are three intentions of curing. The first is concerning diet; the other for the evacuation of the defluxion or antecedent caus; the third for the application of proper remedies for the asswageing of pain. The two former scopes, to wit, of diet, and diverting the defluxion by purgeing, phlebotomie, application of cupping-glasses to the neck and shoulders, and scarification, do absolutely belong to the Physician. Now, for proper and topick medicines they shall bee chosen contrarie to the caus. Wherefore in a hot caus, it is good washing the mouth with the juice of pomgranats, plantain-water, a little vinegar wherein roses, *ba-laustie* and *sumach* have been boiled. But such things as shall bee applied for the mitigating of the pain of the teeth, ought to bee things of verie subtile parts, for that the teeth are parts of dens consistence. Therefore the ancients have alwaies mixed vinegar in such kind of remedies. *Rx. rosar. rub. sumach. hordei, an. m. β. seminis hyoscyami conquassati ℥ii. santalorum an. ℥i. lactuce summitatum rubi, solani, plantaginis, an. m. β. bulliant omnia in aqua ℔.iiii.*

The Tooth-ache a most cruel pain.

The caus thereof.

The signs of this or that defluxion.

Three scopes of curing.

A cold and repulsive lotion for the mouth.

Et pauco aceto ad hordei crepaturam. Wash the mouth with such a decoction being warm. You may also make Trochisces for the same purpose after this manner. *R. sem. hyoscyami, sandarachæ, coriandri, opii an. ʒʒ. terantur & cum aceto incorporentur, formenturque trochisci apponendi dentibus dolentibus.* Or ell, *R. seminis portulacæ, hyoscyami, coriandri, lentium, corticis santali citrini, rosar. rub. pyrethri, camphoræ, an. ʒʒ.* let them all bee beaten together with strong vinegar, and made into trochisces, with which being dissolved in rose-water, let the gums and whole mouth bee washed when need requireth. But if the pain bee not asswaged with these, you shall com to narcoticks, which may stupefie the nerv; as, *R. seminis hyoscyami albi, opii, camphoræ, papaveris albi, an. quantum sufficit, coquantur cum sapâ, & denti applicentur.* Besides, you must also put this following medicine into the ear of the pained side. *R. opii & castorei, an. ʒi. misceantur cum oleo rosato:* It hath somtimes availed in swoln and distended gums, being first lightly scarified, to have applied leeches, for the evacuation of the conjunct matter, as also to have opened the veins under the tongue, or these which are behinde the ears. For I remember that I, by these three kindes of remedies, asswaged great pains of the teeth. Yet there bee som who in this affect open not these veins which are behinde the ears, but those which are conspicuous in the hole of the ear in the upper part thereof.

Trochisces for a hot defluxion.

Pain of the teeth arising from a cold caus and defluxion, may bee helped by these remedies; boil rosemarie, sage, and pellitorie of Spain in wine and vinegar, and add thereto a little *aqua vitæ*, in this liquor dissolv a little treacle, and wash your teeth therewith. Others mingle gum *ammoniacum* dissolved in *aqua vitæ* with a little *sandaracha* and myrrh, and lay it to the pained tooth, after *Vigoe's* counsel. *Mesne* think's that beaten garlick carried in the right or left hand, asswage's the pain, as the teeth ake upon the right or left side. But I being once troubled with grievous pain in this Kinde, followed the counsel of a certain old woman, and laid garlick rosted under the embers to my pained tooth, and the pain forthwith ceased. The same remedie used to others troubled with the like affect, had like success. Moreover, som think it available if it bee put into the auditorie passage. Others drop into the ears oil of *castoreum*, or of cloves, or som such other chymical oil. It is good also to wash the teeth with the following decoction. *R. rad. pyrethri ʒʒ. menthæ & rutæ an. p. i. bulliant in aceto,* and with this decoction being warm, wash the teeth. Som like fumes better, and they make them of the seeds of *Colloquintida* and mustard, and other like; they take the smoak by holding their mouths over a funnel. Other som boil pellitorie of Spain, ginger cinnamon, alum, common salt, nutmegs, cypress-nuts, anif and mustard seeds, and *euphorbium* in oxycrate, and in the end of the decoction add a little *aqua vitæ*, and receiv the vapor thereof through a funnel; as also they wash their teeth with the decoction, and put cotton dipped therein into the ear, first dropping in a little thereof. Som there are which affirm, that to wash the teeth with a decoction of Spurge is a verie good and anodine medicine in the tooth-ach. I have oft-times asswaged intolerable pains of the teeth, by applying vesicatories under the ear, to wit, in that cavitie whereas the lower jaw is articulated with the upper: for the vein, arterie and sinew which are distributed to the roots of the teeth, lie thereunder. Wherefore the blisters being opened, a thin liquor run's out, which doth not onely caus, but also nourish or feed the diseaf. But if the tooth bee hollowed, and that the patient will not have it pull'd out, there is no speedier remedie, then to put in caustick medicines, as oil of vitriol, *aqua fortis*, and also a hot iron; for thus the nerv is burn't in sunder, and loseth it's sens. Yet som affirm that the milkie juice that flow's from Spurge made into a paste with *olibanum* and *amyllum*, and put into the hollowed tooth, will make it presently to fall away in pieces. When the gums and cheeks are swoln with a manifest tumor, then the patient begin's to bee somwhat better and more at eas. For so by the strength of nature, the tumor causing the pain is carried from within outwards. But of what nature soever the matter which causeth the pain bee, it is convenient to intercept the cours thereof with *Empl. contra rupturam*, made with pitch and maslick, and applied to the temple on that side where the tooth asketh.

Narcoticks.

Hot fumes.

Vesicatories.

Causticks.

CHAP. XXVI.

Of other affects of the Teeth.

Causes of looseness of the teeth.



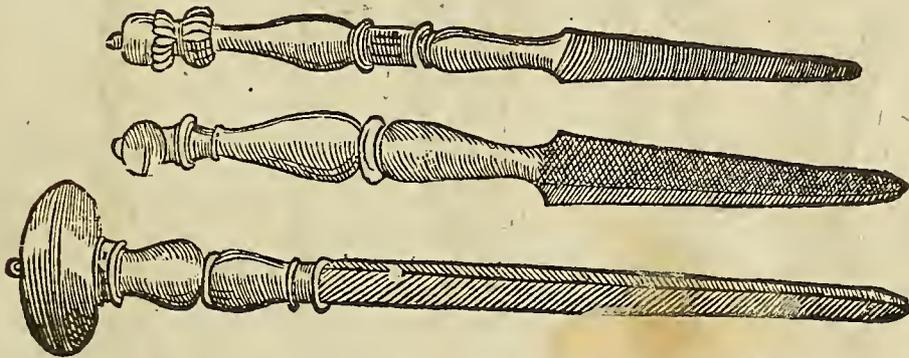
The teeth are also troubled with other preternatural affects. For somtimes they shake by relaxation of the gums, or ell becom corrupt and rotten, or have worms in them, or ell are set on edg. For the first, the gums are relaxed either by an external or primitive caus, as a fall or blow: or ell by an internal or antecedent, as by the defluxion of acrid or waterish humors from the brain, or through want of nourishment in old bodies. If the teeth grow loos by the means of the decaying gums, the diseaf is then incurable; but you may withstand the other causes by the use of such things as fasten the teeth, shunning on the contrarie such as may loosen them. There-

Therefore the patient must not speak too earnestly, neither chaw hard things. If they become loof by a fall or blow, they must not be taken forth, but restored and fastened to the next that remain firm, for in time they will be confirmed in their sockets, as I tried in *Antonie de la Rue* a Tailor, who had his jaw broken with the pommel of a dagger, and three of his teeth loosened, and almost shaken out of their sockets; the jaw being restored, the teeth were also put in their places, and bound to the rest with a double waxed thred; for the rest, I fed the patient with broths, gellies, and the like, and I made astringent gargarisms of cypress-nuts, myrtle-berries, and a little alom boil'd in oxycrate, and I wished him to hold it a good while in his mouth: by these means I brought it so to pass, that hee within a while after could chaw as easily upon those teeth, as upon the other. I heard it reported by a credible person, that hee saw a Ladie of the prime Nobilitie, who instead of a rotten tooth shee drew, made a sound tooth, drawn from one of her waiting-maids at the same time, to be substituted and inserted, which tooth in procefs of time, as it were taking root, grew so firm, as that shee could chaw upon it as well as upon anie of the rest. But as I formerly said, I have this but by hear-say.

Now the teeth are corroded or eaten in by an acrid and thin humor penetrating by a plenteous and frequent defluxion even to their roots, and being there contained, it putrefie's, and becoming more acrid, it doth not onely draw the teeth into the contagion of its putrefaction, but also perforate's and corrode's them.

The putrefaction may be corrected, if after general medicines, you put oil of vitriol or *aqua fortis* into the hole of the eaten tooth: or elf, if you burn the tooth it self to the root with a small iron wier being red hot: you shall thrust this hot iron thorow a pipe or cane made for the same purpose, least it should harm any sound part by the touch thereof, and thus the putrefaction, the caus of the arrosion, may be staid. But if the hole be on the one side between two teeth, then shall you file away so much of the sound tooth, as that you may have sufficient libertie to thrust in your wier without doing anie harm.

The forms of Files made for filing the teeth.



Worms breeding by putrefaction in the roots of the teeth, shall be killed by the use of causticks, by gargles or lotions made of vineger, wherein either pellitorie of Spain hath been steeped, or treacle dissolved; also aloës and garlick are good to be used for this purpose.

Setting the teeth on edg happen's to them by the immoderate eating of acrid or tart things, or by the continual ascent of vapors endued with the same qualitie, from the orifice of the ventricle to the mouth, or by a cold defluxion, especially of acrid phlegm, falling from the brain upon the teeth, or elf by the too excessive use of cold or stupifying liquors. This affect is taken away, if after general medicines and shunning those things that cherish the disease, the teeth be often washed with *aqua vite*, or good wine, wherein sage, rosemarie, clovs, nutmegs, and other things of the like nature have been boiled.

CHAP. XXVII.

Of drawing of Teeth.

Teeth are drawn, either for that they caus intolerable pains, which will not yeeld to medicines, or elf for that they are rotten and hollowed, so that they caus the breath to smell; or elf, for that they infect the sound and whole teeth, and draw them into the like corruption, or becaus they stand out of order. Besides, when they are too deep and strongly rooted, so that they cannot be pluck'd out, they must oft-times be broken of necessitie, that so you may drop som caustick thing into their roots, which may take away the sens, and consequently the pain. The hand must be used with much moderation in the drawing out of a tooth; for the jaw is sometimes dislocated by the too violent drawing out of the lower teeth. But the temples, eies and brain are shaken with greater danger by the too rude drawing of the upper teeth. Wherefore they must first be cut about, that the gums may be loos'd from them, then

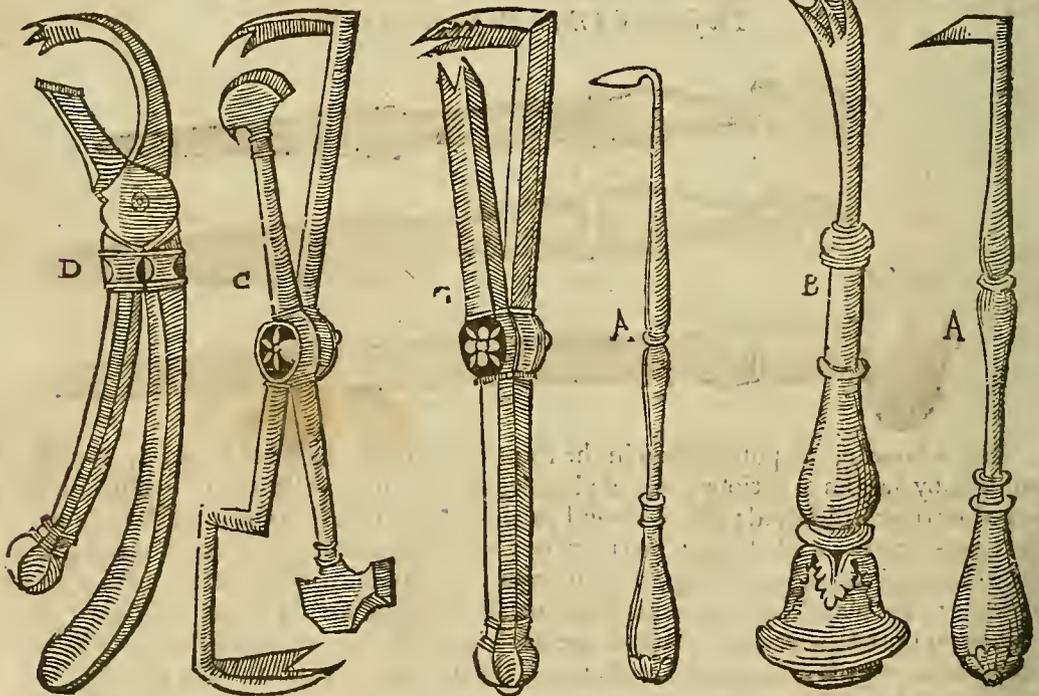
Lib. 7. cap. 18.

The manner of drawing teeth.

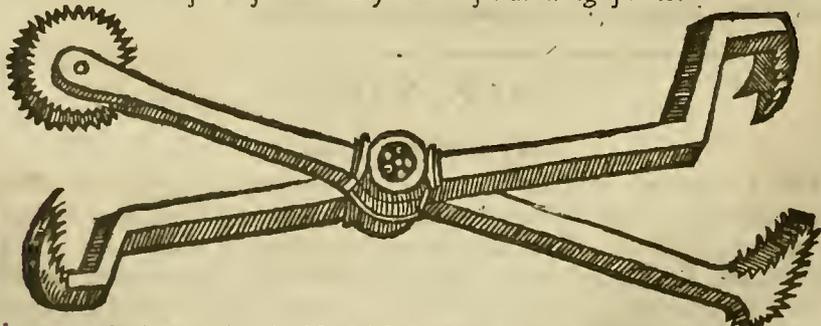
shake them with your fingers, and do this until they begin to bee loof; for a tooth which is fast in, and is plucked out with one pull, oft-times break's the jaw, and bring's forth the piece together therewith, whence follow's a fever and a great flux of blood not easily to bee staid (for blood or pus flowing out in great plentie is, in *Celsus's* opinion, the sign of a broken bone) and manie other malign and deadlie symptons: Som have had their mouths drawn so awrie, during the rest of their lives, so that they could scarce gape. Besides, if the tooth bee much eaten, the hole thereof must bee filled either with lint, or a cork, or a piece of lead well fitted thereto, lest it bee broken under your *forceps*; when it is twitched more straightly to bee plucked out, and the root remain, readie in a short time to caus more grievous pain. But judgment must bee used, and you must take special care, lest you take a sound tooth for a pained one; for oft-times the patient cannot tell, for that the bitterness of pain by neighborhood is equally diffused over all the jaw. Therefore for the better plucking out a tooth, observing these things which I have mentioned, the patient shall bee placed in a low seat, bending back his head between the tooth-drawer's legs; then the tooth-drawer shall deeply scarifie about the tooth, separating the gums there-from with the instruments marked with this letter A. and then if spoiled as it were of the wall of the gums, it grow loof, it must bee shaken and thrust out, by forcing it with the three-pointed levatorie noted with this letter B. but if it stick in too fast, and will not stir at all, then must the tooth bee taken hold of with som of these toothed *forcipes* marked with these letters C. D. E. now one, then another, as the greatness, figure, and site shall seem to require. I would have a tooth-drawer expert and diligent in the use of such toothed mullets; for unless one know readily and cunningly how to use them, hee can scarce so carrie himself, but that hee will force out three teeth at once, oft-times leaving that untouch't which caused the pain.

Instruments for scrapeing the teeth, and
a three-pointed levatorie.

The effigies of Forcipes, or Mulletts
for the drawing of teeth.



The form of another Instrument for drawing of teeth.



What to bee
don when the
tooth is
pluck't out.

After the tooth is drawn, let the blood flow freely, that so the part may bee free'd from pain, and the matter of the tumor discharged. Then let the tooth-drawer press the flesh of the gums on both sides with his fingers whereas hee took out the tooth, that so the socket that was too much dilated, and oft-times torn by the violence of the pluck, may bee closed again. Lastly, the mouth shall bee washed with oxycrate; and if the weather bee cold, the patient shall take heed of going much in the open air, lest it caus a new defluxion upon his teeth.

CHAP. XXVIII.

Of cleansing the Teeth.



ieces of meat in eating sometimes stick between the teeth, and becoming corrupt by long staying there, do also hurt the teeth themselves, and spoil the sweetness of the breath. Hee that would eschue this, ought presently after meat to wash his mouth with wine mixed with water, or oxycrate, and well to cleane his teeth, that no slimie matter adhere to them. Manie folks teeth by their own default gather an earthie filth of a yellowish color, which eat's into them by little and little, as rust eat's into iron. This rustie filthiness, or as it were mouldiness of the teeth, doth also oft-times grow by the omitting of their proper dutie, that is, of chawing. Whence soever this slimie filth proceed's, wee must get *Dentifrices* to fetch it off withall, and then the teeth must bee presently rubbed with *aqua fortis* and *aqua vite* mixed together, that if there bee anie thing that hath scaped the *Dentifrices*, it may bee all fetched off; yet such acrid washings are hurtful to the sound teeth, for that they by little and little consume and waste the flesh of the gums.

Causes of foul or rustie teeth.

The cure.

A caution in the use of acrid things.

Dentifrices shall bee made of the root of marsh-mallows boiled in white wine and allom; and, as when the teeth are loof, wee must abstain from such things as are hard to bee eaten & chewed, but much more from breaking of such things as are of a bonie consistence, so also heer wee must shun all things that by their toughness stick to the teeth. Manie for the cleansing of the teeth, commend a powder made of scuttle-bones, purple-shells, pumice-stone, burnt allom, and Hart's-horn, and a little cinnamon, which is a singular remedie for the teeth howsoever affected. Manie other are content with bread onely tosted and beaten; but this following water is verie effectuall to whiten the teeth. *Rx. sal. ammon. & gemmei, an. ʒi. alum. roch. ʒʒ. aquæ ros. quod sufficit, distillentur.* And let the teeth bee cleansed with this distilled liquor.

A water to whiten the teeth.

CHAP. XXIX.

Of the impediment and contraction of the Tongue.



He tongue is sometimes tied and short from the nativitie; as when the libertie of the tongue is restrained by the subject and neighboring, as well membranous as muscled, being either too short or too hard. Sometimes this disease happen's after they are born by som accident or preternatural affect, as by too hard a scar left by the healing of an ulcer under the tongue. The patient at his beginning to speak, is too slow in speaking, but presently leaving his slowness, hee becom's too quick, so that hee stammer's. If the disease proceed from the striction and shortness of the ligamental membrane lying under the tongue, then the incision shall bee made broad-wise, having great care that the veins and arteries which are there, bee not violated, for fear least they should cause an *hemorrhagie*, not easily to bee staid: Then the mouth shall bee presently washed with oxycrate, and som lint dipped in syrup of dried roses, or honie of roses put into the midst of the incision, least the part of the ligament, especially on the night time when the tongue is silent and at rest, should grow to the rest of the ligament. For the same purpose the finger shall bee often thrust this way, and the tongue more violently rowl'd up and down, and thrust out of the mouth. Yet sometimes this ligament is so thick and short, and therefore hold's down the tongue so close, that you cannot com to cut it with a knife or lancet without great and manifest danger of death by bleeding. Therefore in such a case a needle and thred shall bee thrust through it, and so the thred shall bee tied straighter and straighter everie day, until by little and little this ligamental tie of the tongue, which by its immoderate shortness intercept's the libertie of the motion shall bee consumed and broken.

The cause of being tongue-tied.

The cure;

Another way to cut it.

CHAP. XXX.

Of superfluous Fingers, and such as stick together.

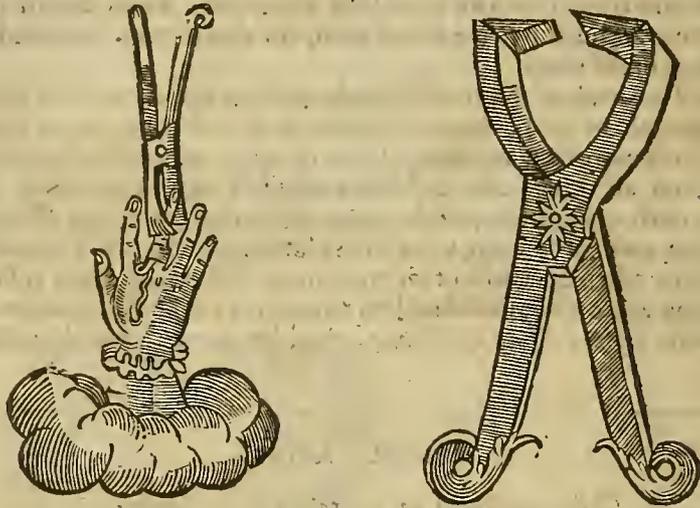


Each hand hath naturally five fingers onely; whatsoever is more or less is against nature: and if there bee fewer, it is a fault not to bee helped by art. But if there bee more, that for the most part may bee helped by art: superfluous fingers usually grow by the thumb, or the little finger, but seldom otherwise. These are either wholly fleshie, or have bones of their kinde and nails upon them. Those which are of a bonie nature doe either arise from the joints of the natural fingers, and are jointed like them, and so are oft-times moovable, or elf from som middle space of a joint, and these have not power to stir or moov. Now they are sometimes

The difference.

equall in magnitudo to the natural fingers to which they grow, yet more frequently they are shorter. Those which are onely fleshy, are easily amputated and made even with a razor; but such as are also bonie cannot bee cut off, unless with the cutting mullets hereafter described, and this is a disease of the fingers in number. There is also another disease in fingers, for they sometimes stick together, and otherwhiles they are verie little separated. This fault happen's either from the first original, by the error of the formative facultie; or elf it happen's afterwards by accident, as by a wound, or burn ill cured. For neighboring fingers being ulcerated do easily grow together, unless they bee kept asunder by a linnen rag. And if they by chance shall grow together by a little and thin skin and flesh, they shall forthwith bee divided with a sharp razor; but if they bee joined by the interposition of a more gross and dens substance, to wit, the nervs, tendons, and vessels, being knit together on each side, it will bee best not to meddle at all with the divideing them.

Cutting Mullets neatly made for the cutting off superflous fingers.



The cure of
nails running
into the flesh
of the fingers.

How to take
off the corns
of the fingers.

Neither must wee omit, that manie have their nails run with such bonie sharpness into the flesh of their fingers lying under them, that they cause most cruel pain; neither commonly do you avail anie thing by pareing them; for growing up within a while after, they press downwards again with the more violence. Therefore the Surgeon is often forced to cut away all the flesh whereinto the sharpness of the nail run's. Which I have don in manie with happie success. Manie have corns growing upon their fingers in divers fashions: They are taken off by pareing away by little and little the callous hardness, and then laying a head of garlick beaten thereon. Yet the cure is more quick and certain, which is performed by causticks, as *aqua fortis*, or oil of vitriol.

CHAP. XXXI.

Of the too short a Prepuce, and of such as have been circumcised.

The caus.

The cure.



When as the Prepuce or fore-skin is too short, it cannot cover the *Glans*. This happen's either by nature, to wit, by the first conformation, or afterwards by some accident, as to those whom religion and the custom of their nation bid's to bee circumcised. The cure is thus: The Prepuce is turned up, and then the inner membrane thereof is cut round, and great care is had, that the vein and arterie which are there between the two membranes of the Prepuce bee not cut in sunder. Hence it is drawn downward by extension, until it cover the *Glans*, a desiccative emplaster being first put between it and the *Glans*, least they should grow together. Then a pipe being first put into the urinarie passage, the Prepuce shall bee there bound until the incision bee cicatrized. This cure is used to the Jews, when having abjured their religion full of superstitions, for hand-somness sake, they would cover the nut of their yard with a Prepuce, and so recover their cut off's-kin.

CHAP. XXXII.

Of Phimosis and Paraphimosis, that is, so great a constriction of the Prepuce about the Glans or Nut, that it cannot bee barred or uncovered at pleasure.

The prepuce is straightened about the *Glans* two waies; for it either cover's the whole Nut, and so straightly encompasse's the end thereof, that it cannot bee drawn upwards, and

and consequently the nut cannot be uncovered; or else it leaves the *Glans* bare under it, being fastned so stiffly to the roots thereof, that it cannot be turned up, nor drawn down, or over the *Glans*. The first manner of constriction is termed *Phimosis*, the later *Paraphimosis*. The *Phimosis* happens either by the fault of the first conformation, or else by a scar, through which occasion the prepuce hath grown lesser, as by the growing of warts. Now *Paraphimosis* is often occasioned by the inflammation of the yard, by impure copulation; for hence ulcers breed between the prepuce and *Glans*, with swelling, and so great inflammation, that the prepuce cannot be turned back. Whence it is that they cannot be handled and cured as you would, and a gangrene of the part may follow, which may by the contagion bring death to all the body, unless it be hindered and prevented by amputation: but if a scar be the cause of the constriction of the prepuce, the patient being plac'd in a convenient site, let the prepuce be drawn forth and extended, and as much as may be stretched and enlarged, then let the scar be gently cut in three or four places on the inner side with a crooked knife, but so, that the gashes come not to the outside, and let them be an equal distance each from other. But if a fleshie excrescence or a wart shall be the occasion of this straitness and constriction, it shall be consumed by the same remedies, by which the warts of the womb and yard are consumed or taken off. But when as the prepuce doth closely adhere to the *Glans* on every side, the cure is not to be hoped for, much less to be attempted.

The causes.

The cure.

CHAP. XXXIII.

Of those whose *Glans* is not rightly perforated, and of the too short or strait ligament, bridle, or cord of the yard.

SOME at their birth, by evil conformation, have not their *Glans* perforated in the middle, but have onely a small hole underneath, toward the bridle and ligament of the yard, called the cord. Which is the cause, that they do not make water in a strait line, unless they turn up their yard toward their bellie; neither by the same reason can they beget children, because through this fault of conformation, the seed is hindered from being cast directly into the womb. The cure is wholly chyrurgical, and is thus performed. The prepuce is taken hold of and extended with the left hand; but with the right hand, the extremitie thereof, with the end of the *Glans*, is cut even to that hole which is underneath. But such as have the bridle or ligament of the yard too short, so that the yard cannot stand straight, but crooked, and as it were turned downwards; in these also the generation of children is hindered, because the seed cannot be cast directly and plentifully into the womb. Therefore this ligament must be cut with much dexteritie, and the wound cured after the manner of other wounds, having regard to the part.

The cause.

The cure.

Children also are sometimes born into the world with their fundaments unperforated, for a skin preternaturally covering the part, hinders the passage forth of the excrement; those must have a passage made by art with an instrument, for so at length the excrements will come forth; yet I have found by experience, that such children are not naturally long lived, neither to live many daies after such section.

Such as are born without a hole in their fundaments are not long lived.

CHAP. XXXIV.

Of the causes of the Stone.

THE Stones which are in the bladder have for the most part had their first origin in the reins or kidneys, to wit, falling down from thence by the ureters into the bladder. The cause of these is twofold, that is, material and efficient. Gross, tough, and viscid humors, which crudities produce by the distempers of the bowels and immoderate exercises, chiefly and immediately after meat, yeeld matter for the stone; whence it is that children are more subject to this disease than those of other ages. But the efficient cause is either the immoderate heat of the kidneys, by means whereof the subtler part of the humors is resolved, but the grosser and more earthie subside, and is hardened as we see bricks hardened by the sun and fire; or the more remains heat of the bladder, sufficient to bake into a stone the feces or dregs of the urine gathered in great plenty in the capacity of the bladder. The straightness of the ureters and urenarie passage may be accounted as an assistant cause. For by this means the thinner portion of the urine floweth forth, but that which is more feculent and muddie being staid behinde, groweth as by scale upon scale, by addition and collection of new matter into a stonie mass. And as a wicke oftentimes dipped by the Chandler into melted tallow, by the copious adhesion of the tallowie substance presently becoms a large candle; so the more gross and viscid feces of the urine stay as it were at the bars of the gathered gravel, and by their continual appuls are at length wrought and fashioned into a true stone.

Why children are subject to the stone in the bladder.

The cause.

CHAP. XXXV.

Of the signs of the Stone in the Kidnies and Bladder.

Why the thigh
is numb in the
stone of the
reins.

Signs of the
stone in the
bladder.



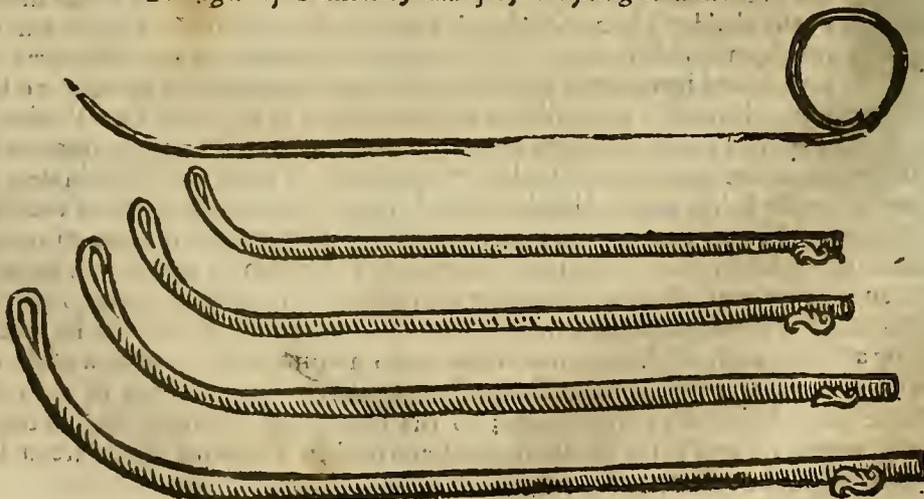
He signs of the Stone in the Reins, are the subsiding of red or yellow sand in the urine, a certain obscure itching at the kidnies, and the sens of a weight or heaviness at the loins, a sharp and pricking pain in mooving or bending the bodie, a numbness of the thigh of the same side, by reason of the compression caused by the stone, of the nervs descending out of the *vertebrae* of the loins of the thigh. But when the stone is in the bladder, the fundament and whole *perineum* is pressed as it were with a heaive weight, especially if the stone bee of anie bigness, a troublesom and pricking pain run's to the verie end of the yard, and there is a continual itching of that part, with a desire to scratch it: hence also by the pain and heat there is a tension of the yard, and a frequent and needles desire to make water, and somtimes their urine cometh from them drop by drop. A most grievous pain torment's the patient in making water, which hee is forced to shew hy stamping with his feet, bending of his whole bodie, and the grateing of his teeth. Hee is oft-times so tormented with excess of pain, that the *Sphincter* beeing relaxed, the right gut falleth down, accompanied with the swelling heat and pain of the *Hemorroid* veins of that place. The caus of such torment is, the frequent striveing of the bladder to expel the stone wholly contrarie to the nature thereof, whereto by sympathie the expulsive facultie of the guts and all their parts of the bellie com as it were for supplie. The sediment of the urine is gross and viscid, and oft-times like the whites of eggs, which argueth the weaknes of the native heat not attenuating the juices. The patient looketh of a pale and yellowish complexion and hollow-eyed, by reason of the almost continual watching which is caused by the bitterness of pain; yet may it more certainly bee known by putting in or searching with a *Catheter*. Which to do, the patient shall bee wished to stand with his bodie somewhat stooping, leaning against somewhat with his back, and holding his knees som foot asunder. Then the *Catheter* beeing bigger or lesser as the bodie shall require, and anointed with oil or butter shall bee thrust with a skilful hand into the passages of the urine, and so into the capacitie of the bladder. But if the *Catheter* cannot com to that capacitie, the patient shall bee placed in such a posture; then shall hee bee laid upon his back on a bench, or the feet of a bed, with his knees bended, and his heels drawn to his buttocks, after which manner hee must almost lie when hee is to bee cut for the stone, as shall bee shew'n hereafter. For thus the *Catheter* is more easily thrust into the bladder, and shew's there is a stone by the meeting and obscure sound of the obvious, hard and resisting bodie. You must have sundrie *Catheters*, that they may serv for everie bodie bigger and lesser, and these must bee crooked, smooth and hollow. When being thrust into the urinarie passage (which before unawares I omitted) they com to the neck of the bladder, they must not bee thrust straight into the bladder; but taking hold of the yard with the left hand, they must bee gently thrust with the right directly into the bladder, especially in men, by reason of the length and crookedness of the way, which tend's in the form of this letter S. It is not so in women by reason of the shortness and straitness of the neck of the bladder. It is fit your *Catheters* bee hollow or fistulous in manner of a pipe, that they may receiv a silver wiar or string, that may hinder the gross and viscid humor, clotted blood, or the like, from stopping the further end of the *Catheter*, through which the suppressed urine ought to pass and bee made. But now assoon as wee perceiv that the *Catheter* is com into the capacitie of the bladder, the wiar must bee drawn forth, that so the urine may the freelier flow out by the hollownes of the *Catheter*. You may perceiv the shapes of these instruments by this following figure.

Why such as
have a stone in
the bladder are
troubled with
the falling of
the fundament.

How to search
for the stone
in the bladder
with a *Catheter*.

The figure of
the neck of the
bladder is dif-
ferent in men
and women.

The figure of Catheters, and of a silver string or wiar.



CHAP. XXXVI.

Prognosticks in the Stone.


 hen the Stone is cast forth of the kidnie (whereas it bred by little and little) and is so driven into one of the ureters, that it wholly stop it, yet thereupon there followeth no suppression of the urine; for seeing nature hath made divers parts of our bodie double, all the urine floweth into the other ureter. But if they shall bee both stopped with stones, there is no doubt but the urine will bee wholly supprest, and death ensue by the suffocation and extinction of the native heat, by the urine flowing back by the rivelets of the veins over all the whole bodie. Such as have a small stone cast forth of their reins into the cavities of the ureters, these, untill this stone bee fallen into the bladder, have cruel pain with gripeings, with often desire to go to stool and make water, but oft-times do neither. For such oft-times have their bellies distended with flatulencies: an argument hereof is their continual belching or breaking of winde. But by sneezing and coughing, or anie other concussion of the whole bodie, a pricking pain is forthwith felt, whereas the stone stop's, especially if it bee either rough, or have sharp points like horns. This pain is communicated to the hip and thigh by sympathie, and som have the stones drawn up as it were with great violence. To these may bee added the Colick, cholerick vomiting, and almost a general sweate. The stone in the kidnies is most commonly bred in such as are antient, by reason of the weakness of the expulsive facultie. But the stone in the bladder happeneth to such as are more young, becaus the native heat is more vigorous in such, and strong and inordinate motions encrease the strength of the expulsive facultie. When the stone is in the bladder, and the urine appeareth bloodie, it is the sign of a small, as also a pricklie and rough stone, for thus it more easily entrencheth into the neck of the bladder, and exulcerateth it beeing fleshie, whence the blood cometh away with the urine, and most cruel pain as of needles thrust into the flesh, especially after labor and much exercise: on the contrarie, a larger and more smooth stone will not cause such tormenting pain, and it causeth a milkie water. The shapes of stones in the kidnies are various, according to the varietie of the strainers through which they pass whilst they are bred. Verily I have seen stones which represented the figure of grayhounds, hogs and other creatures, and things wholly contrarie to man's nature, by the production of their prickles and as it were branches. Som are four square, others longish and like a finger, other som of a round figure with manie protuberancies like a pine-apple kernel; neither is the varietie less in magnitude, number and color: for som are yellowish, others whitish, red, ash-colored or som other like, according to the various temper of the affected bodies. The stones of cholerick and lean men usually concrete by preternatural heat and drieness; but those of phlegmatick or fat bodies, of a certain congelation as it were and obstruction of the passages. A stone falling somtimes from the bottom of the bladder into the passages of the urine quite stop's it up, and thence followeth a total suppressing of the urine. Therefore then the patient shall bee placed upon his back and his legs beeing lifted up on high, hee shall bee shaken and tossed up and down, just as one would shake up a sack to fill it; for thus it is forced back into the bladder from whence it came, from the passage of the urine whereinto it was got; yet it may also bee forced back by thrusting in a Catheter. The pain which afflicteth such as have the stone is somwhiles continual, yet more frequently it cometh by fits and returns, somtimes monthly, otherwhiles yearly. Such as have the stone in the kidnies make for the most part waterish urine. Women are not so subject to the stone as men, for they have the neck of their bladder more short and broad, as also more straight; wherefore the matter of the stone by reason of the shortness of the passage is evacuated in gravel, before it can bee gathered and grow into a stone of a just magnitude; yet stones breed in som women and those equally as big as in men, and therefore they are to bee cured by section and the like remedies. When the stone exceedeth the bigness of an egg, it can scarce bee taken away without tearing of the bladder, whence happeneth an unvoluntarie shedding of the water, cureable by no art, becaus the bladder, seeing it is nervous and without blood, beeing once torn admitteth no consolidation, add hereto that inflammation and a gangrene, often following the rending of the bladder, bring inevitable death. The patient run's the same hazzard, if a long stone bee pulled out sidewise with your instrument, or if it bee inclosed in a membrane (which kinde of stone can scarce bee found with a Catheter) and so bee fastned to the bladder, or otherwise if the stone it self bee fastned into the substance of the bladder, or lastly if by anie chance the Surgeon beeing about to pluck out the stone shall hurt the bodie of the bladder with his instruments. Yet stones of a more indifferent bigness are more safely extracted out of the bladder then those which are less, and the patient more frequently and happily recovereth. For they do not scape from the instrument, and the patient beeing used a long while to endure pain, as that which hath been a long time a growing doth more easily and constantly away with the inflammation, pain and other symptoms which happen after cutting, yea in cutting. Having thus spoken of the causes, signs, places, symptoms and

How death may ensue by the suppressing of urine.

Why stones of the kidnies have sundrie shapes.

Why men are more subject to the stone then women.

What stones cannot bee taken out of the bladder without killing the patient.

prognosticks, wee must com to the cure, begining with that part which is termed *Prophylactice*, that is the preventing part.

CHAP. XXXVII.

What cure is to bee used when wee fear the Stone.

What diet such
must use as fear
the stone.



Let must first bee appointed, which by the convenient use of the six things not natural (as they term them) may heap up small store of gross, tough and viscid humors in our bodies. Therefore cold and cloudie air is to bee shunned. They must abstain from fish, beef, pork, water-fowl, puls, cheef, milk-meats, fried and hard eggs, rice, cakes and all pastrie, unleavened bread, and lastly, all manner of obstructing meats. Also garlik, onions, leeks, mustard, spices, and lastly, all things which over-heat the blood and humors must bee shunned, especially if you fear that the stone is concrete by the heat of the reins. Standing and muddie waters, thick and troubled wines, beer, and such kinde of liquors must bee eschewed. Satiety in meats and drinks is to bee shunned, as that which breed's crudities. Also long watching and continual labor becauf they inflame the blood, caus crudities, and preternatural heat must carefully bee eschewed, as also more vehement passions of the minde. If the bodie bee plethorick, then it must bee evacuated by phlebotomie, purgeing and vomiting, which is accounted for a singular remedie for the prevention of this disease. For the performance of all which things a Physician shall bee consulted with. But becauf Physicians are not in everie place and alwaies as hand, I have thought good to set down these following medicines; yet wee must first remember this counsel of *Galen*; the use of diureticks, and strong purgeing medicines is hurtful, as often as there is inflammation in the reins and bladder, for so the conflux of the humors to the affected parts is the greater, whence the inflammation and pain are increased.

Lib. 13. method.

A lenitive and
lubricateing
syrripe.

A diuretick
Apozeme.

A diuretick
and lenitive
broth.

A diuretick
powder.

The lee made
of the ashes of
bean-stalks a
diuretick.
Anodine gly-
sters in the
stone.

Remedies a-
gainst the stone
of the kidneys
coming from
a cold caus.

Wherefore first using relaxing medicines, as six drams of *Cassia* newly drawn, with Div. of *Rubarb* in powder mixed therewith; then lenitive and refrigerating medicines shall bee inwardly and outwardly used, such as is this following syrripe. *R. summitatum malv. bismal. & violar. an. m. β. rad. alth. ℥i. glycyr. ℥ss. 4. sem. frigid. major. an. ℥i. fiat decoctio. R. prædict. decoctionis ℥β. in colaturâ dissolve sacc. albiss. ℥ii. mellis albi ℥i℥. fiat syrupus secund. artcm;* let the patient use this often. This following apozeme is also verie effectual for the same purpose. *R. rad. aspar. gramin. polyp. quercini, passul. mund. an. ℥ss. betonic. berniar. agrimon. omnium capill. & pimpinel. an. m. β. 4. sem. frigid. major. & sem. fœnic. an. ℥i. folior. sen. ℥vi. fiat decoct. ad ℥β. in colaturâ dissolve syrupi de Althæa & de berniar. an. ℥i℥.* Make a clear apozeme and let it bee aromatized with a little cinnamon, for two doses; let him take the first dosis in the morning two hours before meat, and the other at four of the clock in the afternoon. Moreover this following broth hath an excellent and certain power to prevent the stone. *R. bordei integr. p. i. radic. petroselini, acetos. fœnic. cichor. brusci an. ℥i. 4. sem. frigidorum conuassatorum an. ℥ss. fol. acetos. portul. lactucæ, summitatum malvæ, & violar. an. m. β. bulliant in aquâ fluviatili cum gallo gallinaceo & crure vitulino;* let the broth bee kept, and let the patient take thereof six ounces for four daies; in the morning two hours before meat, with an ounce of the juice of Citrons gently warmed with the same broth at the takeing thereof; for thus, much urine will bee made in a short while after, full of a sandie sediment and a gross viscid humor. Whereby you may certainly gather, that this kinde of broth is verie effectual to cleans the passages of the urine, neither in the interim, doth it anie harm to the stomach and other parts by which it passeth: so that it may bee rightly termed a medicinal nourishment. You may also profitably use this following powder. *R. nucleorum mespilorum ℥i. pul. elect. diamarg. frig. ℥ii. 4. sem. frigid. majorum mund. glycyrbizæ razæ, ℥i. sem. saxifrag. ℥ii. sem. milii solis, genist. pimpin. brusci & asparag. an. ℥i. sem. althææ, ℥β. sacch. albiss. ℥vi. fiat pulvis;* let him take a spoonful in the morning three hours before meat. Also som think that lee made of the stalks and husks of beans is a good preservative against this disease. Besides the use of this following glyster hath done good to manie. *R. fol. lactuc. scariol. portul. an. m. i. flor. viol. & nenph. an. p. i. fiat decoctio. ad lib. i. in colaturâ dissolve cassiæ fistulæ ℥i. mellis viol. & sacc. rub. an. ℥i℥. olei viol. ℥iiii. fiat clyster. This which followeth is the fitter to asswage the pain. R. flor. cham. melil. summitat. aneth. berul. an. p. ii. fiat decoctio in lacte vaccino; in colaturâ dissolve cassiæ fistul. & saccar. alb. an. ℥i. vitellos ovorum num. ii olei anethini, & chamem. an. ℥ii. fiat clyster. In the interim let the kidneys bee anointed on the outside with unguentum rosatum, refrigerans Galen. and populeon used severally, or mixed together, laying a double linnen cloth dipped in oxycrate. But if the concretion of the stone bee of a cold caus, the remedies must bee varied, as follow's: *R. terebeinth. venet. ℥i. cort. citri ℥ii. aquæ coct. ℥ii. fiat potio. Or elf; R. cassiæ recent. extract. ℥vi. benedict. lax. ℥iii. aq. fœnic. ℥ii. aq. asparag. ℥i. fiat potio;* let him take it three hours before dinner: this following apozeme is also good. *R. rad. cepet. bardan. & gram. an. ℥iii. bismal. cum toto, beton. an. m. β. sem. milii solis, bardan. urtic. an. ℥ii. sem. melon. glycyrbiz. ras. an. ℥i℥. ficus num. 4. fiat decoct. ad quart. iii. in expressâ collaturâ, dissolve sirup. de caphan. & oxymilitis scylitici**

litici an. ℥i. β. sacchar. albis. ℥iii. fiat apozema pro tribus dosibus, clarificetur & aromatiz. cum ℥i. cinam. & ℥β. sant. citrin. let him take four ounces three hours before dinner. R. rad. petrosel. fenicul. an. ℥i. saxifrag. pimp. gram. & bardan. an. m.β. quatuor seminum frig. major mundat. & milii. solis an. ℥ii. fiat decoctio, cape de colaturâ ℥β. in quâ dissolve sacch. rub. & syrup. capill. ven. an. ℥i. β. Let it bee taken at three doses, two hours before meat. The following powder is verie effectual to dissolv the matter of the stone. R. sem. petrosel. & rad. ejusdem mundat. an. ℥β. sem. cardui, quem colcitrâpam vocant, ℥i. let them bee dried in an oven or stone with a gentle fire, afterwards let them bee beaten severally and make a powder, whereof let the patient take ℥i. β. or two scruples with white wine, or chicken-broth fasting in the morning by the space of three daies. Or, R. coriand. præp. ℥iv. anis. maratbri, ganor, alkakengi, milii solis, an. ℥ii. zinzib. & cinam. an. ℥ii. turbit. electi ℥i. cari ℥ii. galang. nucis moschat. & lapid. judiaci an. ℥i. fol. serne mund. ad duplon omnium, diacrydii ℥ii. β. misce, fiat pulvis: the dosis is about ℥i. with white wine three hours before meat. Against the flatulencies which much distend the guts in this kinde of disease, glysters shall bee thus made; R. malu. bismal. pariet. origani, calament. flor. chamem. Carminative sumit. anethi, an. m.β. anisi, carvi. cumini, fœnic. an. ℥β. baccar. laur. ℥iii. sem. rutæ ℥ii. fiat de-glysters. coctio, in colaturâ, dissolve bencd. lax. vel diaphænic. ℥β. consecr. bac. lauri ℥iii. sacchar. rub. ℥i. olei aneth. chamem- & rutar. an. ℥i. fiat clyster. Or, R. olei nucum & vini mal. an. ℥β. aq. vitæ ℥β. fiat clyster; let it bee kept long, that so it may have the more power to discuss the winde.

CHAP. XXXVIII.

What is to bee don, when the stone falleth out of the Kidnie into the Ureter.



Of-times it falleth out that the reins using their expulsive facultie force down the stone (whose concretion and generation the Physicians by the formerly prescribed means could not hinder) from themselves into the ureters; but it itaith there either by reason of the straightness of the place, or the debilitie of the expulsive facultie. Therefore then cruel pain tormenteth the patient in that place whereas the stone sticketh, which also by consent may bee communicated to the hip, bladder, testicles and yard, with a continual desire to make water and go to stool. In this case it behooveth the Physician that hee supplie the defect of nature, and assist the weak endeavors.

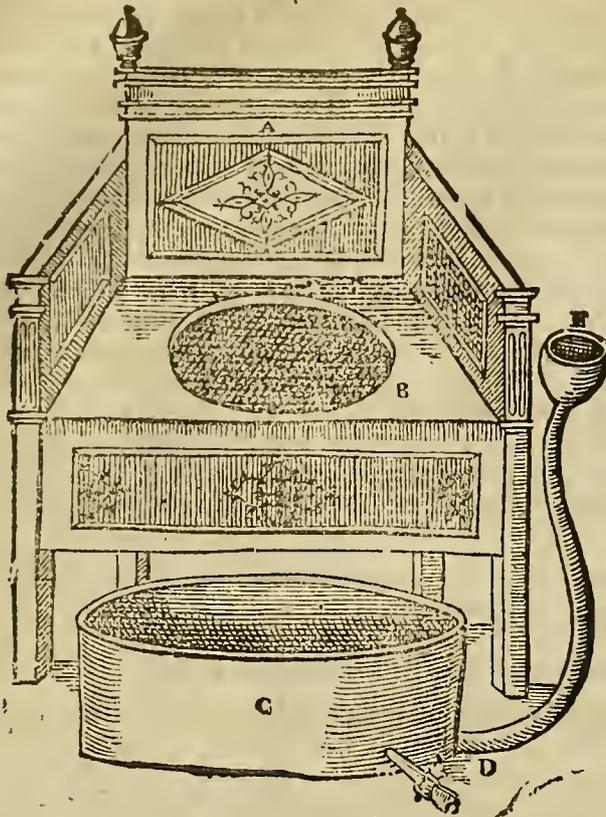
Therefore let the patient if hee bee able mount upon a trotting horse, and ride upon him the space of som two miles, or if hee can have no opportunitie to do so; then let him run up and down a pair of stairs untill hee bee wearie, and even sweat again; for the stone by this exercise is oft-times shaken into the bladder; then presently shall bee given or taken by the mouth such things as have a lenitive and relaxing facultie, as oil of sweet almonds newly drawn and that without fire, and mixed with the water of pellitorie of the wall and white wine. Let frictions of the whole bodie bee made from above downwards with hot clothes; let Ventoses with a great flame bee applied one while to the loins, and another while to the bottom of the bellie, a little below the grievèd place; and unless the patient vomit of his own accord, or by the bitterness of his pain, let vomiting bee procured with a draught of water and oil luke-warm; for vomiting hath much force to drive down the stone by reason of the compressiom of the parts, which is caused by such an endeavor: lastly, if the stone descend not by the power of these remedies, then the patient must bee put into a *Semiscupium*, that is a Half-bath, made of the following decoction. R. malvæ, bismal. cum toto an. m. ii. beton. nasturt. saxifrag. berul. parietar. violar. an. m. iii. sem. melonum, milii solis, alkekengi. an. ℥vi. cicer. rub. ℥i. rad. appii. gram. fœniculi, & eringii. an. ℥iiii. in sufficienti quantitate aque pro incessu; coquantur ista omnia inclusa sacco; herein let the patient sit up to the navel: neither is it fit that the patient tarrie longer in such a bath then is requisite, for the spirits are dissipated, and the powers resolved by too long stay therein. But on the contrarie, if the patient remain as long as is sufficient in these rightly made, the pain is mitigated, the extended parts relaxed, and the passages of the urine opened and dilated, and thus the stone descendeth into the bladder. But if it bee not mooved by this means any thing at all out of the place, and that the same total suppression of urine do as yet remain, neither before the patient entered into the bath the putting of a *Catheter* into the bladder did any thing avail, yet notwithstanding hee shall trie the same again after the patient is com out of the bath, that hee may bee thoroughly satisfied whether peradventure there may bee anie other thing in these first passages of the yard and neck of the bladder, which may withhold the urine; for the *Catheter* will enter far more easily, the parts being relaxed by the warmness of the bath: then inject som oil of sweet almonds with a syringe into the *Urethra* or passage of the yard; whilst all these things are in doing, let not the patient com into the cold air. But heer I have thought good to describe a chair for a bath, wherein the patient may fitly sit.

Signs of the stone stopping in the ureter.

Remedies to force down the stone sticking in the ureter.

A decoction for a bath.

The figure of a Chair for a Semicupium.



- A. Sheweth the whole frame of the Chair.
 B. The hole wherein the patient must sit.
 C. The Cistern that hold's the water.
 D. A Cock to emptie the water when it groweth cold.
 E. A Funnel whereby to pour in warm water.

There may also bee another decoction made for the bath, as thus: *R. rad. raph. alb. an. lb. ii. rad. rusc. petrosel. & asparag. an. lb. i. cumin. fenicul. ameos an. ℥iiii. sem. lini, fenug. an. ℥vi. fol. marub. parietar. flor. chamem. melil. anethi. an. m. ii. bulliant omnia secundum artem in aquæ sufficienti; & vini albi odoriferi exigua quantitate ad consumptionem tertiae partis pro Semicupio.* Also the same decoction may bee used for glisters, adding thereto two yolks of eggs, and four ounces of oil of lillies, with ℥i. of oil of juniper, which hath a certain force to asswage the pain of the stone and collick. But a far less quantitie of the decoction in a glister must bee used in these diseases, than usually is appointed in other diseases; otherwise there will bee danger lest the guts being distended should more press upon the kidneys and ureters, troubled in som sort with inflammation, and so increas the pain and other symptoms. This following cataplasim shall bee profitably applied to the grieved place, to wit, the loins or flanks and bottom of the bellie, for it is verie powerful to asswage pain, and held forwards the falling down of the stone. *R. rad. alb. & raphani, an. ℥iiii. pariet. fenic. senecionis, nasturt. berul. an. m. i. herniariae m. ℥. omnibus in aqua sufficienti decoctis, & deinde contritis, adde olei aneth. chamem. & pingued. cuniculi, an. ℥ii. farin. cicer. quantum sufficit, fiat cataplasma ad usum prædictum.* After, by these means, the stone forced out of the ureter is fallen into the bladder, the pain presently (if there bee but one stone, for sometimes more with much gravel do again fall into the ureter) is mitigated, and then the patient is troubled with an itching and pricking at the end of his yard and fundament. Therefore then unless hee bee verie weak, it is fit that hee ride and walk a foot, and take ℥iv. of *species Lithontriben* in four doses with white wine, or the broth of red Cicers three hours before dinner and supper. Besides, let him plentifully drink good wine, and after hee hath drunk, let him hold in his urine as long as hee can; that so it being gathered in great plentie, it may presently thrust the stone out of the bladder with the more force; for which purpose you may also inject the following liquor into the bladder. *R. syrupi capill. ven. ℥i. aquæ alkekengi ℥iiii. olei scorpionum. ℥β.* Let it bee injected into the bladder with a syringe.

An anodine
Cataplasim.

Signs of the
stone fallen
out of the ureter
into the bladder.

CHAP. XXXIX.

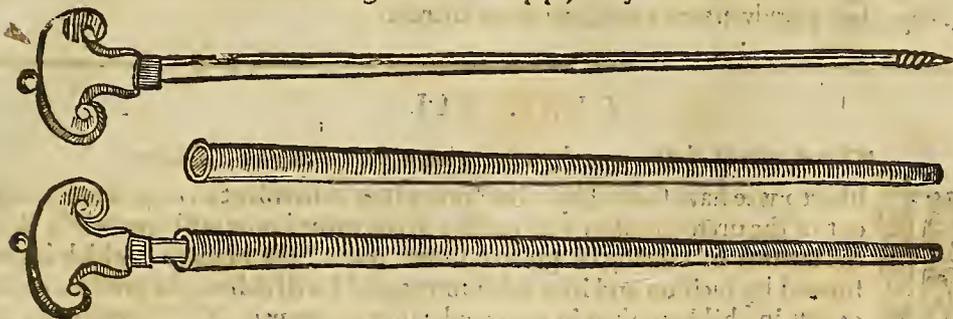
What must bee don the stone being fallen into the neck of the bladder, or passage of the yard.



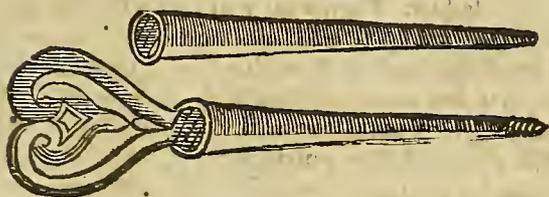
After the stone is fallen out of the capacitie of the bladder, and stop's in the neck thereof, or passage of the yard, the Surgeon shall have a special care that hee do not force or thrust back the stone from whence it came, but rather that hee press it gently with his fingers to the end of the yard, the passage being first made slipperie by injecting som oil of sweet almonds. But if it stop in the end of the *Glans*, it must bee plucked out with som crooked instrument; to which if it will not yeeld

yeeld, a Gimblet with a pipe or case thereto, shall bee put into the passage of the yard, and so it shall bee gotten out, or elf broken to pieces by the turning or twining about of the Gimblet, which I remember I have divers times attempted and don; for such Gimblets are made with sharp scrues, like ordinarie gimblets.

The delineation of a Gimblet made to break the stones in the passage of the yard, together with its pipe, or case.



The effigies of another lesser Gimblet.



Verily what Gimblets soever are made for this business, their bodie or point must bee no thicker then a small probe; least whil't they are forced or thrust into the Urethra, or urinarie passage, they might hurt the bodies next unto them by their violent entrance.

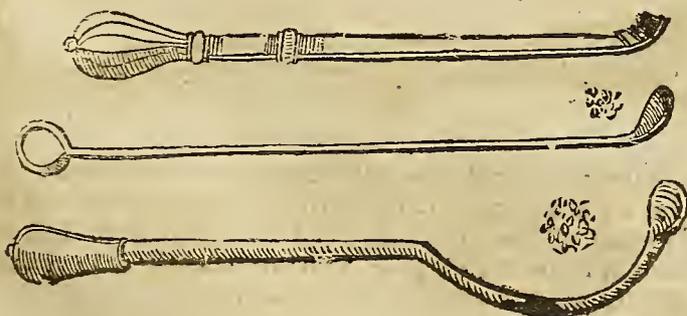
CHAP. XL.

What course must bee taken, if the stone sticking in the Urethra, or urinarie passage, cannot bee gotten out by the fore-mentioned arts.

BUt if the stone bee more thick, hard, rough and remote from the end of the yard, then that it may bee gotten out by the means formerly mentioned in the precedent Chapter, and if that the urine bee wholly suppressed therewith; then must you cut the yard upon the side with a straight wound: for you must not make incision on the upper part, for fear of a flux of blood, for a large vein and arterie lieth there-under; nor in the lower part, for so it would scarce ever heal again, for that it is a bloodless part, and besides, the continual and acrid falling of the urine would hinder the agglutination: wherefore the incision must bee made on the side, on that part whereas the stone most resist's and swell's out. For that part is the more fleshy; yet first the end of the skin of the prepuce must bee much drawn up so to cover the Glans, which being don, the Urethra shall bee tied with a thred a little above the stone, that so the stone may bee staid there, and may not fall back again. Therefore then, incision being made, the stone must bee taken forth, and the skin which was drawn more violently to cover the Glans, is to bee let go back again; for so it will com to pass that a whole part of the skin may cover the cut-yard, and so it may bee the more speedily united, and the urine may naturally flow out. I have by this means oft-times taken forth the stone with the instruments heer delineated.

When the yard may bee safely cut.

Instruments fit to take the stone forth of the opened Urethra, or urinarie passage of the yard.



Og

Then

Then for the agglutination, if need require, it will bee requisite to sew up the lips of the wound, and applie this agglutinative medicine following. *R. tereb. venet. ℥iiiii. gum. elemi, ℥i. sang. dracon. & mastic. an. ℥ss. fiat medicamentum ut dictum est*: then the whole yard must bee covered over with a repercussive medicine made of the whites of eggs, with the powder of bole armenick, aloës, *farina volatilis*, and oil of roses. Lastly, if need so require, a wax-candle, or leaden string anointed with Venice turpentine shall bee thrust into the *Urethra*, to hasten the agglutination, and retain the natural smoothness and straightness of the urinarie passage, least peradventure a caruncle grow therein.

An agglutinative medicine.

How to hasten the agglutination.

CHAP. XLI.

What manner of section is to bee made when a stone is in a boy's bladder.



hitherto wee have shewed, by what means it is convenient to draw small stones out of the ureter, bladder and passage of the urine; now will wee briefly shew the manner of taking of greater stones out of the bladder, which is performed by incision and iron instruments, and I will deliver the practice thereof first in children, then in men, and lastly in women. First therefore let the Surgeon take the boy (upon whom it is determined the work shall bee performed) under the arm-holes, and so give him five or six shakes, that so the stone may descend the more downwards to the neck of the bladder. Then must you cause a strong man, sitting upon an high seat, to lay the childe upon his back with his face from him-ward, having his hips lying upon his knees. The childe must lie somewhat high, that hee may breathe the freelier, and let not the nervous parts bee too much stretched, but let all parts bee loof and free for the drawing forth of the stone. Furthermore, it is fit that this strong man, the childe's legs being bended back, with the childe, that putteth his legs to his hams, that hee draw them up as much as hee can, and let the other bee sure hee keep them so; for this site of the childe much conduceth to well performing of the work. Then let the Surgeon thrust two of the fingers of his left hand as far into the childe's fundament as hee is able; but let him with his other hand presse the lower bellie, first wrapping a cloth about his hand, that so the compression may bee the less troublesome, and least inflammation should happen rather by this means than by the incision. Now the compression hath this use, to cause the stone to descend out of the bottom of the bladder into the neck thereof under the *os pubis*, whither after it is arrived, it must bee there kept, and as it were governed by the command of your hand, least it should slide from that place whereto you have brought it. These things thus don, nothing now remaineth, but that the Surgeon, with a wound som two fingers breadth distant from the fundament, cut through all the flesh even to the stone on the left side of the *Perinaeum*. But in the *interim*, let him beware that hee hurt not the *intestinum rectum*; for it may, and usually doth happen, that whilst the stone is brought out of the bottom of the bladder to the neck thereof, this gut is doubled in: now, if it bee cut with your incision-knife, it cometh to pass that the excrements may sometimes com out at the wound, and the urine by the fundament, which thing hath in manie hindred the agglutination and consolidation of the wound; yet in som others it hath don little harm, becauf in this tender age manie things happen, which may seem to exceed nature: the incision being made, the stone must bee plucked forth with the instrument heer expressed.

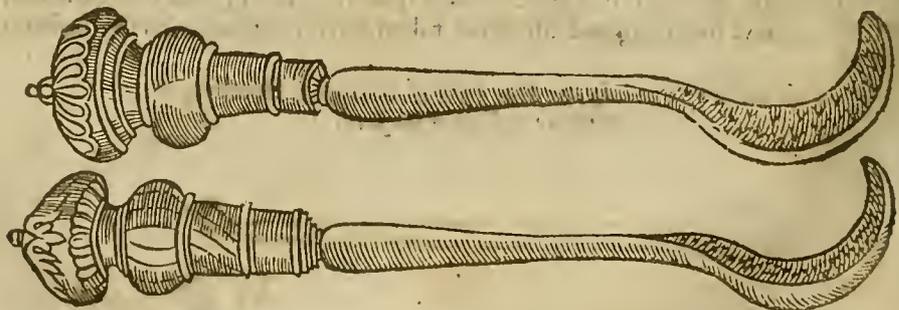
Why the boy must bee shaken before cutting.

How to place the childe before dissection.

Where to divide the *perinaeum*.

Nature verie powerful in children.

Hooks to pull stones forth of children's bladders.



The stone being drawn out, a small pipe shall bee put into the wound, and there kept for som space after, for reasons heerafter to bee delivered; then his knees shall bee bound together, for thus the wound will the sooner close and bee agglutinated. The residue of the cure shall bee performed by reducing the general cure of wounds, to the particular temper of the childe's age, and the peculiar nature of the childe in cure.

General rules must bee reduced to particular bodies.

CHAP. XLII.

How to cut men, for the taking out of the stone in the bladder.



Seeing wee cannot otherwise help such men as have stones in their bladders, wee must com to the extreme remedie, to wit, cutting. But the patient must first bee purged, and if the case require, draw som blood; yett must you not immediately after this, or the day following hasten to the work: for the patient cannot but bee weakened by purgeing and bleeding. Also it is expedient for som daies before to foment the privities with such things as relax and soften, that by their yeelding, the stone may the more easily bee extracted. Now the cure is thus to bee performed: The patient shall bee placed upon a firm table or bench with a cloth manie times doubled under his buttocks, and a pillow under his loins and back, so that hee may lie half upright with his thighs lifted up, and his legs and heels drawn back to his buttocks. Then shall his feet bee bound with a ligature of three fingers breadth cast about his ankles, and with the heads thereof beeing drawn upwards to his neck, and cast about it, and so brought downwards, both his hands shall bee bound to his knees, as the following figure sheweth.

What to bee don before dissection.

How to lay the patient.

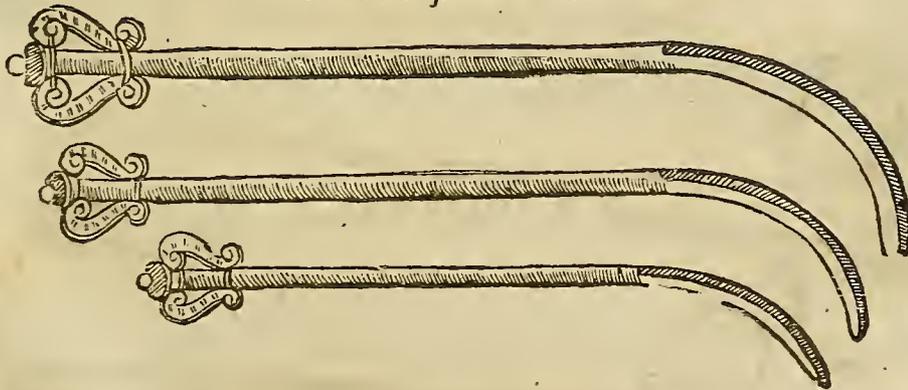
The figure of a man lying readie to bee cut for the stone.



The patient thus bound, it is fit you have four strong men at hand; that is, two to hold his arms, and other two who may so firmly and straightly hold the knee with one hand, and the foot with the other, that hee may neither moov his limbs, nor stir his buttocks, but bee forced to keep in the same posture with his whole bodie. Then the Surgeon shall thrust into the urenarie passage even to the bladder, a silver or iron and hollow probe, anointed with oil, and opened or slit on the out-side, that the point of the knife may enter thereinto, and that it may guide the hand of the workman, and keep the knife from piercing anie farther into the bodies lying there-under. The figure of this probe is heer exprest.

Why the probe must bee slit on the out-side.

Probes with slits in their ends.



Hee shall gently wrest the probe, beeing so thrust in, towards the left side, and also hee who standeth on the patient's right hand, shall with his left hand gently lift up his cods, that so in the free and open space of the left side of the *perinaeum*, the Surgeon may have the more libertie to make the incision upon the probe, which is thrust in and turned that way. But in making this incision, the Surgeon must bee careful that hee hurt not the seam of the *perinaeum* and fundament. For if that seam bee cut, it will not bee easily consolidated, for that it is callous and bloodless, therefore the urine would continually drop forth this way. But if the wound bee made to near the fundament, there is danger, least by forcible plucking forth of the stone hee may break som of the hemorrhoid veins, whence a bleeding may ensue, which is scarce to bee stopped by anie means, or that hee may rend the sphincter-

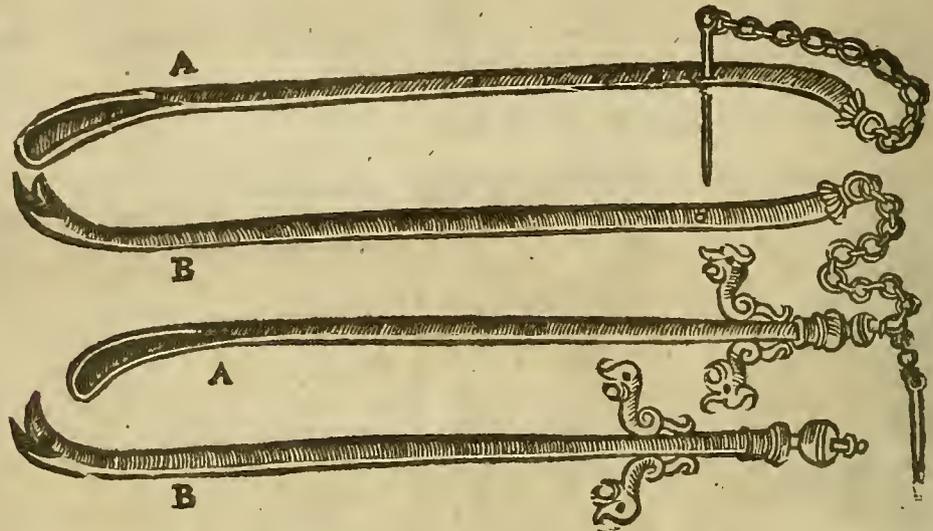
Why the seam of the *perinaeum* must not bee cut.

muscle,

Where to
make the
wound to take
forth the
stone.
That which is
torn is sooner
healed then
that which is
cut.

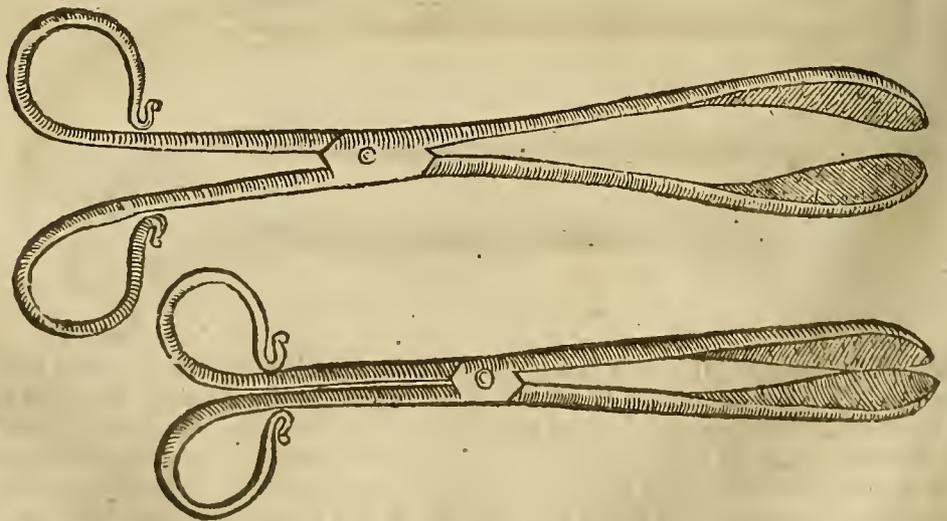
muscle, or bodie of the bladder, so that it can never bee repaired. Therefore it must bee made the space of two fingers from the fundament; according to the straightness of the fibres, that so it may bee the more easily restored afterwards. Neither must the incision thus made, exceed the bigness of ones thumb, for that it is afterwards enlarged by putting in the Crow's beak and the dilater, but more by the stone as it is plucked forth. But that which is cut, is neither so speedily nor easily healed up, as that which is torn. Then presently put into the wound som one of these silver instruments delineated heer below, and called by the name of *Guiders*, for that they serv as guides to the other instruments which are to bee put into the bladder; these are made with a round and prominent head, whereby it may bee put into the described cavities of the *probe*, and they are noted by these letters, A.A. then there are others marked with the letters, B.B. and called by the like name, and are to bee put under the former, being made forked at the end, that so it may, as it were, embrace the end of the former.

The figures of *Guiders* of two sorts.



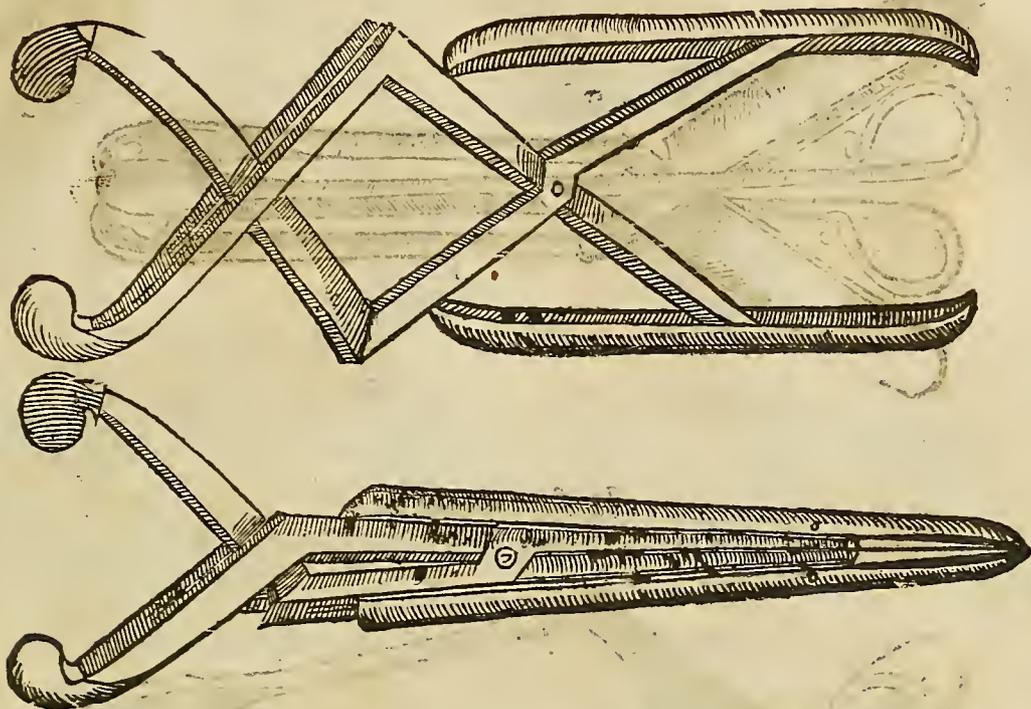
Now the *probe* is to bee drawn forth, and the *guiders* to bee thrust and turned up and down in the bladder, and at length to bee staid there by putting in the pin; yet such *guiders* as want a pin are fitter for the hand, and are by som called *spatulae*. Then must they bee held betwixt the Surgeon's fingers. It will bee also necessarie for the Surgeon to put another instrument called the *Duck's-bill* between the two *guiders* into the capacity of the bladder; hee must thrust it in somewhat violently, and dilate it so thrust in with both his hands, turning it everie way to enlarge the wound as much as shall bee sufficient for the admitting the other instruments which are to bee put into the bladder; yet it is far better for the patient, if that the wound may with this one instrument bee sufficiently dilated, and the stone pulled forth with the same without the help of anie other.

The effigies of an instrument called a *Duck's-bill*.



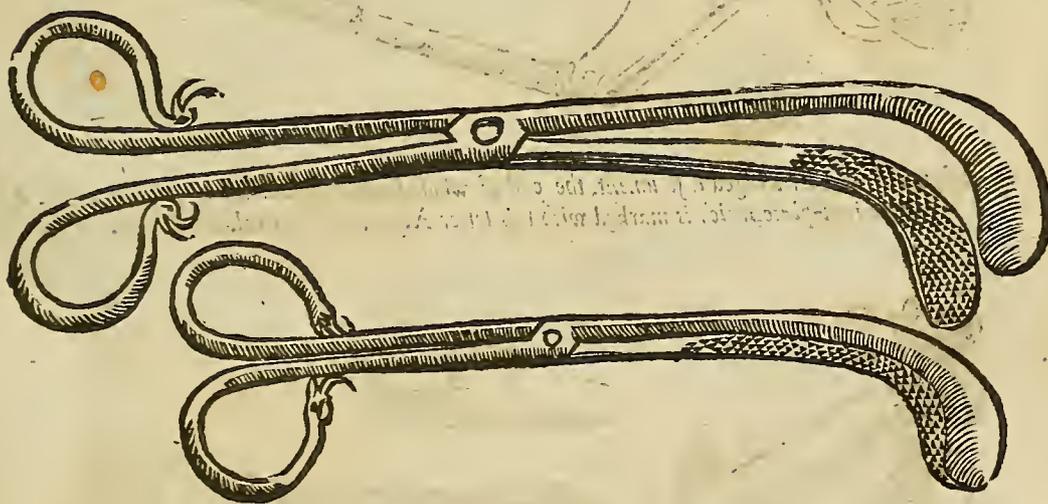
Which if you have not in a readines, and the largeness of the stone require more dilatation, then must you put in this dilater; for being put into the bladder, and the handle pressed together, it will dilate the incision as much as you desire.

The figure of a Dilater shut and opened.



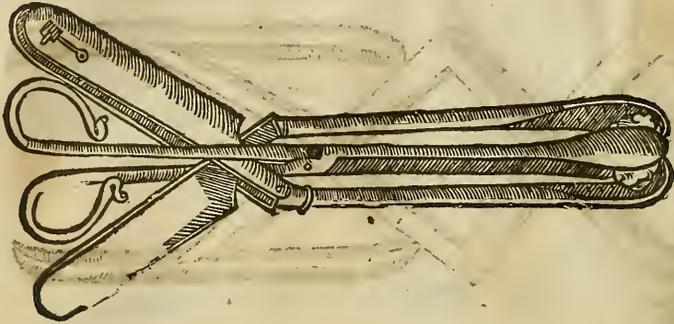
The wound by the help of this instrument being dilated as much as is sufficient, then put in the straight Ducks-bill before described, or the crooked heer exprest.

Crooked Forcipes's like a Ducks-bill.

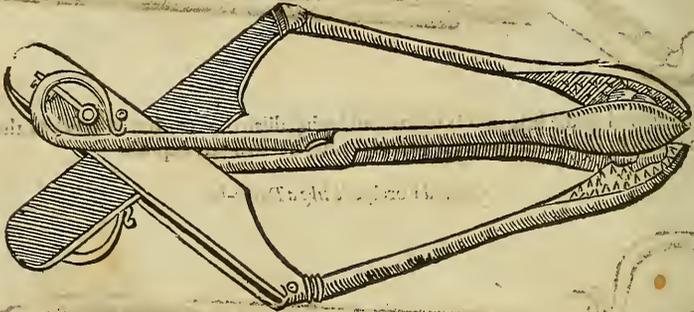


The stone may bee sought and taken hold of with these instruments, and beeing taken hold on, the branches of the instrument shall bee tied together, least they should suffer that to slide away which they have once taken hold of. Neither shall the stone bee suddenly plucked out, but easily shaken to and again, and at length gently drawn forth. Yet you must beware that you do not press it too straightly in the *forceps*, least you should break it in pieces: Som, least it should slip away, when they have once taken hold thereof, put their two fingers into the fundament, and put them above the stone that it may not fall out, nor slip back again, which I think conduceth much to the easie extraction of the stone. There are others who strengthen this comprehension by putting in on each-side above and below these winged instruments, so that the stone can slip forth on no side.

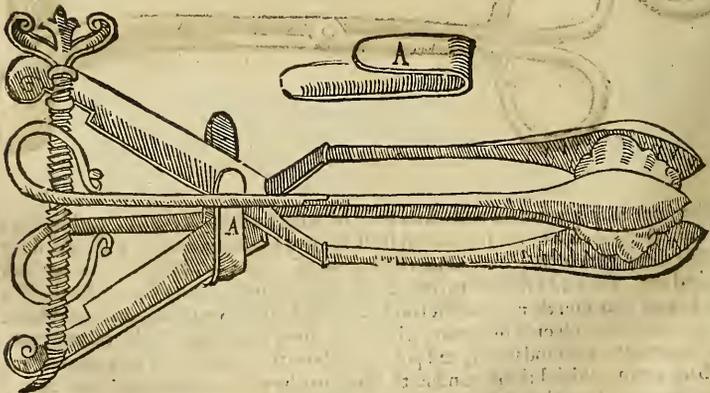
Winged instruments to hold the stone with the Duck's-beak.



The figure of another.



The figure of another winged instrument, the end of whose handle is fastened by a screw, as also a bended iron-plate, which is marked with this letter A. for the firmer holding thereof.

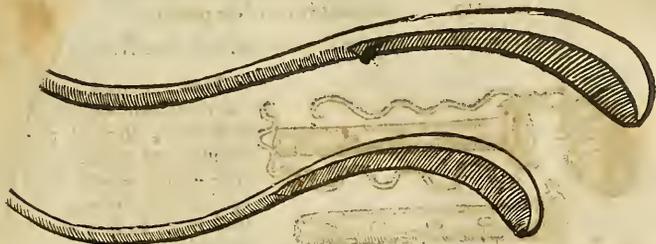


A note of
more Stones
then onc.

After the stone is by these means drawn forth, observe diligently whether it bee worn on any side, and as it were levigated; for that happeneth by the wearing or rubbing of one or more stones upon it; yet there is no surer way to know this, then by searching with a Catheter. The one end of the following instrument may supplie the want of a Catheter or probe, and the other may serve for a scoop or cleanser.

A cleanser

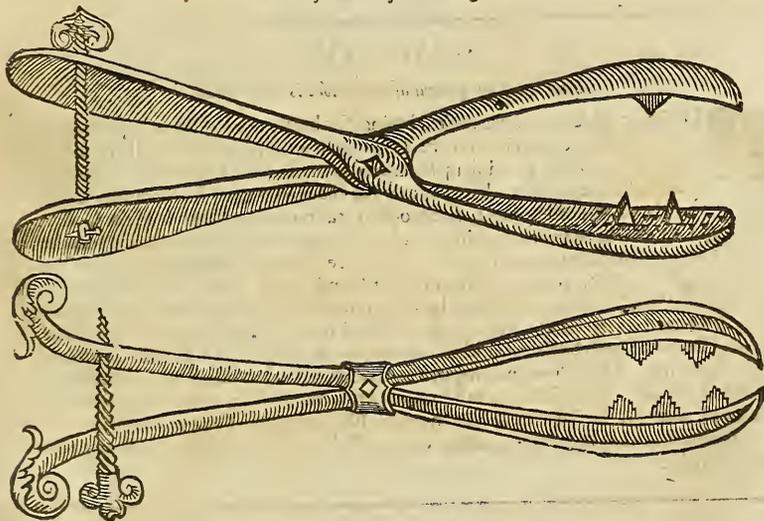
A cleanser or scoop whereby you may search whether there bee anie more stones behinde, as also cleanser or purge the bladder from gravel, clots of blood, and other such bodies, as use to remain behinde after the drawing forth of the stone.



For if other stones remain behinde, they shall bee drawn forth as the former, which being done, the end of the instrument, which is crooked and hollowed like a scoop or spoon, shall bee thrust by the wound into the bladder, and therewith you shall gather together and take out what gravel soever, clotted blood, and the like refuse as shall bee there, for that they may yeeld matter for another stone. But if you finde that the stone which is in the bladder bee too great, so that it may not bee plucked forth without great and fearful rending of the bladder, it will bee better to take hold thereof with this Crows bill and so break it to peeces.

How to cleane the bladder.
How to break a stone that cannot bee taken out whole and at once.

The effigies of a toothed Crow's-bill made neatly to break greater stones, with a screw to force it together.



This Crows-bill hath onely three teeth, and those sharp ones on the inside, of which two are placed above, and one below, which is the middle-most, so that it taketh between the two upper. When the stone is broken, all the peeces thereof must bee taken forth, and wee must have a special care, lest any peece thereof lie hid; for that in time, increased by the access of a tough and viscusous matter, or conjoined with other fragments by the interposition of the like matter as glew, may rise to a stone of a large bigness.

CHAP. XLIII

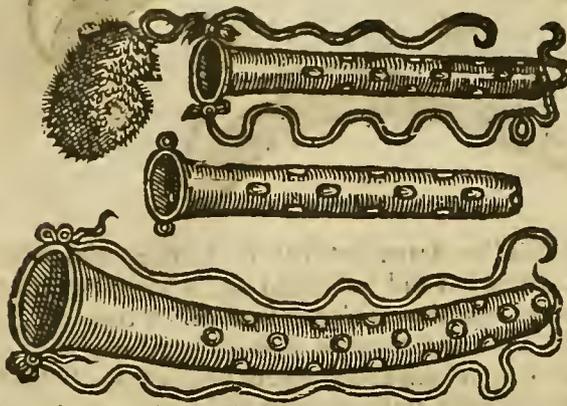
What cure must bee used to the wound, when the stone is taken forth.

THe stone being drawn out, if the greatness of the wound so require, it shall have one or two stitches with a needle and threed, leaving onely so much space as shall bee sufficient to put in a pipe for the use wee shall hereafter shew; your threed must bee of crimson silk waxed, and let it not bee too small, lest it by bindeing should cut asunder the fleshie lips of the wound, or rot in a short time, either by the moisture of the urine, or matter flowing from the ulcer. Therefore you shall

Of sewing the wound when the stone is taken forth.

shall take up much flesh with the skin in sewing it, least the lips of the wound beeing torn, your labor prove in vain, and so you are forced to trouble the patient with making a new one. Things beeing thus performed, a silver pipe shall be put through the wound into the bladder, whereof I have here given you divers forms, that you may take your choice, & so fit them to the wounds, and not the wounds to them, which oft-times in want of instruments the Surgeons are forced to do, to the great harm of the patient.

Silver pipes to be put into the bladder when the stone is drawn out.



These must have no holes in their sides (as those here expressed) but onely in their ends, that all the matter of the wound, and the filth gathered and concrete in the bladder may flow and be carried forth this way. When cleer urine shall begin to flow out of the wound, there shall be no more need of a pipe; therefore if you continue it and keep it longer in the wound, there is some danger least nature accustomed to that way, may afterwards neglect to send the water through the *Urethra*, or urinarie passage. Neither must you forget to defend the

parts near to the wound with the following repercussive medicine, to hinder the defluxion and inflammation, which are incident by reason of the pain. *R. album ovorum. ℥.iii. pul. boli armeni, sanguinis dracon. an. ℥.iii. olei ros. ℥i. pilorum leporinorum quantum sufficit, make a medicine of the consistence of honey.*

A repercussive medicine.

CHAP. XLIV.

How to lay the patient after the stone is taken away.



All things which we have recited beeing faithfully and diligently performed, the patient shall be placed in his bed, laying under him as it were a pillow filled with bran, or oat chaff, to drink up the urine which floweth from him. You must have divers of these pillows, that they may be changed as need shall require. Sometimes after the drawing forth of the stone, the blood in great quantitie falleth into the *Cod*, which unless you be careful to provide against, with discussing, drying and consuming medicines, it is to be feared that it may gangrenate. Wherefore if anie accidents happen in curing these kinde of wounds, you must diligently withstand them. After some few daies a warm injection shall be cast into the bladder by the wound, consisting of the waters of plantain, night-shade and roses, with a little syrup of dried roses. It will help to temper the heat of the bladder caused both by the wound and contusion, as also by the violent thrusting in of the instruments. Also it sometimes happen's, that after the drawing forth of the stone, clots of blood and other impuritie may fall into the urinarie passage, and so stop the urine that it cannot flow forth. Therefore you must in like sort put a hollow probe for some daies into the *urethra*, that keeping the passage open, all the grosser filth may flow out together with the urine.

Remedies for the *Cod*, least it gangrenate.

CHAP. XLV.

How to cure the wound made by the incision.

What things hasten the union.



You must cure this wound after the manner of other bloodie wounds, to wits by agglutination and cicatrization, the filth, or such things as may hinder, beeing taken away by detergent medicines. The patient shall hasten the agglutination if hee lie cross-legged, & keep a slender diet until the seventh or ninth day be past. Hee must wholly abstain from wine, unless it be verie weak; in stead thereof let him use a decoction of barlie and licorish, or mead, or water and sugar, or boiled water mixed with syrups of dried roses, maidenhair, and the like. Let his meat be panado, raisons, stewed prunes, chickens boiled with the cold seeds, purslain, sorrel, borage, spinage, and the like. If hee be bound in his bellie, a Physician shall be called, who may help it, by appointing either *Cassia*, a glyster, or some other kinde of medicine as hee shall think good.

CHAP. XLVI.

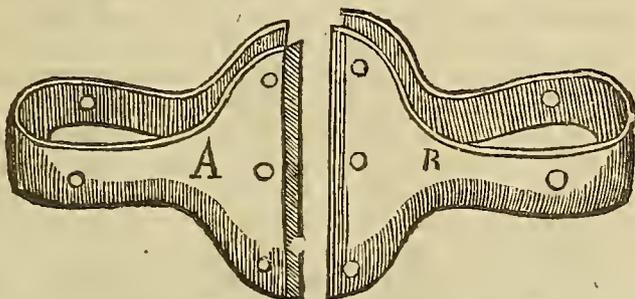
What cure is to be used to Ulcers, when as the urine flow's through them, long after the stone is drawn out.



Manie, after the stone is drawn out, cannot have the ulcer consolidated, therefore the urine flow's out this way continually by little & little, and against the patient's will during the rest of his life, unless the Surgeon help it. Therefore the callous lips of the wound must be amputated, so to make a green wound of an old ulcer; then must they be tied up, & bound with the instrument we term a Retinaculum or stay; this must be perforated with three holes, answering to three other on the other side; needles shall be thrust through these holes, taking hold of much flesh, and shall be knit about it, then glutinative medicines shall be applied, such as are Verice Turpentine, gum Elemi, sanguis draconis, bole armenick and the like; after five or six days the needles shall be taken out, and also the stay taken away. For then you shall finde the wound almost glewed, and there will nothing remain but onely to cicatrize it.

How to make a fresh wound of an old ulcer.

The figure of a Retinaculum, or stay.



A. shew's the greater. B. the lesser, that you may know that you must use divers according to the different bigness of the wound.

If a Retinaculum or stay be wanting, you may conjoin the lips of the wound after this following manner. Put two quills somewhat longer then the wound, on each side one, and then presently thrust them through with needles having thred in them, taking hold of the flesh between, as often as need shall require, then tying the thred upon them. For thus the wound shall be agglutinated, and the fleshy lips of the wound kept from being torn, which would be in danger if the needle and thred were onely used.

What to do in want of a stay.

CHAP. XLVII.

How to take stones out of women's bladders.

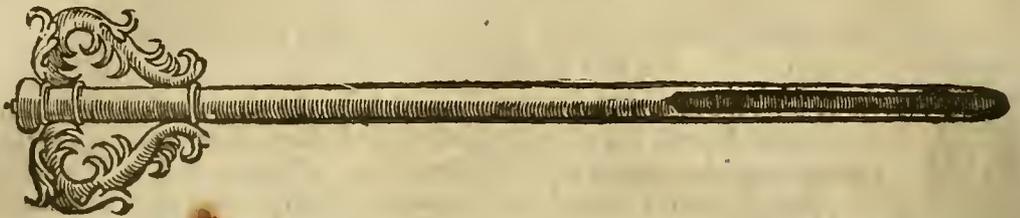


We know by the same signs that the stone is in a woman's bladder as we do in a man's, yet it is far more easily searched by a Catheter, for that the neck of the bladder is the shorter, broader and the more streight. Wherefore it may not onely be found by a Catheter put into the bladder, but also by the fingers thrust into the neck of the womb, turning them up towards the inner side of the Os pubis, and placing the sick woman in the same posture as we mentioned in the cure of men. Yet you must observe that maids younger then seven yeers old, that are troubled with the stone, cannot be searched by the neck of the womb, without great violence. Therefore the stone must be drawn from them by the same means as from boies, to wit. by thrusting the fingers into the fundament; for thus the stone being found out, and the lower bellie also pressed with the other hand, it must be brought to the neck of the bladder, and then drawn forth by the forementioned means. Yet if the riper yeers of the patient permit it to be don without violence, the whole work shall be more easily and happily performed, by putting the fingers into the neck of the womb, for that the bladder is nearer the neck of the womb, then it is to the right gut. Wherefore the fingers thus thrust in, a Catheter shall be presently put into the neck of the bladder: This Catheter must be hollow, or slit on the outside like those before described but not crooked, but straight, as you may perceiv by the following figure.

How to search for the stone in women.

A Catheter.

A Catheter, upon which, beeing put into the bladder, the neck thereof may bee cut, to draw out a stone from a woman.



Upon this instrument the neck of the bladder may bee cut, and then with the *Dilater* made for the same purpose, the incision shall bee dilated as much as need require's; yet with this caution, that seeing the neck of a womans bladder is the shorter, it admit's not so great dilatation as a mans, for otherwise there is danger that it may com to the bodie of the bladder, whence an involuntarie shedding of the water may ensue and continue thereafter. The incision beeing dilated, the Surgeon putting one or two of his fingers into the neck of the womb, shall press the bottom of the bladder, and then thrust his crooked instruments or *forcipes* in by the wound, and with these hee shall easily pluck out the stone, which hee shall keep with his fingers from slipping back again. Yet *Lawrence Collo* the King's Surgeon, and both his sons (then whom I do not know whether ever there were better cutters for the stone) do otherwise perform this operation; for they do not thrust their fingers into the fundament or neck of the womb, but contenting themselves with putting in onely the guiders (whereof wee formerly made mention) into the passage of the urine, they presently thereupon make a straight incision directly at the mouth of the neck of the bladder, and not on the side, as is usually don in men. Then they gently by the same way thrust the *forcipes* hollowed on the out-side formerly delineated, and so dilate the wound by tearing it as much as shall bee sufficient for the drawing of the stone forth of the bladder. The residue of the cure is the same with that formerly mentioned in men: yet this is to bee added, that if an ulcer grow in the neck of the bladder by reason of the rending it, you may by putting in the *speculum matricis*, dilate the neck of the womb, that fitting remedies may bee applied with the more eas.

CHAP. XLVIII.

Of the suppression of the Urine by internal causes.

In suppression of the urine wee must not presenely flie to diureticks.

BESIDES the fore-mentioned causes of suppressed urine, or difficultie of making of water, there are manie other, least anie may think that the urine is stop't onely by the stone or gravel, as Surgeons think, who in this case presently use diureticks. Therefore the urine is suppress'd by external and internal causes. The internal causes are clotted blood, tough phlegm, warts, caruncles bred in the passages of the urine, stones, and gravel; the urine is somtimes suppress'd, becaus the matter thereof, to wit, the serous or whayish part of the blood, is either consumed by the feverish heat, or carried other waies by sweats or a scouring; somtimes also the flatulencie there contained, or inflammation arising in the parts made for the urine and the neighboring members, suppress'e's the urine. For the right gut, if it bee inflamed, intercept's the passage of the urine, either by a tumor whereby it presseth upon the bladder, or by the communication of the inflammation. Thus by the default of an ill-affected liver, the urine is oft-times suppress'd in such as have the dropsie; or elf by dulness or decay of the attractive, or separative facultie of the reins by som great distemper, or by the default of the animal-facultie, as in such as are in a phrensie, lethargie, convulsion, apoplexie. Besides also a tough and viscid humor falling from the whole bodie into the passages of the urine, obstruct's and shut's up the passage. Also too long holding the water somtimes cause's this affect. For when the bladder is distended above measure, the passage thereof is drawn together, and made more straight: heerto may bee added, that the too great distension of the bladder is a hinderance that it cannot use the expulsive facultie, and straiten it self about the urine to the exclusion thereof; heerto also pain succeed's, which presently deject's all the faculties of the part which it seizeth upon. Thus of late a certain young man, riding on horse-back before his mistress, and therefore not dareing to make water, when hee had great need so to do, had his urine so suppress'd, that returning from his journie home into the citie, hee could by no means possible make water. In the mean time hee had grievous pain in the bottom of his bellie and the *perineum*, with gripeings, and a sweat all over his bodie, so that hee almost swooned. I beeing called, when I had procured him to make water by putting in an hollow *Catheter*, and pressing the bottom of his bellie, whereof hee forthwith made two pintes; I told them that it was not occasioned by the stone, which notwithstanding the standers by imagined to bee the occasion of that suppression of urine.

Why the too long holding the urine causeth the suppression thereof.
An historic.

urine. For thence forward there appeared no signs of the stone in the youth, neither was hee afterwards troubled with the stopping of his urine.

CHAP. XLIX.

Adigression concerning the purgeing of such things as are unprofitable in the whole bodie by the the urine.



Think it not amiss to testifie by the following histories, the providence of nature in expelling by urine such thing as are unprofitable in the whole bodie. *Mounseur Sarret* the King's secretarie was wounded in the right arm with a pistol-bullet; manie and malign symptons happened thereupon, but principally great inflammations, flowing with much *sanies* and *pus* or quittance: it somtimes happened that without anie reason this purulent and sanious efflux of matter was staid in inflammation; whereof while wee sollicitously inquired the cause, wee found both his stools and water commixed with much purulent filth, and this through the whole course of the disease, whereof notwithstanding by God's assistance hee recovered, and remain's whole and sound; wee observed that as long as his arm flowed with this filthy matter, so long were his excrements of the bellie and bladder free from the sanious and purulent matter: as long on the contrarie as the ulcers of the arm were drie, so long were excrements of the guts and bladder sanious and purulent. The same accident befel a Gentleman called *Mounseur de la Croix*, who received a deadlie wound with a sword on the left arm, though *German Chaval* and *Master Rasi* most expert Surgeons, and others, who together with mee had him in cure, thought it was not so for this reason, becaus the *pus* cannot run so long a way in the bodie, neither if it were so, could that bee done without the infection and corruption of the whole mass of blood, whil'st it flow's through the veins; therefore to bee more probable that this quantitie of filth, mixed with excrements & urine, flowed out by the default of the liver, or of som other bowel, rather then from the wounded arm: I was of a contrarie opinion for these following reasons. First for that which was apparently seen in the patient; for as long as the excrement and urine were free from this purulent matter, so long his arm plentifully flowed therewith; this on the contrarie beeing drie, much purulent was voided both by stool and urine. Another was, that as our whole bodie is perspirable, so it is also (if I may so term it) confluable. The third was an example taken from the glasses which the French term *Monte-vins* (that is, Mount-wines) for if a glass that is full of wine bee set under another that is fill'd with water, you may see the wine raise it self out of the lower vessel to the upper through the mid'st of the water, and so the water descend through the mid'st of the wine, yet so, that they do not mix themselves, but the one take and possess the place of the other. If this may bee done by art, by things onely natural, and to bee discerned by our eyes, what may bee done in our bodies, in which by reason of the presence of a more noble soul, all the works of nature are far more perfect? What is it which wee may despair to bee done in the like case? For doth not the laudable blood flow to the guts, kidnies, spleen, bladder of the gall, by the impuls of nature together with the excrements, which presently the parts themselves separate from their nutriment? Doth not milk from the breasts flow somtimes forth of the wombs of women lately delivered? Yet that cannot bee carried down thither, unless by the passages of the mammillarie veins and arteriers; which meet with the mouths of the vessels of the womb in the middle of the straight muscles of the *Epigastium*. Therefore no marvel if according to *Galen* the *pus* un-

An historie.

An historie.

How the *pus* may flow from the wounded arm by the urine and excrements.*Lib. de loc. affec. 6. cap. 4.*

CHAP. L.

By what external causes the urine is suppress'd; and prognosticks concerning the suppression thereof.



Here are also manie external causes, through whose occasion the urine may bee suppress'd. Such are batheing and swimming in cold water; the too long continued application of Narcotick medicines upon the reins, *perinaeum* and share; the use of cold meats and drinks, and such other like. Moreover, the dislocation of som *Vertebra* of the loins to the inside, for that it presseth the nervs disseminated thence into the bladder; therefore it causeth a stupiditie or numness of the bladder. Whence it is, that it cannot perceiv it self to bee vellicated by the acrimonie of the urine, and consequently it is not stirred up to the expulsion thereof. But from what-

Why the dislocation of a *vertebra* of the loins may cause a suppression of urine.

soever

Why the suppression of the urine becom's deadly.

A fever following thereon help's the suppression of urine.

soever caus the oppression of the urine proceed's, if it persevere for som daies, death is to bee feared, unless either a fever which may consume the matter of the urine, or a scouring or flux, which may divert it, shall happen thereupon. For thus by stay it acquireth an acrid and venenate qualitie, which flowing by the veins readily infecteth the mass of blood, and carried to the brain, much molest's it by reason of that similitude and sympathye of condition which the bladder hath with the *Meninges*. But nature, if prevalent, easily free'th it self from this danger by a manifest evacuation by stool, otherwise it must necessarily call as it were to its aid, a feverish heat, which may send the abounding matter of this serous humiditie out through the skin, either by a sensible evacuation as by sweat; becaus sweat and urine have one common matter: or elf dispers and breath it out by transpiration, which is an insensible excretion.

CHAP. LI.

Of bloodie Urine.

The differences. Causes.



OM piss pure blood, others mix't, and that either with urine, and then that which is expelled resemble's the washing of flesh newly killed; or elf with *pus*, or matter, and that either alone or mixed with the urine: There may bee divers causes of this symptom, as the too great quantitie of blood gathered in the bodie, which by the suppression of the accustomed and periodical evacuation, by the courses or hemorrhoids, now turn's its cour to the reins and bladder: the fretting asunder of som vessel by an acrid humor, or the breaking thereof by carrying or lifting of som heave burden, by leaping, falling from high, a great blow, the falling of som weight upon the loins, rideing Post too violently, the too immoderate use of venerie, and lastly, from anie kinde of painful and more violent exercise, by a rough and sharp stone in the kidnies, by the weaknes of the retentive facultie of the kidnies, by a wound of som of the parts belonging to the urine, by the too frequent use of diuretick and hot meats and medicines, or elf of things in their whole nature contrarie to the urinarie parts; for by these and the like causes, the reins are oft-times so inflamed, that they necessarily impostumate, and at length the impostume beeing broken it turn's into an ulcer, casting forth quitture by the urine.

Signs of what causes they proceed.

In so great varietie of the causes of bloodie urine, wee may gather whence the causes of this symptom may arise, by the depraved action of this, or that part, by the condition of the flowing blood, to wit, pure or mix't, and that either with the urine alone, or with *pus*. For example, if this bloodie matter flow from the lungs, liver, kidnies, dislocated *Vertebrae*, the straight gut, or other the like part: you may discern it by the seat of the pain and symptoms, as a fever: and the proprietic of the pain, and other things which have preceded, or are yet present. And wee may gather the same by the plentie and qualitie, for if, for example, the *pus* flow from an ulcer of the arm, the purulent matter will flow by turns, one while by the urine, so that little is cast forth by the ulcer; then presently on the contrarie the urine becom's more cleer. That purulent matter which flow's from the lungs by reason of an *Empiema*, or from the liver, or any other bowel placed above the midriff, the *pus* which is cast forth with the urine, is both in greater plentie and more exactly mixed with the urine, then that which flow's from the kidnies and bladder. It neither belong's to a Surgeon's office, either to undertake, or deliver the cure of this affect. It shall suffice onely to note that the cure of this symptom is not to bee hoped for so long as the caus remain's. And if this blood flow by the opening of a vessel, it shall bee staid by astringent medicines; if broken, by agglutinative; if corroded or fretted asunder, by sarcotick.

Cure.

CHAP. LII.

Of the signs of the ulcerated kidnies.



Had not determined to follow or particularly handle the causes of bloodie urines, yet becaus that which is occasioned by the ulcerated reins or bladder more frequently happen's, therefore I have thought good briefly to speak thereof in this place. The signs of an ulcer of the reins are, pain in the loins, matter howsoever mix't with the urine, never evacuated by it self, but alwaies flowing forth with the urine, and residing in the bottom of the chamber-pot, with a sanious and red sediment, fleshie and as it were bloodie fibres swimming up and down in the urine, the smell of the filth is not so great as that which which flow's from the ulcerated bladder, for that the kidnies, seeing thsy are of a fleshie substance, do far better ripen and digest the purulent matter then the bladder which is nervous and bloodless.

Why the matter which flow's from the kidnies is less stinking then that which flow's from the bladder.

CHAP. LIII.

Of the signs of the ulcerated Bladder.

Ulcers are in the bottom of the bladder, and the neck thereof. The signs of an ulcer in the bladder are, a deep pain at the share-bones; the great stench of the matter flowing there-from, white and thin skins swimming up and down in the water. But when the ulcer possesseth the neck of the bladder, the pain is more gentle, neither doth it trouble before the patient com to make water, but in the verie making thereof, and a little while after.

But it is common both to the one and the other, that the yard is extended in making of water, to wit, by reason of the pain caused by the urine fretting of the ulcerated part in the passage by: neither is the matter seen mixed with the urine, as is usual in an ulcer of the upper parts, becauf it is poured forth not together with the urine, but after it.

CHAP. LIV.

Prognosticks of the ulcerated Reins and Bladder.

Ulcers of the kidnies are more easily and readily healed then those of the bladder; for fleshie parts more speedily heal and knit, then bloodless and nervous parts. Ulcers which are in the bottom of the bladder, are uncureable, or certainly most difficult to heal; for besides that they are in a bloodless part, they are daily vellicated and exasperated by the continual afflux of the contained urine; for all the urine is never evacuated: now that which remaines after making water, becom's more acrid by the distemper and heat of the part, for that the bladder is alwaies gathered about it, and dilated and straightned according to the quantitie of the contained urine: therefore in the *Ischuria*, that is, the suppression or difficultie of making water, you may sometimes see a quart of water made at once. Those which have their legs fall away, having an ulcer in their bladder, are near their deaths. Ulcers arising in these parts, unless they bee consolidated in a short time, remain uncureable.

CHAP. LV.

What cure must bee used in the suppression of the Urine.

N curing the suppression of the urine, the indication must bee taken from the nature of the disease, and caus thereof, if it bee yet present or not. But the diversitie of the parts, by which beeing hurt, the *Ischuria* happen's, intimate's the varietie of medicines, neither must wee presently run to diureticks, and things breaking the stone, which manie Empericks do. For hence grievous and malign symptoms often arise, especially if this suppression proceed from an acrid humor, or blood pressed out by a bruise, immoderate venerie, and all more vehement exercise, a hot and acrid potion, as of *Cantharides*, by too long abtaining from making water, by a *Phlegmon*, or ulcer of the urinarie parts. For thus the pain and inflammation are increased, whence follow's a gangrene, and at length death. Wherefore attempt nothing in this case without the advice of a Physician, no not when you must com to Surgerie. For diureticks can scarce have place in another case, then when the urinarie passages are obstructed by gravel, or a gross and viscid humor, or elf in som cold countrie, or in the application of Narcoticks to the loins, although wee must not heer use these before wee have first made use of general medicines. now diureticks may bee administered sundrie waies, as heerafter shall appear.

Rx. agrimon. urtic. parietar. surculos rubros habentis, an. m. i. rad. asparag. mundat. ℥iiii. gran. alkekengi, nu. xx. sem. malvæ ℥ss. rad. acor. ℥i. bulliant omnia simul in sex libris aque dulcis ad tertias, deinde coletur. Let the patient take ℥iiii. hereof with ℥i. of sugar candie, and drink it warm fasting in a morning, three hours before meat. Thirtie or fortie Ivie-berries beaten in white wine, and given the patient to drink som two hours before meat, are good for the same purpose. Also ℥i. of nettle-seeds made into fine powder, and drunk in chicken-broth, is good for the same purpose. A decoction also of grummel, Goat's-saxifrage, pellitorie of the wall, white saxifrage, the roots of parslic, *asparagus*, *acorus*, *bruscus*, and orris drunk in the quantitie of som three or four ounces, is profitable also for the same purpose. Yet this following water is commended above the rest to provoke urine, and open the passages thereof, from what caus soever the stopping thereof proceed. Rx. rad. osmund. regal. cyp. bis. mal. gram. petrosel. fenic. an. ℥ii. raph. crassor. in taleol. ℥iiii. macerentur per noctem in aceto albo acerrimo, bulliant postea in aque fluvialis ℔. x. saxifrag. crist. marin. rub. tinct. milii solis, summitat. malvæ, A diuretick water.

bismal.an. p.ii. berul.cicer. rub.an. p.i. sem. melon. citrul.an. ℥ii.℞. alkekengi, gra.xx. glycyrrhiz. ℥i. bulliant omnia simul ad tertias : in colaturâ infunde per noctem fol. sen.oriental.℞.℞. fiat iterum parva ebullitio, in expressione colatâ infunde cinam. elect.℥vi.colentur; iterum colatura injiciatur in alembicum vitreum, postea tereb.venet.lucid.℞.ii. aq.vitæ ℥vi. agitentur omnia simul diligentissimè. Luteur alembicum luto sapientiæ, fiat distillatio lento igne in balneo mariæ. Use it after the following manner : ℞.aq. stillatitiæ prescriptæ ℥ii. aut iii. According to the operation which it shall perform, let the patient take it four hours before meat. Also radish-water distilled in balneo mariæ is given in the quantitie of ℥iiii. with sugar, and that with good success. Baths and semicupia, or half baths are artificiofally made, relax, soften, dilate, and open all the bodie; therefore the prescribed diureticks mixed with half a dram of treacle may bee fitly given at the going forth of the bath. These medicines following are judged fit to cleane the ulcers of the kidneys and bladder. Syrup of maiden-hair, of roses, taken in the quantitie of ℥i. with hydromel, or barlie-water : Asses or Goat's-milk are also much commended in this affect, because they cleane the ulcers by their serous or whayish portion, and agglutinate by their cheef-like. They must bee taken warm from the dug, with honie of roses, or a little salt, least they corrupt in the stomach; and that to the quantitie of four ounces, drinking or eating nothing presently upon it. The following Trochiscs are also good for the same purpose. ℞.quatuor sem.frigid.major.seminis papaveris albi, portulas, plantag.cydon,myrtil, gum. tragacanth. & arub.pinear.glycyrrhi.mund.bordei mund.macag. psilii, amygdal.dulcium, an.℥i. boli armen. sanguin.dracon.spodii, rosar.mastich.terræ, sigil.myrrhæ, an.℥ii. cum oxymelite, conficiantur secundum artem trochisci. Let the patient take ℥℞. dissolvcd in whay, ptisan, barlie-water, and the like; they may also bee profitably dissolved in plantain-water, and injected into the bladder. Let the patient abstain from wine, and instead thereof let him use barlie-water, or hydromel, or a ptisan made of an ounce of raisins of the Sun, stoned and boiled in five pintes of fair water, in an earthen pipkin well leaded, or in a glass, until one pinte bee consumed, adding thereto of liquorice scraped and beaten ℥i. of the cold seeds likewise beaten two drams. Let it, after it hath boiled a little more, bee strained through an hypocras bag, with a quarter of sugar, and two drams of choice cinnamon added thereto, and so let it bee kept for usual drink.

Why the use of diureticks is better after bathing. To cleane the ulcers of the kidneys and bladder.

Trochiscs to heal the ulcers of the kidneys.

Drink instead of wine.

CHAP. LVI.

Of the Diabete, or inabilityie to hold the Urine.

What Diabete is.

The causes.

Signs.

Why the urines are watrish.

The cure.

Narcotick things to bee applied to the loins.



The Diabete is a disease, wherein presently after one hath drunk, the urine is presently made in great plentie, by the dissolution of the retentive facultie of the reins, and the depravation of immoderation of the attractive facultie. The external causes are the unseasonable and immoderate use of hot and diuretick things, and all more violent and vehement exercises. The internal causes are the inflammation of the liver, lungs, spleen, but especially of the kidneys and bladder. This affect must bee diligently distinguished from the excretion of the morbisick causes by urine. The loins in this disease are molested with a pricking and biting pain, and there is a continual and unquenchable thirst: and although this disease proceed from a hot distemper, yet the urine is not colored, red, troubled, or thick, but thin, and white or waterish, by reason the matter thereof make's verie small stay in the stomach, liver, and hollow vein, being presently drawn away by the heat of the kidneys or bladder. If the affect long endure, the patient for want of nourishment falleth away, whence certain death ensue's. For the cure of so great a disease, the matter must bee purged, which cause's or feed's the inflammation or plegmon, and consequently blood must bee let. Wee must abstain from four cold seeds, for although they may profit by their first qualitie, yet will they hurt by their diuretick facultie. Refrigerateing and astringent nourishments must bee used, and such as generate gross humors; as rice, thick and astringent wine mixed with much water. Exceeding cold, yea narcotick things shall bee applied to the loins, for otherwise by reason of the thickness of the muscles of those parts, the force, unless of exceeding refrigerateing things, will not bee able to arrive at the reins; of this kinde are oil of white poppie, henbane, opium, pursflain, and lettuce-seed, mandrage, vinegar, and the like: of which, cataplasms, plasters, and ointments, may bee made fit to corroborate the parts, and correct and heat.

CHAP. LVII.

Of the Strangurie.

What the Strangurie is. The causes.

The Strangurie is an affect having som affinitie with the Diabete, as that wherein the water is involuntarily made, but not together at once, but by drops, continually and with pain. The external causes of a strangurie are, the too abundant drinking of cold water,

water, and all too long stay in a cold place. The internal causes are, the defluxion of cold humors into the urinarie parts; for hence they are resolved by a certain pallsie, and the sphincter of the bladder is relaxed, so that hee cannot hold his water according to his desire: inflammation also and all distemper causeth this affect, and whatsoever in som sort obstructs the passage of the urine; as clotted blood, thick phlegm, gravel, and the like. And becaus, according to Galen's opinion, all sorts of distemper may caus this disease, divers medicines shall bee appointed according to the difference of the distemper. Therefore against a cold distemper fomentations shall bee provided of a decoction of mallows, roses, *origanum*, calamint, and the like, and so applied to the privities: then presently after, let them bee anointed with oil of bays, and of *Castoreum*, and the like. Strong and pure wine shall bee prescribed for his drink, and that not onely in this caus, but also when the strangurie happen's by the occasion of obstruction, caussed by a gross and cold humor, if so bee that the bodie bee not plethorick. But if inflammation, together with a *Plethora* or fulness, hath caussed this affect, wee may, according to Galen's advice, heal it by blood-letting. But if obstruction bee in fault, that shall bee taken away by diureticks either hot or cold, according to the condition of the matter obstructing. Wee heer omit to speak of the *Dysuria*, or difficultie of making water, becaus the remedies are in general the same with those which are used in the *Ischuria*, or suppression of urine.

Com. ad aphor.
15. sect. 3.

Ad aphor. 48.
sect. 7.

CHAP. LVIII.

Of the Colick.

Whensoever the guts beeing obstructed, or otherwise affected, the excrements are hindred from passing forth, and if the fault bee in the small guts, the affect is termed *Volvulus*, *Ileos*, and *Miserere mei*; but if it bee in the greater guts, it is called the Colick, from the part affected, which is the *Colon*, that is, the continuitie of the greater guts; but especially that portion of the greater guts, which is properly and especially named *Colon*, or the Colick-gut. Therefore *Avicen* rightly define's the Colick, A pain of the guts, wherein the excrements are difficultly evacuated by the fundament. *Paulus Ægineta* reduceth all the causes of the Colick, how various soever, to four heads: to wit, to the grossness, or toughness of the humors impact in the coats of the guts: flatulencies hindred from passage forth: the inflammation of the guts: and lastly, the collection of acrid and biting humors. Now wee will treat of each of these in particular. Almost the same causes produce the grossness of humors, and flatulencies in the guts, to wit, the use of flatulent and phlegmatick, tough and viscid meats, yea also of such as are of good nourishment, if sundrie thereof, and of sundrie kindes bee eaten at the same meal, and in greater quantitie then is fit. For hence cruditie and obstruction, and at length the collection of flatulencies, whereon a tenfive pain ensue's. This kinde of Colick is also caused by the use of crude fruits, and too cold drink, drunken especially when anie is too hot by exercise, or anie other way: for thus the stomach and the guts continued thereto, are refrigerated, and the humors and excrements therein contained are congealed, and, as it were, bound up. The Colick which is caused by the inflammation of the kidneys, happen's by the sympathie of the reins pained or troubled with the stone or gravel contained in them or the ureters. Therefore then also pain trouble's the patient at his hips and loins, becaus the nerves, which arising from the *vertebrae* of the loins, are oppressed by the weight of the stones and gravel, about the joint of the hip are disseminated into the muscles of the loins and thigh. Also the ureters are pained (for they seem nothing elf but certain hollow nerves) and also the cremaster muscles, so that the patient's testicles may seem to bee drawn upwards with much violence. Hence great, phlegmatick, and cholerick vomiting, and sweat of the whole bodie, all which do not surcease before that the stone, or gravel shall bee forced down into the bladder. Now vomiting happen's in this affect, for that the ventricle, by reason of its continuitie and neighborhood which it hath with the guts, suffer's by consent or sympathie. For the stomach is of the same kinde or matter as the guts are, so that the guts seem nothing elf but a certain production of the stomach. Therefore if at anie time nature endeavor to expel anie thing that is troublesom in the kidneys, ureters, coats of the guts, mesenterie, *pancreas*, and *hypochondries*, it causeth a Colick with pain and vomiting. An hot and drie distemper also causeth the Colick, producing a pricking and biting pain, by drying the excrements shut up in the guts, as also by wasting as it were the radical humors of that place provided for the lubricating of the guts. Acrid, viscid, and tough phlegm causeth the same. There is also another caus of the Colick which is not so common, to wit, the twineing of the guts, that is, when they are so twined, folded, and doubled, that the excrements, as it were, bound in their knots, cannot bee expelled, as it manifestly happen's in the rupture called *Enterocoele*, by the falling of the guts into the cod. Likewise also worms generated in the Colick-gut, whil'st that they mutually fold or twine

What *Ileos*, or
iliaca passio is.
What *Colica*
passio, or the
Colick is.
Lib. 3.
Lib. 3. c. 43.

The manner
of the stone-
colick.

How a hot di-
stemper caus-
eth the colick.

The folding
of the guts the
caus of the
colick.

themselves up, do also twine the *Colon* it self, and fold it with them. Also the too long stay of the excrements in the guts, whether it shall happen by the peculiar default of the too hot and drie bodie of the patient, or by his diet, that is, the use of too drie meats, or exercises and pains taken in the heat of the sun, or by the greatnes of business, the minde being carried away, causeth the colick, with head-ach, and plentie of vapors flying upwards.

An historic.

I remember I once dissected the bodie of a boy of som twelv years old, who had his guts folded with manie as it were ties or knots of the restrained, too hard and drie excrements, the which hee cast out by his mouth a little before his death, which brought him to his end, beeing not helped in time by fitting medicines. Now these are the causes of the colick, according to the opinion of the ancient and modern Physicians, of whose signs I judge it not amiss heer to treat in particular. You shall know the patient is troubled with the stone-

Signs whereby we know that the colick proceed's from this or that cause.

colick by the pain which is fixed, and as it were kept in one place, to wit, of the kidnies; by his former manner of life, as if the patient hath formerly voided stones or gravel together with his urine; by the pain of the hips and testicles for the formerly mentioned causes, and lastly, by that the patient cast's forth by stone or urine, for that the great and laborious endeavor of nature to cast forth the stone which is in the kidnies, is propagated by a certain sympathie, and like studie of the neighboring parts, stirring up the expulsive faculties each to his work. The signs of a flatulent colick are, a tensive pain, such as if the guts were rent or torn in pieces, together with a noise or rumbling in the bellie. The force of the shut-up winde is somtimes so great, that it rendeth or teareth the guts in sunder, no otherwise then a swine's bladder too hard blown up. Which when it happen's, the patient die's with much vomiting, becaus the stomack opprest with winde, can contain nor imbrace no meat. The colick which is occasioned by the too long keeping in of the excrements, is accompanied with the weight and pain of the bellie, the tension of the guts, head-ach, apparent hardnes of the bellie, and the complaint of the patient that hee hath not gon to stool in a long time. That which proceed's from a choleric inflammation, yeeld's a sens of great heat and pulsation in the midst of the bellie, by reason of the veins and arteries which are in the *pancreas* and coats of the guts, and there are the other signs of a *Pblegmon*, although also this as it were inflammation may arise also from salt, acrid and viscus phlegm, which nature can neither expel upwards by vomit, nor downwards by stool; this fundrie times is associated with a difficultie of makeing water, for that when as the right gut is inflamed, the bladder is pressed by reason of their societie or neighborhood. The collick which proceed's from the contorsion of the guts, shew's it self by the excessive crueltie of the pain arising, for that the guts are not in their due site and place, and becaus the excrements by their too long detension acquire a preternatural heat; and this is the caus of the death of manie such as have ruptures, for that the gut falling down from the natural place into the cod, being a preternatural place, is redoubled, and kept there as it were bound, whereby the excrements being baked, becoming more acridly hot, caus inflammation, and by raising up flatulencies, increas the distension through all the guts, until at length a deadly *Ileos* or colick arising, they com forth at the mouth. For prognosticks; it is better to have the pain in the colick to wander up and down, then to bee fixed: it is good also that the excrements are not wholly supprest. But the evil signs that are heer pronounce the affect either difficult or deadly. Now these shew that it is deadlie, intolerable tormenting pain, continual vomiting, cold sweat, coldnes of the extreme parts, hicketing by reason of the sympathie the stomack hath with the guts, a phrensie by the consent of the brain with the stomack, and oft-times a convulsion, by drawing the matter into the nervs. But such as have gripeing and pain about their navil and loins, which can neither bee helped by medicine nor otherwise, it end's in a dropsie. The cure must bee diversified according to the varietie of the causes, for the stone-collick is cured by medicines proper to the stone; that which is caused by an *Enterocoele*, is cured by the onely restoreing the gut to its place; that which is occasioned by worms, require's medicines fit to kill and cast forth the worms; But that which proceed's from the weakness and refrigeration of the guts and stomack, is cured by heating and strengthening medicines as well applied outwardly, as taken in inwardly by the mouth, or otherwaies. The beginning of the cure of that which is occasioned by tough phlegm and flatulencies, is by the mitigation of the pain, seeing there is nothing which more deject's the powers then pain. To this purpose shall you provide baths, *Semicupia*, fomentations of mallows, marth-mallows, violet leavs, penie-royal, fennel, *Origanum*, the seeds of time and fenugreek, flowers of caniomil, melilote, and other such like, which have power to heat, drie, attenuate, and rarifie the skin, so to dissipate the winde. But all such must bee

Avicen. li. 3.
Hip. aphor. 10.
sect. 4.

The cure.

Baths and anodine fomentations.

An ointment.

actually hot. Also the bellie may bee anointed with this following ointment. *R. olei chamem. aneth. butyr. recent. an. ℥i. sem. apii, petros. & galang. an. ʒβ. aq. vitæ, ol. salviae aut thymi, chimicæ extract. q. s.* The following liniment is much commended by *Hollerius*. *R. olei rut. & nardi, an. ʒvi. galbani cum aq. vit. dissoluti ʒii. liquefactis simul adde zibetæ gr. iiii. croci, gr. vi. fiat linimentum.* Also little bags made with millet, oats and salt fried with a little white wine in a frying-pan, shall bee applied hot upon the bellie and flanks, and renewed before they grow cold. You may, in stead of these bags, use ox-bladders half filled with a decoction of resolving things;

things; as salt, rofemarie, time, lavender, bay-berries, and the like: then inject a glyster being thus made. *R. quatuor remol. an. m. i. orig. puleg. calamenth. an. m. β. anisi, carui an. m. β. flor. aneth. an. p. i. bulliant in hydromele ad lb. i. in qua dissolve bened. laxat. mellis anthofati, sacc. rub. an. ℥i. olei aneth. & chamem. an. ℥i β.* Let a glyster bee made to bee injected at twice; for the guts being stretched out cannot contain the accustomed *dosis* of a glyster: Also this following glyster is much approved. *R. vini malvat. & olei nucum, an. ℥i i i i. aqua vitæ, ℥i. olei juniperi, & rut. per quintam essent extract. an. ℥i i i i.* Let this bee injected as hot as the patient can endure. I have oft-times as by miracle helped intolerable pain caused by the winde-collick and phlegm with this glyster. *Avicen* prescribe's a carminative glyster made of hyssop, *origanum*, *acorus*, aniseeds, and English galengal. Let the patient feed upon meats of good juice and easie digestion, as broths made with the yolks of eggs, saffron, hot herbs and a nutmeg; let him drink good wine, as Muskadine, or hypocras made with good wine so to heat the stomach and guts. For in *Galen's* opinion, all windiness is generated by a remiss heat. But if the pain shall continue, a large cupping-glass shall bee applied to the navel, to draw and dissipate the windiness; the bellie shall bee bound with strong and broad ligatures, to strengthen the guts, and discuss the matter of flatulencies. The patients taught by nature, use this remedie, whilst none admonishing them, they press the bellie with their hands in the bitterness of pain. But if the pain cannot bee thus appeased, wee must com to such medicines as work by an occult propertie, as the dried gut of a Wolf, for a dram thereof made into powder it given in wine with good success. That colick which is caused by a choleric inflammation require's contrarie medicines, to wit, blood-letting, and a refrigerating diet; cholerick collick. *Avicen* prescribe's narcoticks, for that being cold, they are contrarie to the morbifick cause which is hot and drie; such are pills of *Philonium*. Also pills of *Hyera picra* in the quantitie of *℥iv*. with *opium* and saffron, of each one grain, may bee used. Also baths are appointed, made of water wherein mallows, marsh-mallows, violet-leaves, flowers of white lilies, lettuce, purslain have been boiled, to correct the acrimonie of the choleric and hot humors, whence the disease and symptom ariseth. That colick which is like to this, and proceed's from salt, acrid, thick and tough phlegm, is cured, the humor being first attenuated and diffused, and at length evacuated by medicines taken by the mouth and otherwise, according to the prescription of the learned Physician. But *Avicen* cure's that which is occasioned by the suppression of the hardened excrements, and twineing of them by meats which have an emollient facultie, such as humecting broths, as that which is made of an old cock tired with running, and threshed to death, and so boiled with dill, polypodie, and a little salt, until the flesh fall from the bones; also hee useth detergent glysters, such as this which follow's. *R. betæ, m. i. furfuris, p. i. ficus, nu. x. alib. m. i. fiat decoctio ad lb. i. in qua dissolve nitri & murie an. ℥i i i. sacc. ℥i. ol. sesamini, ℥i i i.* But if the obstruction bee more contumacious, you must use more powerful ones made *ex cyclamin. centaurio, & hiera diacolocintib. ad ℥i i i.* But if the obstruction do notwithstanding remain, so that the excrements com forth at the mouth, *Marianus Sanctus* wisheth (by the counsel of manie who have so free'd themselves from this deadly symptom) to drink three pounds of quick-silver with water onely. For the doubled, and as it twined up-gut is unfolded by the weight of the quick-silver, and the excrements are deprest and thrust forth, and the worms are killed which gave occasion to this affect. *John of S. Germans*, that most worthie Apothecarie, hath told mee that hee saw a Gentleman, who when as hee could not bee free'd from the pain of the colick by anie means prescribed by learned Physicians, at length by the counsel of a certain German his friend, drank three ounces of oil of sweet almonds drawn without fire, and mixed with som white wine and pellitorie-water, and swallowed a leaden bullet besmeared with quick-silver, and that bullet coming presently out by his fundament, hee was wholly free'd from his colick.

Why glysters in the collick must bee given in less quantitie.

Specifick medicines. The cure of a cholerick collick.

The force of quick-silver in the unfolding of the guts. An historie.

CHAP. LIX.

Of Phlebotomie, or Blood-letting.

Phlebotomie is the opening of a vein, evacuating the blood with the rest of the humors; thus Arteritomie, is the opening of an arterie. The first scope of phlebotomie is the evacuation of the blood offending in quantitie, although oft-times the Physician's intention is to draw forth the blood which offend's in qualitic, or either way by opening a vein. Repletion, which is caused by the quantitie, is two-fold; the one *ad vires*, that is, to the strength, the veins being otherwise not verie much swelled; this make's men infirm and weak, nature not able to bear his humor, of what kinde soever it bee. The other is termed *ad vasa*, that is, to the vessels, the which is so called comparatively to the plentie of blood, although the strength may verie well away therewith. The vessels are oft-times broke by this kinde of repletion, so that the patient cast's and spit's up blood, or elf evacuate's it by the nose, womb, hemorrhoids, or *varices*. The repletion which is *ad vires*, is known by the heaviness and weariness.

What Phlebotomie is.

The use.

Repletion two-fold.

The signs.

Five scop's in
letting blood.

From whence
wee must not
draw blood.

When and for
what it is ne-
cessarie.

13. meth. cap.
ult.

sonnes of the whole bodie; but that which is *ad vasa*, is perceived by their distension and fulness, both of them stand in need of evacuation. But blood is onely to bee let by opening a vein, for five respects: the first is to lessen the abundance of blood, as in phletorick bodies, and those who are troubled with inflammation without anie plenitude. The second is for diversion, or revulsion, as when a vein of the right is opened to stay the bleeding of the left nostril. The third is, to allure or draw down: as when the *saphena* is opened in the ankle, to draw down the courses in women. The fourth is for alteration or introduction of another qualitie; as when in sharp fevers wee open a vein to breath out that blood which is heated in the vessels, and cooling the residue which remain's behinde. The fifth, is to prevent imminent diseases; as when in the Spring and Autumn wee draw blood by opening a vein in such as are subject to spitting of blood, the squinancie, plurisie, falling-sickness, apoplexie, madnes, gout, or in such as are wounded, for to prevent the inflammation which is to bee feared. Before blood-letting, if there bee anie old excrements in the guts, they shall bee evacuated by a gentle glyster, or suppositorie, lest the mesaraick veins should thence draw unto them anie impuritie. Blood must not bee drawn from ancient people, unless som present necessitie require it, lest the native heat, which is but languid in them, should bee brought to extreme debilitie, and their substance decay; neither must anie in like sort bee taken from children, for fear of resolving their powers by reason of the tenderness of their substance, and rareness of their habit. The quantitie of blood which is to bee let, must bee considered by the strength of the patient, and greatness of the disease: therefore if the patient bee weak, and the disease require large evacuation, it will bee convenient to part the letting of blood, yea by the interposition of som daies. The vein of the forehead being opened is good for the pain of the hind part of the head; yet first wee foment the part with warm water, that so the skin may bee softer, and the blood drawn into the veins in greater plentie. In the squinancie, the veins which are under the tongue must bee opened aslant, without putting anie ligatures about the neck, for fear of strangling. Phlebotomie is necessarie in all diseases which stop or hinder the breathing, or take away the voice or speech, as likewise in all contusions by a heavie stroke, or fall from high, in an apoplexie, squinancie, and burning fever, though the strength bee not great, nor the blood faultie in quantitie or qualitie, blood must not bee let in the height of a fever. Most judg it fit to draw blood from the veins most remote from the affected and inflamed part, for that thus the course of the humors may bee diverted, the next veins on the contrarie being opened, the humors may bee the more drawn into the affected part, and so increas the burden and pain. But this opinion of theirs is verie erroneus, for an opened vein alwaies evacuate's and burden's the next part. For I have sundrie times opened the veins and arteries of the affected part, as of the hands and feet in the Gout of these parts; of the temples in the Megrim: whereupon the pain alwaies was somewhat asswaged, for that together with the evacuated blood, the malignitie of the Gout, and the hot spirits (the causes of the Head-ach or Megrim) were evacuated. For thus *Galen* wisheth to open the arteries of the temples in a great and contumacious defluxion falling upon the eies, or in the Megrim, or Head-ach.

CHAP. LX.

How to open a vein, or draw blood from thence.

How to place
the patient.

Rubbing the
arm.
Bindeing it
before wee o-
pen the vein.



Why the *Basi-
lica* and *Medi-
ana* may not
bee opened so
safely as the
Cephalick.

He first thing is, to seat or place the patient in as good a posture as you can, to wit, in his bed, if hee bee weak; but in a chair, if strong; yet so, that the light may fall directly upon the vein which you intend to open. Then the Surgeon shall rub the arm with his hand, or a warm linnen cloth, that the blood may flow the more plentifully into the vein. Then hee shall binde the vein with a ligature a little above the place appointed to bee opened, and hee shall draw back the blood upwards towards the ligature from the lower part; and if it bee the right arm, hee shall take hold thereof with his left hand; but if the left, then with his right hand, pressing the vein in the mean time with his thumb a little below the place where you mean to open it, lest it should slip away; and that it may bee the more swoln by forcing up the blood. Then with his nail hee shall mark or design the place to bee opened, and shall anoint it, being so marked, with butter or oil, whereby the skin may bee relaxed, and the lancet enter more easily, and therefore the section may bee the less painful. Hee shall hold his lancet between his thumb and fore-finger, neither too near, nor too far from the point; hee shall rest his other three fingers upon the patient's arm, that so his hand may bee the more steddie, and less trembling. Then shall hee open the vein with an incision agreeable to the magnitude of the vessel, and the indifferent thickness of the contained blood, somewhat aslant, diligently avoiding the arterie which lie's under the *Basilica*, and the nerv, or tendon of the two-headed muscle, which lie's under the Median vein. But for the *Cephalick*, it may bee opened without danger. As much blood as is sufficient being drawn, according to the minde of the Physician, hee shall loof the ligature, and laying a little bolster under

under, hee shall with a ligature binde up the wounded part to stay the bleeding, the ligature shall bee neither too straight, nor loof, but so that the patient may freely bend and extend his arm; wherefore whil'st that is in doing, hee must not hold his arm straight out, but gently bended, otherwise hee cannot freely bend it.

The bindeing
up after
blood-letting.

The figure of a Lancet to let blood withall.



CHAP. LXI.

Of Cupping-glasses, or Ventoses.



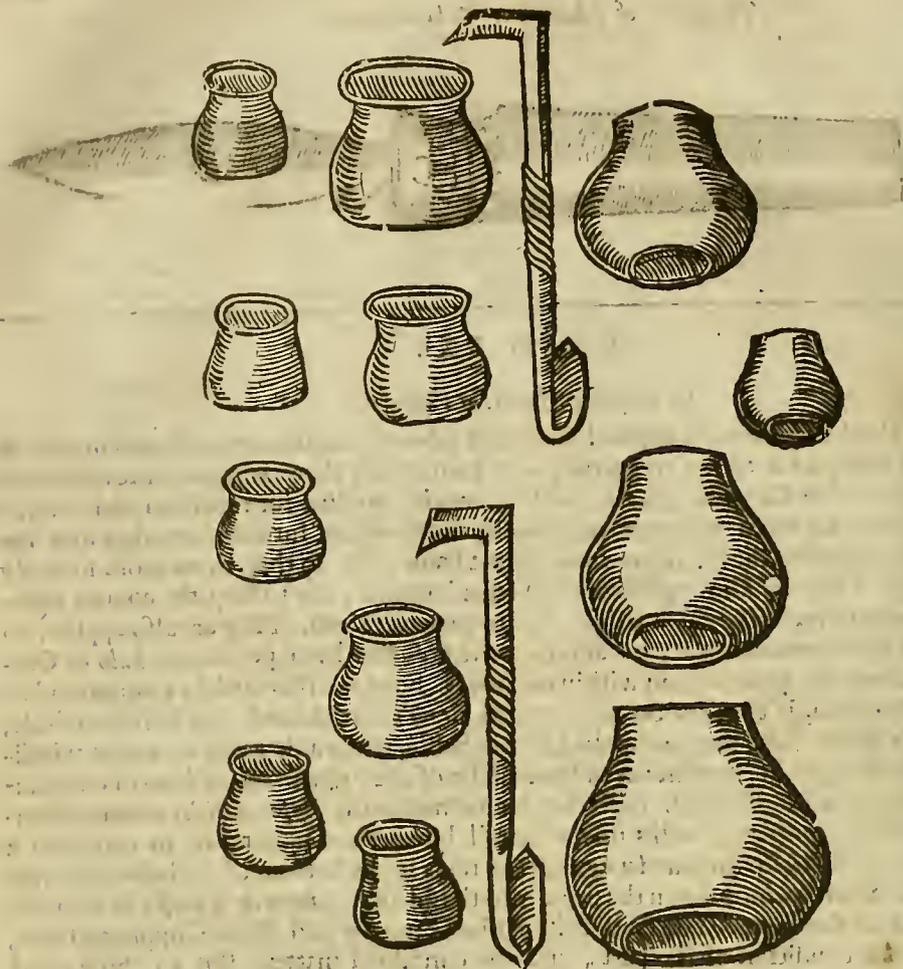
Cupping-glasses are applied especially when the matter conjunct and impact in anie part is to bee evacuated, and then chiefly there is place for scarification after the Cupping-glasses: yet they are also applied for revulsion and diversion; for when an humor continually flow's down into the eies, they may bee applied to the shoulders with a great flame, for so they draw more strongly and effectually. They are also applied under women's breasts, for to stop the courses flowing too immoderately, but to their thighs, for to provoke them. They are also applied to such as are bit by venomous beasts, as also to parts possessed by a pestiferous Bubo or Carbuncle, so to draw the poison from within outwards. For (as *Celsus* saith) a Cupping-glass where it is fastned on, if the skin bee first scarified, draw's forth blood; but if it bee whole, then it draw's spirit. Also they are applied to the bellie, when anie gross or thick windiness shut up in the guts, or membranes of the muscles of the *Epigastrium*, or lower bellie causing the colick, is to bee discussed. Also they are fastned to the *Hypocondrie's*, when as flatulencie in the liver, or spleen, swell's up the entrail lying there-under, or in too great a bleeding at the nose. Also they are set against the reins in the bottom of the bellie, whereas the ureters run down to draw down the stone into the bladder, when as it stop's in the middle or entrance of the ureter. You shall make choice of greater and lesser Cupping-glasses, according to the condition of the part, and the contained matter. But to those parts whereto these cannot by reason of their greatnes bee applied, you may fit horns for the same purpose.

The use of
Cupping-
glasses.

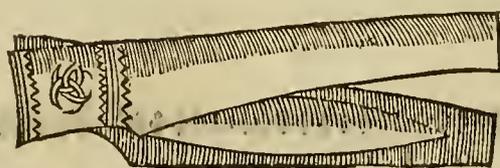
Lib. 8. cap. 1.

The

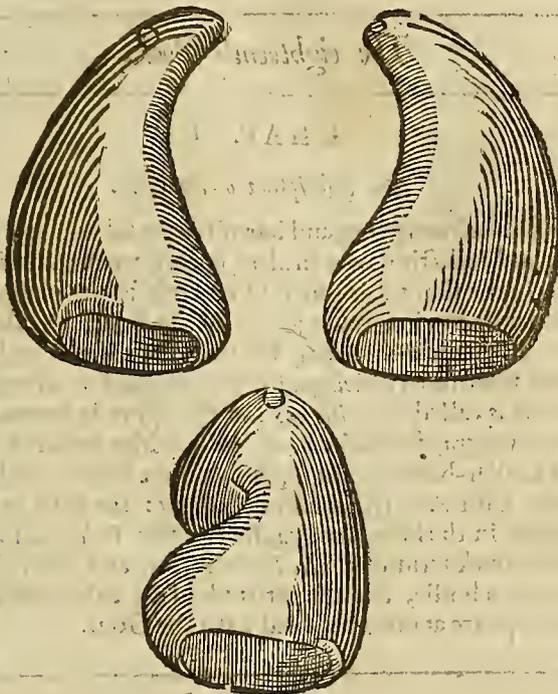
The figures, of Cupping-glasses of different bigness, with little holes in their bottoms, which shall bee stopped with wax, when you apply them to the part; but opened when you would take them off, that so the air may enter in with the more eas.



A Lancet.



Horns which without fire, by onely sucking at the upper hole, draw from the part lying under them.



CHAP. LXII.

Of Leeches, and their use.



N those parts of the bodie whereto Cupping-glasses and horns cannot bee applied, to those Leeches may for the most part bee put, as to the fundament, to open the coat of the hemorrhoid veins, to the mouth of the womb, the gums, lips, nose, fingers. After the Leech, being filled with blood, shall fall off, if the disease require a large evacuation of blood, and the part affected may endure it, Cupping-glasses, or Horns, or other Leeches shall bee substituted. If the Leeches bee handled with the bare hand, they are angered, and become so stomachful, as that they will not bite; wherefore you shall hold them in a white and clean linnen cloth, and apply them to the skin, being first lightly scarified, or befireared with the blood of some other creature; for thus they will take hold of the flesh, together with the skin more greedily and fully. To cause them fall off, you shall put some powder of aloes, salt or ashes upon their heads. If any desire to know how much blood they have drawn, let him sprinkle them with salt made into powder, as soon as they are come off; for thus they will vomit up what blood soever they have sucked. If you desire they should suck more blood than they are able to contain, cut off their tails as they suck, for thus they will make no end of sucking, for that it run's out as they suck it. The Leeches, by sucking, draw the blood not onely from the affected part whereto they are applied, but also from the adjacent and distant parts. Also sometimes the part bleed's a good while after the Leeches bee fallen away, which happen's not by scarification after the application of Cupping-glasses or Horns. If you cannot stop the bleeding after the falling away of the Leeches, then press the half of a bean upon the wound, until it stick of it self, for thus it will stay; also a burnt rag may be fitly applied with a bolster and fit ligature.

The use of Leeches.

How to apply them.

How to cause them to fall off.

The end of the seventeenth Book.

 Of the GOUT.

 The eighteenth Book.

CHAP. I.

The description of the Gout.

What it is.



The Gout is a disease occupying and harming the substance of the Joints by the falling down and collection of a virulent matter accompanied by four humors. This word *Arthritis* or Gout, is general for everie joint so affected; yet it enjoies divers particular names in sundrie joints of the bodie: as that which falleth upon the joint of the Jaw, is termed *Siagonagra*, for that the Greeks call the Jaw *Siagon*; that which affect's the neck is termed *Trachelagra*, for that the neck is termed *Trachelos*: that which trouble's the back-bone is called *Rhacisagra*, for the spine is termed *Rhacis*: that which molest's the shoulders *Omagra*, for the joint of the shoulder is called *Omos*: that which affect's the joint of the Collar-bones *Cleisagra*, for that the Greeks call this bone *Cleis*: that in the Elbow, *Pechyagra*, for *Pechys* signifieth the elbow: the gout in the hand is called *Chiragra*, in the Hip *Ischias*, in the knee *Gonagra*, in the feet *Podagra*, for that the Hand, Hip, Knee, and Foot are in Greek termed, *Cheir*, *Ischion*, *Gony*, and *Pous*. When as there is great abundance of humors in a bodie, and the patient lead's a sedentarie life, not som one, but all the joints of the bodie are at once troubled with the Gout.

Particular Gouts.

CHAP. II.

Of the occult causes of the Gout.



The humor causing the Gout is not of a more known, or easily exprest nature then that which causeth the plague, *Lues venerea*, or falling sickness. For it is of a kinde and nature clean different from that which caus a *Pblegmon*, *oedema*, *erysipelas*, or *Scirrhus*; for, as *Aetius* saith, it never cometh to suppuration like other humors, not for that, as I think, becaus it happen's in bloodless parts, but through the occasion of som occult malignitie. Hereto may bee added that the humors which caus the fore-mentioned tumors, when as they fall down upon anie part, not then truly when they are turned into pus or matter, do they caus so sharp pains as that which causeth the Gout, for the pain thereof is far more sharp, then of that humor which causeth an ulcerated *Cancer*. Besides these humors, when they fall upon the joints through anie other occasion, never turn into knots, onely that which causeth the Gout in the joints, after it hath fallen thither, is at length hardened into a certain knottie and as it were plaster-like substance to bee amended by no remedies. But seeing it offend's not the parts by which it flow's down, (no more then the matter which creeping upwards from the lower parts to the brain, causeth the *Epilepsie*) as soon as it falleth into the spaces of the Joints it causeth cruel pain, one while with heat, another while with cold. For you may see som troubled with the Gout, who complain that their pained joints are burn't; there are others to whom they seem colder then anie ice, so that they cannot bee sufficiently heated to their heart's desire; verily you may sometimes see in the same bodie troubled with the Gout, that the Joints of the right side will as it were burn with heat, but on the left side will bee stiff with cold; or which is more, the knee in the same side to bee tormented with a hot distemper, and the ancle troubled with a cold. Lastly, there sometimes happen's a succession of pain in a succession of daies, as the same joints will bee this day troubled with a hot, to morrow with a cold distemper, so that wee need not marvel to see Physicians prescribe one while hot, another while cold medicines against the same disease of the same part and bodie. Also it sometimes happen's that the malignitie of this humor doth not onely not yeeld to medicines, but it is rather made worf, so that the patients affirm that they are far better when they have none, then when they have anie remedies applied. For all things being rightly don, and according to reason, yet the disease will com again at certain seasons by fits; and hereupon it is said by *Horace*:

The resemblance of the Gout to the Epilepsie.

The strange varietie of the Gout.

*Qui cupit, aut meruit, juvat illum sic domus aut res,
 Ut lippum pictae tabulae, fomenta podagram.
 Riches the covetous, and fearful so do pleas,
 As pictures sore eyes, Bathes the Gout do eas.*

Certain-

Certainly such as have this disease hereditarily, can no more be helped and throughly freed therefrom, then those in whom the matter of the disease is become knotted, whereof *Ovid* thus speaketh :

Tollere nodosam nescit medicina podagram.

Physick the knotted Gout it cannot heal.

These reasons have induced manie to believ that the essence of this disease is unknown, for there is a certain occult and inexplicable virulencie, the autor of so great malignitie and contumacie. Which *Avicen* seem's to acknowledg, when hee write's that there is a certain kinde of Gout whose matter is so acute and malign, that if it at anie time be augmented by the force of anger, it may suffice to kill the partie by sudden death. Therefore *Galen* himself write's that Treacle must be used in all Arthritical and goutie affects, and as I think, for no other reason, then for that it drie's, wast's and weaken's the malignitie thereof. *Gordonius* is of the same opinion, but addeth withall, that the bodie must be prepared and purged before wee use Treacle. Therefore the matter of the Gout is a thin and virulent humor, yet not contagious; offending in qualitie rather then quantitie, causing extreme pains, and therefore infligating the humors together with the caliginous and flatulent spirits prepared or readie for defluxion upon the affected parts. Therefore as the biteings of Asps, and stinging of Wasps caus cruel pain with sudden swelling and blistering, which is by the heat of the humors which the poison hath tainted, and not by the simple solution of continuitie, seeing that wee daily see Shoo-makers and Tailors pricking their flesh with awles and needles without haveing anie such symptom; So the virulencie of the gout causeth intolerable tormenting pain, not by the abundance, becaus it happen's to manie who have the gout, no sign of defluxion appearing in the joints, but onely by a malign and inexplicable qualitie, by reason whereof these pains do not cease unless abated by the help of medicines; or nature, or both. The recital of the following histories will give much light to that inexplicable and virulent malignitie of the matter causing the Gout. Whil'st King Charles the ninth of happie memorie, was at Burdeaux, there was brought to *Chappellain* and *Castellan* the King's Physicians, and *Taste* a Physician of Burdeaux, *Nicolas Lambert* and my self Surgeons, a certain Gentlewoman som fortie yeers old, exceedingly troubled for manie yeers by reason of a tumor scarce equalling the bigness of a peas, on the outside of the joint of the left Hip: one of her tormenting fits took her in my presence; shee presently began to crie and roar, and rashly and violently to throw her bodie this way and that way, with motions and gestures above a woman's, yea a man's nature. For shee thrust her head between her legs, laid her feet upon her shoulders, you would have said shee had been possessed of the Devil. This fit held her som quarter of an hour; dureing all which time I heedfully observed whether the grieved part swelled anie bigger then it was accustomed, whether there happened anie new inflammation; but there was no alteration as far as I could gather by sight or feeling, but onely that shee cried out more loudly when as I touched it. The fit passed, a great heat took her, all her bodie ran down with sweat, with so great weariness and weakness of all her members, that shee could not so much as stir her little finger. There could be no suspicion of an Epileptick, for this woman all the time of her agonie did perfectly make use of all her senses, did speak, discours, and had no convulsion. Neither did shee spare anie cost or diligence, whereby shee might be cured of her disease by the help of Physicians or famous Surgeons; shee consulted also with witches, wizzards and charmers, so that shee had left nothing unattempted, but all art was exceeded by the greatness of the disease. When I had shewed all these things at our consultation, wee all with one consent were of this opinion, to applie a potential Cauterie to the grieved part, or the tumor. I my self applied it: after the fall of the Eschar verie black and virulent sanies flowed out, which freed the woman of her pain and disease for ever after. Whence you may gather, that the cause of so great evil was a certain venenate malignitie, hurting rather by an inexplicable qualitie then quantitie; which beeing overcome and evacuated by the Cauterie, all pain absolutely ceased. Upon the like occasion, but on the right arm, the wife of the Queen's Coach-man at Ambois consulted *Chappellain*, *Castellan* and mee, earnestly craveing ease of her pain, for shee was so grievously tormented by fits, that through impatiencie, beeing careless of her self, shee endeavored to cast her self headlong out of her chamber window, for fear whereof shee had a guard put upon her. Wee judged that the like monster was to be assaulted with the like weapon, neither were wee deceived, for using a potential Cauterie, this had like success as the former. Wherefore the bitterness of the pain of the gout is not occasioned by the onely weakness of the joints, for thus the pain should be continual, and alwaies like it self; neither is it from the distemper of a simple humor, for no such thing happen's in other tumors of what kinde soever they be of; but it proceed's from a venenate, malign, occult and inexplicable qualitie of the matter: wherefore this disease stand's in need of a diligent Physician and a painful Surgeon.

The matter of the gout partake's of occult malignitie.

An historie

A terrible fit

How an Epileptick fit differs from the Gout.

CHAP. III.

Of the manifest causes of the Gout.

The first primitive cause of the Gout.



Although these things may be true which we have delivered of the occult cause of the Gout, yet there be and are vulgarly assigned others, of which a probable reason may be rendered, wherein this malignitie, whereof we have spoken, lies hid and is seated. Therefore as of manie other diseases, so also of the Gout there are assigned three causes; that is, the primitive, antecedent, and conjunct: the primitive is twofold, one drawn from their first original and their mother's womb, which happens to such as are generated of Goutie parents, chiefly if whilst they were conceived, this goutie matter did actually abound and fall upon the joints. For the seed falls from all the parts of the bodie, as saith Hippocrates, and Aristotle affirm's *lib. de gen. animal.* Yet this cause's not an inevitable necessitie of having the Gout, for as manie begot of sound and healthful parents are taken by the Gout by their proper and primarie default; so manie live free from this disease, whose Fathers notwithstanding were troubled therewith: It is probable that they have this benefit and priviledg by the goodness of their Mother's seed, and the laudable temper of the womb; whereof the one by the mixture and the other by the gentle heat, may amend and correct the faults of the paternal seed; for otherwise the disease would become hereditarie, and goutie persons would necessarily generate goutie; for the seed followeth the temper and complexion of the partie generateing, as it is shewed by Avicen. Another primitive cause is from inordinate diet, especially in the use of meat, drink, exercise and Venerie. Lastly, by unprofitable humors which are generated and heaped up in the bodie, which in process of time acquire a virulent malignitie; for these fill the head with vapors raised up from them, whence the membranes, nervs and tendons, and consequently the joints become more lax and weak. They offend in feeding who eat much meat, and that of sundrie kindes at the same meal, who drink strong wine without anie mixture, who sleep presently after meat, and which use not moderate exercises; for hence a plenitude, an obstruction of the vessels, crudities, and the encrease of excrements, especially ferous. Which if they flow down unto the joints, without doubt they cause this disease; for the joints are weak either by nature or accident in comparison of the other parts of the bodie: by nature, as if they be loof & soft from their first original: by accident, as by a blow, fall, hard travelling, running in the sun by day, in the cold by night, racking, too frequent Venerie, especially suddenly after meat; for thus the heat is dissolved by reason of the dissipation of the spirits caused in the effusion of seed, whence manie crude humors, which by an unseasonable motion are sent into the sinews and joints. Through this occasion old men, because their native heat is the more weak, are commonly troubled with the Gout. Besides also the suppression of excrements accustomed to be avoided at certain times, as the courses, hemorrhoids, vomit, scouring, causeth this disease. Hence it is, that in the opinion of Hippocrates, A woman is not troubled with the Gout, unless her courses fail her. They are in the same case who have old and running ulcers suddenly healed, or varices cut and healed, unless by a strict course of diet they hinder the generation and encrease of accustomed excrements. Also those which recover of great and long diseases, unless they be fully and perfectly purged, either by nature or art, these humors falling into the joints, which are the reliques of the disease, make them to become goutie: and thus much for the primitive cause. The internal or antecedent cause is, the abundance of humors, the largeness of the vessels and passages which run to the joints, the strength of the amandating bowels, the looseness, softness and imbecillitie of the receiving joints. The Conjunct cause is the humor it self impacted and shut up in the capacities and cavities of the joints. Now the unprofitable humor, on everie side sent down by the strength of the expulsive facultie, sooner lingers about the joints, for that they are of a cold nature and dens, so that once impacted in that place, it cannot be easily digested and resolved. This humor then causeth pain by reason of distention or solution of continuitie, distemper, and besides the virulencie and malignitie which it acquires. But it favors of the nature sometimes of one, sometimes of more humors; whence the Gout is either phlegmonous, or erysipilatus, edematous, or mix't. The concourse of flatulencies, together with the flowing down humors, and as it were tumult by the hinderance of transpiration, encreaseth the dolorifick distention in the membranes, tendons, ligaments and other bodies wherein the joint consists.

Lib. de aere, loc. & aqua.
Lib. 1. cap. 17.

Lib. 3. feu. 22.
tracl. 2. cap. 5.
Another primitive cause of the Gout.

Aph. 19. Sect. 9.

The antecedent cause of the Gout.

The conjunct.

Five causes of the pain of the Gout.

CHAP. IV.

Out of what part the matter of the Gout may flow down upon the joints.

The matter of the Gout cometh for the most part from the liver, or brain; that which descends from the brain is phlegmatick, ferous, thin and clear, such as usually drops out of the nose, endued with a malign and venenate qualitie. Now it passeth out by the muscu-

What and how the matter of the gout com's down from the brain.

musculous skin and *pericranium*, as also through that large hole by which the spinal marrow, the brain's substitute, is propagated into the spine, by the coats and tendons of the nervs into the spaces of the joints, and it is commonly cold. That which proceed's from the liver is diffused by the great vein and arteries filled and puffed up, and participate's of the nature of the four humors, of which the mass of the blood consist's, more frequently accompanied with an hot distemper, together with a goutie malignitie. Besides this manner of the Gout, which is caused by defluxion, there is another which is by congestion; as, when the too weak digestive facultie of the joints cannot assimilate the juices sent to them.

CHAP. V.

The signs of the Arthritick humor flowing from the brain.

When the defluxion is at hand, there is an heaviness of the head, a desire to rest, and a dulness with the pain of the outer parts, then chiefly perceptible, when the hairs are turned up, or backwards; moreover, the musculous skin of the head is puffed up as swoln with a certain œdematous tumor; the patients seem to bee much different from themselves by reason of the functions of the minde hurt by the malignitie of the humor, from whence the natural faculties are not free; as the crudities of the stomach, and the frequent and acrid belchings may testifie.

CHAP. VI.

The signs of a goutie humor, proceeding from the liver.

He right Hypochondrie is hot in such goutie persons, yea the inner parts are much heated by the bowel; blood and choler carrie the sway, the veins are large and swoln, a defluxion suddenly fall's down, especially if there bee a greater quantitie of choler then of other humors in the mass of the blood. But if, as it often fall's out, the whole blood, by means of crudities degenerate into phlegm and a whayish humor; then will it com to pass, that the Gout also, which proceed's from the liver, may bee pituitous or phlegmatick, and participate of the nature of an œdema, like that which proceed's from the brain. As if the same mass of blood decline towards melancholie, the Gout which thence ariseth, resemble's the nature of a *scirrhus*; yet that can scarce happen, that melancholie by reason of the thickness and slowness to motion may fall upon the joints. Yet notwithstanding, because wee speak of that which may bee of these, it will not bee unprofitable briefly to distinguish the signs of each humor, and the differences of Gouts to bee deduced from thence.

CHAP. VII.

By what signs wee may understand this or that humor to accompanie the goutie malignitie.

You may give a guesse hereat by the patient's age, temper, season of the year, condition of the cuntry where hee live's, his diet and condition of life, the increas of the pain in the morning, noon, evening or night, by the proprietic of the beating, pricking, sharp or dull pain; by numness, as in a melancholie gout or itching; as in that which is caused by tough phlegm, by the sensible appearance of the part in shape and color (as for example sake in a phlegmatick Gout, the color of the affected part is verie little changed from its self and the neighboring well parts, in a sanguine Gout it look's red, in a cholerick it is fierie or pale, in a melancholie livid or blackish) by the heat and bigness which is greater in a sanguine and phlegmatick then in the rest, by the change: and lastly, by things helping and hurting. And there bee som, who for the knowledg of these differences, wish us to view the patient's urine, and feel their puls, and consider these excrements, which in each particular nature are accustomed to abound or flow, and are now suddenly and unaccustomarily supprest. For hence may bee taken the signs of the dominion of this or that humor. But a more ample knowledg of these things may bee drawn from the humors predominant in each person, and the signs of tumors formerly delivered. Onely this is to bee noted by the way, that the Gout which is caused by melancholie, is rare to bee found.

CHAP. VIII.

Prognosticks in the Gout.



Y the writings of Physicians the pains of the Gout are accounted amongst the most grievous and acute; so that through vehemencie of pain manie are almost mad, and with themselvs dead. They have certain periods and fits, according to the matter and condition of the humor wherein this malign and inexplicable goutie virulencie reside's. Yet they more frequently invade in the Spring

The Gout frequent in the Spring & Fall. What Gout uncurable.

and Autumn; such as have it hereditarie are scarce ever throughly free therfrom, as neither such as have it knottie: for in the former it was born with them, and implanted, and as it were fixed in the original of life; but in the other, the matter is becom plaster-like, so that it can neither bee resolved nor ripened. That which proceed's from a cold and pituitous matter, causseth not such cruel tormenting pain, as that which is of an hot, sanguine or cholericke caus, neither is it so speedily healed, for that the hot and thin matter is more readily dissolved; therefore commonly it ceaseth not until fortie daies bee past: Besides also, by how much the substance of the affected part is more dens, and the expulsive facultie more weak, by so much the pain is more tedious. Hence it is, that those goutie pains which molest the knee, heel and huckle-bone, are more contumacious. The Gout which proceed's of an hot

Gal. ad aphor. 49. sect. 5.

Why the Sciatica causseth lameness.

matter, rest's not before the fourteenth or twentieth daie. That which is occasioned by a crid choler, by the bitterness of the inflammation and pain causseth a difficultie of breathing, raveing, and sundrie times a gangrene of the affected part, and lastly death; and healed, it often leav's a palsie behinde it. Amongst all the goutie pains, the Sciatica challengeth the prime place, by the greatness of the pain and multitude of symptoms; it bring's unquietness and watching, a fever, dislocation, perpetual lameness, and the decaie of the whole leg, yea and often-times of the whole bodie. Now lameness and leanness, or decaie of the part are thus occasioned, for that the decurrent humor forceth the head of the thigh-bone out of the cavities of the huckle-bone; this beeing forced out preffeth the muscles, veins, arteries, and that notable and large nerv which run's along the thigh, even to the furthest joints of the toes, and by the waie is diversly dispersed over the muscles of the whole leg: Therefore becaus the head of the thigh is put out of its place, the patient is forced to halt; becaus the vessels and nervs are oppressed, the nourishment and spirits do not freely flow into the parts ther-under, whence proceed's their decaie. Yet it sundrie times happen's, that the head of the thigh beeing not displaced, manie halt becaus the viscid humor, which is naturally implanted in that place, and continually flow's thither, both for the nutrition of these parts, and the lubrication of the joint for quicker motion, is hardened by heat and idleness, and the other unprofitable humors which flow down do there concrete, and so intercept the libertie of motion. A gros and viscid humor into what joint soever it falleth and staie'th, doth the same. For by concretion it turn's into a plaster-like nature at or near the joint, possessing the cavities therof, and it depraveth the figure of the part, making it crooked and knotted, which formerly was straight and smooth. Furthermore, everie distemperature causseth by the defluxion of humors, if it shall lie long upon anie part, deprave's all the actions, and oft-times wholly aboliseth them; so that there may

Three causes of the lameness or decay of the limbs.

bee three causes of the leanness or decaie of the joint by the Gout, the obstruction or compression of the vessels, idleness and an hec'tick distemper: but two of lameness, dislocation and the concretion of an adventitious humor impact in the joint. If contrarie to custom and reason the pains of the Gout do not go away, or return at their accustomed periods, most grievous and dangerous diseases theron follow; for the matter accustomed to flow down into the joints, if it seiz upon the substance of the liver, causseth a phlegmon; if it staie in the larger veins, a continual fever: if it flow in the membrane investing the ribs, a plurisie; if it betake it self to the guts, and adhere to their coats, the colick, or *Iliaca passio*: and to conclude, it produceth divers other symptoms, according to the diversitie of the parts whereto it flow's and abide's. For thus sundrie that have been troubled with the Gout, becom paralytick, becaus the matter, which formerly flowed down

How the Gout turn's into the Palsie.

into the joints, staie's in the substance and pores of the nervs, and so hinder's the spirit that it cannot freely in its whole substance pass through them: hence therefore com's the resolution of the part, whereinto the nerv is inserted. Old men can never bee quite or absolutely cured of the Gout, for that the mass of their blood is so departed from its primarie and native goodnes, that it can no more bee restored, then dead or sowed wine. The Gout, which proceed's from a cold caus, invadeth slowly, and by little and little, and is helped by the use of hot things; that which is from an hot matter, quickly shew's it self, and is helped by the use of cold things. Now, although the Gout more frequently return's in the Spring and Fall, yet it com's in the midst of winter, the nervs beeing weakned by the excess of cold, and the humors pressed out; otherwhiles in the mid't of Summer, the same beeing diffused and dissipated. Lastly, it com's at anie time or season of the year, if those who are subject to this disease feed plenteously, and do all things accord-

Why the Gout take's one in winter, and the mid't of summer.

ing to their own mindes and deire. Those who are troubled with the Gout, feel and perceiv change of weather, storms, rains, snows, windes, and such like, before they com. A Southerlie constitution of the air, for example, fill's the bodie with humidities, and stir's up the humors that lie quiet in the bodie; and therefore caus defluxions upon the weaker parts, such as the joints, both by nature, as beeing without blood and flesh, as also by accident, for that they a long time have been accustomed to bee so tormented; therefore their pains are increased in a wet season. Manie of these that are troubled with the Gout, desire venerie in the bitterness of their pain, becaus the internal heat wherewith they then are inflamed, doth not dissipate into spirits and air, as the feverish heat doth, but dissolv's, and as it were melt's down the feminal humor, which dissolved, flow's to the genitals, filleth and distend's them. The same thing befall's carriage and running horses, for in these by labor, much heat send's flatulencies to the bottom of the bellie. Yet venerie is verie hurtful to such as are troubled with the Gout, becaus it dissipate's the spirits and native heat, and encreaseth the unnatural heat; whereby it cometh to pass, that the nervous parts are weakened, and the pain exasperated. Rich men, that is, such as feed riotously on varietie of dainties, and in the mean space live idly and lazily are more frequently and cruelly tormented with the Gout then poor people, who live sparingly and hardly: Wherefore there have been seen not a few of such rich and riotous persons, who having spent their estates, have therewith changed their health, together with their fortune and diet, and so have been wholly freed from the Gout.

Why such as have the Gout upon them, do oft-times desire venerie.

Venerie hurtful in the Gout.

CHAP. IX.

The general method of preventing and curing the Gout.

THose who desire to prevent the Gout, must not glut themselves with meat, must bee quick to labor, and abstain from wine & venerie, or certainly must not use them, unless for their healths sake, must vomit and purge at certain times. Hippocrates write's, that boies are not troubled with the Gout before the use of venerie. Yet at this day manie Eunuchs are seen to have the Gout, but especially those who abound with idleness and pleasure; yet these wee have heretofore mentioned are verie effectual, not onely for the prevention, but also for the cure of the present disease. Yet wee must diligently distinguish the causes, what they bee, and whence they may proceed, and oppose thereto remedies contrarie in quantitie and qualitie. There are absolutely three distinct causes of the Gout: A tainture from the parents; a corruption of the humors by diet and air; a native, or adventitious weakness of the joints. Against these there is a two-fold indication: the first is the evacuation and alteration of the peccant humors, the other the strengthening of the weak joints. These two shall bee performed by diet conveniently appointed, purgeing, blood-letting, provocation of the hemorrhoids, courses, vomit, sweat, urine, and fit application of local medicines. Therefore, when the time shall com, wherein the Gout accustomed to return by course, the patient shall have a care of himself by a diligent manner of diet, hee shall lessen the matter of the disease by phlebotomie (if that the Gout shall arise from the blood) from the opposite part, that by the same means revulsion and evacuation may bee made; as if the upper parts bee inflamed, blood shall bee drawn from the lower; if on the contrarie the lower, out of the upper, alwaies observing the straightness of the fibres. Thus the right arm beeing troubled with a goutie inflammation, the *Saphena* of the right leg shall bee opened, and so on the contrarie; but if this general blood-letting beeing premised, the pain shall not cease, it will bee requisite to open the vein next to the pain, which I have often performed with happie success.

Aph. 30. sect. 6.

Two general scopes of curing the Gout.

Whence blood must bee let in the Gout.

Yet phlebotomie hath not the like effect in all, for it is not available to such as are continually and uncertainly troubled with goutie pains, or whose bodies are weak and cold, wherein phlegm onely is predominant. Wee may say the same of purgeing, for though it bee oft-times necessarie, yet too frequently re-iterated, it prove's hurtful; furthermore, neither of these remedies is usually verie profitable to such as observ no order in meat & drink, which use venerie too intemperately, who abound with crude and contumacious humors; whose joints by long vexation of the disease, have contracted an hec tick distemper and weakness, so that they are departed from their natural constitution, and suffered a great change of their proper substance. Wherefore as often as these greater remedies shall bee used a Physician shall bee called, who according to his judgment may determine thereof. For oft-times diet proveth more available then medicines: therefore the patient (if the matter of the Gout bee hot) shall either drink no wine at all, or elf verie much allaied, that is, as much as his custom and the constitution of his stomach can endure. A fit time for purgeing and bleeding is the Spring and Autumn, becaus, according to the opinion of Hippocrates, Gouts reign chiefly in these season; in Autumn, for that the heat of the precedent Summer debilitateth the digestive facultie, the native heat beeing dissipated: as also the eating of Summer-fruits hath heaped up plentie of crude humors in the

What goutie persons finde no benefit by phlebotomie.

In what Gout diet prove's more effectual then medicines.

Aph. 55. sect. 6.

bodie, which easily flow down into the passages of the joints opened and dilated by the Summer's heat: add heerunto, that the inequality or variableness of Autumn weakneth all nervous parts, and consequently the joints. But in the Spring, for that the humors forced inward, by the coldness of the Winter, are drawn forth from the centre to the circumference of the bodie, and being attenuated, fall into the joints upon a verie small occasion, thertore ther is great both necessitie and opportunitie for evacuation, which if it shall not avert the accustomed fit, yet it will make it more gentle and easie.

CHAP. X.

Of Vomiting.

To what gout vomiting is to be used.



Vomiting is by all the Antients exceedingly commended, not onely for the prevention, but also for the cure, especially when as the matter floweth from the brain and stomach; for the phlegmatick, serous and cholerick humors, which usually flow from the joints, are excluded and diverted by vomit, and also ther is attenuation of that phlegm, which being more thick and viscid, adhereth to the roots of the stomach: yet you must consider and see, that the patient bee not of too weak a stomach and brain, for in this case vomiting is to be suspected. For the time, such as have excrementitious humors flowing down to the stomach through anie occasion, as by exercise and motion, must vomit before they eat; on the contrarie, such as are over-charged with an old congestion of humors, must vomit after they have eaten something. Certainly, it is safer vomiting after meat, then it is before. For the drie stomach cannot, unless with great contention and straining, free it self from the viscid humors impact in the coats thereof; and hence there is no small danger of breaking a vein or arterie in the chest or lungs, especially if the patient bee straight-chested, and long-necked, the season cold, and hee unaccustomed to such evacuation. I remember that with this kinde of remedie I cured a certain Gentleman of Geneva, grievously molested with a cruel pain in his shoulder, and therby impotent to use his left arm; the Physicians and Surgeons of Lions seemed to omit nothing elf for his cure. For they had used purgeing, phlebotomie, hunger, a diet-drink of *Gudiacum* and *China* (although his disease was not occasioned by the *Lues Venerea*) and divers other topick medicines, neither yet did they anie thing avail. Now learning by him that hee was not apt to vomit, but that it was difficult to him, I wished him to feed more plentifully, and that of manie and fundrie meats; as fat meat, onions, leeks: with fundrie drinks; as beer, ptisan, sweet and sharp wine, and that hee should as it were over-charge his stomach at his meal, and presently after get him to his bed; for so it would happen, that nature not enduring so great confusion and perturbation of meats and drinks, wherof som weer corrupted alreadie in the stomach, and other-som scarce altered at all, nature not enduring this confusion and perturbation, would easily, and of its own accord provoke the stomach to vomit; which that it might the better succeed, hee should help forward nature's endeavor, by thrusting his finger or a feather into his throat, that so the thick and tenacious phlegm might by the same means bee evacuated: and not content to do thus once, I wished him to do the like the second and third daie following; for so it verifieth that saying of *Hippocrates*, *The second and third daie exclude the reliques of the first*: afterwards, that hee should vomit twice a month, chew masticke fasting, rub his neck and the pained part with *aqua vite*, strengthened by infusing therein lavender, rosemarie, and cloves grossly beaten, confirm his arm by indifferent exercise: hee performed all this, and so became free from his pain, and recovered the use of his arm. Those who do not like such plentiful feeding, shall drink a great quantitie of warm water, wherin radish roots have been boiled, and they shall have a care lest by using their stomachs to this excretion by vomit, they weaken the digestive and retentive facultie therof. Wherfore such as can naturally, shall think it sufficient to vomit twice a month.

What time the fittest therfore.

An historie.

How to make one vomit easily.

Lib. de rat. vitis.

CHAP. XI.

The other general remedies for the Gout.

How diureticks are good for the Gout.



Issues or fountains.

Hee defluxion of serous humors is verie fitly diverted from the joints by the use of diuretick medicines. Therefore the roots of sorrel, parslie, *ruscus*, *asparagus*, and grass, and the like, shall bee boiled in broth, and given to such as have the Gout: for when the urine floweth much and thick, the pain is lessened. Manie have found benefit by issues; for the Arthritick malignitie flow's forth of these, as by rivelets; experience shew's it in such as are troubled with the *Lues Venerea*, for in those that you cannot overcome the malignitie by the proper antidote, that is, Quick-silver, they feel no greater ease of the pain, then by application of causticks, and making of issues. They shall bee made in fundrie places, according to the difference of the pained joints,

joints, to wit, in the beginning of the neck, if the defluxion proceed from the brain, and fall into the joints of the collar-bones or shoulder; if into the elbow or hand, under the muscle *Epomis*; if into the hip, knees and feet, som three fingers breadth under the knee, on the in-side: for thus theer will follow more plentiful evacuation, by reason that the *Sapheia* runneth down that way. Yet if the patient bee troubled with much business, and must travel much on hors-back, then shall they bee made on the out-side of the leg, between the two bones thereof, that so they may trouble him the less in rideing. If anie had rather use an actual cauterie, let him take such an one as is triangular and sharp, that so hee may with more speed and less pain perform that which hee intend's, and let him thrust it through a plate of iron which hath an hole therein, and let the place bee marked, least hee should err; the ulcer shall bee kept open, by putting in a pill of gold, silver, lint, of the root of orris, hermodactiles, gentian, wax, wherwith som powder of vitriol, mercuric or alum shall bee incorporated, least it should fill up with flesh sooner then the Physician shall think fit. In the mean space, the head, oft-times the original of the evil, shall bee evacuated by takeing in the winter the pills *cochiæ*, and *de Assajeretb*; but in summer *sine quibus*, or *Imperiales*, before the Full of the Moon. *Rx. pul. hyeræ simp. ℥i. agar. recent. troch. & rhei an. ℥ii. myrobal. cbebul. ℥β. tamarind. ℥ii. cum infusione senæ, fiat massa de qua formentur pill. vi. pro drachmâ*; let the patient take two before supper everie eighth daie; the daie after hee shall drink som broth of the decoction of cicers, and the diuretick roots. Also these following pills will bee good to purge the phlegmatick and ferous humor. *Rx. pillular. fatid. & de hermodactil. an. ℥β. formentur cum succo vel syrup. rosar. solut.* Or els, *Rx. aloës ℥iii. agarici trochis. & rhei, an. ℥i. massæ pilul. arthrit. & de hermodact. an. ℥ii. diacrid. ℥. cum melle rosato fiat massa, capiat pondus, ℥i.* as the Physician shall think fit, by whose advice these shall bee used and changed as occasion shall offer it self, and the nature of the humor caussing the diseas. The day after the purgeing, the patient shall take three hours before meat half a dram of treacle, to strengthen the entrails: pills are preferred before liquid medicines, for that by their long staie in the stomach they easily attract the noxious humor from the brain, and the other more distant parts. I have known som Physicians, who mixing with ordinarie pills a good quantitie of scamonie, as seven or eight grains, with a little ginger, least it should hurt the stomach, have purged by stool a great quantitie of ferous humors; the daie following they gave barlie cream to correct the harm which the scamonie may have don to the stomach. Others for the same purpose give treacle, which doth not onely strengthen the entrails, but also weaken's the virulencie of the goutie malignitie; the orifice of the ventricle must bee shut after meat, that so the vapors ascending to the brain may bee restrained: for this purpose common drige-powder, marmelate, or conserv of roses are good. In a wet season use cephalick perfumes thus made: *Rx. thuris, vernicis, & mastich. an. ℥i. granorum juniperi, baccarum lauri, an. ℥β. ligni aloës ℥ii. assæ odoratæ ℥i. β.* Let them bee grossly beaten; let the fume bee received in tow, or carded cotton, and so applied to the head. Also the excrementitious humors shall bee dried up by the following powder strowed on the patient's head for fifteen daies. *Rx. fol. ros. rub. senæ, stechad. utriusque an. m. β. milii, ℥iiii. furfuris loti in vino albo, ℥iii. florum chamam. melil. an. p. i. sem. anisi, ℥i. salis com. ℥ii. fiat omnium pulvis.* Let it bee put into linnen bags, with which, being warmed at the fire in a frying-pan, and kept with stirring, the head shall bee rubbed. Let the following medicine bee chewed, and kept in the mouth in the form of a masticatorie, in the time of the falling down of the defluxion. *Rx. cubelarum, nucis moschat. glycyrrhiz. anis. an. ℥i. pyretbri, ℥ii. mastich. rad. staphisagr. eryngii, an. ℥ii.* Let them all bee made into powder, and mixed together, and tied up in a little taffatie to the bigness of a hsel-nut, and let them bee rowled up and down the mouth with the tongue to caus spit-ting or salivation. Working with the hands, and frictions of the arms, especially in the morning after the evacuation of the excrements, are good for such as are troubled with the Gout in the feet, for so, it not onely causseth revulsion from the feet, but also the resolution of that which is unprofitable.

An actual cauterie.

Pills.

Common pills with the addition of scamonie. Treacle, how useful in the Gour.

Cephalick fumigations.

Cephalick bags.

A masticatorie.

CHAP. XII.

What diet is convenient for such as have the Gout.

After the bodie is once fed, they must not return to meat before that the concoction bee perfected in the stomach, least the liver bee forced to draw by the mesaraick veins that which is yet crude and ill digested, and as it were forced thence.

Whence the depravation of the nutriment of the whole bodie; for the following decoctions doe not amend the default of the first. Let them make choice of meat of good juice and easie digestion, roasted for such as are phlegmatick, but boiled for such as are choleric: As they shall shun much varietie one meal, so must they eschue the use of pulscs, milk-meats, sallads, and sharp things; as verjuice, vineger, the juice of oranges, and citrons. They shal not eat unless they bee hungrie, & shall desist ther-from before they bee fully satisfied, if it bee but for this, that whil'st the native heat is busied in the digestion of meat

The fault of the first concoction, is not amended in the after.

plenteously eaten, it is diverted from the concoction of the noxious humors. The flesh of great fowl, as swans, cranes, peacocks are not of laudable juice, and are with more difficulty digested in the stomach. Som of the ancients have disallowed of the eating of capons, and the like birds, because they are subject to be troubled with the Gout in the feet. Fishes are to be shunned, for that they heap up excrementitious humors, and are easily corrupted in the stomach, yea and relax it by continual use. Of the flesh of beasts, veal is most to be commended, for that it breed's temperate blood, and laudable juice, and is easily digested. Neither in the mean time is mutton to be found fault withall. But the like hunger or abstinence must not be appointed to all men troubled with the Gout, for such as are of a sanguine and cholerick complexion, because they are endued with much, and much wasting heat, are to be refreshed with more plentiful nourishment; for hunger sharpen's choler, and so augment's their pains; neither in the *interim* must they be fed with too much moist meats, for too much moisture, besides that it is the autor of putrefaction, will cause defluxions, and draw down the matter to the joints. Therefore the cholerick humor must be incrassated and refrigerated by taking things inwardly, and applying things outwardly, least by its tenuitie it should fall down into the grieved parts. To this purpose conduce broths altered with lettuce, purslain, forel, and the like herbs, and barlie creams made with a decoction of the four cold seeds. Phlegmatick bodies, by reason that they have not so vigorous heat, do as it were carrie their provant about them, wherefore they must not be fed, neither with manie, nor with moist meats. All that are troubled with the Gout, must shun those things which are hard of digestion, and which are soon corrupted, for they all have a certain remiss fever, which diminisheth the native heat, and make's the meats apt to putrefie. Too plentiful drinking not onely of wine, but also of anie other liquor, is to be avoided. For by too great a quantitie of moisture the meat float's in the stomach, and the native heat is in som sort extinguished, whence proceed crudities. Som Physicians commend the use of white wine, for that it provoke's urine, which is not altogether to be disallowed, if so be that the bodie be free from excrements, otherwise by this, as it were a vehicle, especially if the temperature of the bodie be somewhat more hot, they shall be carried down into the joints. Therefore in such a case I should rather advise them to use claret, which is somewhat weak and astringent, for that it doth not so much offend the head nor joints, and it shut's and strengthen's the orifices of the vessels. Yet it will be more convenient wholly to abstain therefrom, and instead thereof to drink an *Hydromel* made after this manner: *Rx. aquae lb. iiii. mellis opt. q. i. bulliant ad consumptionem lb. i. bene despumando, adde ad finem, salviae p. i. imò si eger sit pituitosus, cinnamomi aut caryophyllorum momentum.* For cholerick persons make a sugred water thus: *Rx. aquae fontis lb. iiii. saccari lb. β. colentur per manicam sine ebullitione, addendo in fine cinnamomi zii.* For thus the stomach shall also be strengthened; also hee may drink *ptisan*, wherein at the end of the decoction shall be boiled som dried roses, or elf som syrup of pomegranates added thereto, least it should offend the stomach; as soon as it come's from off the fire, let it stand and settle, and then strain it through an hypocras-bag, or clean linnen cloth.

Capons subject to the gout.

Cholerick persons cannot away with long fasting.

Phlegmatick bodies in fasting feed upon themselves.

White wine not good for the gout.

Claret may be the safelier drunk.

Hydromel most safely.

An *Hydrosaccarum*.

CHAP. XIII.

How to strengthen the Joints.

IT is a matter of much consequence for the prevention of this evil, to strengthen the joints, whereby they may be able to resist the humors preternaturally falling down upon them. Wherefore it is good morning and evening to rub them with *oleum omphacinum*, that is, oil made of olives not com to their perfect maturitie; or with oil of roses mixed with common salt finely powdered. It may also be mixed with common oil, adding thereto the powder of Hart's-horn, as that which hath an astringent and drying facultie. Also it is good to bathe them in this following lee: *Rx. cort. granat. nucum cupress. gallarum, sumach. cortic. querni, an. ℥ii. salis com. alumin. roch. an. ℥i. salviae, rorismar. lavendul. lauri, ivae arboretic. an. m. i. rosar. rub. m. β. bulliant omnia in sex lb. vini crassi & astringentis, & lixivio parato ex aqua chalibeata, & cinere querno.* Then foment the part with sponges or cotton-cloths; after, this fomentation shall be carefully wiped and dried with hot linnen cloths, taking heed of cold. The juice of unripe haws tempered with oxycrate is a singular thing for this purpose. But if you desire to strengthen the joints weakned by a cold cause, then, *Rx. salviae, rorismar. thymi, lavendul. laur. absinth. an. m. i. caryophyl. zinzib. piperis, conguassatorum an. ℥i. infundantur in aqua vite & vini rubri astringentis, an. lb. iiii. bulliant leniter in balneo mariae.* With this liquor foment the joints morning and evening. Som think it good to strengthen the joints, to tread grapes in vintage-time, which if they be not able to do, then let them wash their feet in the must or new pressed wine. Also bags may be thus made for the same purpose. *Rx. salis com. alum. roch. cort. granat. sumach. berberis, nucum cupressi, an. ℥iiii. fol. salviae, rorismar. rosar. rub. an. m. β.* Let them be all put in linnen bags, and boiled in lee, and so make a decoction for to foment the joints.

A fomentation to strengthen the joints.

The juice of haws with oxycrate.

Bags.

CHAP. XIV.

Of the Palliative Cure of the Gout and the material causes thereof.



Ever also must wee consider the causes whence this disease proceed's, the temper of the diseased bodie, the parts affected, and those from whence it proceed's. For as these are not alwaies alike, so neither can one and the like remedie bee useful in everie Gout. For first those which proceed of a cold cause require other remedies, then those which arise from a hot, and that which proceed's from anie one simple humor, then that from wch ariseth divers mixed together. For Cholera alone causeth cruel pains, but tempered by the admixture of Phlegm, it becom's more gentle. Furthermore som remedies are good in the beginning, som in the encrease, and som at other times. Neither may wee use repercussives in the Sciatica, as wee may in the Gout of the feet and other joints; unless peradventure the part bee fearfully inflamed. Takinge these things to consideration wee must observe that the Palliative cure of that Gout, which cannot absolutely bee helped, as that which is hereditarie and inveterate, is performed by four scopes. The first is by appointing a convenient diet in the *six things* wch are termed *not-natural*. The second by evacuating & diverting the antecedent matter, both by purging and phlebotomie. The third by topick medicines according to the condition of the morbifick humor and nature. The fourth by correcting the symptoms, but especially the pain, whereof in these affects there is oftentimes so great excess by reason of the inexplicable and invincible malignitie of the virulent qualitie associateing the humor that it alone is oftentimes sufficient to kill the patient. And because the varietie of morbifick causes, bring's a varietie of remedies, fitted to these four intentions, therefore it behoov's a Physician to bee most attentive in the distinction of the causes. For hee may bee easily deceived and mistake one for another; for arthritick pains proceeding from a cold matter, if they bee mitigated by the application of Narcotick and cold medicines, it may induce us to believe that the material cause is hot, though really it bee not so; for Narcoticks asswage pain, not for that they are contrarie to the cause thereof, but because they take away the sense by inducing a numbness; on the contrarie, the material cause may sometimes seem cold, which notwithstanding is hot, for that it becom's better by application of hot medicines, that is, by takinge an argument from that which help's, because contraries are cured by contraries, and the like preserved by the like. But herein consist's the error, for that hot medicines profit not by their contrarietie, but by the attenuation of the gross matter, by the rarefaction of the skin and dissipating them into air. Whence you may gather, that an argument drawn from that which help's and hurt's, is verie deceitful: moreover it may happen that a large quantitie of cold matter flowing down from the brain, may cause great pain by reason of the virulencie, and a small quantitie of cholera mixed therewith, which serv's for a *vehicle* to carrie down the tough and flow phlegm into the joints, whence the patient becom's thirstie and feverish by reason of the heat and inflammation of these parts, whereby such as are less cautious and heedie will easily bee induced to believe that som hot matter is the occasion of this Gout. Now when as not som one simple humor but different by reason of mixture, causeth the Gout, the yellowish color of the part may deceive one, as, if the evil matter should proceed from cholera onely, which by the tenuitie of its substance leaving the center, easily possesseth the circumference of the bodie or part: and notwithstanding much phlegm being as it were enraged by the admixture of a little cholera, may bee the chief cause of the disease, and may peradventure bee discovered by the encrease of pain in the night season. A fever arising by means of pain and watching may encrease the conceived opinion of cholera, which attenuating and diffusing the humors, drive's them into the joints, and causeth fierie urines, tinged with much cholera, and a quick pulse. Yet notwithstanding the Physician shall bee in an error, if deceived with these appearances, hee attempt the cure of this Gout, as arising from a hot, and not from a cold cause: yet I am not ignorant that the cure of the proper disease must bee neglected for the cure of the symptoms. Besides also it may com to pass that cholera may bee the cause of the Gout, and notwithstanding no signs thereof may appear in the skin and surface of the affected part, because the coldness of the ambient air, and the force of applied Narcoticks may have destroyed the color of the juices lying therunder, and as it were imprinted a certain blackness. It also happen's, that the bodie being overcharged with a great quantitie of gross and viscid humors, the expulsive facultie may discharge som portion thereof unto the joints, but leave the rest impacted in the cavities of som entrail, where causing obstruction and putrefaction may presently cause a fever, and that intermitting, if it bee small, and obstruct onely the lesser veins, and these of the habit of the bodie. Wherefore then it is not sufficient that the Physician employ himself in the cure of the Gout, but it behoov's him much more to attend the cure of the fever, which if it bee continual, it discredit's the Physician, and endanger's the patient; if it bee intermitting, it easily becom's continual, unless it bee withstood with fit remedies, that is, unless you let blood, the bellie being first gently purged, and nature bee presently freed by a stronger purge

The scopes of curing.

Repercussives not to be used in the Sciatica. The palliative cure performed by four scopes.

An argument taken from that which helpeth or giveth ease, is not alwaies certain. How cold diseases may be helped by cold, and hot, by hot medicines.

The first thing that may deceive a Physician.

The second.

The third.

The fourth.

The fifth.

The sixth.

Why strong purges mult be given to such as have the Gout.

That judgment most certain which rest's upon multiplicitic of signs.

Why wee must use purgeing and bleeding in the Gout.

Lib. de affect. ubi de Arthrit loquitur. Adaph. 23. sect. 1. Lib. de cur. per sang. missionem.

purge of the troublesom burden of humors. Now it is convenient, the purge bee somewhat stronger then ordinarie, for if it should bee too weak, it will stir up the humors, but not carrie them away, and they thus agitated will fall into the pained and weak joints, and caus the Gout to encreas, By this it appear's how deceitful that conjecture is, which relie's and is grounded on one sign, as often as wee must pronounce judgment of morbidick causes. Wherefore to conclude, wee must think that opinion most certain concerning the matter of the diseas, which is strengthened with multiplicitic of signs, as those which are drawn from the color of the part, the heat or coldness manifest to the touch, those things that help and hurt, the patient's familiar and usual diet, temper, age, region, season of the yeer, proprietic of pain, the exacerbation or excess thereof, in what daies, and in what hours of the daie, the length of these fits, the urine and other excrements coming from the patient's bodie. But for that not a few are in that heresie, that they think that wee must neither purge nor let blood in the Gout, wee must heer convince that opinion. For seeing that phylick is the addition of that which want's, and the takeing of those things that are superfluous, and the Gout is a diseas which hath its essence from the plentie of abounding humors, certainly, without the evacuation of them by purgeing and bleeding, wee cannot hope to cure, either it, or the pain which accompanie's it. *Metrius*, in his Treatise of the Gout write's, that it must bee cured by purgeing, used not onely in the declination, but also in the height of the diseas, which wee have found true by experience; and it is consonant to this saying of *Hippocrates*; in pains wee must purge by the stool. Besides also, *Galen* professeth that in great inflammations, fevers and pains, hee knew no greater nor surer remedie then to let blood, even to the fainting of the patient. If those which are in this case shall not becom better by purgeing and phlebotomic conveniently prescribed, then it happen's by the means of drunkennes, gluttonie, and the like distemper. For hence abundance of crude humors are heaped up, which by thir contumacie yeeld themselvs less obedient to medicines. Therefore such goutie persons as are intemperate and giv'n to gluttonie and venerie, may hope for no health by use of medicines.

CHAP. XV.

Of local medicines which may bee used to a cold Gout.

It is not safe to use repercussives in the Gout before purgeing,



ittle do topick medicines avail, unless the bodie of the goutie patient shall bee purged from excrementitious humors; besides also there is danger least by the use of repelling medicines, the virulencie of the humor may bee driv'n into the entrails, which thing hath been the caus of sudden death to manie. Now in the first place wee will speak of local medicines which are thought meet for a phlegmatick juice, becaus this is more frequent, then that which is from a hot caus. At the beginning in everie gout, the *Sciatica* excepted, wee must use astringent things which have a facultie to binde or strengthen the joints, and to drie and waste the excrementitious humor. As, *R. sol. sabinae m. β. nucum cupressi ℥iii. aluminis roch. ℥i. gum. tragacantha ℥iiii. mucaginis psyllii & cydon. quantum sufficit, fiat cataplasma.* Or, *R. stercoris bubuli recentis ℔. i. mellis ros. ℥iiii. olei ros. & aceti an. ℥ii. bulliant simul parvum, fiat cataplasma.* Or els, *R. olei rosar. & myrtill. an. ℥ii. pulveris myrrhe & aloës an. ℥i. acacie ℥ii. β. incorporentur cum aquâ gallarum coctiarum, & fiat unguentum.* Som boyl sage, camonile and melilote flowers, wormwood and dane-wort, of each a handful in a sufficient quantitie of vineger, then they put the grieved part into this decoction beeing warm; and by frequent useing this medicine, it hath been found to repel and consume the noxious humor, not onely cold, but also cholerick; and also to strengthen the part. The fresh feces of Olives laid to the part, asswage pain: dried Oranges boiled in vineger, beaten and applied, do the same. Or, *R. medii corticis ulmi ℔. β. caudæ equin. stachad. consolid. majoris, an. m. β. aluminis roch. thuris an. ℥iii. farin. bordei ℥v. lixivii com. quantum sufficit, fiat cataplasma ad formam pultis satis liquide.* Commonly then when as the part swelleth up, the pain is lessned, for that the expulsive facultie driveth the humor from the center into the circumference of the part, that is, from within outward; for in like sort, such as have the tooth-ache have less pain when their cheeks begin to swell.

An astringent Cataplasma.

A discussing fomentation.

One, partly astringent and partly discussing.

After repercussives, wee must com to those which evacuate the contained humor by evacuating or resolving it. For everie defluxion of humors remaining in anie part require's evacuation. Neither must wee marvel thereat, if the digested humor doth not vanish at the first time; for wee must have regard to the cold phlegm which is thick and viscid, as also of the part which is ligamentous, membranous and nervous, and consequently more dens then fleshie parts. *R. rad. Bryon. sigilli beat. Mariæ. an. ℥iv. bulliant in lixivio, postea terantur, & colentur per setaceum, addendo farin. bordei & fabarum an. ℥i. olei chamæm. ℥iii. fiat cataplasma.* Or, *R. bordei & lupin. ag. ℥iii. sulphuris vivi & salis com. an. ℥i. mellis com. ℥v. pul aloës & myrrhe an. ℥β. aq. vit. ℥i. cum lixivio, fiat cataplasma.* Or, *R. succi calium rub. aceti boni, an. ℥iiii. farin. bordei ℥iβ. pul. Hermodactyl. ℥β. vitellos ovorum nu. iii. olei chamæm. ℥iii. croci ℥ii, som burn the roots and stalks of Coleworts, and mix the ashes with hog's greas and the powder of Orris, and*

Why the goutie humor doth not presently vanish upon the use of repercussives. Greater discusses

fo make a pultis. Or, R. *Lactis vaccini* lb. ii. *mice panis albi* quantum sufficit, *bulliant simul*, addendo *pulveris subtilis florum chamem.* & *meliloti an.* m. *β. croci* ℥i. *vitellos odororum* nu. iiii. *ol. ros.* ℥iii. *butyri recentis* ℥i. *terebinth.* ℥ii. *fiat cataplasma ad formam pultis sat̄s liquidæ.* This Cataplasma may bee applied with good success, not onely to phlegmatick and cold, but also to anie gout; at anie time to mitigate the extremitie of the pain in men of anie temper, and it must bee changed twice or thrice a daie. Also Triacle dissolved in wine, and anointed on the part, is said to assuage this pain. You may for the same purpose make and applie emplastrs, unguents, cerats and liniments: This may bee the form of an emplastr. R. *gummi ammoniaci, bdellii, styracis, an.* ℥ii. *cum aceto & aqua vit.* dissolve & adde *farin. fenugr.* ℥β. *olei chamem.* & *aneth. an.* ℥ii. *ceræ quantum sufficit, fiat empastrum molle.* Or, R. *rad. bryon. sigill. beat Mariæ. an.* ℥v. *bulliant in lixivio completè, & colentur per setaceum, addendo olei cham.* ℥iiii. *sevi hircini* ℥iiii. *ceræ nov.* quantum sufficit, *fiat emplastrum molle.* Or, R. *gum. ammon. opopanacis galbani. an.* ℥ii. *dissolvantur in aceto, postea colentur, adde olei liliorum, terebinth. venet. an.* ℥i. *picis navalis, & cer. nov.* quantum sufficit, *fiat emplastrum molle.* Or els, R. *succi rad. enul. camp. & ebuli an.* ℥iii. *rad. alb. lb. β. coquantur & colentur per petaceum, addendo florum cham. melil. sambuchi, rorismar. & hyperici an.* p. ii. *nucum cupressi, nu. iiii. ol. cham. aneth. hyper. liliorum, de spicâ an.* ℥ii. *pinguedinis anatis, gallin. anseris an.* ℥β. *ranas viridas vivas nu. vi. catellos duos nuper natos, bulliant omnia simul, in lb. ii. β. vini odcriferi & und aquæ vit. ad consumptionem succorum & vini, & ossium catellorum dissolutionem, & fortiter exprimantur; & expressionis adde terebinth. ℥iii. cer. quantum sufficit, fia emplastrum molle.* Also, *Emp. de vigo. Oxicroceum, de mucilaginitibus, de meliloto* and the like mixed together, and softned with a little oil or *axungia*, are of the like facultie, and good for the same purpose.

A caraplasma good for anie Gout at anie time.

Discussing emplastrs.

Let this bee the form of an ointment. R. *anserem pinguem, & imple catellis duobus, de quibus deme cutem, viscera, caput & pedes; item accipe ranas nu. x. colubros detracta cute in frustra dissectos nu. iv. mithridat. & theriac. an.* ℥β. *fol. salvie, rorismar. thymi, rutæ, an. m. β. baccarum lauri, & juniperi, conquassat. an.* ℥i. *pulveris nuc. moschat. zinzib. caryophyl. & piper. an.* ℥i. *de eo quod stillabat fiat unguentum vel linimentum cum cerâ & terebinth. venetâ, paucâ aquâ vitæ additâ; this marvelously asswageth the pain of the Gout arising from a cold caus.* Another, R. *gummi pini, & lodani, an.* ℥iv. *gummi elemi & piscis naval. an.* ℥β. *terebinth. venet. claræ ℥vi. chamem. & liliorum an.* ℥vi. *vini rub. lb. i. β. ag. vit. & salv. an.* ℥vi. *dissolvantur omnia simul lento igne, baculo semper agitando, deinde adde pul. ireos. flor. baccarum lauri et hermodactyl. an.* ℥i. *β. mastiches, myrrhæ et olibani an.* ℥ii. *farinæ fabar. ℥iv. incorporentur omnia simul, fiat unguentum molle.* Or els, R. *mucag. seminis fenugr. in aceto extract. quantum volueris, cui misce mellis quantum sufficit; let them bee boiled together until they acquire the consistence of an ointment. These things shall bee changed, as often as need shall seem to require. Also an anodine and discussing fomentations are good to resolv; as this, R. fol. rutæ, salv. rorismar. an. m. i. bulliant cum aceto & vino; and so make a decoction for a fomentation, which you may use not onely in a cold Gout, but also in a hot, becaus it resolveth and strengtheneth the part by attraction, and free'th it from the defluxion: you must have a care that the medicines which are used to pains of the Gout bee changed now and then. For in this kinde of disease that remedie which did good a little before, and now availeth, will in a short time becom hurtful.*

Ointments.

Discussing fomentations.

Remedies must bee often changed in the gout.

But if the contumacie and excess of the pain bee so great, that it will not yeeld to the described medicines; then it is fit, becaus the disease is extreme, to use (according to Hippocrates's counsel) extreme, such as are those which follow. R. *axungie gallinæ, olei laurini mastic. & euphorb. an.* ℥i. *pulv. euphorb. & pyreth an.* ℥i. *fiat litus; herewith let the part bee rubbed everie daie, for it is a verie effectual medicine. For euphorbium and Pellitorie by their heat attenuate and resolv, the capon's greas and oil of baies relax, the oil of mastich strengtheneth the part and hindereth a new defluxion. Also there is made a verie anodine ointment of oil of Foxes, wheerin earth-worms, the roots of elecampane and bryonie have been boiled, with a little turpentine and wax; this soften's, attenuate's and resolv's the cold humor impact in the joints. Or els R. seminis sinapi pulviserati, & aceto acerrimo dissoluti, ℥iii. mellis anacardani ℥ii. aquæ vitæ ℥i. salis com. ℥ii. let them bee all mixed together, and applied to the pained part. Or, R. picis nigræ, ℥iii. terebinth. venetæ ℥i. sulphuris vivi subtiliter pulverisati ℥iii. olei quantum sufficit, liquefiant simul, fiat emplastrum; let it bee spread upon lether, and laid upon the part for two or three daie's space, if the patient perceiv anie eas therby; if otherwise, let it bee changed as wee said before. Som for the same purpose applie nettles therto, and presently after wash the part in the sea or salt water. Others foment the part with vineger wherin pigeons hath been boiled. A vesicatorie made of verie sower leaven, *cantharides*, and a little *aqua vitæ* is verie powerful to evcauate the conjunct matter. For thus the malign and virulent serum, or whayish humor is let out, whence follow's som eas of the pain. Now there are som goutie pains, which cannot bee lessned or asswaged unless by remedies more powerful then the distemper, therefore vesicatories ought not to bee rejected, seeing that the Ancients in this affect have also made use of actual cauteries, as wee shall shew heerafter. Christopher Andreas in his book termed *Oëcoitarie* [that is, domestick physick] much commend's Ox-dung wrapped in cabbage or vine-leaves, and roasted in the embers, and so applied hot too the grieved part.*

A great discussor.

An anodine.

A vesicatorie against the contumacie of the conjunct matter.

CHAP. XVI.

Of local medicines to bee applied to hot or sanguin Gout.

What repercussives are here required.



Here must wee in the begining make use of repercussives, such as are cold and drie, that they may contend with the morbifick matter by both their qualities; also let them bee astringent, so to add strength to the part. But I would have you alwaies to understand that you must first premise general medicines. *Rx. albuminum ovorum nu. iv. succi lactuce & solani an. ℥i. aq. rosar. ℥ii. incorporentur simul, & fiat linimentum sepius renovandum.* Others take the meal of barlie, lentils, acatia, oil of roses, myrtles, and with a little vineger they make a cataplasme; Or, *Rx. sumach. myrtillorum, boli arm. an. ℥β. acatie, corticum granat. balust. an. ℥i. aq. plantag. & rosar. an. ℥iiii. ol. rosati ℥iβ. aceti ℥ii. farine hordei & lentium quantum satis erit, fiat cataplasma.* This is verie excellent and effectual to stay or hinder phlegmonous and erisipelatous tumors. Also you may make a cataplasme *ex mucagine Cydoniorum in aqua rosarum extracta, cassie fistula, oleo rosato, & aceto*: Or, *Rx. pampinorum vitis viridum, m. ii. terantur & bulliant in oxycrato ex aqua fabrorum, cui adde sumach. conquassat. ℥i. olei rosati. ℥ii. farine hordei quantum sufficit, fiat cataplasma.* Or else, *Rx. succi sempervivi, hyoscyami, portulacæ an. ℥iv. corticum mali granati ℥iβ. farine hordei ℥v. vini a steri quantum sufficit, fiat cataplasma*; this is much commended, for it hath entring therinto wine and the pomgranate pill, which both are verie great astringents; and the juices are exceeding cooling, the meal also hinder's and thicken's the sanguin humors that are readie to flow down, and make the medicine of a good consistence. Another: *Rx. fol. hyoscyami & acetosæ an. m. i. involvantur papyro, & sub cineribus coquantur, mox cum unguento populeon. aut rosati. ℥ii. incorporentur*; and then lay this Cataplasme thus made warm unto the part. Another: *Rx. florum hyoscyami ℔. ii. ponantur in phiala vitreata, & reconde in sino equino donec putruerint, accipe ex putredine ℥ii. in quibus dissolve olei de junipero ℥β. fiat linimentum ad usum.* Others beat pulp of a Gourd or Citrul in a mortar, and so applie it. Another: *Rx. mucag. sem. psilii, & cyton. extract. in aq. rosar. & solani an. ℥iiii. olei rosati ompbacini ℥iii. vini granat. ℥i. vitellos ovo, cum albumine nu. iii. campboræ ℥i. incorporentur simul, fiat linimentum.* Or else, *Rx. ol. rosati. ompbacini ℥iv. album. ovorum cum vitellis nu. vi. succi plantag. et solani an. ℥i. farine hordei ℥iii. incorporentur simul, fiat cataplasma.* Or, *Rx. farine fabarum et hordei an. ℥iiii. olei rosati, ℥ii. oxycrati quantum sufficit, coquantur simul, fiat cataplasma.* Another; *Rx. mucag. sem. psilii ℥iiii. ol. rosati ℥ii. acet. ℥i vitellos ovorum, nu. iii. croci ℥i. misce.* Plinie reporteth that *Sextus Pomponius* the Governor of the hither-Spain, as hee overlooked the winowing of his corn, was taken by the pain of the Gout in his feet, wherefore hee cover'd himself with the Wheat above his knees, and so was eased, his feet beeing wonderfully dried; and hee afterwards used this kinde of remedie. It is note-worthie, which often happeneth, that the pain cannot bee altogether eased by such remedies, by reason of the abundance of blood impact in the part; wherefore it must bee evacuated: which I have don in manie with good success, opening the vein which was most swelled and nigh to the affected part; for the pain was presently asswaged. Neither must wee too long make use of repercussives; least the matter becom so hardned, that it can scarce bee afterwards resolved, as when it shall bee concrete into knots and plaster-like stones: resolving medicines are to bee mixed with repercussives conveniently applied, so to discuss the humor remaining as yet in the part, whereof shall bee spoken in the following Chapter.

An excellent astringent cataplasme.

Lib. 22. cap. 25.

Phlebotomie to evacuate the conjunct matter, and asswage pain.

CHAP. XVII.

Of local medicines for a choleric Gout.

What repercussives are here required.



He repercussives that must first bee used in this kinde of Gout ought to bee cold and moist, that so they may resist both the qualities of choler; such are the leavs of night-shade, purslain, house-leek, henbane, sorrel, plantain, poppie, cold water and the like, whereof may bee made divers compositions. As, *Rx. succi hyoscyami, sempervivi, lactuc. an. ℥ii. farina hordei ℥i. olei rosati ℥ii. agitando simul fiat medicamentum*; let it bee applied and often changed, for so at length it will asswage the inflammation. Some think the brain of a hog mixed with white starch, or barlie-meal and oil of roses, an excellent medicine. The leavs of mallows boiled in water, and beaten with a pestil, and applied, asswage pain. *Rx. mucag. sem. psilii extract. in aq. solani, vel rosarum ℥ii. farina hordei ℥i. aceti q. s. fiat linimentum.* Or else, *Rx. unguent. rosati. mcsne, & populei an. ℥iii. succi melonum ℥ii. alb. ovorum, nu. iii. misceantur simul pro litu.* Also a sponge dipped in oxycrate, and pressed out again and applied thereto doth the same. Or else, *Rx. fol. caulium rub. m. ii. coquantur in oxycrato & terantur: adde ovorum vitellos tres, olei rosati ℥ iii. farina hordei quantum sufficit, fingatur cataplasma.* Also you may take the crude juice of cole-worts, dane-weed, and roses beaten and pressed out, and of these incorporated with oil of roses and barlie-meal make a cataplasme. In winter-time, when as these things cannot bee had green, you may use

unguent.

unguentum infrigidans Galeni & populeon. Or elf, R. *cera alba* ℥i. *croci* ℥i. *opii* ℥i. *olei rosati* quantum sufficit, *marcerentur opion & crocus in aceto, deinde terantur et incorporantur cum cera et oleo, fiat ceratum;* spread it upon a cloth; and lay it upon the part, and all about it, and let it bee often renewed. Som cut Frogs open and applie them to the grieved part. It is confirmed by sundrie men's experience, that pain of the *Sciatica*, when it would yeeld to no other remedie, to have been asswaged by anointing the affected with the mucous water or gellie of Snails, beeing used for the space of seven or eight daies; the truth whereof was assured mee by the worthie Gentleman the Lord of *Longemau*, a man of great honestie and credit, who himself was troubled for six month's space with the *Sciatica*. This water is thus made, Take fiftie or sixtie red Snails, put them in a copper-pot or kettle, and sprinkle them over with common salt, and keep them so for the space of a daie; then press them in a courf or hair-cloth; in the expressed liquor dip linnen rags and applie them so dipped to the part affected, and renew them often. But if there bee great inflammation, the Snails shall bee boiled in Vineger and Rose-water. They say that Citrons or Oranges boiled in Vineger, and beaten in a mortar, and incorporated with a little barlie or bean flower, are good against these pains. Or elf, R. *potorum coctiorum in lacte* ℥i. *butyri* ℥i. *vitellos ovorum*, nu. ii. *aceti* ℥i. *fiat cataplasma.* There are som who take cheef-curd newly made, and mix it in a mortar with oil of Roses and barlie-meal, and so applie it; it repreffeth inflammation and asswageth pain. Others mix *castia* newly extracted forth of the cane, with the juice of Gourds or Melons. Others applie to the part the leavs of Coleworts, and Dane-weed or smallage, or all three mixed together and beaten with a little Vineger. Others macerate or steep an ounce of linseed in Wurt, and make the mucilage extracted therefrom into a Cataplasme with som oil of Roses and barlie-meal. Som put oil of poppies to the pulp of Citrulls or Gourds beeing beaten, and so incorporate them together, and applie it.

The water of Snails.

This following medicine hath its credit from a certain Gascoin of Basas that was thoroughly cured therewith, when as hee had been vexed long and much with goutie pains, above the common custom of such as are troubled with that disease. Thus it is; Take a great ridg-tile thick and strong, and heat it red hot in the fire, then put it into such another tile of the same bigness, but cold, least it should burn the bed-clothes, then forthwith fill the hot one with so manie Dane-wurt-leavs, that the patient may safely lay the affected part therein without anie danger of burning it. Then let the patient endure the heat that com's therefrom, and by sweat receiv the fruit thereof, for the space of an hour, substituting fresh Dane-wurt-leavs, if the former becom too drie, as also another hot tile, if the former shall grow too cold before the hour bee ended. This beeing don, let the part bee dried with warm and drie linnen clothes. Use this particular stove for the space of fifteen daies, and that in the morning fasting; afterward anoint the part with this following ointment. R. *succi ebuli* ℥i. *olei com.* ℥i. *miscerantur simul,* and let them bee put into a strait mouthed glass, and well luted up; then let it boil in *balneo Marie*, beeing first mixed with som wine, untill the half thereof bee consumed, for the space of ten or twelv hours, then let it cool, and so keep for use, adding thereto in the time of anointing, som few drops of *agua vite*. It may bee anointed twice or thrice in a daie, long after meat. Moreover, the roots and leavs of Dane-wurt boiled in water, beaten and applied asswage pain; the oil thereof chimically extracted perform's the same.

An historie.

A particular stove.

An ointment of the juice of Dane-wurt.

But if the contumacious pain cannot bee mitigated by the described remedies, and becoming intolerably hot and rageing, make the patient almost to swoon, then must wee flie to Narcoticks. For although the temper of the part may bee weakned by these, the native heat diminished or rather extinguished; yet this is a far less inconvenience then to let the whole bodie bee wasted by pain. These things have a powerful refrigerateing and drying facultie, taking away the sens of the pain, and furthermore, inactivate, thin acrid and biting humors, such as cholerick humors are. Wherefore if the matter which causeth the pain bee thick, wee must abstain from Narcoticks, or certainly use them with great caution. R. *mica panis secalini parson cocti in lacte*, ℥ii. *vitellos ovorum*, nu. ii. *opii* ℥i. *succorum salani, hyoscyami, mandragora, portulacae, sempervivi, an.* ℥i. let them bee mixed together and applied, and often changed. Or elf, R. *fol. hyoscyami cicuta, acetos. an.* m. i. *bulliant in oxycrato & contendantur, cinque vitellis ovorum crudorum* nu. ii. *& olei rosati* ℥ii. *farin. bordei quod satis sat, incorporantur, fiat cataplasma;* with the use thereof I am accustomed to asswage great pains. Or elf, R. *opii* ℥i. *campbor.* ℥ss. *slet nenuph.* ℥i. *lactis* ℥ii. *unguent. ros. Galeni* ℥iv. *incorporantur simul in mortario, applicentur.* Moreover, cold water applied and dropped upon the part drop by drop, is narcotick and stupefactive, as *Hippocrates* affirmeth, *Apbor. 29. Sect. 5.* for a moderate numbness mitigateth pain. There is also another reason why it may bee profitably used in all pains of the Gout, for that by repelling the humors, it hindereth their defuxion into the part. Mandrag-apples boiled in milk, and beaten, do the same thing; also the leavs of benbane, hemlock, lettuce, purslain, beeing so boiled, do the same. If anie desire to use these more cold, hee must applie them crude, and not boiled.

When to use narcoticks.

A cataplasme with opium.

But the excess of pain beeing mitigated, wee must desist from the use of such narcoticks, and they must rather bee strengthened with hot and digerateing things; otherwise there will

How to amend
the harm don
by Narcotics.

D'iscuss'rs.

A mean to bee
use d in discus-
sing.

Bathes a swage
the pain of the
Gout.

How meats of
gross juice are
profitable.

will bee danger lett it bee too much weakned, the temper thereof beeing destroyed, and so afterwards it may bee subject to everie kinde of defluxion. Wherefore it shall bee strengthened with the formerly discussing fomentations, and these ensuing remedies. As, R. gum. ammoniaci & bdellii an. ʒi. dissolvantur in aceto, & passentur per setaceum, addendo styracis liquid. & farin. sanugr. an. ʒʒ. pulv. ireos ʒiiii. olei chamem. ʒii. pulveris pyrethri ʒii. cum cera, fiat emplastrum molle. Or, el, R. rad. emulæ, ebuli albæ an. ʒʒ. sem. lini, sanugr. an. ʒii. ficuum ping. nu. xx. coquantur completè & trajiciantur per setaceum, addendo pul. euphorb. ʒii. olei chamem. aneth. & rutacei, an. ʒiii. medullæ cervi ʒiv. fiat cataplasma. Yet you must use moderation in discussing, lest the subtler part of the impact humor beeing discussed, the grosser part may turn into a stonie consistence, which also is to bee feared in using reperculsives.

I also omitted, that according to the opinion of the Antients, bathes of fresh water, wherein cooling herbs have been boiled, used three hours after meat, conduce much to the asswaging of pain; for so used, they are more convenient in cholerick natures, and spare bodies, for that they humect the more, and quickly digest the thin and cholerick, and consequently acrid vapors, the pores beeing opened, and the humors dissipated by the gentle warmth of the bath. After the bath, the bodie must bee anointed with *hydrælium*, or oil and water tempered together, lest the native heat exhale and the bodie become more weak. Meats of more gross juice are more convenient, as beef, sheeps-feet, and the like, if so bee that the patient can digest them, for these inspissate the cholerick blood, and make it more unfit for defluxion.

CHAP. XVIII.

What remedies must bee used in pains of the joints proceeding of a distemper onely, without matter.

An historic.



Hip. ap. 10.
sett.

Divers remedies for pain arising from a cold distemper without matter.

Ains also happen in the joints by distemper without anie matter, which though rare, yet because I happened once to feel them, I have thought good to shew what remedies I used against them. I once earnestly busied in studie, and therefore not sensible of such external injuries as might befall mee; a little winde coming secretly in by the crannies of my studie, fell upon my left Hip; at length wearied with studie, as soon as I rose up to go my way, I could not stand upon my feet, I felt such bitter pain without anie swelling or humor which might bee discerned. Therefore I was forced to go to bed, and calling to minde, that cold, which was absolutely hurtful to the nervs, had bred mee that pain, I attempted to drive it away by the frequent application of verie hot clothes; which, though they scorched and blistered the sound parts adjoining thereto, yet did they scarce make anie impression upon the part where the pain was settled, the distemper was so great, and so firmly fixed therein. And I laied thereto bags filled with fried oats and millet, and dipped in hot red wine; as also ox-bladders half filled with a decoction of hot herbs. And lastly, a wooden dish almost filled with hot ashes, covered over with sage, rosmarie and rue lightly bruised, and so covered with a cloth, which, sprinkled over with *aqua vitæ*, sent forth a vapor which asswaged the pain. Also brown bread newly drawn out of the oven, and sprinkled over with rose-water, and applied, did verie much good. And that I might more fully expel this hurtful cold, I put stone-bottles filled with hot water, to the soles of my feet, that the brain might bee heated by the straightness and continuitie of the nervs. At length, by the help of these remedies, I was verie well free'd from this contumacious distemper, when it had held mee for the space of four and twentie hours.

A fuliginous vapor sometimes the cause of the Gout.

There is another kinde of Goutie pain sometimes caused by a certain excrementitious matter, but so thin and subtle that it cannot bee discerned by the eies. It is a certain fuliginous or sootie vapor, like to that which passeth from burning candles or lamps, which adhere's and concrete's to anie thing that is opposed thereto; which beeing infected by the mixture of a virulent serous humor whithersoever it runneth, causeth extreme pain, somwhiles in these, and otherwhiles in other joints, unless you make a way therefore, when as it seeketh passage forth, wick must bee don by horns, cupping-glasses, velicatories, cauteries, or other the like art.

CHAP. XIX.

What is to bee don after the fit of Gout is over.

How to strengthen the joints.

Remedies for the weakness left in the joints after the pain is gon.



It is convenient when the pain is asswag'd, that you strengthen the joints. Now, to strengthen them is not onely to binde and drie, but wholly to amend the weakness left in the part by the disease, that is to discuss the humor, if anie superfluitie thereof remain; but to humect the part, if the moisture bee exhausted and dried up. But such as are troubled with the gout, after they are free'd from their pain, have notwithstanding such impotencie of their joints that they cannot go of a long time after; for that the nervs and tendons

tendons which are in great number in the feet, being moistned with much phlegm, are so relaxed, that they can no more sustain or bear themselves upon their feet, then paper when it is wet can bee made to stand. Wherefore, that they may recover the use of their feet, the impacted humor must by all means bee dissolved, and spent with fomentations, cataplasms, drying and astringent emplaisters. You may use the formerly described fomentation, encreasing the quantitie of aluim and salt, and adding thereto a like quantitie of *sulphur vivum*: then the following emplaister shall bee applied thereto. *R. mas. emplast. contra rupturam* ℥iiii. *tereb.* ℥ii. *pulv. ros. rub. nucum cupress. gallarum, gran myrtil. & sol. ejusdem, thuris, mastich. & caryophyl. an.* ℥i. *malaxentur omnia simul, manibus inunctis. oleo myrtino & mastichino, fiat emplastrum.* Let it bee spread upon leather to a just bigness, and applied to the top and sole of the foot. Draw over the plaster, and the whole leg a stocking made of a tanned-dog's-skin; this emplaister strengtheneth the nervs, draweth forth the humor impact therein, and intercept's the defluxion. But the dog-skin-socking preserveth the native heat of the part, and for that it bindeth, hindreth the defluxion into the feet.

The benefit of a dog-skin stocking.

CHAP. XX.

Of the Tophi, or knots which grow at the joints of such as are troubled with the Gout.



Om that are troubled with the Gout, have knottie bunches growing in their joints, which by the antients were called *Tophi*. These are generated by the congestion of gross, viscid and crude phlegm, with a little admixtion of an acrid and cholerick humor. These matters remain settled in the part, for that it being too weak cannot digest and deprefs them; wherefore being there impact, they easily concrete into a certain plaster-like or chalk-like substance, whilest by the adventitious and burning heat caused by pain, and the goutie malignitie, their more subtle part is dispersed, but the grosser subsides. Yet somtimes the unfit application of repercussive or discussive medicines is a caus of the generation of these *Tophi*. For by the former, the impact matter is incrassated and gathered together; but by the later, the subtle part being dissolved, the remnant that subsides, concrete's into *Tophi*. Those medicines which are made to mollifie, ought to have a moderately heating, and humecting facultie, that they may diffuse, and as it were dissolve the impact matter; such is warm water, the decoction of emollient herbs, the decoction of calv's or sheep's entrails, heads and feet: after these or the like fomentations, you shall use the following medicine. *R. axungie, human. anseris & gallinae, medul. cervin. an.* ℥iii. *tereb. ven.* ℥i. *aq. vite parum, cere quantum sufficit, fiat unguentum molle.* Then this which followeth will bee good. *R. rad. alth. liliorum, bryon. lapath. acuti, an.* ℥iiii. *coquantur completè, & trajiciantur per setaceum; adde gum. ammon. bdel. galb. opopanis in aceto dissolutorum* ℥i. *medul. cervin.* ℥i℥. *incorporentur simul, & applicentur.* Or els, *R. olei liliorum, amygd. dul. medulle cruris cer. an.* ℥i℥. *mucag. sem. lini, alth. fœnygr. an.* ℥i. *cere quantum sufficit; fiat ceratum.* Or els, *R. empl. de vigo cum mercurio, & cerat. de æsipo humidâ descripti. Philagrii, an.* ℥ii. *malaxentur simul cum oleo lilior. fiat massa.* Or els, *R. gum. amron. opopan. galb. bdel. dissolutorum in aceto, an.* ℥ii. *panno lineo colatis, adde pulv. sulph. nitr. sinapi, pyrethri, an.* ℥℥. *styracis, liq. & axung. hum. an.* ℥i. *res. pini, tereb. ven. an.* ℥℥. *cere quantum sufficit, fiat ceratum molle.* This which follow's is thought most effectual in the opinion of Galen and Avicenn. *R. pedes porcel. bene salsos, nu. iiii. veterem pernam, cum illis coque: addendo sub finem, radice bryoniae, lapath. acut. an.* ℥iii. *axungie tauri, & medul. cervin. an.* ℥i. *cum caseo putrefacto fiat empl. molle ad usum.* This which follow's is also most effectual. *R. casei acris & putrefacti, ℥iiii. pulv. sulph. vivi euphorb. & pyreth. an.* ℥iii. *decoctionis veteris pernae & porcellorum quod sufficit ad incorporandum, ducantur in mortario, & fiat empl. ad usum.* Or els, *R. sumæ nitr. ℥vi. tereb. ℥ii. olei veteris, lixivii, quo lana pileorum lavantur, & cere quantum sufficit, fiat ceratum satis molle.* After the use of emollients, a fumigation shall bee made in this manner: Heat a cogle-stone, mill-stone or brick red hot in the fire, take it forth, and cast upon it a sufficient quantitie of verie sharp vinegar, and *aqua vite*, the rising vapor shall bee diligently received by the affected member, for this hath a facultie to attenuate and cut gross, viscid, and plaster-like matter, yea also, and to break the skin; yet that is broken oftime of its own accord, without the help of either medicine or instrument. To conclude, these medicines which are good to mollifie scirrhus tumors, the same are also good to soften the goutie knots and *tophi*. But wee must note, that these knotie bunches are somtimes suppurated, not truly by the impact and plaster-like matter, but by a new defluxion comming on a sudden, and then it is necessarie to make way for the contained matter, which being don; first there commeth forth an humor like milk, then a plaster-like matter, then it leav's behinde it an ulcer to bee cured by applying thereto *empl. gratiâ Dei*, and others as the Surgeon shall think fit.

Whence the *Tophi* are generated.

The unfit application of discussive and repercussive medicines causeth the *Tophi*. Mollifying medicines.

Lib. 10. simp. c. 7. se. 2. lib. 3. tract. 2. c. 21.

An effectual fumigation.

CHAP. XXI.

Of Flatulencies contained in the joints, and counterfeiting true Gouts, and of the remedies to be used thereto.

In what joints flatulencies are chiefly generated. Signs of flatulencies.



Times there is small quantitie of humor, which move's the pain of the Gout; but much flatulencie mixed therewith, especially in great joints, as in the huckle or hip-bone, and the knees; they somtimes cauf so great distention, that they drive the heads of the bones forth of their places. You may partly understand it is so, if a tensive pain affliēt the patient with anie sens of heaviness; if when you pres the tumor with your fingers, the place retain no mark or impression thereof, as happen's in an *œdema*: but on the contrarie, a flatulent spirit lift's it up as it were by renitencie, as if one should thrust a pair of bellows, which are filled with winde; hence the part cannot perform its dutie, for that the spaces of the joints are possessed with abundance of flatulencies, so that the libertie of motion is intercepted, and the member is kept as it were bound up. Manie no verie skilful Surgeons, putting their fingers to these kinde of tumors, so that lifting up the one, they pres down the other, when as they perceive the flatulencie, as it were, rising between their fingers, supposing it to be the motion of *pus*, or matter already generated & flowing up and down, as is usual in impostumes, they have opened it by incision; but when as nothing flowed forth, it appeared how much they were deceived, yet in the *interim*, by this their rashness they have caused manie dangerous symptoms: as increas of pain, defluxion of humors, by force whereof the bones have been dislocated, and brought to the patient an uncureable lameness. But these flatulent Gouts are seldom without som phlegmatick matter, which is neither too crude, nor viscid. Such like flatulencies are not easily discussed, nor at the first endeavor, by reason of a cold distemper which they bring to the part, and the densitie of the membranes and ligaments, by which the articulation is knit and fastened, so that scarce anie part of that which is there shut up can breathe forth of such straight passages. Therefore the cure must bee undertaken with resolving, discussing, and drying fomentations; as for example, with a decoction of fennel, aniseeds, rue, chamomil, melilote, sage, rosemarie, *origanum*, calamints, hore-hound, and the like, boiled in wine with a little lee, rose-vineger, and common salt. This following ointment shall bee used after the fomentation. *Rx. olei chanæm. aneth. rut. lauri. an. ℥ii. cum cerâ albâ, fiat linimentum, addendo aq. vitæ parum.* After you have annointed it, applie thereto this following cataplasme. *Rx. flor. cham. melil. aneth. ros. rub. pulv. an. m. i. fol. malv. & absinth. an. m. ℞. fursur, m. i. bulliant omnia simul cum lixivio, & vino rubro, deinde pistentur cum medullâ panis, & farinâ fabarum, quantum sufficit, fiat cataplasma, addendo ol. rosar. & myrtin. an. ℥ii.* Som highly approve of this following medicine for the wasteing of flatulencies. *Rx. axung. suil. ℥iv. calcis vivæ, ℥i℞. terantur diligenter in mortario, & incorporata applicentur.* Or els, *Rx. stercor. caprar. cocti cum vino & aceto, an. ℞. tereb. venet. & mel. com. an. ℥ii. aq. vitæ, ℥℞. pul. rad. Ireos florent. & sabin. an. ℥iii. olei rut. & aneth. an. ℥i. farin. fabarum quantum sufficit.* Make a cataplasme to the form of a pultis. Also stoups dipped in oxycrate, and wrung out, shall bee applied: in this oxycrate shall bee boiled wormwood, *origanum*, chamomil, melilote, rue, common salt, adding thereto som *aqua vitæ*. Then the part shall bee bound up as straight as the patient can endure it; in conclusion, that the native strength may by little and little bee restored to the part, it shall bee fomented with lee made of the ashes of oak-wood, and the cuttings of vines, wherein shall bee boiled salt, sulphur, choice alum, and wetting linnen-clothes, or stoups therein, and applying them, it shall bee straightly swathed up. Yet if great pain shall more cruelly vex the part, then neglecting for a time the proper cure of the disease, you shall withstand the symptom by rubbing the part, and annointing it with som discussing oil, laying thereon som moist wooll, and other anodyne things.

How flatulencies may make you believe there is *pus*, or matter.

Why hard to cure.

CHAP. XXII.

Of the Ischias; Hip-gout, or Sciatica.

Why it hath the most grievous symptoms.



Or that the Hip-gout in the greatness of the causes, bitterness of pain, and vehemencie of other symptoms, easily exceed's the other kindes of Gout, therefore I have thought good to treat thereof in particular. The pain of the *Sciatica* is therefore the most bitter, and the symptoms most violent, for that the dearticulation of the hucklebone, with the head of the thigh-bone, is more deep then the rest; becauf also the phlegmatick humor which causeth it, is commonly more plenteous, cold, gross, and viscid, that flow's down into this joint: and lastly, becauf the *Sciatica* commonly succeed's som other chronical disease, by reason of the translation and falling down thither of the matter, becom malign and corrupt by the long continuance of the former disease. But the pain not onely trouble's the hip, but entring deep, is extended to the muscles of the buttocks, the groins, knees, and verie ends of the toes, yea often times it vexeth

The caus of the large spreading of the pain.

vexeth the patients with a sense of pain in the verie *vertebra* of the loins, so that it make's the patients, and also oftentimes the verie Physicians and Surgeons to think it the winde or stone-colick. The cause of such wandering and dispersed pain is to bee referred to the manifold distribution of the nervs which com to that joint from the loins and *holie-bone*, for they are sent into the muscles of the buttocks, and so dispersed over the whole leg to the verie ends of the toes, as it is shewed in our Anatomie. Therefore the pain is largely extended, that is, to what part soever a nerv run's which com's from the affected hip. Often times there is no swelling, no redness, nor distemper manifest to the eye, by reason that the veins are verie few which rise into the surface and skin of this part, and the humor lies, as it were, sunk in; which is the cause that divers times the excrementitious humors mixed with flatulencie, run so violently into the cavities of this joint, that relaxing the ligaments, as well proper as common, the head of the thigh-bone is easily driven out from hence, so that it may never bee restored again, if it remain so for any space of time; for that in this time the humor falling down into this cavity, by delaye concrete's as it were into a stonie bodie, and the head of the thigh-bone wear's it self another cavity in the neighboring bone; but the lips of the true cavity, which are gristle, becom more straight and deprest: and lastly, all the ligamentous bodies moistned with this excrementitious humor becom more loof and weak, whence succeed manie and most grievous symptoms; as lameness, and the decaye not onely of the thigh and leg, but at length of the whole bodie; and lastly, a slow and hec tick fever, which in continuance of time will consume the patient for the causes formerly mentioned. Therefore let Physicians and Surgeons have a care that they resist it at the first, and, with such powerful remedies as are mentioned in the following Chapter, hinder the springing up and growth of the formerly mentioned symptoms.

The thigh-bone often dislocated by the *Sciatica*.

CHAP. XXIII.

The cure of the *Sciatica*.

Hough the *Sciatica* bee commonly occasioned by tough phlegm, yet if the patient bee strong, and abound with blood, and all things else consent, it shall bee good to draw blood by opening a vein; for phlebotomie equally evacuate's all humors: therefore the falling down of the humors into the part affected, is thereby hindered or retarded. Verily, I have known no speedier remedie to asswage the pain of inflammation, then blood-letting, being first made on the *Basilica* of the grieved side for revulsion's sake; and then for evacuation of the conjunct matter on the *vena Ischiadica*, which is at the out-side of the ankle, if the pain of the *Sciatica* bee more on the out-side; or else on the *Sapheia*, which is on the in-side of the ankle, if the inner parts bee more pained. The quantitie of blood which is to bee drawn, must bee left to the judgment of the Physician, without whose advice I would attempt nothing in this case. Also acrid glysters are good, if there bee nothing which may hinder; as ulcers of the guts, or hemorrhoids. *R. rad. acor. ℥ii. centaur. rut. salu. roris. sm. calam. origan. puleg. an. m. ℥. stæchad. arabic. flo. cham. melil. aneth. an. p. i. sem. anis. & fenic. an. ℥℥. fiat decoctio ad ℥bi. in colatura dissolve hieræ & diaphen. an. ℥℥. mellis anthos. sacc. rub. an. ℥i. olei liliorum ℥iii. fiat clyster.* Strong purgations are also here useful, as of *pillul. fatid. arthritic.* *Affajeret. de Hermodactylis*, and others used in phlegmatick causes. *Electuarium Diacarthami* purgeth choler and phlegm. Often vomitings do not onely evacuate the humors, but also make revulsion, as wee have formerly delivered. Baths & sweats profit no otherwise then a decoction of *Guaicum* or *sarsaparilla*. If heat molest the part, then foment it with oil of roses and vineger, especially if the pain bee deep in, for vineger by its tenuitie pierceth to the bottom, and make's way for the oil, which of its own nature is anodyne. After the use of general medicines, you shall applie attractive and resolving things: emplasters of pitch and sulphur, or of *ammoniacum*, *exphorbium*, *terebinthina*, *propolis*, *galbanum*, *bdelium*, *Opopanax*, draw the humor from within to the surface or skin. As in like sort also the chymical oil of sage, rosemarie, pellitorie of Spain, and such other like do the same, which by reason of the tenuitie of their substance, and their separation from earthy impurities, have far more powerful and expedite faculties to penetrate and discuss. Yet must you use none of all these without verie good judgment and deliberation, otherwise there will bee danger of inflammation.

Why wee must open a vein in the *Sciatica*.

When the *vena Ischiadica* and *Sapheia* must bee opened in the *Sciatica*.

Strong purgations in the *Sciatica*.

There may also bee made fomentations of discussing and resolving herbs, as the roots and leavs of dane-weeds, orris, bay and juniper-berries, the seeds of fenugreek, anis, fennel, the leavs of sage, rosemarie, chamomile, melilote, elder, and the like, boiled in wine and oil: the following plaster is much commended by the antients to digest, or resolv and asswage the pain, with this which draw's forth thorns, splinters, and rotten bones. *R. sem. urtic. mundat. spunæ borac. salis ammoniaci, rad. aristoloch. rotund. colocynth. terebinth. venet. an. ℥. x. fenug. piperis longi, xylobal. sam. thur. myrrhæ, adipis cap. gum. pini, an. ℥. v. ceræ, ℥℥. lactis ficus sylv. ℥℥. ex omnibus secundam artem preparatis cum oleo liliorum, & vini generosi quantitate sufficiente fiat emplastrum.* Let it bee applied to the hip. Or, *R. sinapi acerrimo aceto dissoluti, ℥ii. fermenti acris,*

acris, ℥ss. pul. hermodacti. ℥ii. mellis com. ℥iii. tereb. ℥iv. olei laur. & de spicâ, an. ℥ii. far. senug. ℥i. terre formicarum cum ovis, lbi. fol. laur. salu. rut. rorism. an. m. β. vermium. terrest. prepar. ℥ss. The earth with the eggs and worms shall bee boiled apart with the white wine, and herbs cut in pieces, and these beeing strained out, the rest of the things shall bee added according to art, and then it shall bee applied to the hip. Or else, *Rx. rad. enul. camp. sigil. salom. bryon. bismal. an. ℥ii. coquantur completè & terantur, trajiciantur per setaceum, addendo farin. senug. & hordei, an. ℥i. olei liliorum, & cham. em. an. ℥iii. tereb. ℥iv. ceræ quantum sufficit, fiat cataplasma.* It resolv's, asswageth pain, and calleth forth the humors to the skin. Or else, *Rx. rad. sigil. beate Mariæ, ℥vi. empl. diachyl. albi, ℥iv. croci in aquâ vitæ dissoluti, ℥ii. terebinth. ℥i. ol. de spicâ nardi quantum sufficit, fiat empl.* Let it bee spread upon leather, and applied warm. I have oftentimes suddenly asswaged the pain of the *Sciatica*, by putting to the pained hip the root of black Brionie cut into slices, and applied, when the matter was cold. Or else, *Rx. ceræ citrin. & tereb. abiet. an. ℥ii. liquefiant simul in vase duplici, & ubi refixerint, adde pulv. hermodacti. ℥ss. flor. cham. em. irid. flor. an. ℥iii. spicæ nardi, flor. thymi, an. ℥ii. interioris cinamomi elect. & semin. nasturi. an. ℥ii. croci, ℥iv. malaxantur simul manibus axungia porci veteris non salita unctis, & fiat massa empl.* But if the pain bee not by this means asswaged, then must wee com to more powerful medicines, as to use great cupping-glasses applied with much flame, and to vesicatories: As, *Rx. cantharid. quibus detractæ sunt ale, ℥ii. staphisagr. ℥iii. sinapi, ℥i. fermenti acerrimi ℥ss. incorporentur simul, & fiat vesicatorium.* Also blisters may bee raised by applying the inner rinde of Travellers-joy to the weight of some two drams, a little beneath the grieved part: you must have a care that the ulcers that remain after the skin of the blisters is taken off, do run, and bee kept open for some time after, that so more of the humor contained in the part may bee drawn away. But if wee cannot avail by these means, wee must, according to *Hippocrates* his counsel, com to the last and extremest remedie. Such (saith hee) as are troubled with a long pain of the *Sciatica*, have their hip fall out of joint, their leg consume's, and they becom lame, unless they bee burnt. Wee have also read the same approved by *Celsus*. It is the last (saith hee) and most effectual medicine in longer diseases, to cauterize with hot irons the skin of the hip in three or four places; and then not to heal up these ulcers or fontenels as soon as may bee, but to keep them open, by putting thereinio bullets of gold, or silver, or pills of gentian, or wax melted and wrought up with the powder of vitriol, mercurie, and the like cautereticks, until the affect against which wee use this remedie bee helped, for by this means manie have been helped. Therefore three or four actual cauteries, or hot irons shall bee so thrust in about the joint of the hip, that they may enter into the flesh some fingers breadth, yet so that you shun the nervs. Cauteries here do good, for that by heating the part, they heat and dissolve the cold humors, they cut, attenuate, and draw forth the gross and viscid, so that they flow out by the ulcers, together with the quitture. Over and besides, the ligaments are strengthened by their cicatrization, and their looseness helped; and by this means the whole part is notably corroborated.

Black brionie
discusseth.

A strong vesic-
catoric.

The inner
rinde of Tra-
vellers-joy a
vesicatoric.

Aep. ult. sect. 6.

Lib. 4. cap. 22.

The use of
cauteries in the
Sciatica.

CHAP. XXIII.

Of the flatulent convulsion, or convulsive contraction, which is commonly called by the French, Goute Grampe, and by the English, The Cramp.

What the
Cramp is.



The caus
thereof.

Who Subject
thereto.

The cure.

That which the French call *Goute Grampe*, wee here intend to treat of, induced thereto rather by the affinity of the name, then of the thing; for if one speak truly, it is a certain kinde of convulsion generated by a flatulent matter, by the violence of whose running down or motion, oftentimes the neck, arms, and legs are either extended, or contracted into themselves with great pain, but that for a short time. The cause thereof is a gross and tough vapor, insinuating it self into the branches of the nervs, and the membranes of the muscles. It take's one on the night, rather then on the day, for that then the heat and spirits usually retire themselves into the entrails and centre of the bodie; whence it is that flatulencies may bee generated, which will fill up, distend and pull the part whereinto they run, just as wee see lute-strings are extended. This affect often take's such as swim in cold water, and causeth manie to bee drowned, though excellent swimmers, their members by this means beeing so straightly contracted, that they cannot by anie means bee extended. For the skin, by the coldness of the water is contracted and condensed, and the pores thereof shut, so that the engendered flatulencies have no passage forth. Such as give themselves to drunkenness and gluttonie, or sloth and idleness, are usually more frequently troubled with this disease, by reason of their heaping up of crudities. Therefore it is cured by moderate diet, and ordering of the bodie, and exercise of each part thereof; for thus they gather strength, and the generation of the flatulent matter is hindered. In the verie time when it take's one, the patient shall bee cured by long rubbing with warm clothes, and *aquâ vitæ*, wherein the leavs of sage, rosemarie, thyme, favorie, lavender, clovs, ginger, and the like discussing and resolving things have been infused. The extension and flexion of the members or joints, and walking, are also good.

Of the *Lues Venerea*, and those Symptoms which
happen by means thereof.

The nineteenth Book.

CHAP. I.

THe French call the *Lues Venerea* the *Neapolitan disease*; the Italians and Germans (as also the English) term it the *French disease*; the Latines call it *Pudendagra*: others name it otherwise. But it make's no great matter how it bee called, if the thing it self bee understood: Therefore the *Lues Venerea* is a disease gotten or taken by touch, but chiefly that which is in unclean copulation; and it partake's of an occult qualitie, commonly taking its original from ulcers of the privie parts, and then further manifesting its self by pustles of the head, and other external parts; and lastly, infecting the entrails and inner parts with cruel and nocturnal tormenting pain of the head, shoulders, joints, and other parts. In proces of time, it causeth knots and hard *tophi*: and lastly, corrupt's and foul's the bones, dissolving them, the flesh about them beeing oftentimes not hurt; but it corrupteth and weakneth the substance of other parts, according to the condition of each of them, the distemper and evil habit of the affected bodies, and the inveteration or continuance of the morbilick caus. For som lose one of their eyes, others both: Som lose a great portion of the eye-lids, other-som look verie gaskly, and not like themselvs, and som becom squint-eyed. Som lose their hearing, others have their noses fall flat, the palat of their mouths perforated with the loss of the bone *Ethmoides*, so that instead of free and perfect utterance, they faulter and fumble in their speech. Som have their mouths drawn awry, others their yards cut off, and women a great part of their privities tainted with corruption. There bee som, who have the *urethra* or passage of the yard obstructed by budding caruncles, or inflamed pustles, so that they cannot make water without the help of a Catheter, readie to die within a short time, either by the suppression of the urine, or by a gangrene arising in these parts, unless you succor them by the amputation of their yards. Others becom lame of their arms, and other-som of their legs, and a third sort grow stiff by the contraction of all their members; so that they have nothing left them sound but their voice, which serveth for no other purpose but to bewail their miseries, for which it is scantly sufficient. Wherefore should I trouble you with mention of those that can scantly draw their breath by reason of an *Asthma*: or those whose bodies waste with an hecick fever, and slow consumption? It fare's far worf with these, who have all their bodies deformed by a leprosie arising there-hence, and have all their throttles and throats eaten with putrid and cancrus ulcers; their hair falling off from their heads, their hands and feet cleft with tethers and scalie chinks: neither is their case much better, who, haveing their brains tainted with this disease, have their whole bodies shaken by fits of falling-sickness; who troubled with a filthy and cursed flux of the bellie, do continually cast forth stinking and bloodie filth. Lastly, there are no kindes of diseases, no sorts of symptoms, wherewith this disease is not complicate, never to bee taken away, unless the virulencie of this murrain bee wholly taken away, and impugned by its proper antidote, that is, *argentum vivum*.

What the *Lues Venerea* is.

What hurt it doth to the bodie.

The Leprosie somtimes the off-spring of the *Lues Venerea*.

CHAP. II.

Of the causes of the *Lues Venerea*.

THere are two efficient causes of the *Lues Venerea*; the first is, a certain occult and specificke qualitie, which cannot bee demonstrated; yet it may bee referred to God, as by whose command this hath assailed mankinde, as a scourge or punishment to restrain the too wanton and lascivious lusts of unpure whoremongers. The other is an impure touch or contagion, and principally, that which happeneth in copulation. Whether the man or woman have their privities troubled with virulent ulcers, or bee molested with a virulent strangurie (which disease craftie Whores color by the name of the whites) the malignitie catcheth hold of the other; thus a woman

The *Lues Venerea* the scourge of Whoremongers.

taketh

taketh this disease by a man, casting it in her hot, open and moist womb; but a man taketh it from a woman, which, for example sake, hath some small while before received the virulent seed of a whore-master polluted with this disease, the mucous *sanies* whereof remaining in the wrinkles of the woman's womb, may be drawn in by the pores of the standing and open yard, whence succeed malign ulcers, and a virulent strangurie. This virulencie, like a torch or candle set on fire, will by little and little be propagated and sent by the veins, arteries and nerves to the noble parts; whose malignitie a strong liver not enduring, by the strength of the natural expulsive facultie, will send it into the groins, whereon follow abscesses, therefore called *Venerical Bubo's*. These, if they return in again, and cast not forth matter by being opened, they will, by their falling back into the veins and arteries, infect the mass of the blood by the like tainture, and thence will ensue the *Lues Venerea*. Yet this disease may be got by a more occult manner of touch, as by breathing onely. For it is not altogether besides reason and experience, that a woman long troubled with this disease, may by importunate and often kissing, transfuse malignitie into a childe; for the tender and soft substance of a little childe may be altered, infected, and by little and little corrupted by receiving of filthie, and in their whole kinde malign vapors. For it is known, and now vulgarly beleev'd, that mid-wives, by receiving the childe of a woman infected with this disease, to have got this affect, the malignitie being taken and drawn into their bodies through the pores of their hands by the passages of the veins and arteries. Neither doth it spare anie condition, sex, nor age of men: for, not onely whosoever use copulation, but such as onely lie with them, may be taken by this virulencie; yea verily, if they onely lie in the sheets or coverings which retain his sweat, or the virulencie cast forth by an ulcer. The same danger may assail those who shall drink in the same vessel after such as are troubled with this disease. For by the impure touch of their lips, they leav a virulent *sanies* and spittle upon the edges of the cup, which is no less contagious in its kinde then the virulencie of leprous persons, or the fume of mad dogs. Wherefore it is no marvel if children nursed by an infected nurse, draw in the seeds of this disease together with the milk, which is onely blood whitened in the breasts; or infected sucking children by their hot and ulcerated mouths, may transfuse this malignitie into the bodie of the nurse, by the rare, loof and porous substance of the dugs which it frequently sucketh.

Venerical Bubo's returning in again, occasion the *Lues Venerea*.

The *Lues Venerea* may be got by the onely communication of vapor.

How nurses may infect children, and they their nurses.

An historie.

This following historie is verie memorable to this purpose. A certain verie good Cittizen of this Cittie of Paris granted to his wife, being a verie chaste woman, that conditionally shee should nurse her own childe, of which shee was lately delivered, shee should have a nurse in the house to ease her of some part of the labor: by ill hap, the nurse they took was troubled with this disease; wherefore shee presently infected the childe, the childe the mother, the mother her husband, and hee two of his children, who frequently accompanied him at bed & board, being ignorant of that malignitie wherewith hee was inwardly tainted. In the mean while the mother when shee observed that her nurse-childe came not forward, but cried almost perpetually, shee asked my counsell to tell her the cause of the disease; which was not hard to be done, for the whole bodie thereof was replenished with venereal scabs and pustles, the hired nurse, and the mother's nipples were eaten in with virulent ulcers; also the father's, and the two other children's bodies, whereof the one was three, the other four years old, were troubled with the like pustles and scabs. I told them, that they had all the *Lues Venerea*, which took its original and first off-spring by malign contagion from the hired nurse. I had them in cure, and by God's help healed them all, except the sucking-childe, which died in the cure. But the hired nurse was soundly lashed in the prison, and should have been whipped through all the streets of the Cittie, but that the Magistrate had a care to preserve the credit of the unfortunate familie.

CHAP. III.

In what humor the malignitie of the Lues Venerea reside's.



Hough in the opinion of manie the antecedent cause of this disease be the mass of blood containing the four humors, yet I had rather place the matter, and primarie, and chief seat thereof in gross and viscid phlegm infected with the malign qualitie of the venereous venom, and from this beginning and foundation, I think by a certain contagious growth it sooner or later infects the other humors, as each of them is disposed or apt to suffer. Of which my opinion there are manie arguments, but this chiefly, That by the evacuation of a phlegmatick humor, whether by the mouth and salivation, or by stool, urine, or sweat in men of what temper soever, whether cholerick, sanguine or melancholick, the disease is helped or cured. Secondly, for that the excess of pain is more by night then by day, because then the phlegm bearing sway, sever's the *periostium* from the bone, or elf offend's it and the rest of the membranous and nervous bodies by the acrimonie of its malignitie. Thirdly, because the patients are hurt by the use of cold things, but usually finde benefit by hot medicines, whether they be

Why the pain is worst upon the night, then on the day.

bee ointments, plasters fumigations, or whatsoever else, inwardly taken, or outwardly applied. Fourthly, for that in venereous pustles there is found a certain hardness at the root, though outwardly they make shew of choler or blood. For being opened, you shall finde them stuffed with a certain plaster-like and topous matter, or else with rough phlegm, or viscosus pus; whence arise these hard *tophi*, or bonie excrescences upon the bones, if not from phlegmatick humors there heaped up and concrete. Fifthly, for that the spermatick and cold parts do primarily and principally feel the harm of this disease. Sixthly, for that the ulcers which over-spread the bodie by reason of this disease, admit of no cure, unless you caus sweats. Therefore if the matter of the disease, and such ulcers as accompanie it, were hot and drie, it would grow worse, and bee rather increased by a decoction of *Guajacum*, the roots of *China*, or *sarsaparilla*. Seventhly, because oftentimes this disease, the seed thereof being taken or drawn into the bodie, so lieth hid for the space of a yeer, that it shew's no sign thereof, which happen's not in diseases proceeding from an hot matter, which causeth quick and violent motions. By this it appeareth that the *basis* and foundation of the *Lues venerea* is placed or seated in a phlegmatick humor; yet may not denie, but that other humors confused therewith may bee also in fault, and defiled with the like contagion. For there are scarce anie tumors which proceed from a simple humor, and that of one kinde, but as in tumors, so here the denomination is to bee taken from that humor which carrieth the chief sway.

This disease sometimes lies long hid in the bodie before it shew it self.

CHAP. IV.

Of the signs of the Lues Venerea.

When the *Lues venerea* is lately taken, malign ulcers appear in the privities, swellings in the groins, a virulent strangurie runneth oftentimes with filthie *sanies*, which proceed's either from the *prostate*, or the ulcers of *urethra*; the patient is troubled with pains in his joints, head, and shoulders, and as it were breakings of his arms, legs and all his members, they are wearie without a cause, so that neither the foot nor hand can easily perform his dutie; their mouths are inflamed, a swelling trouble's their throats, which take's away their freedom of speaking and swallowing, yea of their verie spittle; pustles rise over all their bodies, but chiefly certain garlands of them engirt their temples and heads; the shedding or loss of the hair, disgraceth the head and chin; and leanness deformeth the rest of the bodie; yet all of these use not to appear in all bodies, but som of them in som. But the most certain signs of this disease are, a callous ulcer in the privities, hard and ill conditioned, and this same is judged to have the same force in a prognostick, if after it bee cicatrized, it retain the same callous hardness; the Bubo's or swellings in the groins to return back into the bodie without coming to suppuration or other manifest cause: these two signs, if they concur in the same patient, you may judge or foretel that the *Lues venerea* is either present, or at hand; yet this disease happeneth to manie without the concurr of these two signs, which also bewraieth it self by other manifest signs, as ulcers and pustles in the rest of the bodie, rebellious against medicines though powerful, and discreetly applied, unless the whole bodie bee anointed with *Argentum vivum*. But when as the disease becometh inveterate, manie becom impotent to venerie, and the malignitie and number of the symptoms encrease, their pains remain fixed and stable, verie hard and knotted *tophi* grow upon the bones, and oftentimes they becom rotten and foul, as also the hands and feet by the corruption of salt phlegm are troubled with chops or clefts, and their heads are seized upon by an *ophiasis* and *alopecia*; whitish tumors with roots deep fastned in, arise in sundrie parts of the bodie, filled with a matter like the meat of a chesnut, or like a tendon; if they bee opened they degenerate into divers ulcers, as putrid, eating, and other such, according to the nature and conditon of the affected bodies. But why the pains are more grievous on the night season, this may bee added to the true reason we rendered in the precedent Chapter, first for that the venereous virulencie lying as it were asleep is stirred up and enraged by the warmness of the bed and coverings thereof; Secondly, by reason of the patient's thoughts which on the night season are wholly turned and fixed upon the onely object of pain.

The most certain signs of the *Lues venerea*.

Two other causes of the excess of pain in the night.

CHAP. V.

Of Prognosticks.

If the disease bee lately taken, associated by a few symptoms, as with som smal number of pustles, and little and wandring pains, and the bodie besides bee young and in good case, and the constitution of the season bee good and favorable, as the Spring, then the cure is easie, and may bee happily performed. But on the contrary, that which is inveterate and enraged by the fellowship of manie and malign symptoms,

The signs of a curcable *Lues venerea*.

as

The signs of
an incurable
noc.

How these
pains differ
from those of
the gout.

The *Lues ve-*
nera becom's
more gentle
then formerly
it was.

as a fixed pain of the head, knots and rottenness of the bones, ill-natur'd ulcers in a bodie verie much fallen away and weak, and whereof the cure hath been alreadie fundrie times undertaken by Empricks, but in vain; or elf by learned Physicians, but to whose remedies, approved by reason and experience, the malignitie of the disease and the rebellious virulencie hath refused to yeeld, is to bee thought incurable, especially, if to these so manie evils, this bee added, that the patient bee almost wasted with a consumption and hestick leanness, by reason of the decaie of the native moisture. Wherefore you must onely attempt such by a palliative cure; yet bee warie here in making your prognostick: for many have been accounted in a desperate case, who have recovered; for by the benefit of God and nature, wonders oftimes happen in diseases. Young men who are of a rare or lax habit of bodie are more subject to this disease, then such as are of a contrarie habit and complexion. For as not all who are conversant with such as have the Plague, or live in a pestilent air, are alike affected; so neither all who lie or accompanie with such as have the *Lues venerea*, are alike infected or tainted. The pains of such as have this disease, are far different from the pains of the Gout. For those of the Gout return and torment by certain periods and fits, but the other are continual and almost alwaies like themselves; Goutie pains possess the joints, and in these condense a plaster-like matter into knots; but those of the Pocks are rather fastned in the mid't of the bones, and at length dissolve them by rottenness and putrefaction. Venereous ulcers which are upon the yard are hard to cure, but if beeing healed, they shall remain hard and callous, they are signs of the disease lying hid in the bodie.

Generally, the *Lues venerea* which now reigneth is far more milde and easie to bee cured then that which was in former times, when as it first began amongst us: besides, each day it seemeth to bee milder then other. Astrologers think the cause hereof to bee this, for that the celestial influences which first brought in this disease, in success of time by the contrarie revolutions of the Stars, lose their power and become weak; so that it may seem somewhat likely, that at length after some few yeers it may wholly cease; no otherwise then the disease termed *Mentagra*, which was verie like this in manie symptoms, and troubled manie of the Romans in the reign of *Tiberius*; and the *Lichen*, which in the time of *Claudius* (who succeeded *Tiberius*) vexed not onely *Italie*, but all *Europe* besides. Yet Physicians had rather take to themselves the glorie of this less raging disease, and to refer it to the manie and wholsom means, which have been invented, used and opposed thereto by the most happie labors of noble wits.

CHAP. VI.

How manie, and what means there are to oppugn this disease.

Why the decoction of *Guaicum* is not sufficient to impugn the disease.



Manie sorts of remedies have been found out by manie to oppugn and overcome this disease. Yet at this daie there are onely four which are principally used. The first is by a decoction of *Guaicum*; the second by unction; the third by emplasters, and the fourth by fumigation: all of them by *Hydrargyrum*, the first excepted. Yet that is not sufficiently strong and powerful; for experience hath taught, that the decoction of *Guaicum* hath not sufficient strength to extinguish the venom of the venereous virulencie, but onely to give it ease for a time; for because it heats, attenuates, provoke's sweat and urine, wast's the excrementitious humors by drying them, it seemeth to cure the disease, for that thereupon, for some time, the pain and all other symptoms seem more remis; but these endeavors are weak and deceitful, as whereby that onely which is more subtle in the humors in fault, is exhausted and dispersed by sweat. But *Hydrargyrum*, is a certain higher power, contain's therein all the power of *Guaicum*, yet much more excellent and efficacious; for besides that it heats, attenuates, cut's, resolv's and dries, it provoke's sweat and urine, and besides it expel's noxious humors upwards and downwards, by the mouth and stool. By which evacuations not onely the more subtle, but also the more gross and feculent excrements, wherein the seat of this disease is properly fixed, are dispersed and evacuated; by which the Physician may bee bold to assure himself of certain victorie over the disease. But after the use of the decoction of *Guaicum*, fresh pains and knots arise by the reliques of the more gross and viscos humors left in the cavities of the entrails; but *Hydrargyrum* leav's no reliques behinde it.

Hydrargyrum is sufficient to overcome the disease.

CHAP. VII.

How to make choice of the wood Guaicum.

The facultie.

That is preferred before the rest, which is of a great log, of a duskie color, new, gummie, with a fresh strong smell, an acrid and somewhat biting taste, the bark cleaving verie close to the wood. It hath a facultie to heat, rarifie, attenuate, attract, to cause sweat, and move urine, and besides by a specifick propertie to weaken the virulencie of the *Lues venerea*.

nera.

nerca. There are three substances taken notice of in this wood: the first is the bark, the other is a whitish wood which is next to the bark, the third is the heart of the wood, that is the inner, blackish, and more duskie part thereof. The bark is the more drie, wherefore you shall use it when as you would drie more powerfully; the middle substance is more moist, because it is more succulent and fat; that which lieth between both, is of a milde temper. Wherefore the two last are more convenient for delicate natures and rare bodies, which require less drying. Furthermore, the bark must be given to dens and strong natures, that by the more fierce force thereof, the humors may be made more fluid, and the passages of the bodie more passable. But I would here be understood to mean such bark as not putrid & rotten with age, to which fault it is verie subject, for that long before it be shipped by our people, the wood lieth in heaps upon the shore in the open air, until they can finde chapmen for it; which when it is brought aboard, it is stowed in the hold or bottom of the ship, where beneath by the sea through the the chinks of the boards, and above by the mariners, it usually gathereth much dirt. When it is brought hither to us, it is bought and sold by weight, wherefore, that it may keep the weight, the Druggists lay it up in vaults and cellars under ground, where the surface thereof bedewed with much moisture, can scarce escape mouldiness and rottenness. Wherefore, I do not like to give the decoction either of the bark or wood which is next thereto to sick people.

The parts.

The hot and fierce facultie of the bark.

CHAP. VIII.

Of the preparation of the decoction of Guaicum.



First you must have your *Guaicum* shaved into small pieces, and to everie pound of the shavings, add of fair water eight, ten, or twelv pintes, more or less as the nature of the partie, and condition of the disease shall seem to require, according to the rule of the formerly mentioned indications. Let the water be hot or warm, especially if it be in Winter, that so it may the more easily and thoroughly enter into the bodie of the wood, and draw into it self the faculties thereof in the space of twentie four hours, wherein it is macerated; then boil it in *in balneo*, to avoid *empyreuma*, or taste of fire, which it will contract by boiling it over a hot fire. Yet som, nothing regard this, but think the patient sufficiently served, if they make a decoction in an earthen-pot well glazed, over a gentle fire, so that no part of the liquor may run over the mouth of the vessel, for that thus so much of the strength of the decoction might vanish away. Howsoever it be made, let it be boiled to the consumption of half, a third, or fourth part, as the nature of the patient, and disease shall seem to require. There be som who mix divers simples therewith, which have an occult and proper sympathie with that part of the bodie which is principally hurt by the disease, which at the least may serve in stead of a vehicle to carrie the faculties of the decoction thither where the disease most reigneth. Others add thereto purging medicines, whose judgment I cannot approve of, for that I think it is not for the patient's good to attempt two evacuations at once; that is to expell the humors by sweat, by the habit of the bodie, and by purging by the bellie; for that as much urine, so also much sweat shew's little evacuation by stool. For these two motions are contrarie, which nature cannot brook at once. For purging draw's from the Circumference to the Center, but sweat run's a quite contrarie course, and this is the opinion of manie and great Physicians. This first decoction beeing boiled out and strained, the like quantitie of water shall be put to the stuff, or mass, that so beeing boiled again without anie further infusion, and strained, with the addition of a little cinnamon for the strengthening of the stomach, the patient may use it at his meals, and between his meals, if hee be drie, for his ordinarie drink. The quantitie of the first decoction to be taken at once, ought to be som five or six ounces, and it shall be drunk warm, that so it may be the sooner brought into action, and lest the actual coldness should offend the stomach; and then the patient beeing well covered, shall keep himself in bed, and there expect sweat which if it come slowly on, it shall be helped forwards with stone-bottles filled full of water, and put to the soles of the feet. If anie parts in the interim shall be much pained, they shall be comforted by applying of swines-bladders half filled with the same decoction heated. Neither will it be unprofitable before the decoction be drunk, to rub over all the bodie with warm linnen clothes, that by this means the humors may be attenuated, and the pores of the skin opened. When hee shall have sweated som two hours, the parts opposite to the grieved places, shall first be wiped, then presently, but more gently the grieved parts themselves, lest a greater conflux of humors flow thereto. These things beeing don, hee shall keep himself in bed, shunning the cold air until hee be cooled and come to himself again, som two hours after hee shall so dine, as the disease and his former custom shall seem to require; six hours after, betakeing himself to his bed, hee shall drink the like quantitie of the decoction, and order himself as before. But if hee be either weak, or wearie of his bed, it shall be sufficient to keep the house without lying down; for although hee shall not sweat, yet there will be a great dissipation of the vapors

The proportion of the *Guai-cum* to the water.

Why the decoction ought to be performed with a drie heat.

Whether it be fit to add purges to a decoction of *Guai-cum*.*Hip. aph. ult. sect. 6.*

How, and in what quantitie this decoction must be taken.

How to drie the sweat of the bodie.

How long this decoction must be used.

The manner of diet.

To whom, and what manner of wine may be allowed

The description of *China*.

The preparation.

Of *Sarsaparilla*.

vapors, and venenate spirits, by insensible transpiration; for the *Lues venerea* by the onely communication of these, often times catcheth hold, and propagates it self in lying with a bedfellow tainted therewith. But as it is requisite to have let blood, and purged the bodie by the advice of a Physician, before the takeing of the decoction of *Guaicum*; so whilst hee doth take it, it much conduceth to keep the bellie soluble (which is much bound by the heat and drieness of such a drink) and to preserv the puritie of the first veins by a glyster, or laxative medicine taken everie fifth, or sixth day. But for the use of it, wee must warily observ, takeing indication, not onely from the malignitie and contumacie of the disease, but also from the particular nature of the patient; for such as have their bodie wasted by heat & leanness, & their skin drie and scalie (whence you may gather a great adustion of the humors, & as it were, a certain incineration of the habit of the bodie) must more sparingly make use of these things, but rather temper the bodie by humecting things taken inwardly, and applied outwardly, as bathes, ointments without Quick-silver, and other such like things. And then a verie weak decoction of *Guaicum* shall be used for a few daies before your unction with Quick-silver. A more plentiful diet, as it draws forth the disease, which of its own nature is long, so a more spareing and slender diet makes the ulcers more rebellious and contumacious, by a hestick drieness.

Therefore a middle course must be kept, and meats made choice of which are fit, and naturally engender good and laudable juice in the bodie. For it is not onely great ignorance, but much more cruelty, to go about to contain all patients without anie difference, within the strait allowance of four ounces of Ship-bisket, & twelv damask prunes: for I judg it far better to diet the patient with Lamb, Veal, Kid, Pullets, fat Larks, and black-birds, as those which have a greater familiaritie with our bodies, then Prunes and the like Junkets. Let his bread be made of white wheat, well leavened, neither too new, or tough, neither too old or hard. Let his drink be made of the mass, or strainings of the first decoction of *Guaicum* boiled with more water, as was formerly mentioned; yet if there arise anie great weakness of the faculties, you may permit the use of som little wine, drinking especially before each a cup of the last mentioned decoction. Let him avoid sleep presently after meat, for so the head is filled with gross vapors. Passions, or perturbations of the minde must also be avoided, for that by these the spirits are inflamed and dissipated; all the delights of honest pleasure are to be desired, but venerie wholly avoided, as that which weakens all the nervous parts. Manie in stead of a decoction of *Guaicum*, use a decoction of *China*. Now this *China* is the root of a certain Rush, knottie, rare, and heavie, when it is fresh, but light when it is waxed old; it is also without smell, whence manie judg it void of anie effectual qualitie, it is brought into use out of *India*, it thus prepar'd, it is cut into thin round slices, boild in fountain or river water, and is given to patients to drink morning & evening after this manner. *Rx. rad. chin. in talcol. sect. ℥ii. aquæ font. lb̄xii. infundantur per hor. xii. & coquantur ad consumption. tertie partis.* Let him take ℥vi. in the morning, and so much at night; let him expect a sweat in his bed: a second decoction may be made of the mass remaining of the first, but with a less quantitie of water put thereto, which also by longer boiling may draw forth the strength remaining in the mass, and be used at meals for ordinarie drink. There are some who make a third decoction thereof, but that is wholly unprofitable & unuseful. *Sarsaparilla* is prepared also just after the same manner.

CHAP. IX.

Of the second manner of cureing the Lues Venerea, which is performed by friction or unction.

When the bodie must be prepared with humecting things before unction.



The cure of the *Lues Venerea* which is performed by unction and friction is more certain, yet not in everie kinde, condition and season thereof. For if the disease be inveterate from an humor, tough, gross, viscos, and more tenaciously fixed in the solid parts, as you may gather by the knottie tumors of the bones; for then wee are so far from doing anie good with a friction used at the first, that on the contrarie wee bring the patient in danger of his life, unless wee shall have first prepared the humor to expulsion, by emollient and digesting things first used. But if it be lately taken with moveable pains, pustles, and ulcers in the jaws, throat and privie parts, then may it be easily cured without such preparatives, especially if the humor be sufficiently obedient, and as it were prepared of it self, and its own nature. Therefore first using general medicines, you may afterwards com to use the unction with *Hydrargyrum*.

CHAP. X.

Of the choice preparation and mixing of Hydrargyrum.

HYDRARGYRUM which is cleer, thin, white and fluid, is the best: on the contrarie, that which is livid, and not so fluid, is thought to be adulterated by the admixture of som lead.

lead. That it may bee the purer, strain it through som sheeps-leather, for by pressing it, when it is bound up, it passeth through by its subtiltie, and leav's the filth and leaden dross behinde it on the inside. Then it may bee boil'd in vineger with sage, rosemarie, thyme, camomile, melilote, and strained again, that so manie waies cleansed, it may enter into ointments and plasters: To kill it more surely, it shall bee long wrought, and as it were ground in a mortar, that it may bee broken and separated into most small particles, that by this means it may not bee able to gather it self into the former bodie: to which purpose you may also add som sulphur, or sublimate, as wee shall shew hereafter. It is most usually mixed with hogs-greaf, adding thereto sow oil of turpentine, nutmegs, cloves, sage, and Galen's treacle. If a *Leucophlegmatia* together with the *Lues Venerea* affect the bodie, then hot, attenuateing, cutting and dying things shall bee added to the medicine, which shall bee provided for unctiõ; the same shall bee don when as wee would have it to enter into the substance of the bones. But if the patient bee of a choleric temper, and his blood easie to bee inflamed, you shall make choice of less hot, attractive and discussing things. As when the bodie shall bee replenished with knottie and scirrhous tumors, or squalid by excessive driness, then shall emollient and humecting things mixed therewith. But that such ointments may have a better consistence, I use to add to each pound thereof, four, five, or six yolks of hard eggs. Therefore this shall bee the form of the ointment called Vigoes. R. *axung. porci*, ℥i. *olei chamem. aneth. mastich. & laurini*, an. ℥i. *styrac. liquid.* ℥x. *rad enule. camp. parum trite, & ebuli*, an. ℥iii. *pul. euphorb.* ℥β. *vini odorif.* ℞i. *bulliant omnia simul usque ad consumptionem vini, deinde colentur; colatura adde lythargyræ auri*, ℥vi. *thuris, mastich. an.* ℥vi. *res. pini*, ℥iβ. *tereb. venet.* ℥i. *argenti vivi*, ℥iv. *cera albæ*, ℥iβ. *liquefaciis oleis, tum cerâ incorporentur omnia simul, fiat linimentum ad usum.* Or elf, R. *argenti vivi preparati*, ℥vi. *sublimiti*, ℥β. *sulphuris vivi*, ℥β. *axung. porci, salis expertis*, ℥i. *vitellos ovorum sub cineribus coctorum, nu.* iii. *olei terebinth. & laurini*, an. ℥ii. *theriac. vet. & methridat.* ℥β. *fiat linimentum ut artis est.* You shall compose it thus, first the *sublimatum* and sulphur shall be finely poudred, then som part of the *Argentum vivum* and hog-greaf put to them, then presently after, som of the hard yolks of eggs, continually and diligently stirring and mixing them all together. All these beeing well incorporate, add som more *Argentum vivum*, hogs-greaf, and yolks of eggs, and incorporate them with the former; at the last add the oils, then treacle, and methridate, and so let them all be beaten together for a whole daies space, and thus you shall make an oinment of a good consistence, which I have often used with good success. Yet the hogs-greaf shall be first boiled with the hot herbs good for the sinews, as sage, rosemarie, thyme, marjerom, lavender and others which the season afford's. For so the *axungia* acquire's a more attenuating facultie, and consolidateing of those parts which the *Lues Venerea* afflict's. Besides, when unguents are made for this purpose, that such virulencie may be drawn from within outwards, by sweats and transpiration through the pores of the skin, no man need doubt, but that they ought to be furnished with relaxing, and rarifying, and attractive faculties. But *axungia*, besides that it verie fit to kill the *Argentum vivum*, it also relaxeth and mollifieth. Now *Oleum laurinum, de spicâ, rutaceum*, rarifie, digest and aswage pain. Turpentine also extinguisheth and bridleth the *Argentum vivum*, moderately heat's, resolv's and strengthen's the nervous parts. But *Argentum vivum* is the proper antidote of the *Lues Venerea*, as that which cure's it howsoever used, drying by the subtiltie of the parts, and provokeing sweat. Verily Treacle and Methridate somewhat conduce to retund the virulencie of this disease, but unless *Argentum vivum* assist as a ferret to hunt, and an *Alexiterium* to impugn the disease, they can do no great matter

How to kill *Argentum vivum*.

What to mix therewith.

An unctiõ with *Argentum vivum*.

Another.

How to make it.

How to prepare the hog-greaf before you mix the *Argentum vivum* therewith.

CHAP. XI.

How to use the Unctiõ.

He bodie and humors apt to caus or nourish a *plethora* or inflammation, beeing prepared by digestive sirups, and evacuated by purgeing and bleeding as is fitting, according to the direction of som Physitian, the patient shall bee shut up in a parlor or chamber, hot either by nature or art, and free from cold blatts of winde. For cold is most pernicious in this disease, both for that it hurt's the nervous parts, already ill affected by reason of the disease, as also for that it lessen's the efficacie of medicines. Wherefore manie do ill in this, who, whether in winter or summer, annoint their patients in a large room, exposed on everie side to the windes. They deal somewhat more wisely, who put a cloth fastned like half a tent presently behinde the patient, though annointed by the fire-side, so to keep away the cold air from him. Yet it is safest to set, and annoint the patient either in a little room, or elf in som corner of a large room, separated from the rest of the room by som hangings, and building a stove, or making som fire therein, for so hee may stand or sit as hee best like's, the longer, and with the less offence, and bee equally heated on everie side, whereas such as are annointed in a chimney by a fire's side cannot but bee heated unequally, beeing readie to burn on the one side, while the other is cold, which motions are contrarie and hurtful to that wee require: besides, if the patient shall bee weak,

Cold most hurtful to such as are troubled with the *Lues Venerea*.

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hee cannot stand and endure the heat of the fire. Or if hee bee shamefact, hee will bee unwilling to shew all his bodie at once naked to the Surgeon, but hee may without anie harm, and with modestie, lying on a bed in a little room, wherein a stove is made, have all his lims annointed about the joints, and presently bound up, either with stoups, or carded cotton, or brown paper.

CHAP. XII.

What cautions to bee observed in rubbing or annointing the Patient.

The patient, if it may bee conveniently don, must bee annointed fasting.

In what places the bodie must bee annointed.

Where to begin the unction.

What it is that maketh the art of Physick conjectural.

Who must bee rubbed over once, who twice in a daie, and who but e- verie other daie.

Lib. de vena sect.

Hee shall bee annointed or rubbed over with the ointment in the morning, the concoction and distribution of the meat beeing perfected, which functions otherwise would not bee well performed, the powers of nature beeing distracted into several operations. Yet if the patient shall bee weak, you may som hour before the unction, give him som gellie, the yolk of an egg, or som broth made of meat, boiled to pieces, but verie spareingly, lest nature, intent upon the concoction of solid meats, or in great quantitie, should bee drawn away from that which wee intend. At first, let onely the joints of the lims bee annointed, as about the wrists, elbows, knees, ankles, shoulders. But asterward, if the patient shall bee more strong, and a greater commotion of the humors and bodie seeme necessaric, the emunctories of the principal parts may also bee annointed, and the whole spine of the back; yet haveing much care, and alwaies shunning the principal and noble parts, lest wee should do as those butcherlie Empericks do, who equally, and in like manner daub and rub over all the bodie, from the soles of the feet, to the crown of the head: moreover, diligent regard must bee had of those parts, which are seized upon by the symptoms of this diseas, that they may bee more annointed, and that it may bee more throughly rubbed in. Yet you must alwaies begin your annointing or rubbing at those parts which are less offended, lest the humors should bee drawn in greater measure to the grieved part. And as gentle frictions do not sufficiently open the pores of the skin, so more strong and hard ones shut them up, caus pain, and more plentifully attract the morbifick matter. Wherefore it will bee more couvenient to use moderate frictions, takeing indication from the strength of the patient, as that whereto wee must still have the chief regard. There is also another thing whereto the Physician and Surgeon must diligently attend, as that, which if it bee not carefully prevented, will either hasten the death of the patient, or make him subject to a relaps; that is, the quantitie of the remedies and unctions, and the number of the frictions. Which consideration, together with that which is of the degrees of the temperaments of the whole bodie, and each part thereof, much trouble's the mindes of good Physicians, and maketh the art conjectural, it is far from beeing attained to by Empericks. Yet wee must endeavor by method and reason, that by the rule of indications so frequently mentioned, wee may attain to the knowledg thereof, as near as may bee. For to have perfect knowledg hereof, and to say that those need onely four, others five, and othersom six, more or fewer frictions at the beginning, which Empericks commonly do, is a thing both impossible and vain. All these must bee changed and ordered according to the malignitie and continuance of the diseas, and the condition of the affected bodies. Verily wee must so long use frictions and unctions, until the virulent humors bee perfectly evacuated by spitting and salivation, by stool, urine, sweat, or insensible transpiration. Which you may understand by the falling away and drying up of the pustles and ulcers, and the ceasing of the pains and other symptoms proper to this diseas. In manie, by reason of the more dens and compact habit of the bodie nature is more slow in excretion. Yet I have learn't by long experience, that it is best to annoint and chafe such twice in a daie, to wit, morning and evening, six hours after meat. For so you shall profit more in one daie, then by the single friction of three daies. But on the contraie, I have often, and with good success, rubbed over but each other day more rare and delicate bodies, giving them one or two daies rest to recollect their strength, which by the too much dissolution of their spirits becomming too weak, were not sufficient to expell the reliques of the morbifick matter. And certainly about the end of the appointed friction, especially when as the patient begin's to flux at the mouth, the bodies, together with the noxious humors are made so fluid by the means of the precedent friction, that one friction is then more efficacious then two were at the beginning. Therefore as *Galen* bid's, when as the diseas is great, and the strength of the patient infirm, that wee should part our blood-lettings, and draw a little and a little at once; so also here when as wee shall observ nature stirred up, and readie bent to anie kinde of evacuation by the mouth, stool, or other like; you ought not to use anie unction or friction oftner then once in a daie; yea, certainly it will bee better to intermit for som few daies. For thus *Masfa* report's, that there was a certain man who almost wasted with a consumption beeing continually afflicted with the most grievous pains of this diseas, and reputed in a desperate case by other Physicians, was notwithstanding at length recovered by him, when as hee had annointed him thirtie seven times, putting som time between for the recoverie of his strength.

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I my self have observed others, who thus, by the interposition of one or two daies, being rubbed over som fifteen or seventeen times, have perfectly recovered. Wherefore you must take this course in resolved and weak bodies, yet in the *interim* must you have a care, that the frictions bee not too weak, and so few, that the morbidick caus may not bee touched to the quick: for in this kinde of disease nature doth not of it self endeavour anie *crisis*, or excretion; it require's the auxiliarie forces of medicines, by whose assistance it may expell all the malignitie. These are signs of such a *crisis*, either at hand, or already present, if the patient bee so restless, so loath all things, that hee cannot remain in one place either standing or lying, hee can neither eat nor drink, if hee bee oppressed with a continual weariness, almost ready to swoond, yet have a good and equal puls, and gripeings in his bellie afflict him with bloodie and viscus dejections, until at length nature after one or two daies portion of the morbidick matter being spent, bee somewhat free'd, and all pains and symptoms so much abated, as the excretions have proceeded. But whereas medicines are not sufficient in number or strength, there follow's an imperfect *crisis*, which leav's behinde it som reliques of the morbidick matter, which like leaven do so by little and little infect the whole mass of the humors, that oftentimes after ten years space, the disease riseth as out of an ambush, or lurking-hole, and becom's far worse then before. But wee must in like manner have a care least these medicines, that are either given inwardly, or applied outwardly, bee not too strong: for by causing such colliquation of the radical moisture and solid parts, manie have been brought into an incurable consumption. In others sordid and putrid ulcers have thence arisen in the mouth, which having eaten a great part of the palate and tongue, have degenerated into a deadly *Cancer*. In others hereupon the tongue hath so swelled up, that it hath filled the whole capacitie of the mouth, so that it could not bee bended to anie part of the mouth for chawing, whereupon they have by little and little been famished. In other som there hath been caused so great colliquation of humors, that for a whole moneth after, tough and filthie slaver hath continually flowed out of their mouths. Other som have the muscles of their jaws relaxed; others troubled with a convulsion, so that during the rest of their lives they can scarce gape. Others, by losing a portion of their jaw, have lost som of their teeth. But you must not alwaies so long annoynt and chase the bodie, until a flux of the mouth or bellie appear. For you may finde sundrie persons, who, if you should annoynt or rub them to death, you cannot bring them to flux at the mouth; yet these will recover notwithstanding, excretion being made either by insensible transpiration, or evacuation of urine, or som gentle flux of the bellie, either procured by art, or coming of it self. In which case I have observed that manie have received much good by a purgeing decoction of *Guaicum*, administred according to the quantitie of the peccant humor, and given for som daies in the morning, adding thereto white wine, if the bodie abounded with tough and viscid humors. Dysenteries, or bloodie Fluxes caused by unctions, may bee helped by glysters, wherein much Hog's-grease is dissolved to rotund the acrimonie caused by the medicine and humor which nourisheth the Dysenterie. Also new treacle dissolved in new milk, is thought wonderfully to mitigate this symptom.

Nature is not sufficiently able to expell the virulent matter. Signs that the *crisis* is nigh.

Inconveniences following upon immoderate unctions.

For what persons a purgeing decoction of *Guaicum* is good.

The cure of a Dysenterie occasioned by too strong friction.

CHAP. XIII.

Of the third manner of cure, which is performed by cerates, and emplasters, as substitutes of unctions.



Or that sundrie by reason of the name abhor the use of friction, which is performed by the fore-mentioned ointments, therefore there is found out another manner of cure by cerates and emplasters, as substitutes of Frictions, but that usually is somewhat slower; for which purpose it is not needful onely to use the things which are described by *Vigo*, but you may also devise other, which are more or less anodyne, emollient, attenuating, discussing, or drying, according to the condition of the present disease, symptoms, humors and patient, never omitting *Hydrargyrum*, the onely antidote of this disease. Such emplasters mitigate pains and knots, and resolv all hardness, and are absolutely verie effectual, for continually sticking to the bodie, they continually operate. Wherefore they are of prime use in relapses of this disease, or when the humors are thick and viscus, or otherwise lie deep in the bodie, and verie difficult to root out. But for that they work more slowly oftentimes, such as use them are forced at length to use som frictions to stimulate nature, and caus the speedier excretion. Yet in som whose bodies and humors have been fluid, either by nature or art, the applied emplasters have in three daies space procured evacuation sufficient for the disease, so that if they had not been taken away, they would have caused a colliquation, like that which wee lately mentioned in too violent friction. Wherefore you shall use the like discretion in taking of these, as you use in your unctions and friction. In stead of *emp. de Vigo*, this following may be fitly used. *R. massæ emp. de melil. & oxycrocei, an. ℥ss. argenti vivi extin. ʒvi. oleo laurino, & de spicâ, reduncantur*

The cure by emplasters more slow.

In what case they are chiefly useful.

The description of an emplaster.

reducantur ad formam emplastris. These plasters must bee equally spread upon lether, and laid upon the same places of the joints, as were formerly mentioned in the cure by frictions. Yet some there bee, who cover with the plaster all the arm; from the hand even to the shoulder, and all the leg from the top of the knee, even to the ends of the toes, which thing I do not disallow of, if so bee that the places of the joints bee covered over with a thicker plaster. They must bee left sticking there so long, until nature bee stirred up and provoked to cause excretion of the virulent humors. Yet if in the *interim* great itching shall arise in the parts, you may take them off so long until the parts shall bee fomented with a decoction of the flowers of camomile, melilote, red roses, and the like made in wine, to discuss that which caused the itching, and then you may lay them on again. Some, to hinder the rising of anie itch, lay not the bare plaster to the part, but cover it over with sarcenet, so to keep it from sticking, and thus intercept the transpiration of the part, the cause of itching. They shall bee stronger or weaker, and lie to the part a longer or shorter space, as long as the indications, so often formerly mentioned, shall seem to require. The effects of emplasters are the same as of frictions; for they cause excretion, one while by insensible transpiration, other-whiles by a *Diarrhœa*, or flux of the bellie; sometimes by urines, but most frequently (which *Crisis* is also most certain) by salivation. Sordid and virulent ulcers often breed in the mouth, tongue, palate and gums by salivation, by reason of the acrimonie of the virulent humors adhering to the sides of the mouth: to hinder the growth of these, manie inject glysters made of emollient things, especially at the beginning of the salivation, so to draw downwards the humors forcibly flying up in greater quantitie then is fit, although the part it self may endure them.

What excretion best in this disease.

To avoid the ulcers of the mouth.
To cure them.

There are also some, who to the same end give a purgeing medicine at the verie time when as the humors are readie to move upwards, the which I think is not a safe course. The cure of such ulcers is far different from the cure of others. For they ought by no means to bee repulsed or repelled, how inflamed soever they bee, but onely to bee mitigated by gargarisms, so onely to lessen the heat, and that by this frequent washing of the mouth, you may hinder the sticking or furring of viscid humors to such like ulcers. A decoction of barlie, cow's-milk warm, held and gargled in the mouth, the mucilages of the seeds of mallows, marsh-mallows, *psilium*, lettuce, line extracted in the water of barlie, mallows, and pellitorie of wall, are good for this purpose; for thus the ulcers becom more milde, and the tenacitie of the adherent humors is loosened. You must at the first beware of strong detergent medicines, for almost all such have acrimonie joined with them, which will encrease the pain, but chiefly in the state of the disease: for so, the ulcers gently cleansed by frequent gargling, would becom worse by the use of acrid things. Therefore it shall bee sufficient to make use of the fore-mentioned medicines, so to hinder the encrease of the filth, and inflammation of the ulcers; if so bee that such ulcers bee not too exceeding malign and burning. For if it shall happen either by the powerful efficacie of the applied plasters, or by the violence of nature in its motion of the ill humors upward, that such store of viscid and gross humors are carried to the mouth, that it want's little, but that the part it self is over-ruled by the morbidick matter, so that by the violence and continuance of the flux, the mouth and jaws becom so swelled, that a gangrene is to bee feared, by hindering the entrance of the spirits, and extinguishing of the native heat of these parts. In this case wee are forced to leav the proper cure for to withstand the accidents, and for this purpose wee use restrictive and repelling things, such as are barlie water, plantain, night-shade, knot-grass, shepherds-Purs, and the like, with syrup of roses, violets, quinces, berberies, pomegranates and the like; also such are the mucilages and decoctions of the seeds of lettuce, *psilium*, quinces, plantain, night-shade, water-lillies, wood-bine, &c. Also it is convenient to procure sweats by stoves, or the application of anie hot and drie things; for thus the humors which run forth of the vessels into all the surface of the bodie are diverted. But when as the course of the humors running to the mouth, is beginning to stop, and the tumors and ulcers begin to lessen, then nothing hinder's, but that wee may use gently detergent things, as, *syrup. rosarum siccarum*, *mel rosatum*, *Diamoron*, *Dianucum*, and the like. But when it is time to drie the ulcers, they may bee lightly touched with alum-water, or with *aqua fortis*, such as Gold-smiths have used for the separation of metals. They may also frequently use drying gargarisms made with astringion of the waters of roses, plantain, night-shade, shepherds-purs, knot-grass, and dog's-tongue, boiling therein *balanstris*, *ros. rub. myrtil.* *sumach.* *alumen.* *acacia*, *berber.* *galle malicor.* and the like. During the time of fluxing or salivation you must diet and feed the patient with liquid meats, and those of good juice, and easie digestion, for that then hee can neither chaw, swallow, nor digest hard things. For nature wholly intent upon the excretion of the noxious and peccant humors, as also weakened by the bitterness of pain, watchings, and unquietness, and consequently a great resolution of the spirits, cannot insist powerfully upon the work of concoction. Therefore hee shall bee fed with rear new-laid eggs, caudles of the same, barlie-creams, cullisses made of a decoction of knuckles of veal, and a capon, and gellies, and with

Restrictive and repelling gargarisms.

To drie the ulcers of the mouth.

Manner of diet when the mouth is ulcerated.

with these in small quantitie, but frequently administred, alwaies gargling his mouth before hee eat. For his drink hee shall use a decoction of *Guaicum* aromatized with a little cinnamon; but if anie desire that the drink shall become nourishment, for that the patients cannot feed on more solid meats, you may give them old wine, claret and thin, mixed with some barlie-water. Some there are who steep some crumbs of pure manchet in the foresaid wine, and then press it out, but yet so, that there may some part of the bread remain therein, which may make it more nourishing, and less sharp or acrid. Others steep bread hot out of the oven, in wine, for the space of a night, then they distill it all over in *balneo Mariæ*; the liquor which first comes over is more strong and hot, but that which flows out afterwards, more milde, and such as the patient may use to mix with his wine without any danger, for his better nourishment, and the recoverie of his strength.

To make their drink nourishing.

For to refresh the spirits in fear of fainting, muskedine, hippocras, rose-vineger, and the like, put to the nose to smell to, will be sufficient, unless peradventure the patient should naturally abhor such things, for so they would rather deject the powers and spirits. In the *interim*, you must have care of the bellie, that you keep it open by gentle and emollient glysters.

CHAP. XIII.

Of the fourth manner of cureing the Lues Venerea.



Some have devised a fourth manner of cureing the *Lues Venerea*, which is by *suffitus*, or fumigations. I do not much approve hereof, by reason of sundrie malign symptoms which thence arise, for they infect and corrupt by their venomous contagion, the brain and lungs, by whom they are primarily and fully received, whence the patients during the residue of their lives have stinking breaths. Yeamanie while they have been thus handled, have been taken hold of by a convulsion, and a trembling of their heads, hands, and legs, with a deafness, apoplexie, and lastly, miserable death, by reason of the malign vapors of sulphur and quick-silver, whereof *cinnabaris* consists, drawn in by their mouth, nose, and all the rest of the bodie. Wherefore I can never approve the use of such fumigations which are to be received in fumes by the mouth and nostrils for to work upon the whole bodie; yet I do not dislike of that, which is undertaken for some one part onely, as to drie up ill-conditioned ulcers, which so affect it, that they cannot be overcome by any other means, or for to disperse or digest knots, or to resolve fixed pains, otherwise unmoveable. These fumigations, by reason of the admixture of *argentum vivum*, have an attenuating, cutting, resolving, and colliquating facultie. Those who prepare these fumigations for the cure of the whole disease and bodie, take this course. They put the patient under a tent or canopie made close on every side, lest any thing should expire, and they put in unto him a vessel filled with hot coles, whereupon they plentifully throw *Cinnabaris*, that so they may on every side enjoy the rising fume, just after the same manner as Farriers use to smoke their horses for the glanders: they repeat this every day so long, until they begin to flux at the mouth. The principal matter or basis of such fumigations, as we have already noted, is *Cinnabaris* consisting of sulphur and *argentum vivum* mixed together; there is added also, *radix ireos flor. thus, olibanum. myrrha, juncus odoratus, assa odorata, mastiche, terebinthina, & theriaca*, all which have a facultie to resolve and strengthen the spirits, and nature, and correct the stinck and evil qualitie of the *argentum vivum*. There are also other fumigations made after another manner, but that also when as the *argentum vivum* is extinct, and as it were fixt after this manner; let some lead be melted, & let there be poured or put thereto some *argentum vivum*, then let it all be powdered, adding thereto antimonie, aloës, mastich, copres, orpiment, and benjamin made into powder, and framed into Trochiscs with some turpentine. Or else, *R. cinnabaris, ℥i. styracis rub. & calamitæ, nucis moschat. an. ℥i. benzoini, ℥℥. excipe terebinth. fiant trochisci ponderis ℥ii.* for the fore-said use. The *terebinthina* is added to incorporate the drie things, and the gums are added to yield matter to the fume. But virulent ulcers of the *Lues Venerea* shall not be fumigated before they be cleansed; also this following fumigation is good. *R. cinnab. ℥i. benzoini, myrrhæ, styracis, olibani, opoponacis, an. ℥℥. mastiches, macis, thuris, an. ℥ii. excipiantur terebinthina, & fiat suffumigium.*

The hurt that follow's upon fumigations.

What fumigations good.

The common manner of using them.

The matter of them.

Trochiscs for fumigations.

CHAP. XV.

The cure of the symptoms, or symptomatick affects of the Lues Venerea: and first, of the Ulcers of the Yard.



Allons and malign ulcers in this disease may grow all over the yard; but these are far more malign which arise on the prepuce, then those that grow on the Glans, or nut of the yard. Now they are rebellious to the common medicines of ulcers which happen other-ways, and they are also subject to turn into a gangrene, so that sundrie, who have not in time provided for themselves by

The ulcers of the prepuce more malign then those of the Glans.

Lanfrank's
collyrium.

the use of *argentum vivum*, are forced for their negligence to suffer the loss of their *Glans*, and oftimes of their whole yard. Yet I am of opinion, that I think wee must begin the cure of all ulcers of the yard with the general remedies of ulcers. For all ulcers arising in these parts by reason of copulation, are not virulent. But when as wee shall finde that wee doe no good by this means, and that the disease notwithstanding grow's worse and worse, then must wee com to make use of such things as receive *argentum vivum*, that by these wee may resist the virulencie which is readie to disperse it self over all the bodie, yet it is absolutely necessarie that all these things bee endued with such faculties as may retund the malign acrimonie of this venom, such an one is this following *collyrium* of Lanfrank. *R. vini albi, ℥i. aq. ros. & plan. ag. an. quart. i. aurifig. ℥ii. viridis aris, ℥i. aloës, myrrhæ, an. ℥ii. terantur subtilissime, & fiat collyrium.* Also these ulcers may bee profitably touched with mercurie-water, or *aqua fortis* which the Gold-smiths have used, or elf mercurie in powder, or our *egyptiacum*: but the falling away of the Eschar shall bee procured with *basilicon*, or fresh butter. Yet I think it not fit to use these acrid things without verie great caution, for fear of a gangrene, which easily happen's to this part. But if such ulcers are so stubborn, that they will not yeild to these remedies, then must wee com to the friction or unction of the groins, *perineum*, and ulcers, with the ointments formerly prescribed for the general friction. Also fumigations may bee made, as wee mentioned in the former chapter. For thus at length the malignitie of the virulent humor will bee overcome, and the callous hardness mollified; and lastly, the ulcers themselves cleansed, and being cleansed, consolidated. Somtimes after the perfect cure of such ulcers, there will appear manifest signs of the *Lues Venerea* in manie, which shewed not themselves before, for that the virulencie flowed forth of the running ulcers, and now this vent being stopt, it flow's back into the bodie, and shew's signs thereof in other parts; and these men have need of a general unction.

* This which by our Autor is here termed *Stranguria virulenta*, and in French *Chandepisse*, is the same which by other Autors is usually termed *Gonorrhœa virulenta*, and by us vulgarly in English, *The running of the reins*.

What a virulent strangurie is.

The cause of the convulsive distension of the yard.

Vid. Aut. de fin. med. apud Galen.
What kinde of matter floweth forth in a virulent strangurie.

CHAP. XVI.

*How a Gonorrhœa differeth from a *virulent Strangurie.*



Ven to this day verie manie have thought that the virulent Strangurie hath som affinitie with the *Gonorrhœa* of the Antients, but you shall understand by that which follow's, that they are much different. For a *Gonorrhœa* is an unvoluntarie effusion of seed running from the whole bodie to the genitals, by reason of the resolution and palsie of the retentive facultie of these parts, as it is delivered by *Galen, lib. de loc. affect.* This disease befallerh others by the collection of the blood and seminal matter by the vessels of the whole bodie, which not turning into fat and good flesh, take's it course to the genitals; but on the contrarie, a virulent Strangurie is a running, or rather dropping out of the urinarie passage, of a yellowish, livid, bloodie, filthy *sanies*, like to *pus*, or matter not well concocted, oftentimes fretting and exulcerating the passage with the acrimonie, and causing a painful erection of the yard, and distension of all the genital parts. For in this erection there is caused as it were a convulsive contraction of these parts. And hence it is that the patients complain, that they feel as it were a string stretched stiff in that part, which draw's the yard as it were downwards. The cause hereof is a gross and flatulent spirit, filling and distending by its plentie, the whole channel or hollow nerv; yea verily, the whole porous substance of the yard. If to these symptoms this be added, that the urinarie passage bee exulcerated, a grievous pain afflict's the patient, whilst hee make's water, for that the ulcers are irritated by the sharp urine passing that way. Such a virulent strangurie or running of the reins oftentimes continueth for two or three years space: but the *Gonorrhœa*, or running of the seed cannot endure so long, but that it will bring the bodie to an extreme and deadlie leanness, for that the matter of the seed is of the more benign and laudable portion of the blood, as you may perceiv by those who have too immoderately used copulation but the space of one night. For such have their faces more lean and lank, and the rest of their bodies enervated, languisheth and becometh dull. By this wee have delivered, it may bee perceived that the running of a virulent strangurie, is not the running of a seminal humor, fit for generation of issue, but rather of a viscous and acrid filth, which hath acquired a venenate malignitie by the corruption of the whole substance.

CHAP. XVII.

Of the causes and differences of the scalding, or sharpness of the urine.

The cause of a particular repletion of the privie parts.



The heat or scalding of the water, which is one kinde of the virulent strangurie, ariseth from som one of these three causes; to wit, repletion, inanition, and contagion. That which proceed's from repletion, proceed's either from too great abundance of blood, or by a painful and tedious journie in the hot sun,

or by feeding upon hot, acrid, diuretick and flatulent meats causing tension and heat in the urinarie parts, whence proceed's the inflammation of them and the genital parts, whence it happen's that not onely a feminal, but also much other moisture may flow unto these parts, but principally to the *prostate*, which are glandules situate at the roots, or beginning of the neck of the bladder, in which place the spermatick vessels end; also abstinence from venerie causeth this plenitude in som who have usually had to do with women, especially the expulsive facultie of the feminal and urinarie parts beeing weak, so that they are not of themselves able to free themselves from this burden. For then the suppressed matter is corrupted, and by its acrimonie contracted, by an adventitious and putredinous heat, it causeth heat and pain in the passage forth. The *prostate* swelling with such inflamed matter, in proces of time becom ulcerated, the abscess beeing broken. The purulent *sanies* dropping and flowing hence alongst the urinarie passage causes ulcers by the acrimonie, which the urine falling upon, exasperate's; whence sharp pain, which also continueth for som short time after making of water, and together therewith by reason of the inflammation, the pain's attraction, and the vaporous spirit's distension, the yard stand's, and is contracted with pain, as wee noted in the former Chapter. But that which happen's through inanition, is acquired by the immoderate and unfit use of venerie, for hereby the oilie and radical moisture of the fore-mentioned glandules is exhausted, which wasted and spent, the urine cannot but be troublesome and sharp by the way to the whole *urethra*. From which sens of sharp pain, the scalding of the urine hath its denomination. That which com's by contagion, is caused by impure copulation with an unclean person, or with a woman, which som short while before hath received the tainted seed of a virulent person, or elf hath the whites, or her privities troubled with hidden and secret ulcers, or carrieth a virulent spirit shut up or hidden there, which heated and resuscitated by copulation, presently infect's the whole bodie with the like contagion, no otherwise then the sting of a Scorpion or *Phalangium*, by casting a little poison into the skin, presently infect's the whole bodie, the force of the poison spreading further then one would believ, so that the partie fall's down dead in a short while after. Thus therefore the feminal humor contained in the *prostate*, is corrupted by the tainture of the ill drawn thence by the yard, and the contagion infect's the part it self; whence follow's an abscess, which casting forth the virulencie by the urinarie passage, causeth a virulent strangurie; and the malign vapor carried up with som portion of the humor unto the entrails and principal parts, caus the *Lues Venerea*.

The causes of the inanition of the genital parts.

The reason of a contagious strangurie.

CHAP. XVIII.

Prognosticks in a virulent Strangurie.

Wee ought not to be negligent or careles in curing this affect; for of it proceed pernicious accidents, as wee have formerly told you, and neglected, it becom's uncurable, so that som have it run out of their urinarie passage dureing their lives; oftines to their former miserie is added a suppression of the urine, the *prostate* and neck of the bladder beeing inflamed and unmeasurably swelled. Copulation, and the use of acrid or flatulent meats increas this inflammation, and also together therewith caus an *Ischuria*, or stoppage of the urine; they are worst at the change of the Moon: certain death follow's upon such a stoppage; as I observed in a certain man, who troubled for ten years space with a virulent strangurie, at length died by the stoppage of his water. Hee used to be taken with a stopping of his urine, as often as hee used anie violent exercise, and then hee helped himself by putting up a silver Catheter, which for that purpose hee still carried about him; it happened on a certain time, that hee could not thrust it up into his bladder, wherefore hee sent for mee, that I might help him to make water, for which purpose when I had used all my skill, it proved in vain: when hee was dead, and his bodie opened, his bladder was found full, and verie much distended with urine, but the *prostate* preternaturally swelled, ulcerated, and full of matter resembling that which formerly used to run out of his yard, whereby you may gather, that this virulencie flow's from the *prostate*, which run's forth of the yard in a virulent strangurie, and not from the reins, as manie have imagined. Certainly, a virulent strangurie, if it be of anie long continuance, is to be judged a certain particular *Lues Venerea*, so that it cannot be cured unless by frictions with *Hydrargyrum*. But the ulcers which possess the neck of the bladder are easily discerned from these which are in the bodie or capacitie thereof. For in the later the filth com's away as the patient make's water, and is found mixed with the urine, with certain strings or membranous bodies comming forth in the urine: to these may be added, the far greater stinch of this filth which issueth out of the capacitie of the bladder. Now must wee treat of the cure of both these diseases, that is, the *Gonorrhœa* and virulent Strangurie; but first of the former.

A virulent strangurie continue's with som dureing their lives.

An historic.

From what part the matter of a virulent strangurie flow's.

CHAP. XIX.

The chief heads of cureing a Gonorrhœa.

Diet.



Et a Physician bee called, who may give direction for purgeing, bleeding and diet, if the affect proceed from a fulness and abundance of blood and seminal matter; all things shall bee shunned which breed more blood in the bodie, which increas feed, and stir to venerie. Wherefore hee must abstain from wine, unless

For a strangurie occasioned by repletion.

it bee weak and astrigent, and hee must not onely eschue familiaritie with women, but their verie pictures, and all things which may call them to his remembrance, especially if hee love them dearly; strong exercises do good, as the carrying of heaue burdens even until they sweat, swimming in cold water, little sleep, refrigerations of the loins and genital parts, by anointing them with *unguentum rosarum refrigerans Galeni & nutritum*, putting thereupon a double cloth steeped in oxycrate, and often renewed. But if the resolution or weaknes of the retentive facultie of these parts bee the caus of this diseaf, contracted by too much use of venerie before they arrive at an age fit to perform such exercise; in this case strengthning and astrigent things must both bee taken inwardly, and applied outwardly. But now I hasten to treat of the virulent Strangurie, which is more proper to my purpose.

For the decaye of the retentive facultie.

CHAP. XX.

The general cure both of the scalding of the water, and the virulent Strangurie.

Diet.



Hee must diversly order the cure of this diseaf, according to the varietie of the causes and accidents thereof. First, care must bee had of the diet, and all such things shunned as inflame the blood, or caus windines; of which nature are all diuretick and flatulent things, as also strong and virulent exercises. Purgeing and bleeding are convenient, especially, if fulness caus the affect. Womens companies must bee shunned and thoughts of venereous matters; the patient ought not to lie upon a soft bed, but upon a quilt or matterice, and never, if hee can help it, upon his back: boiled meats are better then roasted, especially boild with sorrel, lettuce, purslain, cleansed barlie, and the four cold seeds beaten: for sauce, let him use none, unless the juice of an orange, pomegranate, or verjuice; let him shun wine, and in stead thereof use a decoction of barlie and liquorice, an *hydromel*, or *hydrosaccarum* with a little cinnamon, or that which is termed *Potus divinus*. In the morning let him sup of a barlie cream, wherein hath been boiled a *nodulus* of the four cold seeds beaten together with the seeds of white poppie; for thus it refrigerath, mitigath and cleanseth; also the syrups of marsh-mallows and maiden-hair are good. Also purgeing the bellie with half an ounce of *Cassia*, sometimes alone, otherwhiles with a dram or half a dram of *Rubarb* in powder put thereto, is good. And these following pills are also convenient. *R. massæ pilul. sine quibus Di. rhei electi ʒß. capburæ gr. iiii. cum terbinthinâ fermentur pilule*; let them bee taken after the first sleep. Venice turpentine alone, or adding thereto som *Rubarb* in powder, with oil of sweet almonds newly drawn without fire, or som syrup of maiden-hair, is a singular medicine in this case, for it hath an excellent lenitive and cleansing facultie, as also to help forwards the expulsive facultie, to cast forth the virulent matter contained in the *prostate*. You may by the bitterness perceiv how it resist's putrefaction, and you may gather how it perform's its office in the reins and urinarie parts, by the smell it leav's in the urine after the use thereof. But if there bee anie who cannot take it in form of a bole, you may easily make it potable, by dissolving it in a mortar with the yolk of an egg, and some white wine, as I learned of a certain Apothecarie, who kept it as a great secret. If the diseaf com by inanition or emptiness, it shall bee helped by fattie injections, oilie and emollient potions, and inwardly takeing and applying these things which have the like facultie, and shunning these things which caused the diseaf. How to cure that which happen's by contagion, or unpure copulation, it shall bee abundantly shewed in the ensuing Chapter.

Pill.

The force of Venice-turpentine in this diseaf.

How to bee made potable.

CHAP. XXI.

The proper cure of a virulent Strangurie.

An injection to stay inflammation.



First, wee must begin with the mitigation of pain, and staying the inflammation, which shall bee performed by making injection into the *urethra*, with this following decoction warm. *R. sem. psylli, lactucæ, papav. albi, plantag. cydon. lini, hyoscyami albi, an. ʒii. detrabantur mucres in aquis solani & rosar. ad quantitatem sufficientem, adde trochisc. alborum Rbassis camphoratorum in pollinem redactorum, ʒi. misce simul, & fiat injectio frequens*. For this becauf it hath a refrigerating facultie, will help the inflamma-

inflammation, mitigate pain, and by the mucilaginous facultie lenifie the roughness of the *urethra*, and defend it by covering it with the slimie substance, against the acrimonie of the urine and virulent humors. In stead hereof you may use cow's milk newly milked, or warmed at the fire. Milk doth not onely conduce hereto, beeing thus injected, but also drunk, for it hath a refrigerateing and cleansing facultie, and by the subtiltie of the parts it quickly arrive's at the urinarie passages. Furthermore, it will bee good to annoint with *cerat. refriger. Galeni addita camphora*, or with *ceratum centalinum, ung. comitissæ*, or *nutritum*, upon the region of the kidneys, loins and *perineum*, as also to annoint the cods and yard. But before you use the foresaid ointments or the like, let them bee melted over the fire, but have a care that you make them not too hot, least they should lose their refrigerateing qualitie, which is the thing wee chiefly desire in them. Haveing used the foresaid ointment, it will bee convenient to applie thereupon som linnen clothes moistened in oxycrate, composed *ex aquis plantaginis, solani, sempervivi, rosarum*, and the like. If the patient bee tormented with intolerable pain in makeing water, and also som small time after, as it commonly commeth to pass, I would wish him that hee should make water, putting his yard into a chamber-pot filled with milk or water warmed. The pain by this means beeing aswaged, wee must com to the cleansing of the ulcers by this or the like injection: *R. hydromelitis sympt. ℥iv. syr. de rosis siccis, & de absinth. an. ℥ss. fiat injectio*. But if there bee need of more powerful detersion, you may safely add, as I have frequently tried, a little *egyptiacum*. I have also found this following decoction to bee verie good for this purpose. *R. vini albi odoriferi, ℔ss. aquar. plantag. & ros. an. ℥ii. auripigmenti, ℥ss. viridis æris, ℥i. aloës opt. ℥ss. pulverisentur pulverisanda, & bulliant simul*. Keep the decoction for to make injection withall. You may increas or diminish the quantitie and force of the ingredients entring into this composition, as the patient and disease shall seem to require. The ulcers beeing thus cleansed, wee must hasten to drie them, so that wee may at length cicatrize them. This may bee don by drying up the superfluous moisture, and strenghtning the parts that are moistned and relaxed by the continual defluxion, for which purpose this following decoction is verie profitable. *R. aq. fabrorum, ℔i. psidiarum, balsam. nucum cupres. conquassatorum, an. ℥ss. semin. sumach. & berber. an. ℥ii. syrup. rosar. & de absinth. an. ℥i. fiat decoctio*. You may keep it for an injection to bee often injected into the *urethra* with a syringe, so long as that there shall no matter or filth flow over thereat, for then there is certain hope of the cure.

The faculties of milk against a virulent strangurie.

How to make water without pain.

Detergent injections.

How the cleansed ulcers may bee dried.

CHAP. XXII.

Of Caruncles, or fleshie excrescences which sometimes happen to grow in the Urethra, by the heat or scalding of the urine.



Sharp humor which flow's from the Glandules, termed *Prostatæ*, and continually run's alongst the urinarie passage, in som places by the way it fret's, and exulcerate's by the acrimonie the *urethra* in men, but the neck of the womb in women. In these, as also is usual in other ulcers, there sometimes grow's up a superfluous flesh, which oftimes hinder's the casting or comming forth of the seed and urine by their appropriate and common passage, whence manie mischiefs arise; whence it is that such ulcers as have caruncles growing upon them must bee diligently cured. But first wee must know whether they bee new or old. For the later are more difficultly to bee cured then the former, becaus the caruncles that grow upon them becom callous and hard, beeing oftimes cicatrized. Wee know that there are caruncles, if the *Catheter* cannot freely pass alongst the passage of the urine, but finde's so manie stops in the way, as it meet's with caruncles that stop the passage; if the patient can hardly make water, or if his water rnn in a verie small stream, or two streams, or crookedly, or onely by drop and drop, with such tormenting pain, that hee is readie to let go his excrements, yea and oftimes doth so, after the same manner as such as are troubled with the stone in the bladder. After makeing water, as also after copulation, som portion of the urine and seed staie's at the rough places of the caruncles, so that the patient is forced to press his yard, to press forth such reliques. Sometimes the urine is wholly stopped, whence proceed's such distension of the bladder, that it causseth inflammation, and the urine flowing back into the bodie, hasten's the death of the patient. Yet sometimes the urine thus suppress, sweat's forth preternaturally in sundrie places, as at the fundament, *perineum*, cod, yard, groins. As soon as wee, by anie of the fore-mentioned signs, shall suspect that there is a caruncle about to grow, it is expedient forthwith to use means for the cure thereof; for a caruncle from a verie little beginning doth in a short time grow so big; that at the length it becom's incurable: verily, you may easily guess at the difficultie of the cure by that wee have formerly delivered of the essence hereof, besides, medicines can verie hardly arrive thereat. The fittest season for the undertakeing hereof is the Spring, and the next thereto is Winter; yet if it bee verie troublesom, you must delaie no time. Whilest the cure is in hand, the patient ought wholly to abstain from venerie, for by the use thereof, the kidneys, spermatick vessels, *prostatæ*, and the whole yard,

How caruncles com to grow upon the ulcers of the genital parts.

Callous caruncles hard to cure. Signs.

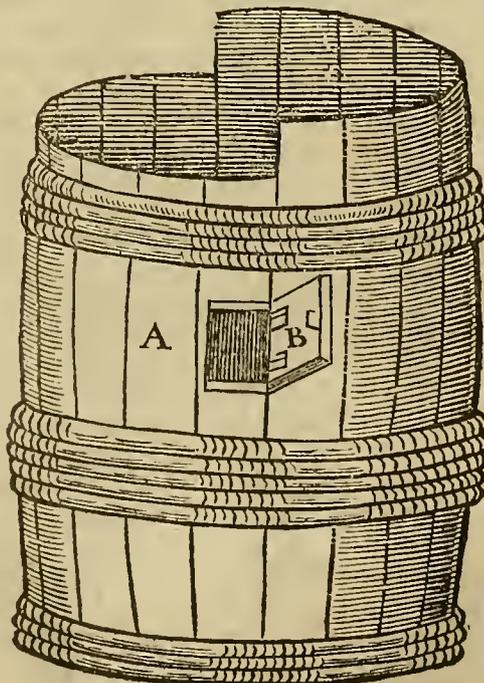
The suppress urine com's forth whereas it can get vent.

The fittest time for the cure.

Why venerie must bee eschued.

- yard, swell up and wax hot, and consequently draw to them from the neighboring and upper parts, whence abundance of excrements in the affected parts, much hindering the cure. You must beware of acrid and corroding things in the use of detergent injections, for that thus the *urethra* being endued with most exquisite sense, may be easily offended, whence might ensue manie ill accidents. Neither must wee bee frightened, if at some times wee see blood flow forth of secret or hidden caruncles. For this helps to shorten the cure, because the disease is hindered from growth, by taking away portion of the conjunct matter, the part also it self is eased from the oppressing burden, for the material cause of caruncles is superfluous blood. Wherefore unless such bleeding happen of it self, it is not amiss to procure it by thrusting in a *Catheter* somewhat hard, yet with good advice. If the caruncles bee inveterate, and callous, then must they bee mollified by fomentations, ointments, cataplasms, plasters, and fumigations; you may thus make a fomentation. *R. rad. alb. & lilior. alb. an. ℥iv. rad. bryoniae, & fanic. an. ℥i℥. fol. malvar. violarum, parietar. & mercur. an. m. ℥. sem. lini. fanugr. an. ℥℥. caricis ping. nu. xii. florum chamæm. & melil. an. p. i. contundantur contundenda, incidenda incidantur, bulliant omnia in aquâ communi*: make a fomentation, and apply it with soft sponges. Of the mass of the strained-out things, you may make a cataplasm after this manner. *R. prædicta materialia, terantur, & trajiciantur, adde axungie porci, unguenti basiliconis, an. ℥ii. fiat cataplasma*: let it be applied presently after the fomentation. You may use this following liniment whilst the cataplasm is providing. *R. unguenti alb. & agrippæ an. ℥i℥. æsopi humidæ, & axung. human. an. ℥i. butyri recentis, olei lilior. & chamæm. an. ℥vi. liquefiant simul, addendo aquæ vitæ ℥i. fiat linimentum*: let it be applied outwardly upon the part wherein the caruncles are. For the same purpose plasters shall bee applied, which may be diversified, and fitted as you shall think good; yet *Emplastrum de Vigo* truly made, exceedeth all the rest in a mollifying facultie, and in wasting such callous hardness. The following fumigation is also good for the same purpose; take some pieces of a mill-stone (for this wee use in stead of the pyrites mentioned by the Antients) or else some bricks of large size, after they are heated hot in the fire, let them be put into a pan, and set under a close stool, then cause the patient to sit thereon, as if hee were going to stool, then pour upon the hot stones equal parts of verie sharp vinegar, and verie good *aqua vitæ*, and casting clothes about him, that nothing may exhale in vain: let him receive the ascending vapor at his fundament, *perinæum, scrotum, and urethra*. Moreover, that this medicine may work the better effect, you may put the patient naked into the barrel noted with this letter A. so that hee may sit upon a seat or board perforated on that part, whereas his genitals are, then place the pan, holding the hot stones between his legs, then presently sprinkle the stones with the fore-mentioned liquor, by the door marked with the letter B. Thus the patient shall easily receive the fume that exhales therefrom, and none thereof be lost, hee covering and vailing himself on everie side. Such a fumigation in *Galen's* opinion, hath a facultie to penetrate, cut, resolve, soften and digest scirrhous hardnesse.

A Barrel fitted to receive the fume in.



CHAP. XXIII.

What other remedies shall bee used to Caruncles occasioned by the Lues Venerea.

B Ut if you suspect that these Caruncles com or are occasioned by a virulent humor, or the malignitie of the *Lues venerea*, it is meet that the patient observ such a diet as usually is prescribed to such as are troubled with the *Lues Venerea*; let him use a decoction of *Guaicum*, and let the *perinaeum* and the whole yard be anointed with ointment made for the *Lues Venerea*; otherwise the Surgeon will lose his labor. In the interim, whil'ft hee shall sweat in his bed, hee shall bee wished to hold between his legs a stone-bottle filled with hot water, or elf a hot brick wrapped in linnen cloaths, moistened in vinegar and *aqua vitae*; for thus the heat and vapor will ascend to the genitals, which, together with the help of the applied ointment, will dissolv the matter of the Caruncles, and beeing thus softened, they must bee consumed with convenient medicines. Wherefore first if they becom callous, or cicarrized (which you may suspect if they cast forth no excrementitious humiditie) they shall bee exasperated, excoriated and toru with a leaden *Catheter* haveing a rough button at the end like a round file. Hee shall so long use the *Catheter* put into the *Urethra*, thrusting it up and down the same way so long and often as hee shall think fit for the breaking and tearing the Caruncles, hee shall permit them thus torn to bleed freely, so to ease the affected part. You may also for the same purpose put into the *Urethra* the *Catheter* marked with this letter B; whereinto putting a silver wier sharp at the upper end, that by often thrusting it in and out it may wear and make plain the resisting Caruncles. Verily, by this means I have helped manie much perplexed with the fearful danger of this diseaf. Som better like of the *Catheter* marked with this letter A, beeing thus used: it is thrust into the *Urethra* with the prominent cutting sides downwards, and then pressing the yard on the outside close with your hand to the *Catheter* in the place where the Caruncles are, it is drawn forth again.

Particular defaults of the *Lues Venerea* nor to bee cured unless by the general remedie of the virulencie.

Caruncles, if callous, must first bee softened.

Catheters fit to wear asunder, or tear Caruncles.



A sheweth the *Catheter* with the inserted silver wier, but not hanging forth thereat.

B sheweth the *Catheter* with the inserted silver wier hanging forth at the end.

The Caruncle thus torn shall bee strowed over with the following powder, beeing verie effectual to waste and consume all Caruncles of the privities without much pain. *Rc. herb. sabin. in umbrâ exsiccat. ℥ii. ocræ, antimoni. tub. preparat. an. ℥ss. fiat pulv. subtilissimus*, let it bee applied in the following manner. Put the powder into the pipe or *Catheter* haveing holes in the sides thereof, the which is the lowermost of the last described. Then put the *Catheter* into the urinarie passage until the slit or openness of the side com to the Caruncle, then into the hollownes of the *Catheter* put a silver wier, wrapped about the end with a little linnen rag, which as it is thrust up, will also thrust up the powder therewith, until it shall com to the slit against the caruncle, then will it adhere to the caruncle, bloodie, by reason of the late attrition. Then shall you draw forth the *Catheter*, first twineing it about, that so it may not scrape off the powder again. If intolerable pain hereupon happen, it shall bee asswaged, and the inflammation restrained by the following injection. *Rc. succorum portulacæ, plantag. solani, & sempervivi, an. ℥ss. album ovorum, nu. vi. agitentur diu in mortario plumbeo*; let it bee injected warm into the *urethra* with a syringe. In stead hereof you may also make use of another injection, which is formerly prescribed. Neither will it bee unprofitable to applie repercussives to the genitals, to hinder pain and inflammation. You may also use other medicines, haveing a facultie to consume the Caruncle, amongst which these following are excellent.

A powder to waste Caruncles.

How to applie it.

An injection to hinder inflammation.

An emplaſter
uſed by the
Surgeons of
Montpelier for
Caruncles.

cellent. *Rx. viridis eris, auripigmenti, vitriol. Rom. aluminis roch. an. ℥ii. infundantur omnia in acet. acerrimo, atque inter duo marmora in pollinem redigantur*: then let it bee expoſed to the ſummer's ſun, and dried, again infuſed in ſharp vineger, and then as before ground upon a marble, ſo that you finde nothing ſharp with your fingers; laſtly, let it bee oppoſed to the ſun until it may bee made into moſt ſubtil powder, and all the acrimonie bee vaniſhed, which will bee commonly in eight daies ſpace. Then, *Rx. ol. roſat. ℥iv. lythargyr. ℥ii. coquantur ad ignem, quouſque coërint in emplaſt. ſolidæ conſiſtentie, ab igne tum ſemotis, adde pulv. prædicti. ℥ii.* let them bee mixed with a ſpatula, and put it upon the fire until it com to ſo hard a conſiſtence, that it will ſtick faſt to a wax candle, or lead wier, ſo that it may not com off by handling with your hands. The Surgeons of Montpelier uſe this medicine: This following is another, *Rx. tubiæ præparat. ℥vi. antimonii, ℥iii. trochiſc. alborum, Rhaſ. camphorat. ℥i. corticis granati, aluminis uſti, an. ℥iſſ. ſpongiæ uſtæ, ℥ii.* let them bee all made into powder: then, *Rx. ung. diapompholigos, & alb. Rhaſis, an. ℥ii. miſceantur cum prædictis pulveribus in mortario plumbeo, & diu agitentur*: let a verie fine rag bee ſpread over with this ointment, and wrapped about a wax candle, and ſo thruſt into the Urethra, and then draw forth the candle by twineing it a contrarie way; ſo let the end of the rag hang out of the yard, ſo to pluck ir forth again, when as you ſhall think it hath don what it can to the Caruncle, which is, when it hath covered it with the medicine with which it was ſpread. Som alſo make wax candles with a ſlender, but ſtiff wick, whoſe end, which is to bee put to wear and conſume the Caruncle, is compoſed of the following medicine. *Rx. Emplaſtri nigri, vel diathylonis irea. i, ℥ii. pulv. ſabinæ, ocræ, vitriol Rom. calcin. pul. mer. an. ℥ſſ. amnia liqueſcant ſimul ad dictum uſum.* Whilſt the cure ſhall bee in hand, by theſe following medicins; Let the patient bee careful that hee ſo ſhake hit yard after making water, that hee may ſhake forth all the reliques of the urine which may chance to ſtop at the Caruncles; for if but one drop ſhould ſtay there, it would bee ſufficient to ſpoil the whole operation of the applied medicines. After that the Caruncle ſhall bee worn away and wholly conſumed by the deſcribed medicines, which you may know by the urine flowing forth freely, and in a full ſtream, and by thruſting up a Catheter into the bladder without anie ſtoppage; then it remain's that the ulcers bee dried and cicatrized; for which purpoſe the following injection is verie powerful and effectual, and without anie acrimonie. *Rx. aq. fabrorum, ℔. ſ. nuc. cupreſ. gallar. cort. granat. an. ℥iſſ. alum. roch. ℥ſſ. bulliant omnia ſimul ſecund. art.* ſo make a decoction for an injection, which you ſhall uſe ſo long, until no excrementitious humiditie diſtill out of the yard. The following powder drie's more powerfully, and conſequently haſten's forwards cicatrization, and it is alſo without acrimonie. *Rx. lapidem calamin. lotum, teſtas ovorum uſtas, corallum rubrum, corticem granat. comminue omnia in pollinem*; let this powder be uſed to the ulcers, with a wax candle joined to ſom unguentum deſiccativum rubrum, or ſom ſuch like thing. Alſo ſtrings or rods of lead thruſt into the urethra as thick as the paſſage will ſuffer, even to the ulcers, being firſt beſmeared with quickſilver, and kept in daie and night as long as the patient can endure, are good to bee uſed. For they drie by their touch and cicatrize, they dilate the urinarie paſſage without pain, and laſtly hinder the ſides of the ulcers from corrupting one another.

Another em-
plaſter.

How to applie
it.

A caution in
making wa-
ter.

Signs that the
Caruncle is
worn away.

An epulotick
injection.

Quick-ſilver
by drying cau-
ſeth cicatriza-
tion.

CHAP. XXIV.

Of venereal Buboës, or ſwellings in the Groins.

The efficient
and material
cauſes of vene-
reous Bubo's.



He virulencie of the *Lues Venerea* is ſometimes communicated to the Liver, which if it have a powerful expulſive facultie, it expell's it into the groins, as the proper emunctories thereof, whence proceed venereal Buboës. The matter of theſe for the moſt part is abundance of cold, tough, and viſcous humors, as you may gather by the hardneſs and whiteness of the tumor, the pravitie of the pain, and contumacie of cureing; which alſo is another reaſon, beſides theſe that wee formerly mentioned, why the virulencie of this diſeaſ may bee thought commonly to faſten it ſelf in a phlegmatick humor. Yet ſometimes venereal Buboës proceed from a hot, acrid and choleric humor, associated with great pain and heat, and which thereupon often degenerate into virulent and corroding ulcers. Som venereous Buboës are ſuch conjoined accidents of the *Lues Venerea*, that they foretel it; ſuch are theſe which for a ſmall while ſhew a manifeſt tumor, and ſuddenly, without anie manifeſt occaſion hide themſelvs again, and return back to the noble parts. Others are diſtinct from the *Lues Venerea* though they have a ſimilitude of eſſence and matter therewith, and which therefore may bee healed, the *Lues Venerea* yet remaining uncured. Such are theſe which are uſually ſeen, and which therefore compared with the former, may bee termed ſimple and not implicit. For the cure, you muſt not uſe diſcuſſing medicines, leſt reſolving the more ſubtil part, the groſſer dregs becom impact and concrete there; but much leſs muſt wee uſe repercullives, for that the matter is virulent. Wherefore onely attractive and ſuppurateing medicines are here to bee uſed, agreeable to the humor predominant and cauſing the tumor, as more hot things in œdematous and ſcirrhous tumors, then in thoſe which reſemble the nature of a phlegmon or eryſpelas: the indica-
tion

What Bubo's
foretel the
Lues venerea

tion taken from the raritie and densitie of bodies insinuate's the same varietie. The applying of cupping glasses is verie effectual to draw it forth. But when as it is drawn forth, you shall forthwith applie on emplastick medicine, and then you shall com to suppuratives. When the tumor is ripe it shall bee opened with a potential cauterie, if it peoced from a cold cauf; for by the inducing of heat the residue of the crude matter is more easily concocted; besides when as an ulcer of this kinde is opened, the matter will bee more easily evacuated, neither shall it bee fit to use anie tent, but onely to applie pledgets. The residue of the cure shall bee performed by detergent medicines, and then if need require, the patient shall bee let blood, and the humors evacuated by a purging medicine, but not before the perfect maturitie thereof.

Cupping.

A potential
Cauterie.

CHAP. XXV.

Of the Exostosis, bunches or knots growing upon the bones by reason of the Lues Venerea.

Hard tumors, Exostoses and knots have their matter from thick and tough phlegm, which cannot bee dissolved, unless by hot medicines, which have a mollifying and dissolving facultie. For which purpose, besides those medicines which usually are applied to scirrhous humors, you must also make use of arg. viv. commonly after this manner. R. empl. filii Zach. & Ceronei, an. ℥i. euphorb. ℥ss. emplast. de vigo, ℥ii. cerat. asp. descript. Philagr. ℥i. argent. vivi extincti. ℥vi. fiat emplastrum. Spread it upon leather for your use. In the mean space let the patient observ a spareing diet; for thus hee shall bee helped, if so bee that the substance of the bones bee yet unperished. For if it bee putrified and rotten, then described medicines are of no use, but you must of necessitie lay bare the bone, either by incision, or elf by an actual or potential cauterie; but I had rather do it with an actual, for that it extract's the virulencie impact in the bones, as also it hasten's the abscess, or falling away of the corrupted bone. It shall bee of a convenient figure to cauterize the bone, as round, square, or long. I usually, before the application of such a Cautick, first divide the flesh that lie's over it with an incision-knife, that so the pain may bee the less, becauf the flesh cannot burn't through but in a long time, by which the fire may come to the bone. But it will not bee amiss, before wee treat of this art, first to consider the nature of the rottenness of the bones.

The matter of
knots and viru-
lulent Tophi.An emplaster
against the
bunching out
of the bones.

CHAP. XXVI.

Why the bones becom rotten, and by what signs it may bee perceived.

That solution of Continuitie which is in the bones, is called by Galen, Catagina. Gal. meth. 6. This usually is the cauf of rottenness; for, bones that are grated, bruised, rent, perforated, broken, luxated, inflamed and despoiled of the flesh and skin are easily corrupted; for dispoiled of their covering, they are altered by the appull of the air, wch they formerly never felt, whence also their blood & proper nourishment is dried up & exhausted. Besides also, the sanies running down by reason of wounds & old ulcers, in procefs of time fasten's it self into their substance, and putrefie's by little and little; this putrefaction is increased and caused by the too much use of oylie and fattie medicines, as moist and suppurate things; for hence the ulcer becommeth more silthie and malign, the flesh of the neighboring parts groweth hot, is turned into pus, which presently falling upon the bone lying under it, inflame's it. Lastly, the bones are subject to the same diseases, as the flesh that lieth under them is; besides also according to Galen, the beginning of inflammation oftentimes proceed's from the bones; but they beat not, becauf, according to the opinion of the ancients, pulsation is a dolorifick motion of the Arteries, but the bones want sens. Which verily I cannot denie; but also wee must confes that the membrane that encompasseth them, and the arterie's that enter into their bodie, are endued with most exquisite sens. Wherefore the arterie's compressed and waxing hot by reason of the inflamed bone, cauf a sens of pain in the periostium, so that the patients complain of a dull and deep pain, as it were sunk into the substance of the bones. The rottenness or corruption is oftentimes manifest to the eie, as when the bone is lai'd bare, for then it varieth from the natural color, and becom's livid, yellowish or black. Otherwise you may perceiv it by touch, as by searching it with a probe, as when you meet with anie inequality or roughness, or when but gently touching it, your probe run's into the substance of the bone as into rotten wood; for a bone is naturally hard, but beeing rotten, becom's soft. Yet hardness is not an infallible sign of a sound bone. For I have seen rotten and bared bones, to have sometimes grown so hard, by the appull of the air, that a Trepan could not, without a strong endeavor, enter them. Also the rottenness of the bone is known by the condition of the filth which flow's forth of the ulcer, for it is not onely more thin and liquid, but also more stinking. Furthermore, such ulcers have a soft, loof and waterie flesh; besides also, they are untoward and rebellious to

The frequent
cauf of the rot-
tenness of
bones.Hip. lib. de ulc.
fract.
Gal. lib. de tum.
cont. nat.Signs of the
rottenness.Hardness is no
infallible sign
of sound bones.

farcotick

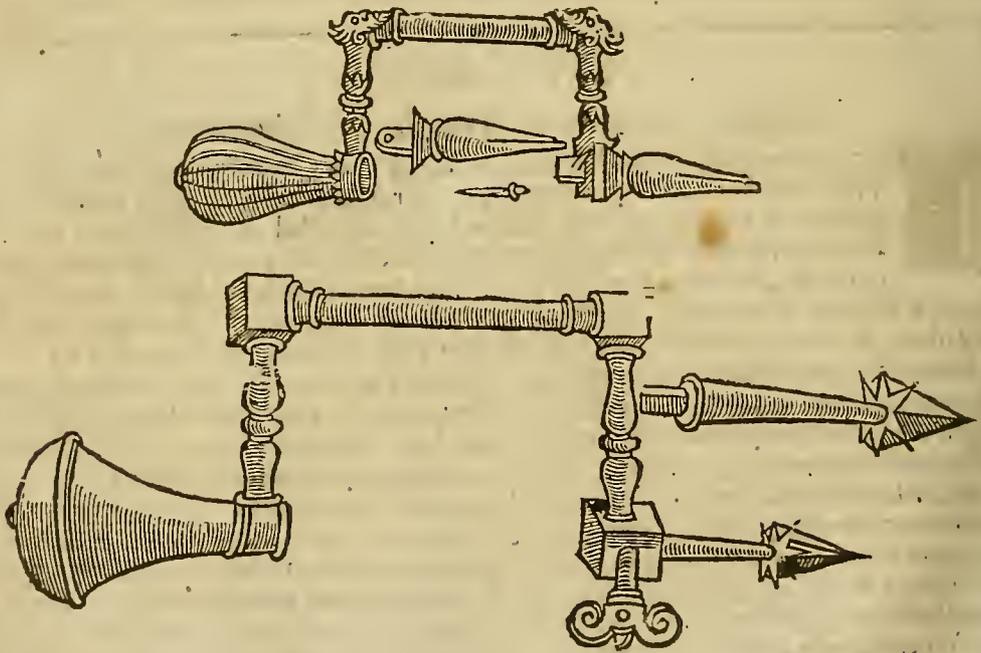
The cure of a rotten bone.

A catagmatic powder.

A desquamatorie or scaling plaster.
Diosc. lib. 3. cap. 78.

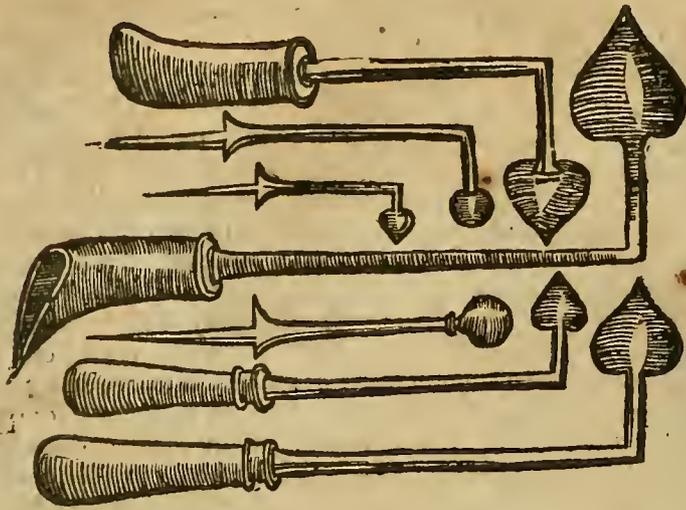
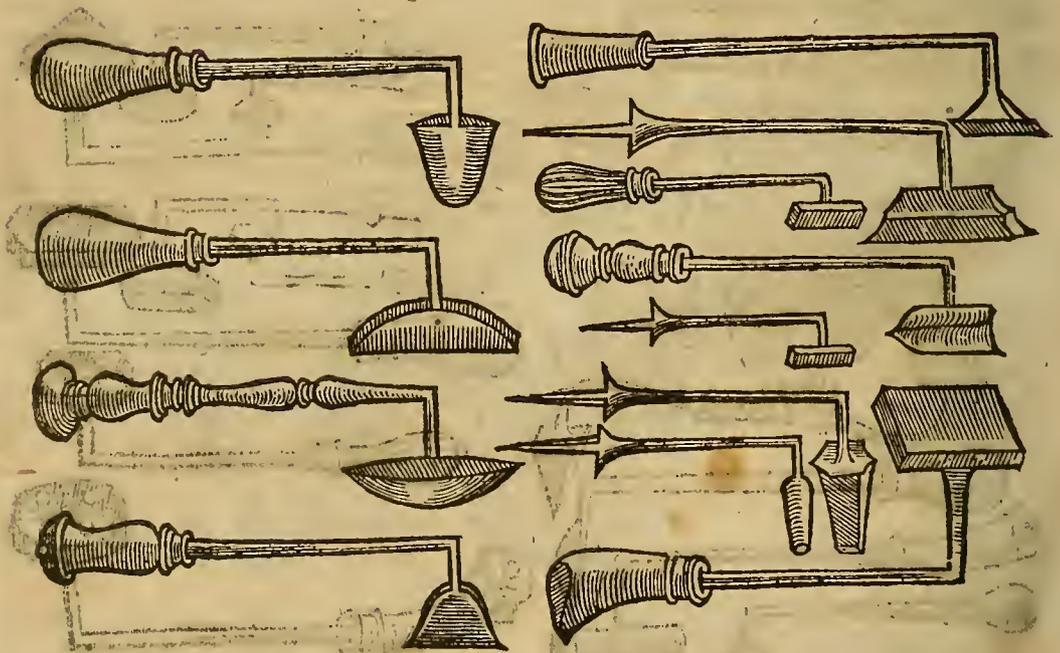
farcotick and epulotick medicines; to which if they chance to yeeld and bee cicatrized, yet within a short while after the scar will relent of its own accord, for that nature, destitute of the firm and sound foundation of the bones, cannot build up a laudable and constant flesh. Neither is it sufficient that the Surgeon know certainly that the bone is rotten and corrupt, it is furthermore fit hee know, whether this corruption bee superfiarie, or pierce deep into the substance of the bone, that hee may know how much of the bone must bee scaled. For scaling is the onely cure of that which is corrupted; now it is scaled by that which drie's exceedingly, & draw's forth all the humiditie, as well the excrementitious, the autor of the rottenness, as the alimentarie. For thus it remain's without blood and nourishment, and consequently life also; whence it must of necessitie scale or fall off, beeing destitute of the glue or moisture which joined it to the sound parts in vicinitie and communion of life, like as leavs which fall away from the trees, the humiditie beeing exhausted, by which, as by glue, they adhered to the boughs. For this purpose Catagmatic powders are prepared to amend the corruption which is onely superfiarie. *Rx. pul. aloës, cretæ combustæ, pompholygos, an. zii. ireos flor. aristoloch. rot. myrrh. cerussæ, an. zi. pul. osteor. combust. 3ß. terantur subtiliss. fiat pulvis;* let it bee applied either alone by it self, or elf with honie and a little *aqua vitæ*. Also the followiug emplaster beeing applied, stir'sup nature to the exclusion of the broken bones, and cleanseth the ulcers from the more grosse and viscid sanies. *Rx. cer. nov. res. pini, gum. ammon. & elemi, an. zvi. tereb. ziii. pul. mastich. myrrh. an. 3ß. aristol. rot. ireos flor. aloës, opopan. euphorb. an. zi. olei rosati quantum sufficit, fiat emplast. secundum artem.* Euphorbium, according to *Dioscorides* take's off the scales of bones in one daie. Hereto also conduceth *Emp. de betonica*. Or, *Rx. olei caryophyl. 3ß. camph. zii. misceantur simul in mortario, & utere.* But if that part of the bone which is corrupt cannot thus bee taken away, then must you use the scaling Trepan and Scrapers described formerly in wounds of the head; especially if anie more great or solid bone bee foul. Furthermore the here-described Trepan will bee good to perforate the rotten bone in manie places where it is corrupted, until, as it were, a certain bloodie moisture issue forth at the holes; for thus it more freely enjoie's the air, and also the force of the medicines admitted by these holes work's more powerfully.

A Trepan with two triangular bits and a pin to hold them in the stock: as also another Trepan having four-square and six-square bits convenient for to bee used in the rottenness of greater bones.



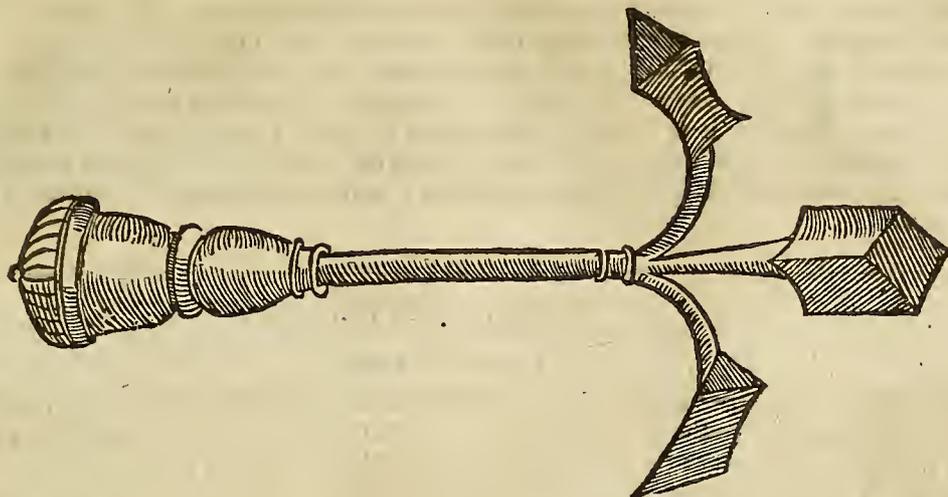
But if the rottenness bee more deep, and the bone more hard, either by nature or accident, as by the occasion of the too long admission of the air, then the rotten scales shall bee cut off by the instruments described in wounds of the head, driveing them into the bone with leaden mallets, lest the part should bee too much offended or shaken with the blow. The scales and fragments shall bee taken forth with mullets, the signs that all the rottenness is taken away, are the solidness of the bone thereunder, and the bloodie moisture sweating out thereat.

Signs that the rottenness is taken away.

Other Cauteries.*Other Cauteries for the same purpose.*

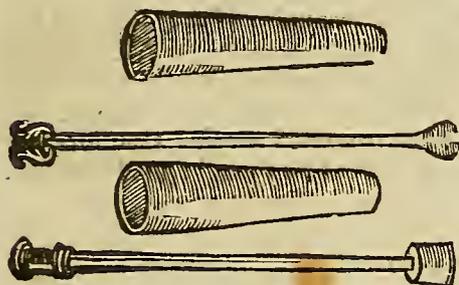
The following figure of a Cauterie is fit for virulent knots that arise in the skull, when you desire to take away the flesh that cover's the bone; for this purpose it is made hollow and sharp in a triangular and quadrangular form, divided as it were into three branches, that you may so make use of which you pleas.

The figure of an hollow and cutting Cauterie.



The Cauteries, whose forms are hereafter exprest, take place in rotten bones that lie deep in, wherein you cannot make use of the formerly described, without touching of the neighboring sound parts. To avoid which danger, you shall put your Cauterie even to the bone through an iron pipe, which may keep the neighboring and fleshie parts from burning.

Actual Cauteries with their pipes.



Great discommodities ensue upon too rash, that is, too frequently applied Cauteries, or too long adhering to the bone; for by this immoderate and fierie heat not onely the excrementitious humiditie of the rotten bone is consumed, but also the radical and substantial moisture of the part is exhausted; wherein alone nature endeavouring to cast off the corrupt scales, and sever the sound from the rotten bone, and to substitute flesh, stand's and consist's. Whereof, the measure of applying of Cauteries ought to be taken from the greatness of the rottenness, and the excrementitious, or after a manner, foaming

humiditie sweating through the pores of the bone. But before you press your Cauterie into the rotten bone which lie's verie deep in, as that which happen's in the thigh-bone, and upon other verie fleshie parts, you must diligently defend the neighboring sound and fleshie part, as it were with a covering, for that the humor diffused by the touch of the fire, burn's the other places whereunto it diffuseth it self like scalding oil. After the cauterization, you must help forwards the falling away of the scales, by sometimes dropping in our oil of whelps, beeing made scalding hot. This oil, though verie fit for this purpose, yet do I not judge it fit to use it too often, it may suffice to have dropped it in, som twice or thrice. For at length it may violate the sound bone, that lie's under the rotten, by the oilie, subtil and moist substance. Furthermore, a bone is the most drie part of the bodie, therefore unctuous and moist medicines are contrarie to its temper and consistence. But it conduceth often and gently to moov the scales alreadie beginning to separate themselves, and it hasten's the slackness of nature in casting them off. Yet may you not use force, unless peradventure when as they hang as it were by a slender thred; otherwise if the unwarie Surgeon forcibly pluck away the scales before that nature hath put a cover upon the sound bone, hee shall give way to a new alteration and fowlness by the appulf of the air. Furthermore, after the corrupt scale is falling off by the force of nature expelling it, you must have diligent heed that you put not eating or corroding medicines upon the bone that is under it; for thus thou shalt consume or waste the flesh which nature hath generated thereupon, which composed of newly concreted blood, is like in softness to newly crudled milk, which otherwise in time would grow into a more solid and hard consistence. This under-growing flesh by little and little thrust's the rotten bone above it, out of its place, and is the caus of the scaling thereof; it is at the first gathered together like the granes of a pomegranate, with a red, smooth & equal sanies, and not sinking, and at length it cast's forth a white matter. Therefore then we must rather straw thereon cephalick powder composed of such things as have a facultie

Manner of applying of Cauteries.

Oil of whelps help's forwards the casting off of scales.

A caution in moving the scales of burnt bones.

Cephalick powders of what composed.

to drie without biting, such as are Orrit-roots, washed aloës, mastich, myrrh, barlie-flour, and the like. Lastly, it must bee cicatrized; it is better that scales of bones fall away of themselves by the onely force of nature, then to bee plucked away by the force of medicines or instruments; becaus, such as are too violently and forcibly plucked away, leav corners like to fistulous ulcers. Neither ought the corrupted membranes when they are turned into pus to bee plucked away too violently, or to bee touched by too acrid medicines; for pain hereupon arising hath divers times caused inflammation, convulsion and other pernicious symptoms. Therefore it is better to commit this business to nature, which in success of time, by making use of the expulsive facultie, will easily free it self from this rotten substance; for that which is quick as far as it is able, will still put away that which is dead from it.

CHAP. XXVIII.

Of a Vulnerarie potion.

Ut if the contumacious rottenness of the bone, and also a rebellious ulcer shall not yield to the described remedies, it will bee convenient to prescribe a vulnerarie potion to the patient. For nature helped by such a potion, hath to my knowledg sundrie times don wondrous things, in the amendment of corrupt bones, and consolidation of ulcers. For these potions though they do not purge the noxious humors away by stool, yet are they wondrous effectual to cleanse ulcers, and free them from the excess of excrementitious humors, to cleanse the blood, and purge it from all impuritie, to agglutinate broken bones, and knit the sinews. I have here thought good to speak of them, and chiefly, for that they were much commended by the Ancients, but neglected by the modern Physicians and Surgeons. But if the cure of wounds and old ulcers bee performed by detersion, and the reposition of the lost substance, what medicine can sooner or rather do it then that, which by its admirable and almost divine force so purgeth the blood, that thereof, as from a fit and laudable matter, the flesh or anie other lost substance may bee fitly restored, and the part recover its former union? But if fistulous Ulcers, Cancers, Gouts, and the like diseases bee offended by the use of salt, spiced, acrid meats, and others which are of subtil parts, as mustard, onions, and garlike, or anie other excess in meat or drink; why may they not becom milde and gentle by medicated and contrarie meats and drinks, or at least bee reduced to a more equal temper? Therefore that Surgeons may know of what things such compositions may arise, I have here thought good to reckon them up, that you may learn what they are.

The use of
vulnerarie po-
tions.

<i>Scabious.</i>	<i>The Capillaries.</i>
<i>Sanicle.</i>	<i>Herb-Robert.</i>
<i>Bugle.</i>	<i>Dove's-foot.</i>
<i>Mouf-ear.</i>	<i>Dog's-tongue.</i>
<i>Burnet.</i>	<i>Avenes.</i>
<i>Madder.</i>	<i>Prunella.</i>
<i>Tansie.</i>	<i>Osmund.</i>
<i>Tops of hemp.</i>	<i>Clarie.</i>
<i>Tops of brambles.</i>	<i>Gentian.</i>
<i>Sow's-bread.</i>	<i>Herniaria.</i>
<i>Comforie the greater and lesser.</i>	<i>Red Cole-wurt, or Cabbage.</i>
<i>Vervine.</i>	<i>Scordium.</i>
<i>Bistort.</i>	<i>Cat's-mint.</i>
<i>Mug-wurt.</i>	<i>Cinque-foil.</i>
<i>Periwinkle.</i>	<i>River-Crabs.</i>
<i>Centaurie.</i>	<i>Mace.</i>
<i>Adder's-tongue.</i>	<i>Bole-armenick.</i>
<i>Betonie.</i>	<i>Petum, or Tobacco</i>
<i>Carduus benedictus.</i>	<i>Mead-sweet.</i>
<i>The cordial flowers.</i>	<i>Colt's-foot.</i>
<i>Aristolochia, or Birth-wurts.</i>	<i>Dandelion.</i>
<i>Speed-well.</i>	<i>Plantane.</i>
<i>Agrimonie.</i>	<i>S. John's-wurt.</i>

Of all these the Surgeon shall make choice according to the minde and judgment of the Physician, such as hee shall think fit and proper to everie ulcer or wound, or to each wounded and ulcerated part, according to the condition of the time, the temper of the patient, and kinde or nature of the diseas. You may make drinks not onely of the decoctions of these, but also of their juices in white wine, or *anomet*, which are good not onely to purifie
the

the maſs of the blood, to cleanſe ſanctious, virulent, filthie and dyſſenterious ulcers, but alſo to drive away putrefaction, ſcale-bones, diſſolv clotted blood in bruifes, to draw, pluck out and exterminate all ſtrange bodies, as I have often obſerved to my great admiration. They are compoſed uſually after this manner. *R. ſavic. bugul. ſcabiol. beton. ſcord. nepet. an. m. ſ. uvar. mund. ſem. hypet. & card. ben. an. ʒi. trium flor. cord. an. p. ii. coquantur completè in aq. communi; poſtea in fine adde vini alb. mel. roſ. & cinnam. quod ſufficit, fiat decoctio, coletur per manicam.* Let him drink ʒiii. in the morning 3. hours before dinner. You may alſo with good ſucceſs make injections with the ſame liquor into fiſtulous and ſinuouſ ulcers, as alſo to waſh the ſordid ulcers therewith. You may alſo boil the ſame ſimples, as herbs, flowers and ſeeds in the patient's broths, that ſo they may acquire a medicinable and nourishing facultie. For the time of the affect, wherein you may with good ſucceſs make uſe of theſe, wee have read in *Guido*, that hee uſed not to preſcribe theſe potions to his patients when as they were newly wounded, for that they commonly are compoſed of things hot and opening, which heat and attenuate the blood, whence there would bee danger of a deſuxion, upon the affected part. Wherefore when the matter is com to ſuppuration, when as there nothing remain's, but to cleanſe the ulcer, and fill it with fleſh, no inflammation as now remaining in the part, I judg theſe potions may then bee uſed with good ſucceſs.

The form of a vulneratic poſition.

In what time of the diſeaſ they are chiefly to bee uſed.

CHAP. XXIX.

Of Tetterſ, Ring-worms, or Chops occaſioned by the Lues Venerea.

UPon the cure of the *Lues Venerea*, uſually Tetterſ and Chops happen thereupon, which make furrows in the palms of the hands and ſoles of the feet. They acquire their matter from ſalt phlegm, or aduſt choler, or the reliques of the venerious virulencie ſent thither. The cure, eſpecially when as the diſeaſ is grown old, is difficult; by reaſon that the humor hath long accuſtomed to flow that way, and for that it hath corrupted the habit of the part by the continual deſuxion; but the cure is more eaſie, if the diſeaſ bee newly bred. Now you may know it is newly bred by the redneſs, accompanied by a great itching, and not onely a drineſs of the ſkin, but alſo a thickneſs and denſneſs thereof. That which is old, beſides theſe fore-recited ſigns, have ſcale-like and bran-like hardneſſes conjoynd therewith, which by ſcratching and rubbing caſt off ſcales. For general medicines, the diſtemper of the liver, and habit of the bodie muſt bee corrected, which by the occaſion of the former diſeaſ and remedies apt to inflame the blood, cannot but much ſwerv from their native temper. This may bee don by diet conveniently appointed, by purging and altering medicines, bleeding, batheing, applying of cupping-glaſſes and horns. For topick or particular medicines, waſh ſuch as are newly or lately bred with the following water which drie's, and is of ſubtil parts. *R. aq. roſ. & pariet. an. ʒi. aq. alum. ʒii. calc. ʒii. alum. ʒiii. pul. ſubl. Div. fiat lent. & minim. ebul. in baln. mar.* This water ſhall bee made more or leſs forcible, according to the condition of the diſeaſ. Or, *R. ol. tart. ʒii. ſep. com. ʒiv. miſc. fiat unguent. ad uſum.* If the Phyſician ſhall think good, let the patient uſe a decoction of *Guaicum*, but that verie weak. But old Tetterſ and Chops muſt bee ſoftned with emollient, attenuating and inciding decoctions, as alſo with liniments, ointments and plaſters haveing the ſame effect. Then let the reſidue of the cure bee performed by fumigations, ſuch as this which follow's. *R. pul. cinab ʒii. lad. aff. odor. ſtirac. cal. an. ʒʒ. olib. maſtic. an. ʒiii. olei tart. & theriac. q. ſ. ſiant trochiſci;* uſe at each time ſom ʒʒ. of them, and let onely the affected parts receiv the ſmoak. Som commend the rubbing of the hands with the following medicine. Take the aſhes of wine-lees, make thereof a lee, and ſtrain it through an hypocraſs-bag; then put thereto ſom rennet, let them bee well mixed together in a mortar, and herewith let the hands bee rubbed or waſhed. Or, *R. unguent. enul. ʒiii. fugit. ʒii.* Or elſ, *R. reſ. pini. ʒi. ceruſ. ʒʒ. argent. viv. ʒiii. ſucci citri & lapatb. acut. an. ʒʒ.* Let them bee incorporated, and make a liniment to bee uſed to the part. If to this you add ſublimatè ſo waſhed and prepared, as women uſe for their faces, you ſhall make it more effectuell. Others take burnt alum made into powder, and incorporated with the yolk of an egg, the juice of citrons, and a little aloës diſſolved in *oxymel ſcilliticum*.

Signs of the new-bred diſeaſ.

The cure of newly com Tetterſ.

A water drying virulent Tetterſ.

The cure of old Tetterſ.

A Fumigation.

A Liniment.

CHAP. XXX.

Of cureing the Lues Venerea in infants and little children.

Inſants oftimes conceiv the ſeeds of this diſeaſ in the wombs of their mothers, and are born infected there-withall, puſtles preſently ariſeing over all the bodies, infecting with the like diſeaſ as manie nurſes as give them ſuck; they ſcarce ever recover thereof, for that they contracted the diſeaſ from their firſt confirmation. But ſuch as are ſomewhat bigger, if they chance to catch the diſeaſ after they are born by ſucking ſom infected nurſ, or by anie other occaſion or kinde of contagion, often times receiv cure.

The cure.

For first, you shall cause the nurse to use the *aqua theriacalis* here-under described, for the space of twentie or more daies, that so shee may the better arm her self against the contagion of this disease, and yield milk which may have the facultie both of meat and medicine; shee shall bee careful as often as shee giv's the childe suck, to wash and drie her teat or pap, lest the virulencie that the childe breath'es out at his mouth, bee impact in the little holes of the teat through which the milk flow's out. Now the pustles of little children shall bee anointed with som ointment that receive's *argentum vivum* in som small quantitie, as *unguentum enulatum cum mercurio*, or the like. Then shall it bee swathed or bound up in swathes and clothes aired with the formerly described fumigations. For the rest, it shall bee kept as warm as you can in som warm place. These and the like must bee don not in one continued course, but at several seasons, otherwise it is to bee feared, that it would cause ulcers to arise in the mouth, or elf salivation. If anie ulcers arise in the mouth, and spread therein, they shall bee touched with the formerly described waters, but made somewhat weaker, having regard to the tender age of the patient; if the infant shall get this disease of its nurse, let the nurse bee presently changed, for it beeing otherwise nourished with tainted and virulent blood, can never bee healed. Manie have by these means recovered; but such as have perisht, have not perisht by the default of medicines, but by the malignitie and vehemencie of the disease.

A description of the Aqua Theriacalis, or treacle-water formerly mentioned.

A treacle-water.

R. rasor. interior. ligni sancti gummosi, ℥ii. polypod. querni, ℥iv. vini albi dulcedinis expertis ℥ii. aquæ fontan. puriss. ℥viii. aquar. cichor. & fumar. an. ℥iv. sem. junip. heder. & baccar. lauri an. ℥ii. caryophyl. & macis, an. ℥ss. cort. citri saccharo condit. conf. ros. anthos, cichor. buglos. borag. an. ℥ss. conf. anulæ camp. theriac. vet. & mithrid. an. ℥ii. distil them all in *balneo Mariæ*, after the following manner.

The manner of making it.

Let the *Guaicum* bee infused in equal parts of wine, and the fore-mentioned waters for the space of twelv hours, and the residue of the things in that which remain's of the same wine and waters for six hours space, beating such things as may require it, then let them bee mixed altogether, that so the liquor may bee endued with all their faculties. Which that it may bee the more effectually performed, let them bee boiled, put up in glass-bottles, closely stopped for som three or four hours space, in a large kettle filled with boiling water, then let them bee put into a glass alembick, and so distilled. Give ℥iv. of this distilled liquor at once, beeing aromatized with ℥i. of cinnamon, and ℥i. of *Diamargariton*, and ℥ss. of sugar, to give it a pleasing taste. Such a drink doth not onely retund the virulencie of the *Lues Venerea*, but strengthen's the noble parts. *Rondeletius* make's an *aqua theriacalis* after this manner.

Rondeletius his treacle-water.

R. theriac. vet. ℥i. acetos. m. iii. rad. gram. ℥iii. puleg. card. ben. an. m. ii. flor. chamæm. p. ii. temperentur omnia in vino albo, & distillentur in vase vitrio: reserv the water for use; whereof let the patient take ℥ii. with ℥iii. of sorrel and buglos-water: hee wisheth this to bee don when hee shall enter into bed or a stove; for so this distilled liquor will cause sweat more easily, and mitigate pain, whether given by it self, or with a decoction of grommel, or of *chyna*, or burdock-roots; yet if the patient bee of a phlegmatick constitution, hee shall use a decoction of *Guaicum* in stead of a decoction of *chyna*, for it penetrate's more speedily, by reason of its subtiltie of parts, and also expell's the dolorifick matter.

The end of the nineteenth Book.



Of the *Small Pocks* and *Meazles*: As also of *Worms*, and the *Leprosie*.

The twentieth Book.

CHAP. I.

Of the causes of the Small Pocks and Meazles.



OR that the small Pocks and Meazles are diseases, which usually are fore-runners and fore-tellers of the Plague, not onely by the corruption of humors, but oftentimes by default of the air; moreover, for that worms are oftentimes generated in the plague, I have thought good to write of these things, to the end that by this treatise the young Surgeon may bee more amply and perfectly instructed in that pestilent disease. Also I have thought good to treat of the Leprosie as being the off-spring of the highest corruption of humors in the bodie. Now the small Pocks are pustles, and the Meazles spots, which arise in the top of the skin by reason of the impuritie of the corrupt blood sent thither by the force of nature. Most of the Antients have delivered that this impuritie is the reliques of the menstruous blood remaining in the bodie of the infant, being of that matter from whence it drew nourishment in the womb, which lying still or quiet for som space of time, but stirred up at the first opportunitie of a hotter Summer, or a southerlie or rainie season, or a hidden malignitie in the air, and-boiling up, or working with the whole mass of the blood, spread or shew themselves upon the whole surface of the bodie. An argument hereof is, there are few or none who have not been troubled with this disease, at least once in their lives, which when it begins to shew itself, not content to set upon som one, it commonly seizeth upon more: now commonly there is as much difference between the small pocks and meazles, as there is between a Carbuncle and a pestilent *Bubo*. For the small pocks arise of a more gross and viscous matter, to wit, of a phlegmatick humor. But the meazles of a more subtil and hot; that is, a cholerick-matter, therefore this yeelds no marks thereof, but certain small spots without anie tumor, and these either red, purple, or black. But the small pocks are extuberating pustles, white in the midst, but red in the circumference, an argument of blood mixed with choler, yet they are scarce known at the beginning, that is on the first or second daie they appear; but on the third and fourth daie they bunch out and rise up into a tumor, becoming white before they turn into a scab; but the meazles remain still the same. Furthermore the small pocks prick like needles by reason of a certain acrimonie, and caus an itching; the meazles do neither, either becaus the matter is not so acrid and biteing, or elf for that it is more subtil, it easily exhale's, neither is it kept shut up under the skin. The patients often sneez when as these matters seek passage out, by reason of the putrid vapors ascending from the lower parts upwards to the brain. They are held with a continual Fever, with pains in their backs, itching of their nose, head-ach, and a vertiginous heaviness, and with a kinde of swoounding or fainting, a nauseous disposition, and vomiting, a hoarseness, difficult and frequent breathing, an inclination to sleep, a heaviness of all the members, their eies are fierie and swollen, their urine red and troubled. For prognosticks, we may truly say thus much, That the matter whence this affect take's its original, partake's of so malign, pestilent and contagious a qualitie, that not content to mangle and spoil the fleshie part, it also eat's and corrupt's the bones like the *Lues Venerea*, as I observed not onely in *Anno Dom. 1568.* but also in divers other yeers, whereof I think it not amiss to set down this notable example.

The daughter of *Claude Piqué* a book-seller, dwelling in *S. James* his street at *Paris*, being som four or five yeers old, having been sick of the small pocks for the space of a month, and nature could not overcome the malignitie of the disease, there rose abscesses upon the *sternon* and the joints of the shoulders, whose eating and virulent matter, corroded the bones of the *sternon*, and divided them in sunder; also it consumed a great part of the top of the shoulder-bone, and the head of the blade-bone: of this thing I had witnesses with me, *Marcus Myron* Physician of *Paris*, and at this present the King's chief Physician, *John Doreau* Surgeon to the *Comte de Bryane*, the bodie being dissected in their presence. Also you may observ in manie killed by the malignitie of this disease, and dissected, that it causeth such impression of corruption

What the small Pocks and Meazles are. Their matter.

Why the Meazles do not itch.

Prognosticks.

An historie.

ruption in the principall parts, as bring's the dropſie, ptiſick, a hoarſneſs, *Aſhma*, bloody flux ulcerating the guts, and at length bringing death, as the puſtles have raged or raigned over theſe or theſe entrails, as you ſee them to do over the ſurface of the body; for they do not onely moleſt the external parts, by leaving the impreſſions & ſcars of the puſtles and ulcers, rooting themſelvs deep in the fleſh, but alſo oft times they take away the facultie of motion, eating aſunder, and weakning the joints of the elbow, wreſt, knee and ancle. Moreover ſundry have been deprived of their ſight by them, as the Lord *Guymenay*, others have loſt their hearing, and otherſom their ſmelling, a fleſhy excreſcence growing in the paſſages of the noſe and ears. But if anie reliques of the diſeaſ remain, and that the whole matter thereof bee not expelled by the ſtrength of nature, then ſymptoms afterwards ariſe, which favor of the malignitie of the humor, yea and equal the harm of the ſymptoms of the *Lues Venerea*.

CHAP. II.

Of the cure of the Small Pocks and Meazles.

The cure.



The cure of this diſeaſ uſeth to bee divers, according to the condition of the humor free from, or partaker of the venenate qualitie. For if it partake of malignitie, and the childe bee a ſucking childe, ſuch things ſhall bee given to the Nurſ as may intringe and overcome the ſtrength of the malignitie, as wee ſhall ſhew more at large,

when wee com to treat of the cure of children which are ſick of the Plague; howſoever it bee, the childe muſt bee kept in a warm room free from winde, and muſt be wrapped and covered with ſcarlet cloaths, untill the pocks com forth. There ſhall bee provided for the Nurſ medicated broths with purſlain, lettuce, ſorrell, ſuccory, borage, and French barley bound up in a cloth. Shee ſhall ſhun all ſalt, ſpiced and baked meats, and in ſtead of wine drink a decoction of liquorice, raiſons and ſorrel roots. Shee ſhall alſo take purging medicins, as if ſhee were ſick of the ſame diſeaſ, that ſo her milk may become medicinable. Laſtly, ſhee ſhall obſerv the ſame diet as is uſually preſcribed to ſuch as have the plague. You ſhall give the childe no pap, or if you give it anie, let it be verie little. But if the childe bee weaned, let him abtain from fleſh, untill the feaver have left him, and the pocks bee fully com forth: in ſtead of fleſh let him feed on barley and almond creames, chicken broths, wherein the fore-named herbs have been boyled, panadoes, gellies, culaffes, prunes and raiſons. Let his drink bee a ptiſan made of French barlie, graſs & ſorrel roots, or with a nodula containing the four cold ſeeds, the pulp of prunes and raiſons, with the ſhaveings of Ivorie and hart-horn; between meals the ſame decoction may bee mixed with ſom ſyrup of violets, but not of roſes or any other aſtringent ſyrup, leſt wee hinder the courſe and inclination of the humor outwards. Let his ſleep bee moderate, for too ſound ſleep draws back the matter to the center, and increaſeth the fever; you muſt neither purge, nor draw blood the diſeaſ increaſing or beeing at the height, unlesſe peradventure there bee a great plenitude, or elſe the diſeaſ complicate with other, as with a pleuriſie, inflammation of the eyes, or an ſquinancie which require it, leſt the motion of nature ſhould be diſturbed; but you ſhall think it ſufficient to looſe the bellie with a gentle glyſter: but when the height of the diſeaſ is over, and in the declenſion thereof, you may with *Caffia* or ſom ſtronger medicine evacuate part of the humors and the reliques of the diſeaſ. But in the ſtate and increaſ it is better to uſe ſudorificks, which by attenuating the humors and relaxing the pores of the ſkin may drive the cauſe of the diſeaſ from the center to the circumference, which otherwiſe reſideing in the bodie might bee a cauſe of death; as I and *Richard Hubert* obſerved in two maids, whereof one was four, and the other ſeventeen years old; for wee diſſecting them both beeing dead, found their entrails covered with ſcabbie or cruſted puſtles, like thoſe that break forth upon the ſkin. Wee muſt not think that a bleeding at noſe at the beginning of the diſeaſ, or in the firſt four or five daies ſhould carrie away the matter and original of the diſeaſ, for nevertheleſs the pocks will com forth; but for that this is a true and natural *crifis* of this diſeaſ, as that which is carried to the ſurface & circumference of the bodie, ſuch bleeding muſt not bee ſtopped, unlesſe you fear it will cauſe ſwounding. The matter ſhall bee drawn out with a decoction of figs, huſked lentils, citron-ſeeds, the ſeeds of fennel, parſlie, ſmallage, roots of graſs, raiſons and dates. For ſuch a decoction, certainly if it have power to cauſe ſweat, hath alſo a facultie to ſend forth unto the ſkin the morbiſick humor; the ſeeds of fennel and the like opening things relax and open the pores of the ſkin; figs leniſie the acrimonie of the matter, and gently cleaſe, the lentils keep the jaws and throat, and all the inward parts from puſtles, and hinder a flux by reaſon of their moderate aſtriction, but haveing their huſks on, they would binde more then is required in the diſeaſ; dates are thought to comfort the ſtomach, and citron-ſeeds to defend the heart from malignitie, licoriſh to ſmooth the throat, and hinder hoarſneſs and cauſe ſweat. But theſe things ſhall bee given long after meat, for it is not fit to ſweat preſently after meat; ſom there bee who would have the childe wrapped in linnen clothes ſteep'd in this decoction beeing hot, and afterwards hard wrung forth. Yet I had rather

The childe muſt have no pap.

How ſound ſleep doth harm in this diſeaſ. Of purging, bleeding and ſudorificks.

An hitorie.

A ſudorifick decoction.

When it is beſt to procure ſweat.

rather to use bladders or sponges, or hot bricks for the same purpose; certainly a decoction of millet, figs and raisons, with som sugar, causeth sweat powerfully. Neither is it amiss whil't the patient is covered in all other parts of the bodie, and sweat's, to fan his face, for thus the native heat is kept in and so strengthened, and fainting hindred, and a greater excretion of excrementitious humors caused. To which purpose you may also put now and then to the patient's nose a *nodulus* made with a little vineger and water of roses, camphire, the powder of sanders, and other odoriferous things which have a cooling facultie, this also will keep the nose from pustles.

CHAP. III.

What parts must bee armed against, and preserved from the Pocks.

HHe eyes, nose, throat, lungs and inward parts ought to bee kept free'r from the eruption of pustles then the other parts; for that their nature and consistence is more obnoxious to the malignitie of this virulencie, and they are easlyer corrupted and blemished. Therefore lest the eyes should bee hurt, you must defend them when you first begin to suspect the disease, with the eye-lids, also moistning them with rose-water, verjuice or vineger, and a little camphire. There are som also who for this purpose also make a decoction of Sumach, berberie-seeds, pomgranate-pills, aloës, and a little saffron; the juice of sower pomgranates, and the water of the whites of eggs dropped in with rose-water are good for the same purpose; also woman's milk mixed with rose-water and often renewed; and lastly all such things or have a repercussive qualitie. Yet if the eyes bee much swoln and red, you shall not use repercussives alone, but mix therewith discussers and cleansers, such as are fit by a familiaritie of nature to strengthen the sight; and let these bee tempered with som fennel or eye-bright water. Then the patient shall not look upon the light or red things for fear of pain and inflammation; wherefore in the state of the disease, when the pain and inflammation of the eyes are at their height, gently drying and discussive things properly conducing to the eyes are most convenient, as washed aloës, tuttie and Antimonie in the water of fennel, eye-bright and roses. The formerly mentioned *nodulus* will preserv the nose, and linnen clothes dipped in the fore-said astringent decoction, put into the nostrils and outwardly applied. Wee shall defend the jaws, throat, and throte, and preserv the integritie of the voice by a gargle of oxycrate, or the juice of sower pomgranates, holding also the grains of them in their mouths, and often rousing them up and down therein, as also by nodula's of the seeds of *psilium*, quinces and the like cold and astringent things. Wee must provide for the lungs and respiration by syrups of jubes, violets, roses, white poppies, pomgranates, water-lillies, and the like. Now when as the Pocks are throughly com forth, then may you permit the patient to use somwhat a free'r diet, and you must wholly busie your self in ripening and evacuateing the matter, drying and scaling them. But for the Meazles, they are cured by resolution onely, and not by suppuration; the Pocks may bee ripened by annointing them with fresh butter, by fomenting them with a decoction of the roots of mallows, lillies, figs, line-seeds and the like. After they are ripe, they shall have their heads clipped off with a pair of scissers, or els bee opened with a golden or silver-needle, lest the matter contained in them, should corrode the flesh that lie's thereunder, and after the cure, leav the prints or pock-holes behinde it, which would caus som deformitie; the pus, or matter beeing evacuated, they shall bee dried up with *unguent. rosat.* adding thereto ceruss, litharge, aloës and a little saffron in powder; for these have not onely a facultie to drie, but also to regenerate flesh; for the same purpose the flowr of barlie and lupines are dissolved and mixed with rose-water, and the affected parts annointed therewith with a fine linnen rag; som annoint them with the sward of bacon boiled in water and wine, then presently strow upon them the flowr of barlie or lupines, or both of them. Others mix crude honie newly taken from the comb, with barlie-flowr, and therewithall annoint the pustles so to drie them; beeing dried up like a scurf or scab, they annoint them with oil of roses, violets, almonds, or els with som cream, that they may the sooner fall away, the pustles beeing broken; tedious itchings sollicit the patients to scratch, whence happen's excoriation and filthie ulcers, for scratching is the occasion of greater attraction. Wherefore you shall binde the sick childe's hand, and foment the itching parts with a decoction of marsh-mallows, barlie and lupines, with the addition of som salt. But if it bee already excoriated, then shall you heal it with *unguent. album camphorat.* adding thereto a little powder of aloës or *Cinnabaris*, or a little *desiccativum rubrum.* But if notwithstanding all your application of repelling medicines, pustles nevertheless break forth at the eyes, then must they bee diligently cured with all manner of *collyria*, having a care that the inflammation of that part grow not to that bigness, as to break the eyes, and that which sometimes happen's to drive them forth of their proper orbs. If anie crustie ulcers arise in the nostrils, they may bee dried and caused to fall away by putting up of ointments. Such as arise in the mouth, palate

How to defend the eyes.

When the eyes must not be defended by repercussives onely.

How to defend the nose.

How the mouth.

How the lungs

How to prevent pock-scars.

Remedies for excoriation.

For the ulcers
of the mouth
and jaws.
To help the
unsightlie scars
of the face.

late and throat, with hoarsness and difficultie of swallowing, may bee helped by gargarisms made with barlie-water, the waters of plantain and chervil, with som syrup of roses, or *Diamoron* dissolved therein; the patient shall hold in his mouth sugar of roses or the tablets of *Elect. diatragacanth. frigid.* The Pock-arrs left in the face, if they bunch out undecently, shall bee clipped away with a pair of scissers, and then annointed with fresh unguent. *citrin.* or elf with this liniment. *Rx. amyli triticei, & amygdalarum excorticatarum, an. ʒiʒ. gum. tragacanth. ʒʒ. seminis melonum, fabarum siccarum excorticat. farine bordei, an. ʒiiii.* Let them all bee made into fine powder, and then incorporated with rose-water, and so make a liniment, wherewith annoint the face with a feather; let it bee wiped away in the morning, washing the face with som water and wheat-bran; hereto also condueth *lac virginale*; *Goof*, duck's and capon's greaf are good to smoothe the roughness of the skin, as also oil of lillies; hares-blood of one newly killed and hot, is good to fill and plain, as also whiten the pock-holes, if they bee often rubbed therewith. In stead hereof manie use the sward of Bacon rubbed warm thereon; also the distilled waters of bean flowers, lillie-roots, reed-roots, egg-shels, and oil of eggs are thought verie prevalent to waste and smoothe the Pock-arrs.

A Discours of certain monstrous creatures which breed against nature in the bodies of men, women, and little children, which may serv as an induction to the ensuing discours of worms.

A comparison
between the
bigger and les-
ser world.
The generati-
on of winde in
man's bodie.
Of water.

As in the *macrocosmos* or bigger world, so in the *microcosmos* or lesser world there are windes, thunders, earth-quakes, shows, inundations of waters, sterilities, fertilities, stones, mountains & sundrie sorts of fruits & creatures thence arise. For whocan denie but that there is winde contained shut up in flatulent abscesses, and in the guts of those that are troubled with the colick? Flatulencies make so great a nois in divers women's bellies, if so bee you stand near them, that you would think you heard a great number of frogs croaking on the night-time: That water is contained in waterie abscesses, & the bellie of such as have the dropsie, is manifested by that cure which is performed by the letting forth of the water; in fits of Agues the whole bodie is no otherwise shaken & tremble's, then the earth when it is heard to bel- low, and felt to shake under our feet. Hee which shall see the stones which are taken out of the bladder, and com from the kidnies and divers other parts of the bodie, cannot denie but that stones are generated in our bodies. Furthermore wee see both men and women who in their face or som other parts, shew the impressiion, or imprinted figure of a cherrie, plumb, *service*, fig-mulberrie and the like fruit; the caus hereof is thought to bee the power of the imagination concurring with the formative facultie, and the tenderness of the yeelding and wax-like *embryon*, easie to bee brought into anie form or figure by reason of the proper and native humiditie. For you shall finde that all their mothers whil'st they went with them have earnestly desired or longed for such things, which, whil'st they have too earnestly agi- tated in their mindes, they have transferr'd the shape unto the childe, whil'st that they could not enjoy the things themselvs. Now who can denie but that the bunches of the back and large wens resemble mountains? Who can gain-say, but that squalid sterilitie may bee assimilated to the hestick driness of wasted and consumed persons? and fertilitie deciphered by the bodie distended with much flesh and fat, so that the legs can scarce stand under the burden of the bellie? But that divers creatures are generated in one creature, that is in man, and that in sundrie parts of him, the following histories shall make it evident.

Lib. de morb.
intercap. 1.

Hollerius tell's that a certain Italian by frequent smelling to the herb Basil, had a Scorpion bred in his brain, which caused long & vehement pain, and at length death; therefore I have here exprest the figure of that Scorpion, found, when as his brain was opened.

The figure of a Scorpion.

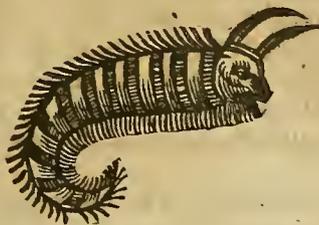


It make's *Hollerius* conjecture of the caus and original of this Scorpion, probable for that *Chrysippus*, *Dyophanes* and *Plinie* write, that of basil beaten between two stones, and laid in the sun, there will com Scorpions.

Lib. 5. de part.
morbis cap. 7.

Fernelius write's that in a certain souldier, who was flat nosed, upon the too long restraint or stoppage of a certain filthie matter that flowed out of the nose, that there were generated two hairie worms of the bigness of ones finger, which at length made him mad, hee had no manifest fever, and hee died about the twentieth day: this was their shape, by as much as wee can gather by *Fernelius*'s his words.

The effigies of worms mentioned by Fernelius.



The shape of a Milles cast forth by urine.

Lewis Duret, a man of great learning & credit, told me that he had com forth ^{An historic} with his urine, after a long and difficult disease, a quick creature, of color red, but otherwise like in shape a Milles, that is, a Cheslop, or Hog-louf.



Count Charls of Mansfeldt, last Summer troubled with a grievous and continual fever, ^{An historic} in the Duke of Guises place cast forth a filthie matter at his yard, in the shape of a live thing almost just in this form.

The shape of a thing cast forth by urine.

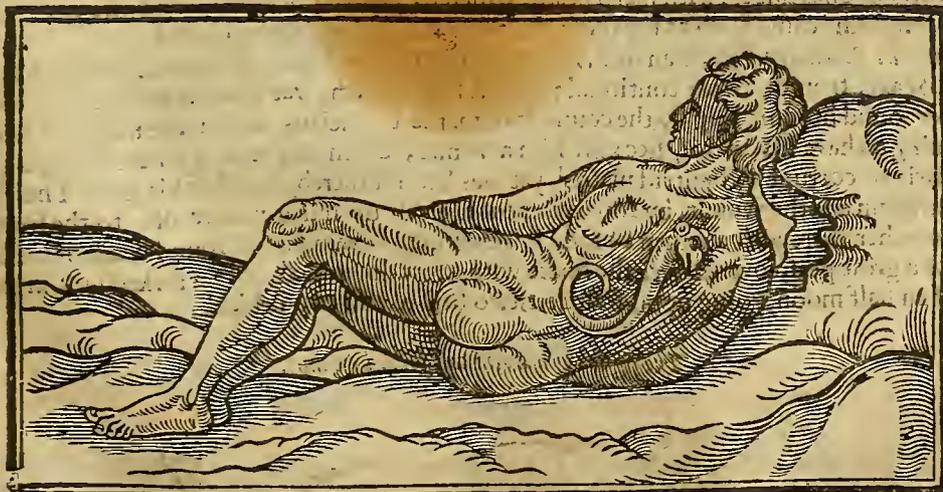


Monstrous creatures also of sundrie forms are also generated in wombs of women; somwhiles alone, otherwhiles with a *mola*, and somtime with a childe naturally and well made; as frogs, toads, serpents, lizzards: which therefore the Antients have termed the Lumbard's brethren, for that it was usual with their women, that together with their natural and perfect issue they brought into the world worms, serpents, and monstrous creatures of that kinde generated in their wombs, for that they alwaies more respected the decking of their bodies, then they did their diet. For it happened whilest they fed on fruits, weeds and trash, and such things as were of ill juice, they generated a putrid matter, or certainly verie subject to putrefaction and corruption, and consequently opportune to generate such unperfect creatures. *Joubertus* telleth that there were two Italian women, that in one month brought forth each of them a monstrous birth; the one that married a Tailor, brought forth a thing so litle, that it resembled a Rat without a tail; but the other a Gentlewoman, brought forth a larger, for it was of the bigness of a Cat; both of them were black, and as soon as they came out of the womb, they ran up high on the wall, and held fast thereon with their nails. *Lycosthenes* write's that in *Anno Dom. 1494.* a woman at *Cracovia*, in the street which taketh name from the holie Ghost, was delivered of a dead childe, who had a serpent fastned upon his back, which fed upon this dead childe, as you perceiv by this following figure.

Nicolawa Flor.
God. lib. 7. c. 18.

Lib. error populi.

The figure of a serpen fastned to a childe.



Levinus Lemnius tell's a verie strange historie to this purpose. Som few yeers agone (saith ^{*Lib. de occult.*} hee) a certain woman of the Isle in Flanders, which beeing with childe by a Sailor, her bellie ^{*nat. mir. cap. 8.*} swelled

swelled up so speedily, that it seemed shee would not bee able to carrie her burden to the term prescribed by nature; her ninth month beeing ended shee call's a midwife, and presently after strong throws and pains, shee first brought forth a deformed lump of flesh, haveing as it were two handles on the sides, stretched forth to the length and manner of arms, and it moved and panted with a certain vital motion; after the manner of sponges and sea-nettles; but afterwards there came forth of her womb a monster with a crooked nose, a long and round neck, terrible eies, a sharp tail, and wonderful quick of the feet, it was shaped much after this manner.

The shape of a monster that came forth of a woman's womb.

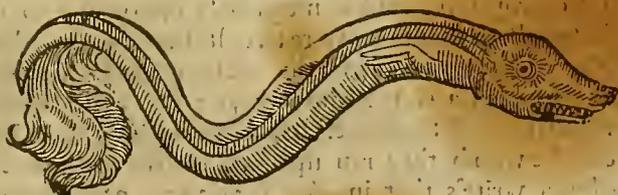


As soon as it came into the light it filled the whole room with a noise & hissing, running to everie side to finde out a lurking hole wherein to hide its head, but the women which were present, with a joint consent fell upon it, and smothered it with cushions; at length the poor woman wearied with long travel, was delivered of a boie, but so evilly entreated and handled by this monster; that it died as soon as it was christened.

*Lib. de divinis
natur. Characteris-
rismis.*

Cornelius Gemma a Physician of Lovain, telleth that there were manie verie monstrous and strange things cast forth both upwards and downwards out of the bellie of a certain maid of Lovain, of the age of fifteen years. Amongst the rest, shee cast forth at her fundament, together with her excrements, a liveing creature som foot & half long, thicker then ones thumb, verie like an eel, but that it had a verie hairie tail; I have here given you the figure of the monster as it was expressed by him.

The figure of a monster that came forth of a maid's bellie.



An historic.

Master Peter Barque and Claude le grand, Surgeons of Verdun, lately affirmed to mee that they cured the wife of a certain Citizen of Verdun, which out of an Abscess broken in the bellie, cast forth a great number of worms, together with the quittur; and these were of the thickness of ones finger, with sharp heads, which so gnawed her guts, that the excrements for a long time came forth at the ulcer, but now shee is perfectly recovered.

An historic.

Anthony Benenius a Physician of Florence telleth; that one John Menusierus, a man of fortie years of age, troubled with continual pains at his stomach, was often at the point of death, neither found hee anie help by the counsels of manie Physicians which hee used. At length comming to have his advice, hee gave him a vomit, by means whereof hee cast up a great quantitie of corrupt and putrid matter, yet was hee not thereby eased of his pain. Therefore hee gave him another vomit, by force whereof hee cast up much matter like to the former, and together therewith a worm of four fingers long, haveing a red round head, of the bigness of a great pea, covered over the bodie with a soft downiness, with a forked tail, in manner of an half moon, going upon four feet; two before, and two behinde.

The figure of a worm cast forth by vomit.



Why should I mention the prodigious bodies which are found in abscesses, as stones, chalk, sand, coles, snail-shells, strawes, hay, horns, hairs, and manie kindes of living and dead creatures? For there is nothing in the generation of these things (caused by corruption, preceded by much alteration) which may make us admire, or hold us in suspence, especially if wee shal consider that nature, the fruitful parent of all things, hath put divers portions and particles of the universal matter whereof the greater world is composed into this *microcosmos*, or little world, man; whereby hee might the rather seem to bee made to the resemblance and form of the greater. Wherefore it so desport's it self here, that it may counterfeit and resemble all the actions and motions which it useth to perform in the scene of the greater world, in this little one, if so bee that matter bee not wanting.

The efficient and material causes of such things as are preternaturally generated in our bodies.

CHAP. III.

Of the worms which use to breed in the guts.

A Gross, viscid and crude humor is the material caus of worms, which having got the beginning of corruption in the stomach, is quickly carried into the guts, and there it putrefie's, having not acquired the form of laudable *Chylus* in the first concoction. This, for that it is viscid, tenaciously adhere's to the guts, neither is it easily evacuated with the other excrements; therefore by delay it further putrefies, and by the efficacie of heat, it turn's into the matter and nourishment for worms. This alimentarie humor beeing consumed, unless som fresh, supplie the want thereof, which may ease their hunger, they moov themselves in the guts with great violence, they caus grievous and great pains, yea, and oftimes they creep up to the stomach, and so com forth by the mouth, and sometimes they ascend into the holes of the palate, and com forth at the nose. Worms are of three sorts; for som are round and long, others broad and long, others short and slender. The first are called by the Antients *Teretes*, that is, round; for that they are long and round. The second are named *Tenie*, for that their bodies are long and broad, like a rowler or swathe. The third are termed *Ascarides*, for that they commonly wrap themselves up round. Other differences of worms are taken from their colors, as red, white, black, ash-colored, yellowish. Som also are hairie, with a great head like the little fish which the French call *Chabot*, wee, a *Miller's-thumb*; in som diseases manie worms are generated and cast forth by the fundament, as small as hairs, and usually of color white, and these are they which are called *Ascarides*. The diversitie of colors in worms proceedeth not from the like distinct diversitie of humors whereof they are generated. For the melancholick and choleric humor by their qualities are wholly unfit to generate worms. But this manifold varietie in color, is by reason of the different corruption of the *chylous* or *phlegmatick* humor whereof they are bred. The long and broad worms are oftentimes stretched alongst all the guts, beeing like to a mucous or albuminous substance; and verily I saw one voided by a woman, which was like to a serpent, and som six foot long, which ought not to seem strange, seeing it is noted by the Antients; that they have seen worms so long, as the length of the whole guts, that is, seven times the length of ones bodie. *Wierus* write's, that hee saw a countrie-man who voided a worm eight foot and one inch long, in head and mouth resembling a Duck, which therefore I have thought good here to express.

How worms are generated.

The reason that they sometimes com forth at the mouth.

The differences of worms.

An historie

An historie

The figure of a worm, generated in, and cast forth of the guts.



Valeriola affirmeth, that hee saw a worm above nine foot long. Now as worms differ in shape, so are their places of generation also different. For the round and long worms are commonly generated in the smaller guts, the rest in the greater, but especially the *Ascarides*:

In observat:
none

In what places of the bellie worms are generated.

Ad finem lib. 4. de morbis.

Signs of worms in the small guts.

Signs of worms in the great guts.
Signs of *Ascari-
des*.

Why worms of divers colors are more dangerous.

none breed in the stomach, as that which is the place of the first concoction. There truly the matter which breedeth these worms, get's the first rudiment of corruption, but com's to perfection onely in the guts; they breed in som infants in their mothers bellies, by the pravitie and corrupt nature of the humor flowing from the mother for the nourishment of the childe, which for that then they do not expell it by siege, it by delay putrefieth the more, and yield's fit matter for the breeding of worms, as som have observed out of *Hippocrates*. Lastly, worms breed in people of anie age that are Bellie-gods, and given to gluttonie, as also in such as feed upon meats of ill juice, and apt to corrupt, as crude summer-fruits, cheef, and milk-meats. But to know in what part of the guts the worms do lurk, you must note, that when they are in the small guts, the patients complain of a pain in their stomach, with a dog-like appetite, whereby they require manie and severall things without reason, a great part of the nourishment beeing consumed by the worms lying there; they are also subject to often fainting, by reason of the sympathie which the stomach, beeing a part of most exquisite sens, hath with the heart, the nose itches, the breath stink's, by reason of the exhalations sent up from the meat corrupting in the stomach; through which occasion they are also given to sleep, but are now and then waked there-from by sudden startings and fears; they are held with a continued and slow fever, a drie cough, a winking with their eie-lids, and often changeing of the color of their faces. But long and broad worms, beeing the innates of the greater guts, shew themselves by stools replenished with manie sloughs, here and there resembling the seeds of a Musk-melon or Cucumber. *Ascari-
des* are known by the itching they caus in the fundament, caussing a sens as if it were Ants running up and down; caussing also a *tenasmus*, and falling down of the fundament. This is the caus of all these symptoms; their sleep is turbulent and often clamorous, when as hot, acrid and subtil vapors, raised by the worms from the like humor and their food, are sent up to the head; but sound sleep by the contrarie, as when a mistie vapor is sent up from a gross and cold matter. They dream they eat their sleep, for that while the worms do more greedily consume the *chylous* matter in the guts, they stir up the sens of the like action in the phantasie. They grate or gnash their teeth by reason of a certain convulsifick repletion, the muscles of the temples and jaws beeing distended by plentie of vapors. A drie cough com's by the consent of the vital parts serving for respiration, which the natural, to wit, the *Diaphragma*, or midriff, smit upon by acrid vapors, and irritated as though there were som humor to bee expelled by coughing. These same acrid fumes assailing the orifice of the ventricle, caus either an hicketing, or els a fainting, according to the condition of their consistence, gross or thin; these carried up to the parts of the face caus an itching of the nose, a darkness of the sight, and a sudden changeing of the color in the cheeks. Great worms are worst then little ones, red then white, living then dead, manie then few, variegated then those of one color, as those which are signs of a greater corruption. Such as are cast forth bloodie and sprinkled with blood, are deadlie, for they shew that the substance of the guts is eaten asunder; for oftimes they corrode and perforate the bodie of the gut wherein they are contained, and thence penetrate into divers parts of the bellie, so that they have com forth somtimes at the navel, haveing eaten themselves a passage forth, as *Hollerius* affirmeth. When as children troubled with the worms draw their breath with difficultie, and wax moist over all their bodies, it is a sign that death is at hand. If at the beginning of sharp fevers, round worms com forth alive, it is a sign of a peccilent fever, the malignitie of whose matter they could not endure, but were forced to com forth. But if they bee cast forth dead, they are signs of greater corruption in the humors, and of a more venenate malignitie.

CHAP. V.

What cure to bee used for the Worms.

The general indications of curing the worms.



N this diseas there is but one indication, that is, the exclusion or casting out of the worms, either alive or dead, forth of the bodie, as beeing such that in their whole kinde are against nature; all things must bee shunned which are apt to heap up putrefaction in the bodie by their corruption, such as are crude fruits, cheef, milk-meats, fishes, and lastly, such things as are of a difficult and hard digestion, but prone to corruption. Pap is fit for children, for that they require moist things, but these ought to answer in a certain similitude to the consistence and thickness of milk, that so they may the more easily bee concocted and assimilated, and such onely is that pap which is made with wheat flower, not crude, but baked in an oven, that the pap made therewith may not bee too viscid nor thick, if it should onely bee boiled in a pan as much as the milk would require; or els the milk would bee too terrestrial, or too waterish, all the fattie portion thereof beeing resolved, the cheesie and whayish portion remaining, if it should boil so much as were necessarie for the full boiling of the crude meat;

meat; they which use meal otherwise in pap yeeld matter for the generateing of grofs and viscid humors in the stomach, whence happen's obstruction in the first veins and substance of the liver; by obstruction worms breed in the guts, and the stone in the kidnies and bladder. The patient must bee fed often, and with meats of good juice, lest the worms through want of nourishment, should gnaw the substance of the guts. Now when as such things breed of a putrid matter, the patient shall bee purged, and the putrefaction repress by medicines mentioned in our Treatise of the Plague. For the quick killing and casting of them forth, syrup of succorie, or of lemmons with rubarb, a little treacle or methridate is a singular medicine, if there bee no fever; you may also for the same purpose use this following medicine. *Rx. cornu cervi, pul. rasur. eboris, an. ʒiʒ. sem. tanacet. & contra verm. an. ʒi. fiat decoctio pro parva dosi, in colatura infunde rhei optini, ʒi. cinam. ʒi. dissolve syrupi de absinthio, ʒʒ. make a potion, give it in the morning three hours before anie broth.* Oil of Olives drunk, kill's worms; as also water of knot-grass drunk with milk; and in like manner all bitter things. Yet I could first with them to give a glyster made of milk, honie and suger, without oils and bitter things, lest shunning thereof, they leav the lower guts, and com upwards; for this is natural to worms, to shun bitter things, and follow sweet things. Whence you may learn, that to the bitter things which you give by the mouth, you must alwaies mix sweet things, that allured by the sweetness, they may devour them more greedily, that so they may kil them. Therefore I would with milk and suger, mix the seeds of centaurie, *Rue*, wormwood, aloës and the like: hartshorn is verie effectual against worms, wherefore you may infuse the shavings thereof in the water or drink that the patient drink's, as also to boil som thereof in his broths. So also treacle drunk or taken in broth, killeth the worms; purslain boiled in broths, and distilled and drunk, is also good against the worms; as also succorie and mints; also a decoction of the lesser hout-leek and sebestens given with suger before meat; it is no less effectual to put worm-seeds in their pap, and in rosted apples, and so to give them it. Also you may make suppositories after this manner, and put them up into the fundament. *Rx. coralli sub-*

Wherefore, and
wherewith, such
as have the
worms, must
bee purged.

albi, rasuræ eboris, cornu cervi usti, ireos an. ʒii. mellis albi ʒiʒ, aque centinodie q. s. ad omnia incorporanda, fiant Glandes: let one bee put up everie daie, of the weight of ʒii. for children; these suppositories are chiefly to bee used for *Ascariides*, as those which adhere to the right gut. To such children as can take nothing by the mouth, you shall applie cataplasms to their navels made of the powder of cummin-seeds, the flowr of lupines, worm-wood, southernwood, ransie, the leavs of artichokes, *Rue*, the powder of *coloquintida*, citron-seeds, aloës, arf-smart, hors-mint, peach-leavs, *Costus amarus*, *Zedoaria*, sope and ox-gall. Such cataplasms are oftentimes spread over all the bellie, mixing therewith astringent things for the strengthening of the part, as oil of myrtles, Quinces and mastich; you may also applie a great onion hollowed in the mid'st, and filled with aloës and treacle, and so rosted in the members, then beaten with bitter almonds, and an ox-gall. Also you may make emplasters of bitter things, as this which follow's. *Rx. fellis bubuli, succi absinthii, an. ʒii. calocyn. ʒi. terantur & misceantur simul, incorporantur cum farina lupinorum:* make hereof an emplaster to bee laid upon the Navel.

Hartshorn
good against
the worms.

Suppositories
against the
Ascariides.

A plaster a-
gainst the
worms.

Liniments and ointments may bee also made for the same purpose to annoint the bellie, you may also make plasters for the navel of *pillule ruf.* annointing in the mean time the fundament with honie and suger, that they may bee chafed from above with bitter things, and allured downwards with sweet things. Or else take worms that have been cast forth, drie them in an iron-pan over the fire, then powder them, and give them with wine or som other liquor to bee drunk, for so they are thought quickly to kill the rest of the worms. Hereto also conduceth the juice of citrons, drunk with the oil of bitter almonds, or sallet-oil. Also som make bathes against this affect of worm-wood, galls, peach-leavs boiled in water, and then bathe the childe therein.

But in cureing the worms, you must observ that this disease is oftentimes entangled with another more grievous disease, as an acute and burning fever, a flux or scouring, and the like, in which (as for example sake) a fever beeing present and conjoined therewith, if you shall give worm-seeds, old Treacle, myrrh, aloës, you shall increas the fever and flux, for that bitter things are verie contrarie to these affects. But if, on the contrarie, in a flux whereby the worms are excluded, you shall give corral, and the flowr of Lentils, you shall augment the fever, making the matter more contumacious by drie and astringent things. Therefore the Physician shall bee careful in considering whether the fever bee a symptom of the worms, or on the contrarie it bee essential, and not symptomatick; that this beeing known, hee may principally insist in the use of such medicines as resist both affects, as purgeing and bitterish in a fever and worms, but bitter and somewhat astrictive things in the worms and flux.

A fever some-
times a sym-
ptom, and some-
times a disease.

CHAP. VI.

A short description of the Elephantiasis or Leprosie, and of the causes thereof.



His disease is termed *Elephantiasis*, because the skin of such as are troubled therewith is rough, scabious, wrinkled and unequal, like the skin of an Elephant. Yet this name may seem to be imposed thereon by reason of the greatness of the disease. Some from the opinion of the Arabians have termed it *Lepra*, or Leprosie (but improperly, for the *Lepra* is a kinde of scab and disease of the skin, which is vulgarly called *Malum sancti manis*) which word for the present we will use, as that which prevails by custom and antiquitie. Now the Leprosie (according to *Paulus*) is a Cancer of the whole bodie, the which (as *Avicen* add's) corrupt's the complexion, form and figure of the members. *Galen* think's the cause ariseth from the error of the sanguifying facultie, through whose default the assimilation in the flesh and habit of the bodie is depraved, and much changed from it self, and the rule of nature. But *ad Glauconem*, hee defines this disease, An effusion of troubled or gross blood into the veins and habit of the whole bodie. This disease is judged great, for that it partake's of a certain venenate virulencie, depraveing the members and comeliness of the whole bodie. Now it appear's, that the Leprosie partake's of a certain venenate virulencie by this, that such as are melancholick in the whole habit of their bodies, are not leprous. Now this disease is composed of three differences of diseases: First, it consist's of a distemper against nature, as that which at the beginning is hot and drie, and at length the ebullition of the humors ceasing, and the heat dispersed, it becom's cold and drie, which is the conjunct cause of this symptom. Also it consist's of an evil composition or conformation, for that it deprave's the figure and beautie of the parts. Also it consist's of a solution of continuitie, when as the flesh and skin are cleft in divers parts with ulcers and chops. The Leprosie hath for the most part three general causes, that is, the primitive, antecedent, and conjunctive: The primitive cause is either from the first conformation, or com's to them after they are born. It is thought to be in him from the first conformation, who was conceived of depraved and menstruous blood, and such as inclined to melancholie; who was begot of the leprous seed of one or both his parents, for leprous persons generate leprous, because the principal parts being tainted and corrupted with a melancholick and venenate juice, it must necessarily follow, that the whole mass of blood and seed that fall's from it, and the whole bodie should also be vitiated. This cause happen's to those that are already born, by long staying and inhabiting in maritime countries, whereas the gross and mistie air, in success of time, induceth the like fault into the humors of the bodie; for that, according to *Hippocrates*, such as the air is, such is the spirit, and such the humors. Also long abiding in verie hot places, because the blood is torried by heat, but in cold places, for that they incrassate, and congealing the spirits do after a manner stupifie, may be thought the primitive causes of this disease. Thus in some places of Germanie there are divers leprous persons; but they are more frequent in Spain, and over all Africa, then in all the world beside, and in Languedoc, Provence and Guyenne, are more then in whole France besides. Familiaritie, copulation, and cohabitation with leprous persons may be reckoned amongst the causes thereof, because they transfer this disease to their familiars by their breath, sweat and spittle left on the edges of the pots or cups. This disease is also caused by the too frequent use of salt, spiced, acrid and gross meats, as the flesh of Swine, Asses, Bears, pulf, milk-meats; so also gross and strong wines, drunkenness, gluttonie, a laborious life, full of sorrow and cares, for that they incrassate, and as it were burn the blood. But the retention of melancholick excrements, as the suppression of the hemorrhoids, courses, small pocks and meazles, as also a quartain fever accustomed to com at set-times; the drying up of old ulcers, for that they defile the mass of the blood with a melancholick dross and filth. Now you must understand, that the cause of the Leprosie by the retention of the superfluities, happen's, because the corrupt blood is not evacuated, but regurgitate's over the whole bodie, and corrupt's the blood that should nourish all the members; wherefore the assimilative facultie cannot well assimilate by reason of the corruption and default of the juice; and thus in conclusion the Leprosie is caused. The antecedent causes are the humors disposed to adustion and corruption into melancholie, by the torrid heat; for in bodies possessed with such heat, the humors by adustion easily turn into melancholie, which in time acquiring the malignitie and corruption of a virulent and venenate qualitie, yield's a beginning and essence to the Leprosie. The conjunct causes are the melancholick humors, which are now partakers of a venenate and malign qualitie, and spread over the whole habit of the bodie, corrupting and destroying it first by an hot and drie distemper, and then by a cold and drie, contrarie to the beginnings of life. For hence inevitable death must ensue, because our life to be deadlie, consist's in the moderation of heat and moisture.

Lib. 4. cap. 1.

Lib. 2. cap. 11.

There is a certain hidden virulencie in the Leprosie.

The primitive cause of a Leprosie.

How they may be leprous from their first conformation.

The antecedent cause of a Leprosie.

The conjunct cause.

How it com's to be deadlie.

CHAP. VII.

The signs of a Leprosie, breeding, present, and alreadie confirmed.



He disposition of the bodie and humors to a Leprosie is shewed by the change of the native and fresh color of the face, by that affect of the face, which is commonly called *Gutta rosacea*, red and blackish suffusions and pustles, the falling away of the hairs, and a great thirst, and a driness of the mouth both by night and day, a stinking breath, little ulcers in the mouth, the change of the voice to hoarseness, a desire of venerie above nature and custom. Now there are four times of this disease, the beginning, increas, state and declension. The beginning is, when as the malignitie hath not gon further then the inner parts and bowels, wherupon the strength must need's bee more languid. The increas is, when as the virulencie com's forth, and the signs and symptoms are everie day increased in number and strength. The state is, when as the members are exulcerated. The declension is, when as the aspect of the face is horrid, the extreme parts fall away by the profunditie and malignitie of the ulcers, so that none, no not of the common sort of people, can doubt of the disease. According to the doctrine of the Antients, wee must in searching out of the signs of this disease beeing present, have chief regard to the head. For the signs of diseases more properly and truly shew themselves in the face, by reason of the softness and raritie of the substance thereof, and the tenuitie of the skin that cover's it; wherefore a black and adust humor diffused there-under, easily shew's it self, and that not onely by the mutation of the color, but also of the character and bulk, and oftimes by manifest hurting it. Wherefore you must observ in the head whether it have scauls, and whether in the place of those hairs that are fallen away, others more tender, short and rare grow up, which is likely to happen through defect of fit nourishment to preserve and generate hairs, through corruption of the hairie scalp that should bee stored with such nourishment, and of the habit it self, and through the unfitnes thereof to contain hairs: lastly, by the acrimonie of the vapors sent up from the adust humors and entrails, fretting asunder the roots of the hairs. But if not onely the hair, but also som portion of the skin and flesh about the roots of the hair, com away by pulling, it is an argument of perfect corruption: let this therefore be the first sign of a Leprosie. A second and verie certain sign is, a numerous and manifest circumscription of round and hard pusses or pustles under the eie-brows, and behinde the ears, and in severall places of the face, resembling round and hard kernels, occasioned by the default of the assimilating facultie. The caus of this default is the grosness of the flowing nourishment, by which means it beeing impact, and stopping in the straitness of the way, it grow's round, as it were compassed about in the place whereas it stick's, and by the means of the cruditie, for that it is not assimilated, and by delay, it is further hardned. The third sign is, the more contract and exact roundness of the ears, their grosness, and as it were grainie spissitude or denseness; the caus of their roundness is the consumption of the flaps and fleshie part through want of nourishment, and excess of heat; but the occasion of their grainie spissitude is the grosness of the earthie nourishment flowing thither. The fourth sign is a Lion-like wrinkling of the fore-head, which is the reason that som term this disease *morbus Leoninus*; the caus hereof is the great driness of the habit of the bodie, which also is the reason that the bark of an old oak is rough and wrinkled. The fifth is, the exact roundness of the eies, and their fix't and immoovable steddeness; verily the eies are naturally almost round, yet they appear obtuse, and somewhat broad on the fore-side, but end in a *Conus* on the hind part, by reason of the concurs and figure of the muscles and fat investing them. Therefore these beeing consumed either through defect of laudable nourishment, or elf by the acrimonie of the flowing humor, they are restored to their proper figure and roundness. Now the muscles which mooved the eies beeing consumed, and the fat which facilitated their motion wasted, it com's to pass that they stand stiff and unmoovable, beeing destitute of the parts yeelding motion, and the facilitie thereof. The sixth sign is, the nostrils flat outwardly, but inwardly straight and contracted, that is, an earthie and gross humor forced from within outwards, which swels the sides or edges of the nostrils; whence it is, that the passages of the nose appear as it were obstructed by the thickness of this humor; but they are depressed and flatted by reason of the rest of the face and all the neighboring parts swoln more then their wont; add hereto that the partition is consumed by the acrimonie of the corrodeing and ulcerateing humor. The seventh is, the lifting up, thickness and swelling of the lips, the filthiness, stinch and corrosion of the gums by acrid vapors rising to the mouth; but the lips of leprous persons are more swoln by the internal heat burning and increasateing the humors, as the outward heat of the Sun doth in the Moors. The eighth sign is, the swelling and blackness of the tongue, and as it were varicous veins lying under it; becaus the tongue, beeing by nature spongeous and rare, is easily stored with excrementitious humors, sent from the inner parts unto the habit of the bodie: which same is the caus why the grandules placed about the tongue above and below, are swoln hard & round, no otherwise then scrophulous or meazled swine. Lastly, all their face riseth in red

The beginning of a Leprosie.
The increas.
The state.
The declension.

The first sign of the Leprosie.

II.

III.

IV.
Why it is called morbus Leoninus.

V.

V.

VII.

VIII.

- bunches or pushes, and is over-spread with a duskie and obscure redness; the eyes are fierce, fierce and fixed, by a melancholick chachetick disposition of the whole bodie, manifest signs whereof appear in the face by reason of the fore-mentioned causes, yet some leprous persons have their faces tintured with a yellowish, others with a whitish color, according to the condition of the humor, which serv's for a *basis* to the leprous malignitie. For hence Physicians affirm that there are three sorts of Leprosies; one of a reddish black color, consisting in a melancholick humor; another of a yellowish green, in a choleric humor; another in a whitish yellow, grounded upon adust phlegm. The ninth sign is a stinking of the breath, as also of all the excrements proceeding from leprous bodies, by reason of the malignitie conceived in the humors. The tenth is, a hoarseness, a shakeing, harsh and obscure voice, coming as it were out of the nose, by reason of the lungs, recurrent nerves, and muscles of the throttle tainted with the grossness of a virulent and adust humor; the fore-mentioned constriction and obstruction of the inner passage of the nose; and lastly, the asperitie and inequality of the weazon by immoderate driness, as it happen's to such as have drunk plentifully of strong wines without any mixture. This immoderate driness of the muscles serving for respiration make's them to be troubled with a difficultie of breathing. The eleventh sign is verie observable, which is a morpew or defecation of all the skin, with a drie roughness and grainie inequality, such as appear's in the skins of plucked geese, with manie tetters on everie side, a filthie scab, and ulcers not casting off onely a brain-like scurf, but also scales and crusts. The cause of this drie scab is the heat of the burning bowels and humors unequally contracting and wrinkling the skin, no otherwise then as leather is wrinkled by the heat of the sun or fire. The cause of the filthie scab and serpiginous ulcers, is the eating and corroding condition of the melancholick humor, and the venenate corruption, it also being the autor of corruption, so that it may be no marvell if the digestive facultie of the liver being spoiled, the assimilative of a malign and unfit matter sent into the habit of the bodie cannot well nor fitly perform that which may be for the bodie's good. The twelfth is, the sense of a certain pricking, as it were of goads or needles over all the skin, caused by an acrid vapor hindered from passing forth, and intercepted by the thickness of the skin. The thirteenth is a consumption and emaciation of the muscles which are between the thumb and fore-finger, not onely by reason that the nourishing and assimilating faculties want fit matter wherewith they may repair the loss of these parts, for that is common to these with the rest of the bodie; but because these muscles naturally rise up unto a certain mountainous tumor, therefore their depression is the more manifest. And this is the cause that the shoulders of leprous persons stand out like wings; to wit, the emaciation of the inward part of the muscle *Trapezites*. The fourteenth sign is, the diminution of sense, or a numbness over all the bodie by reason that the nerves are obstructed by the thickness of the melancholick humor hindring the free passage of the animal spirit, that it cannot come to the parts that should receive sense, these in the *interim* remaining free which are sent into the muscles for motion's sake, and by this note I chiefly make trial of leprous persons, thrusting a som-what long and thick needle som-what deep into the great tendon endued with most exquisite sense, which run's to the heel, which, if they do not well feel, I conclude, that they are certainly leprous. Now, for that they thus lose their sense, their motion remaining entire, the cause hereof is, that the nerves which are disseminated to the skin are more affected, and those that run into the muscles are not so much; and therefore when as you prick them somwhat deep, they feel the prick, which they do not in the surface of the skin. The fifteenth is, the corruption of the extreme parts possessed by putrefaction and a gangrene, by reason of the corruption of the humors sent thither by the strength of the bowels, infecting with the like tainture the parts wherein they remain: add hereto that the animal sensitive facultie is there decayed, and as often as any facultie hath forsaken any part, the rest presently after a manner neglect it. The sixteenth is, they are troubled with terrible dreams, for they seem in their sleep to see divels, serpents, dungeons, graves, dead bodies, and the like, by reason of the black vapors of the melancholick humor troubling the phantasie with black and dismal visions, by which reason also such as are bitten of a mad dog fear the water. The seventeenth is, that at the beginning and increase of the disease they are subtil, craftie and furious by reason of the heat of the humors and blood; but at length in the state and declension they become craftie and suspicious, the heat and burning of the blood and entrails decaying by little and little; therefore then fearing all things whereof there is no cause, and distrusting of their own strength, they endeavor by craft maliciously to circumvent those with whom they deal, for that they perceive their powers to fail them. The eighteenth is, a desire of venerie above their nature, both for that they are inwardly burned with a strange heat, as also by the mixture of flatulencies therewith (for whose generation the melancholick humor is most fit) which are agitated, and violently carried through the veins and genital parts by the preternatural heat; but at length, when this heat is cooled, and that they are fallen into an hot and drie distemper, they mightily abhor venerie, which then would be verie hurtful to them, as it also is at the beginning of the disease, because they have small store of spirits and native heat, both which are dissipated by venerie. The nineteenth

is, the so great thicknes of their gros and livid blood, that if you wash it, you may finde a sandie matter therein, as som have found by experience, by reason of the great adustion and assation thereof. The twentieth is, the languidnes and weaknes of the puls (by reason of the oppression of the vital and pulsifick facultie by a cloud of gros vapors.) Herewith also their urine sometimes is thick and troubled, like the urine of carriage-beasts, if the urinarie vessels bee permeable and free; otherwise it is thinn, if there bee obstruction, which onely suffer's that which is thin to flow forth by the urinarie passages; now the urine is oftentimes of a pale ash-color, and oftimes it smell's like as the other excrements do in this diseas. Verily there are manie other signs of the Leprosie; as the slowness of the bellie by reason of the heat of the liver, often belchings by reason that the stomach is troubled by the reflux of a melancholick humor, frequent sneeing by reason of the fulnes of the brain; to these, this may bee added most frequently, that the face and all the skin is unctuous or greasie, so that water poured thereon, will not in anie place adhere thereto: I conceiv it is by the internal heat dissolving the fat that lie's under the skin, which therefore alwaies look's as if it were greased or annointed therewith in leprous persons. Now of these fore-mentioned signs, som are univocal, that is, which truly and necessarily shew the Leprosie: other-som are equivocal or common, that is, which conduce as well to the knowledg of other diseases as this. To conclude, that assuredly is a Leprosie which is accompanied with all, or certainly the most part of these fore-mentioned signs.

X X.

Why their fa-
ces seem to
bee greasie.

CHAP. VIII.

Of Prognosticks in the Leprosie; and how to provide for such as stand in fear thereof.



The Leprosie is a diseas which passeth to the issue, as contagious almost as the Plague, scarce cureable at the beginning, incureable when as it is confirmed; becaus it is a *Cancer* of the whole bodie; now if som one *Cancer* of some one part shall take deep root therein, it is judged incureable. Furthermore, the remedies which to this day have been found out against this diseas, are judged inferior and unequal in strength thereto. Besides, the signs of this diseas do not outwardly shew themselves before that the bowels bee seized upon, possessed and corrupted by the malignitie of the humor, especially in such as have the white Leprosie, sundrie of which you may see about Burdeaux, and in little Brittain, who notwithstanding inwardly burn with so great heat, that it will suddenly wrinkle and wither an apple held a short while in their hand, as if it had laid for manie daies in the sun. There is another thing that increaseth the difficultie of this diseas, which is an equal pravitie of the three principal faculties whereby life is preserved. The deceitful and terrible visions in the sleep, and numness in feeling, argue the depravation of the animal facultie; now the weaknes of the vital facultie is shewed by the weaknes of the puls, the obscuritie of the hoarf and jarring voice, the difficultie of breatheing, and stinking breath; the decay of the natural is manifested by the depravation of the work of the liver in sanguification, whence the first and principal caus of this harm ariseth. Now becaus wee cannot promise cure to such as have a confirmed Leprosie; and that wee dare not do it to such as have been troubled therewith but for a short space, it remain's that wee briefly shew how to free such as are readie to fall into so fearful a diseas. Such therefore must first of all shun all things in diet and courf of life, whereby the blood and humors may bee too vehemently heated, wherof wee have formerly made som mention. Let them make choice of meats of good or indifferent juice, such as wee shall describe in treating of the diet of such as are sick of the plague; purgeing, bleeding, batheing, cupping, to evacuate the impuritie of the blood, and mitigate the heat of the liver, shall bee prescribed by som learned Physician. *Valesius de Tarenta* much commend's gelding in this case, neither do I think it can bee disliked. For men subject to this diseas may bee effeminated by the amputation of their testicles, and so degenerate into a womanish nature, and the heat of the liver boiling the blood, beeing extinguished, they becom cold and moist, which temper is directly contrarie to the hot and drie distemper of leprous persons; besides the leprous beeing thus deprived of the facultie of generation, that contagion of this diseas is taken away which spreadeth, and is diffused amongst mankind by the propagation of their issue.

Why the Le-
prosie is in-
cureable.

The cure.

The diet.

Gelding good
against the le-
prosie.

The end of the twentieth Book.



Of *Poisons*, and of the *Biteing* of a mad Dog, and
the *Biteings* and *Stingings* of other
venemous Creatures.

The one and twentieth Book.

CHAP. I.

The caus of writeing this Treatise of Poisons.



Five reasons have principally mooved mee to undertake to write this Treatise of Poisons, according to the opinion of the Antients. The first is, that I might instruct the Surgeon what remedies must presently bee used to such as are hurt by poisons, in the *interim* whil't greater means may bee expected from a Physician. The second is, that hee may know by certain signs & notes such as are poisoned or hurt by poisonous means, and so make report thereof to the Judges, or to such as it may concern. The third is, that those Gentlemen and others who live in the countrie, and far from Cities, and store of greater means, may learn something by my labors by which they may help their friends bitten by an Adder, mad Dog, or other poisonous creature, in so dangerous, sudden and usual a case. The fourth is, that everie one may beware of poisons, and know their symptoms when present, that being known, they may speedily seek for a remedie. The fifth is, that by this my labor all men may know what my good will is, and how well minded I am towards the common-wealth in general, and each man in particular, to the glorie of God. I do not here so much arm malicious and wicked persons to hurt, as Surgeons to provide to help and defend each man's life against poison; which they did not understand, or at least seemed not so to do, which taking this my labor in evil part, have maliciously interpreted my meaning.

What is to be accounted poison.

But now at length, that wee may com to the matter; I will begin at the general division of poisons, and then handle each *species* thereof severally: but first let us give this rule, That poison is that which either outwardly applied or struck in, or inwardly taken into the bodie, hath power to kill it, no otherwise, then meat well drest is apt to nourish it. For *Conciliator* write's, that the properties of poison are contrarie to nourishments in their whole substance; for as nourishment is turned into blood, and in each part of the bodie whereto it is applied to nourish, by perfect assimilation is substituted in the place of that portion which flow's away each moment. Thus on the contrarie poison turn's our bodies into a nature like it self and venenate, for as everie agent imprint's the force and qualities thereof in the subject patient, thus poison by the immoderation of faculties in their whole nature contrarie to us, changeth our substance into its nature, no otherwise then fire turneth chaff in a moment into its own nature, and so consume's it. Therefore it is truly delivered by the Antients, who have diligently pried into the faculties of natural things, that it is poison that may kill men by destroying and corrupting their temper, and the composure and conformation of the bodie. Now all poisons are said to proceed either from the corrupt air, or from living creatures, plants and minerals, or by an artificial malignitie in distilling, subtilizing and diversly mixing of poisonous and fuming things. Hence arise sundrie differences of poisons; neither do they all work after the same manner: for som corrupt our nature by the unmeasurablebleness of the manifest and elementary qualities wherof they consist, others from a specifick and occult propertie. Hence it is that som kill sooner then others; neither is it true, that all of them presently assail the heart, but others are naturally at deadlie strife with other parts of the bodie, as *Cantharides* with the bladder, the sea-Hare with the lungs, the *Torpedo* with the hands, which it stupefieth, though the fishers rod bee betwixt them. Thus of medicines, there are som which are apt presently to comfort and strengthen the heart; others the brain, as *stechus*; others the stomach, as cinnamon: Also there are som poisons which work both waies, that is, by manifest and occult qualities, as *Euphorbium*; for that both by the excessive heat and the whole substance, or the discord of the whole substance with ours, corrupt's our nature. An argument hereof is, that Treacle, which by its qualitie is manifestly hot, infringeth the force thereof, as also of all others of an occult propertie. Poisons which work by an occult and specifick propertie, do not therefore

The differences of poison.

All poisons have not a peculiar antipathie with the heart.

fore do it, because they are too immoderately hot, cold drie, moist; but for that they are absolutely such, and have that essence from the stars and celestial influence, which is apt to dissolve and destroy the strength of man's body, because being taken, but even in a small quantity, yet are they of so pernicious a quality, that they kill almost in a moment. Now poisons do not only kill being taken into the body, but some being put or applied outwardly; neither do venomous creatures only harm by their stinging and biting, but also by their excrements, as spittle, blood, the touch and breath.

CHAP. II.

How poisons being small in quantity, may by their only touch cause so great alterations.



It seemeth strange to manie, how it may come to pass, that poison taken or admitted in a small quantity, may almost in a moment produce so pernicious effects over all the body, and all the parts, faculties, and actions, so that being admitted but in a little quantity, it swells up the body into a great bigness. Neither ought it to seem less strange, how Antidotes and Counterpoisons, which are opposed to poison, can so suddenly break and weaken the great and pernicious effects thereof, being it is not likely that so small a particle of poison or Antidote can divide it self into so manie, and so far sever'd particles of our body. There are some (saith Galen) who think that some things by touch only, by the power of their quality, may alter those things which are next to them; and that this appears plainly in the fish *Torpedo*, as that which hath so powerful a quality, that it can send it along the fisher's rod to the hand, and so make it become torped or numb. But on the contrary, Philosophers teach, that accidents, such as qualities are, cannot without their subjects remove and diffuse themselves into other subjects. Therefore Galen's other answer is more agreeable to reason, that so manie and great effects of poisons and remedies arise either from a certain spirit or or subtil humiditie; not truly, for that this spirit and subtil humiditie may be dispersed over the whole body and all the parts thereof which it affects, but that little, which is entered the body, as cast in by the stroke of a Spider, or the sting of a Scorpion, infects and corrupts all the next parts by contagion with the like quality, these others that are next to them, until from an exceeding small portion of the blood, if the stroke shall light into the veins, it shall spread over the whole mass of blood; or of phlegm, if the poison shall chance to come to the stomach, and so the force thereof shall be propagated and diffused over all the humors and bowels. The doubt of Antidotes is less, for these being taken in greater quantity, when they shall come into the stomach, warmed by the heat of the place, they become hot, and send forth vapors, which suddenly diffused over the body by the subtiltie of their substance, do by their contrary forces dull and weaken the malignitie of the poison. Wherefore you may often see when as Antidotes are given in less quantity then is fit, that they are less prevalent, neither do they answer to our expectation in overcoming the malignitie of the poison; so that it must necessarily follow that these must not only in qualities, but also in quantity be superior to poisons.

*Cap. 5. lib. 6.
de loc. affect.*

The true reason of the wondrous effects of poisons.

CHAP. III.

Whether there be any such poisons as will kill at a set time?



Of the propounded question; whether there may be poisons which within a certain and definite time (put case a month or year) may kill men. *Theophrastus* thus answer's; of poisons, some more speedily perform their parts, others more slowly; yet may you finde no such as will kill in set limits of time, according to the will and desire of men. For that some kill sooner or later then others; they do not this of their own or proper nature, as Physicians rightly judge, but because the subject upon which they light, doth more or less resist or yeeld to their efficacy. Experience sheweth the truth hereof; for the same sort of poison in the same weight and measure given to sundrie men of different tempers and complexions, will kill one in an hour, another in six hours, or in a daie, and on the contrary will not so much as hurt some third man. You may also observe the same in purging medicines. For the same purge given to divers men in the same proportion, will purge some sooner, some later, some more sparingly, others more plentifully, and other some not at all; also with some it will work gently, with other some with pain and grippings. Of which diversitie, there can no other cause be assigned, then men's different natures in complexion and temper, which no man can so exactly know and comprehend, as to have certain knowledge thereof, as how much and how long the native heat can resist and labor against the strength of the poison, or how pervious or open the passages of the body may be, whereby the poison may arrive at the heart and principal parts. For in such (for example

No poisons kill in a set time.

How poisons come to kill sooner or later.

xample sake) as have the passages of their arteries more large, the poison may more readily & speedily enter into the heart together wth the air that is continually drawn into the bodie.

CHAP. IV.

Whether such creatures as feed upon poisonous things bee also poisonous; and whether they may bee eaten safely and without harm.



Such things as feed upon poison may bee eaten without danger.

Ducks, Storks, Hens, Peacocks, Turkeys, and other birds, feed upon Toads, Vipers, Asps, Snakes, Scorpions, Spiders, Caterpillars, and other venomous things. Wherefore it is worthie the questioning, whether such like creatures nourished with such food, can kill or poison such persons as shall afterward eat them? *Matthiolus* writes that all late Autors, who have treated of poisons, to bee absolutely of this opinion, That men may safely and without anie danger feed upon such creatures, for that they convert the beasts into their nature after they have eaten them, and on the contrarie are not changed by them. This reason though verie probable, yet doth it not make these beasts to bee wholly harmless, especially if they bee often eaten or fed upon. *Dioscorides* and *Galen* seem to maintain this opinion, whereas they write, that the milk, which is nothing els then the relented blood of such beasts as feed upon scammonie, hellebore and spurge, purgeth violently. Therefore Physicians, desirous to purge a sucking childe, give purges to the nurses, whence the milk becomming purging, becom's both meat and medicine to the childe. The flesh of thrushes, which feed upon Juniper-berries, favor's of Juniper. Birds that are fed with worm-wood or garlick, either taste bitter, or have the strong sent of garlick. Whiteings taken with garlick, so smell thereof, that they will not forego that smell or taste by aniesalting, frying or boiling; for which sole reason, manie who hate garlick, are forced to abstain from these fishes. The flesh of Rabbits that feed upon pennie-royal and juniper, favor of them; Physicians with that Goats, Cows and Asses, whose milk they would use for Consumptions or other diseases, should bee fed som space before, and everie daie wth these or these herbs w^{ch} they deem fit for the cureing of this or that disease. For *Galen* affirm's that hee doubt's not, but that in success of time the flesh of creatures will bee changed by the meats whereon they feed, and at length favor thereof. Therefore I do not allow that the flesh of such things as feed upon venomous things, should bee eaten for food, unless it bee som long space after they have disused such repaste, and that all the venom bee digested and overcom by the efficacie of their proper heat, so that nothing thereof may remain in taste, smell or substance, but bee all vanished away. For manie die suddenly, the caus of whose deaths are unknown, which peradventure was from nothing els; but the sympathie and antipathie of bodies, for that these things caus death and disease to som, that nourish other som [according to our vulgar English proverb; *That which is one man's meat, is another man's poison.*]

Lib. de simp. facult.

The occasion of sudden death in manie.

CHAP. V.

The general signs of such as are poisoned.



Common signs of such as are poisoned.

We will first declare what the general signs of poison are, and then wee will descend to particulars, whereby wee may pronounce that one is poisoned with this or that poison. Wee certainly know that a man is poisoned, when as hee complain's of a great heaviness of his whole bodie, so that he is wearie of himself; when as som horrid and loathsom taste sweat's out from the orifice of the stomach to the mouth and tongue, wholly different from that taste; that meat, howsoever corrupted, can send up: when as the color of the face changeth suddenly, somwhiles to black, som times to yellow, or anie other color, much differing from the common custom of man; when nauseousness with frequent vomiting, troubleth the patient, and that hee is molested with so great unquietness, that all things may seem to bee turned upside down. Wee know that the poison work's by the proper, and from the whole substance, when as without anie manifest sens of great heat or coldness, the patient swoond's often with cold sweats, for usually such poisons have no certain and distinct part wherewith they are at enmitie, as *cantharides* have with the bladder. But as they work by their whole substance, and an occult proprietie of form; so do they presently and directly assail the heart, our essence and life, and the fortress and beginning of the vital facultie. Now will wee shew the signs whereby poisons, that work by manifest and elementarie qualities, may bee known. Those who exceed in heat, burn or make an impression of heat in the tongue, the mouth, throat, stomach, guts, and all the inner parts, with great thirst, unquietness, and perpetual sweats. But if to their excess of heat they bee accompanied with a corroding and putrefying qualitie, as *Arsenick*, *Sublimate*, *Rose-ager* or *Rats-bane*, *Verdegreece*, *Orpiment*, and the like, they then caus in the stomach

Signs of hot poisons.

Stomach and guts intolerable pricking pains, rumblings in the belly, and continual and intolerable thirst. These are succeeded by vomitings, with sweats sometimes hot, sometimes cold, with swoonings, whence sudden death ensues. Poisons that kill by too great coldness, induce a dull or heavy sleep, or drowsiness, from which you cannot easily rouse or waken them; sometimes they so trouble the brain, that the patients perform many undecent gestures and antic tricks with their mouths and eyes, arms and legs, like as such as are frantic; they are troubled with cold sweats, their faces become blackish or yellowish, always ghastly, all their bodies are benumbed, and they die in a short time unless they be helped; poisons of this kind are Hemlock, Poppie, Night-shade, Henbane, Mandrag. Drie poisons are usually accompanied by heat with moisture, for although sulphur be hot and drie, yet hath it moisture, to hold the parts together, as all things which have a consistence have; yet are they called drie, by reason that driness is predominant in them: such things make the tongue and throat drie and rough, with unquenchable thirst; the belly is so bound, that so much as the urine cannot have free passage forth; all the members grow squalid by driness, the patients cannot sleep: poisons of this kind are Lytharge, Ceruss, Lime, scales of Brasse, filings of Lead, prepared antimonie. On the contrary, moist poisons induce a perpetual sleep, a flux or scouring the resolution of all the nerves and joints, so that not so much as the eyes may be faithfully contained in their orbs, but will hang as ready to fall out; the extreme parts, as the hands, feet, nose and ears corrupt and putrefie, at which time they are also troubled with thirst by reason of their strong heat, always the companion of putrefaction, and oftimes the author thereof: now when this cometh to pass, death is at hand. Verie many deny that there can be any moist poisons found, that is, such as may kill by the efficacy of their humiditie, because there are no such things to be found, as may come to the fourth degree of moisture. Yet there is an example that avers the contrary, which was of one, who sleeping on the night, was bitten by a Serpent, as *Gilbertus Anglicus* affirmeth; for dying thereof, when as his servant, desirous to awaken his Master out of his sleep, took him by the arm, all the flesh being putrefied, fell off, and presently the bones also fell asunder, being deprived of their flesh, which could not happen, unless by excess of the venomous humiditie which lay hidden in the teeth and spittle of the serpent. Also we have found it noted by *Hippocrates*, that in a rainy, humid and southerly constitution of the year, it happened by the malign violence of the venenate and putrefying humiditie, that the flesh of the arms and legs becoming rotten, fell away by peece-meal, and the bones remained bare; yea also and the bones themselves in some putrefied and fell away; neither doth the *Lues Venerea* kill by any other means, then by a fretting and putrefying force of humiditie, by whose efficacy the soliditie of the bones is dissolved; then much more the flesh may be tainted and consumed by putrefaction.

To these and such poisons which work by a manifest and elementarie facultie, when as they shall be received into the bodie after what manner soever, you shall forthwith oppose their contraries, and if by chance it be not manifest, what, and of what distinct kind of poison that is, you must know that such poisons as work by occult properties, it is not by reason as yet found out how they will affect the bodie, but onely by experience. Therefore to these you must oppose their like antidotes, which may by their whole substance strengthen the heart and vital facultie, and withstand the strength of the poison. But to this our distinction of poisons, working by a manifest and elementarie qualitie, their opinion is contrary, who affirm that the venom of all poisonous beasts are therefore cold, for that such as are bitten or stung with them, are forthwith felt to be colder then a stone. And that serpents for fear of cold, when as winter is at hand, keep themselves in holes and dens under ground, or else, as vipers use to do, lie under stones; under which, you may often finde them stiff and numb, and so unapt for motion, that you may easily take them up in your hand. But the coldness that is perceived or felt in such as are bitten or stung, is not occasioned by the coldness of the poison, but by the absence of the natural heat, withdrawing it self in the verie instant of the stroak, from the surface into the center of the bodie, both for the defence of the heart, as the principal part; as also for that there is nothing which so much dissipates, or so much oppugns the vital heat, as poison, of what kinde soever it be, doth.

CHAP. VI.

How, or by what means to shun, or eschew Poisons.



It is a matter of much difficultie to avoid poisons, because such as at this time temper them, are so thoroughly prepared for deceit and mischief, that they will deceive even the most warie and quick-sighted; for they so qualifie the ingrate taste and smell, by the admixture of sweet and well-smelling things, that they cannot easily be perceived even by the skilful. Therefore such as fear poisoning, ought to take heed of meats cooked with much art, verie sweet, salt, sower, must observe in or notably ended with any other taste. And when they are oppressed with hunger or thirst, they

Signs of cold poisons.

Signs of drie poisons.

Signs of moist poisons.

An historic.

Seft. 3. lib. 3 epid.

The *Lues Venerea* kill's by excess of moisture.

All poisons are not cold.

Why such, as are poisoned or stung, are cold.

What, such as fear poisoning, must observe in their diet.

they must not eat nor drink too greedily, but have a diligent regard to the taste of such things as they eat or drink; besides, before meat let them take such things as may weaken the strength of the poisons; such as is the fat broth of good nourishing flesh-meats; in the morning let them arm themselves with treacle or mithridate, and conserv of roses, or the leavs of rue, a walnut and drie figs; besides, let him presently drink a little draught of muskedine or som other good wine; when one suspects hee hath taken any poison in meat or drink, let him forbear sleeping. For besides that the force of poison is oft times so rapid, that it consume's our life in a short space, as fire doth stubble, as also for that it is drawn more inwardly into the secret passages of the bodie by sleep. Wherefore in such a case it is better to procure vomit by drinking *Hydraeum* warm, or butter dissolved in warm oil, or a decoction of line, or fenugreek-seeds, or fat broth, for thus the received poison is also cast forth therewith, or els the acrimonie thereof retunded, and the bellie loosed.

Why sleep is hurtfull.

Why and how vomit must be procured.

When and wherewith they shall be purged.

The cure of poisoned wounds.

You may see this by dailie experience, for causticks, vesicatories, and the like acrid things beeing applied to an anointed part, will not blister nor exulcerate the part. Neither doth the vomit conduce onely in this, that it excludeth the poison, but it shew's either by the taste, smell, or color, the kinde of the taken-poison; so that then by useing the proper Antidote, it may be the more easily and speedily resisted, yet notwithstanding if you conceiv that the poison have descended deeper in the Guts, you may with a glyster draw away the rest thereof which adher's to the coats of the Guts. But if the patient cannot vomit, then shall som purging medicine be given him forthwith, and such as are thought more particularly to resist poison, such as are Agarick, Aloës, the lesser Centaurie, Rubarb and other things, according to the direction of the learned Physician. Then shall you administer glysters made with *Cassia*, fattie decoctions, sheep-suet, or butter or Cowf-milk, with the mucilages of Line-seed, *psilium*-seeds, quince-seeds, and other such things as are usually given in a Dysenterie, or bloodie flux, that such things may hinder the adhesion of the poison to the coats of the Guts, and by their unctuousness retund the acrimonie of the poison, and mitigate if anie thing shall already be ulcerated, and absolutely defend the sound parts from the malign effects of the poison. But let this be a perpetual rule, That the poison be speedily drawn back by the same way it entred into the bodie; as, if it entred by smelling in at the nostrils, let it be drawn back by sneezing, if by the mouth into the stomach, let it be excluded by vomit; if by the fundament into the bellie, then by glyster; if by the privities into the womb, then by *metrenchites* or injections made therinto; if by a bite, sting or wound, let revulsion be made by such things as have a powerful attractive facultie; for thus wee make diversions, that by these wee may not onely hinder the poison from assailing the heart, but also that by this means wee may draw it from within outwards. Wherefore strong ligatures cast about the arms, thighs and legs, are good in this case. Also large cupping glasses applied with flame to sundrie parts of the bodie are good. Also bathes of warm water, with a decoction of such things as resist poison, southern-wood, calamint, rue, betonie, horehound, pennie-royall, bayes, *scordium*, smillage, scabious, mints, valerian, and the like, are good in this case. Also sweats are good, beeing provoked so much as the strength of the patient can endure. But if hee be verie wealthy, whom wee suspect poisoned, it will be safer to put him into the bellie of an ox, hors or mule, and then presently into another assoon as the former is cold, that so the poison may be drawn forth by the gentle and vaporous heat of the new killed beast; yet do none of these things without the advice of a Physician, if it may conveniently be had.

CHAP. XIII.

How the corrupt or venomous Air may kill a Man.

By how manie, and what means the air may be infected.



How thunders and lightnings may infect the air.

THE air is infected and corrupted by the admixture of malign vapors, either arising from the unburied bodies of such as are slain in great conflicts, or exhaling out of the earth after earth-quakes, for the air, long pent up in the cavities and bowels of the earth, and deprived of the freedom & commerce of the open air, is corrupted, and acquires a malign qualitic, which it presently transferreth unto such as meet therewith. Also there is a certain malignitie of the air, which accompanieth thunders, and lightnings, which favours of a sulphureous virulencie, so that whatsoever wilde beasts shall devour the creatures killed therewith, they becom mad, and die immediatly; for the fire of lightning hath a far more rapid, subtil, and greater force then other fires, so that it may rightly be termed a Fire of Fires.

An argument hereof is, that it melteth the head of a spear, not harming the wood, and silver and gold, not hurting the purf wherein it is contained. Also the air is infected by fumigations, which presently admitted into the bodie and bowels by the mouth and nose in respiration, by the skin and arteries in perspiration, doth easily kill the spirits and humors beeing first infected, and then within a short space after, the solid substance of the principal parts, and chiefly of the heart beeing turned into their nature, unless the man be first provided

provided for by sneezing, vomiting, sweating, purging by the bellie, or som other excretion. For that poison which is carried into the bodie by smell, is the most rapid and effectuall, by so much as a vapor or exhalation is of more subtil and quicklier-piercing essence then an humor. Yet notwithstanding, wilt thou say, it is not credible, that anie bee kill'd by anie vapor raised by the force of fire, as of a torch, or a warming-pan, for that the venenate qualitie of the thing that is burnt, is dissipated and consumed by the force of the fire, purging and cleanting all things. This reason is fallly feigned to the destruction of the lives of careless people; for sulphureous brands kindled at a clear fire, do notwithstanding cast forth a sulphureous vapor. Whether do not *Lignum aloës* and Juniper, when they are burnt in a flame, smell less sweetly?

Whether the vapor that arises from a burnt thing may poison one.

Pope *Clement*, the seventh of that name, the uncle of our Kings mother, was poisoned by the fume of a poisonous torch that was carried lighted before him, and died thereof. *Mathiolus* telleth, that there were two Mountebanks in the market-place of *Sienna*, the one of which but smelling to a poisoned gillie-flower given him by the other, fell down dead presently.

An historic.

A certain man not long ago, when hee had put to his nose, and smelled a little unto a pomander, which was secretly poisoned, was presently taken with a *Vertigo*, and all his face swelled, and unless that hee had gotten speedie help by sternutatories and other means, hee had died shortly after of the same kinde of death that Pope *Clement* did.

The safest preservative against such poisons is, not to smell to them: moreover, som affirm, that there are prepared som poisons of such force, that being annointed but on the saddle, they will kill the rider, and others, that if you but annoint the stirrups therewith, they will send so deadlie poisonous a qualitie into the rider, through his boots, that hee shall die thereof within a short time after: which things, though they bee scarce credible, because such poisons touch not the naked skin, yet have they an example in nature, whereby they may defend themselves. For the *Torpedo* send's a narcotick, and certainly deadly force into the arm, and so into the bodie of the fisher, the cords of the net being between them.

CHAP. VIII.

That everie kinde of poison hath its proper and peculiar Signs and Effects.



S poisons are distinct in species, so each species differ's in their signs and effects; neither is it possible to finde anie one kinde of poison, which may bee accompanied or produce all the signs and effects of all poisons, otherwise Physicians should in vain have written of the signs and effects of each of them, as also of their proper remedies and antidotes. For what kinde of poison shall that bee, which shall caus a burning heat in the stomach, bellie, liver, bladder and kidnies, which shall caus a hicketting, which shall caus the whole bodie to tremble and shake, which shall take away the voice and speech, which shall caus convulsions, shall weaken the pulsfick facultie, which shall intercept the freedom of breathing, which shall stupefie and cast into a dead sleep, which shall together, and at once caus a *Vertigo* in the head, dimness in the sight, a strangling, or stoppage of the breath, thirst, bleeding, fever, stoppage of the urine, perpetual vomiting, redness, lividness, and paleness of the face, resolutions of the powers, and manie other things, all which are caused by all sorts of poison. Lastly, no bodie will denie but that hot poisons may kill more speedily then cold, for that they are more speedily actuated by the native heat.

Hot poisons kill sooner then cold.

CHAP. IX.

The Effects of poisons from particular venemous things, and what Prognosticks may thence bee made.



It is the opinion of *Cornelius Celsus*, and almost of all the Antients, that the bite of everie beast had som virulencie, but yet som more then other-som. They are most virulent that are inflicted by venemous beasts, as Asps, Vipers, Water-snakes, and all kindes of Serpents, Basilisks; Dragons, Toads, mad Dogs, Scorpions, Spiders, Bees, Wasps, and the like. They are less malign, which are of creatures wanting venom, as of Horses, Apes, Cats, Dogs not mad, and manie other things, which though of their own nature they are without poison, yet in their bites there is something more dolorifick and ill natured, then in common wounds inflicted by other occasions: I belev, that in their flaver or sanies, there is something, I know not how to term it, contrarie to our nature, which imprint's a malign qualitie in the ulcer, which also you may observe in the tearings and scratchings of such creatures as have sharp claws, as Lions and Cats. Moreover manie affirm, that they have found by experience, that the bites of men are not altogether without virulencie, especially of such as are red-haired & freckled, chiefly when

Lib. 2. cap. 27. The bites of all wilde beasts are virulent.

The bites of a red-haired man virulent.

Contused
wounds harder
to heal then
such as are cut.

when as they are angred; it is probable that the bites of other persons want this malignitie, seeing that their spittle will cure small ulcerations. Wherefore, if there shall happen difficultie of cure in a wound, caused by a man's biting, which is neither red haired nor freckled, neither angrie; this happen's not by means of the spittle, nor by anie malign qualitie, but by reason of the contusion, caused by the bluntness of the teeth, not cutting, but bruising the part, for beeing not sharp, they cannot so easily enter the flesh, unless by bruising and tearing, after the manner of heaive and blunt strokes and weapons, wounds beeing occasioned by such are more hard to bee cured, then such as are made by cutting and sharp weapons. But of the fore-said biteings of venemous creatures, there are few which do not kill in a short space, and almost in a moment, but principally if the poison bee sent into the bodie by a live creature, for in such poison there is much heat; also there is therein a greater tenuitie, which serv's as *vehicles* thereto into what place or part foever of the bodie they tend, the which the poisons taken from dead creatures are defective of. Wherefore some of these kill a man in the space of an hour, as the poison Asps, Basilisks and Toads; others not unless in two or three daies space, as of water-Snakes; a Spider, and Scorpion require more time to kill, yet all of them admitted but in the least quantitie, do in a short space caus great and deadlie mutations in the bodie, as if they had breathed in a pestiferous air, and with the like violence, taint and change into their own nature all the members and bowels, by which these same members do in the time of perfect health change laudable meats into their nature and substance. The place whereas these poisonous creatures live, and the time, conduce to the perniciousness of the poison, for such as live in drie, mountainous, and sun-burnt places kill more speedily then such as bee in moist and marish grounds; also they are more hurtful in winter then in summer; and the poison is more deadly which proceed's from hungrie, angrie and fasting creatures, then that which com's from such as are full and quiet; as also that which proceed's from young things, chiefly when as they are stimulated to venerie, is more powerful then that which com's from old and decrepit; from femals worst then from males; from such as have fed upon other venemous things, rather then from such as have abstained from them, as from snakes which have devoured toads, vipers which have fed upon scorpions, spiders and Caterpillers. Yet the reason of the efficacie of poisons depend's from their proper, that is, their subtil or gross consistence, and the greater or less aptness of the affected bodie to suffer. For hot men that have larger and more open veins and arteries, yeeld the poison freer passage to the heart. Therefore they which have more cold and straight vessels, are longer ere they die of the like poison; such as are full, are not so soon harmed as those that are fasting: for meats, besides that by filling the vessels, they give not the poison so free passage, they also strengthen the heart by the multiplication of spirits, so that it more powerfully resist's pernicious venom. If the poison work by an occult and specifick propertie, it causeth the cure and prognostick to bee difficult, and then must wee have recourse to Antidotes, as these which in their whole substance resist poisons; but principally to treacle, becaus there enter into the composition thereof medicines which are hot, cold, moist and drie: whence it is, that it retund's and withstand's all poisons, chiefly such as consist of a simple nature, such as these which com from venemous creatures, plants and minerals; and which are not prepared by the detestable art of empoisoners.

Why treacle
retund's the
force of all
simple poi-
sons.

CHAP. X.

What cure must bee used to the biteings and stingings of venemous beasts.



Ure must speedily bee used without anie delaie to the bites and stingings of venemous beasts, which may by all means disper the poison, and keep it from entering into the bodie; for when the principal parts are possessed, it boot's nothing to use medicines afterwards. Therefore the Antients have propounded a double indication to lead us to the findeing out of medicines in such a case, to wit, the evacuation of the virulent and venenate humor, and the change or alteration of the same and the affected bodie. But seeing evacuation is of two sorts, to wit, *universal*, which is by the inner parts; and *particular*; which is by the outward parts. Wee must begin at the particular, by such to pick medicines as are fit to draw out, and retund the venom; for wee must not alwaies begin a cure with general things, as some think, especially in external diseases, as wounds, fractures, dislocations, venemous bites and punctures. Wherefore hereto as speedily as you may, you shall applie remedies fit for the bites and punctures of venemous beasts; as for example, the wounds shall bee presently washed with urine, with sea-water, *aqua vite*, or wine, or vineger where-in old treacle or mustard shall bee dissolved. Let such washing bee performed verie hot, and strongly chafed in, and then leav upon the wound and round about it, linnen rags, or lint steeped in the same liquor. There bee some who think it not fit to lay treacle thereto, becaus, as they say, it drive's the poison in. But the authoritie of Galen convinceth that opinion, for hee writeth that if treacle bee applied to this kinde of wounds

before

A double in-
dication in the
cure of vene-
mous bites.

Lotions fit for
venemous
bites.

Lib. de theriac.

before that the venom shal arrive at the noble parts, it much conduceth. Also reason confutes it; for viper's flesh enters the composition of treacle which attracts the venom by the similitude of substance, as the Load-stone draweth iron, or Amber straws. Moreover, the other simple medicines which enter this composition, resolv and consume the virulencie and venom, and beeing inwardly taken, it defendeth the heart and other noble parts, and corroborateth the spirits. Experience teacheth that mithridate fitly given in the stead of treacle worketh the like effect. The medicines that are taken inwardly and applied outwardly for evacuation, must bee of subtil parts, that they may quickly inlinate themselvs into everie part to retund the malignitie of the poison; wherefore garlick, onions, leeks, are verie good in this case, for that they are vaporous; also *scordium*, *Rue*, *diemamus*, the lesser Centaurie, hore-hound, *Rocket*, the milkie juice of unripe figs, and the like, are good; there is a kinde of wilde bugloss amongst all other plants, which hath a singular force against venomous bites, whence it is termed *Echium* and *viperinum*, and that for two causes; the first is, becaus in the purple flowers that grow amongst the leav's, there is a resemblance to the head of a viper or adder. Another reason is, becaus it heal's the biting of a viper not onely applied outwardly, but also helpeth such as are bitten, beeing drunk in wine, yea, and will not suffer those that have lately drunk thereof to bee bitten at all. Wilde *Time* hath the like effect; though these oft-times agree with the poison in qualitie as in heat, yet do they help in dissolving and resolving it; yet, as much as wee may, wee must labor to have evacuation and alteration together. It is most convenient, if the part affected will permit, to applie large cupping-glasses with much flame and horns; also sucking is good, the mouth beeing first washed in wine wherein some treacle is dissolved, and with oil, lest any thing should adhere thereto, for it will hinder it, if so bee the mouth bee no where ulcerated. It is good also to applie horse-leeches; som wish to applie to the wound, the fundaments of hens or turkies that lay eggs, for that such are opener behinde, first putting salt upon them that they may gape the wider, shutting their beaks and opening them now and then lest they should bee stifled, and ever and anon to substitute others instead of such as die or are suffocated; for thus it is thought the poison is drawn forth, and passeth into the bird by the fundament. There bee others which had rather applie to the wound live birds cut asunder in the midst, and so laid to hot, for that they ghefs these resist poison by a natural discord. But certainly it is by their heat whereby they do not onely digest toads, asps, vipers, scorpions and other venomous things, but also wear asunder and soften sand, stones, and most drie and stonie seeds in their gizzards; wherefore wee must think them very good to draw out the poison and dissipate it. But nothing is so forcible to dispers and retund the venom, as the impression of cauteries, especially actual, for a hot iron works more effectually and speedily, and causeth an ulcer which will remain open a longer time. Wherefore to caus the speedier falling away of the Eschar, you shall scarifie it to the quick, and then plentifully annoint the place. For thus the poison will the sooner pass forth. But this must bee done before the poison enter's far into the bodie, for otherwise Cauteries will not onely do no good, but further torment the patient, and weaken him to no purpose. Let drawing plasters bee laid to the wound and neighboring parts, made of *Galbanum*, turpentine, black pitch, and other gummie and resinous things. After the falling away of the Eschar, *basilicon* shall bee applied, quickned with a little *Precipitate*, for it is very effectual in these cases, for that it draweth forth the virulent *sanies* out of the bottom of the wound, neither doth it suffer the wound to bee closed speedily. To which purpose they put in a piece of a sponge, or a root of *Gentian* or *Hermodytyl*, or som acrid medicine, as *egyptiacum*, or *Precipitate* mixed with the powder of Alum, or a caustick beaten to powder. But you must alwaies observ this, that with your ointments you must alwaies mix som Treacle or Mithridate, or the juice of *hypericon*, or the like, which have power to attract and dispers the poison, and cleans the ulcer; yet if too vehement heat shall caus such pain as is likely to bring a gangren by the dissipation of the spirits, then neglecting the cure of the proper disease for a time, wee must labor to correct the symptom. But in this case you must observ this rule, that you let no blood, give no purging medicine, nor glyster, nor vomit, nor use no bath, nor other thing that may procure sweat, untill three daies bee past after the bite or sting. In the mean space let the patient shun all manner of labor, but chiefly venerie, lest by causing an agitation of the humors, the poison get sooner to the heart. Therefore then it is time to use universal evacuations, when as you shall suspect that the poison is diffused over the veins and whole inner part of the bodie besides. Before you shall give nothing, unless medicines of Treacle or Mithridate and the like things, which have a facultie to resist poison, and strengthen the whole bodie by their benign and vital vapor, although their substance go no further then the stomach. Thus pills when they are swallowed, though they go no further then the stomach, yet do they draw matter out of the joints and head; and strong glysters, though they pass no further then the guts, yet by their qualitie diffused further with the vapor, they draw from the most distant parts; yet you must give an Antidote, not onely more powerfull then the poison in qualitie, but also greater in quantitie, that so it may the more easily overcome and expell the poison. Wherefore you must give it twice in a daie,

Treacle outwardly applied and inwardly taken good against venomous bites.

The force of *Echium*.

The efficacy of Cauteries against venomous bites.

The force of *Precipitate* against venomous wounds.

When hot things are not convenient for poisoned wounds.

Antidotes must bee given in great quantities.

and continue it so long untill you shall know that the strength of the poison is weakened and overcome by the remission and decay of the malign symptoms. Yet in the mean while, you must not neglect the distemper caused in the part by the poison, but must rather correct it by the application of the remedies contrarie to the distemper, as by cold things, if great heat afflict the affected part and whole bodie; by hot things on the contrarie, if it seem as cold as a stone, which oft-times happen's. And let thus much suffice for the general cure of poisons: now will we come to their particular cure.

CHAP. XI.

Why dogs sooner become mad then other creatures, and what be the signs thereof.

Dogs naturally subject to madness.



Dogs become mad sooner then other creatures, because naturally they enjoy that temper and condition of humors which hath an easie inclination to that kinde of disease, and as it were a certain disposition, because they feed upon carrion and corrupt, putrid and stinking things, and lap water of the like condition; besides the trouble and vexation of losing their masters, make's them to run everie waie, painfully searching and smelling to everie thing, and neglecting their meat. A heating of the blood ensue's upon this pain, and by this heat it is turned into a melancholie, whence they become mad. But yet dogs do not alwaies become mad by means of heat, but also by occasion of cold, that is, by contrarie causes; for they fall into this disease not onely in the dog-daies, but also in the depth of winter. For dogs abound with melancholik humors, to wit cold and drie. But such humors as in the summer through excess of heat, so in the depth of winter by constipation and the suppression of fuliginous excrements, they easilie turn into melancholie. Hence follow's a verie burning and continual fever, which causeth or bringeth with it a madness. Add hereto, that in the depth of winter the heat which is contained within is redoubled, and in like manner as the scorching heat in summer, it breed's and turn's the humors into melancholie. Also dogs become mad by contagion, as such as are bitten by another mad dog. A mad dog hath sparkling and fierie eies, with a fixed look, cruel and a squint, hee carrie's his head heavily, hanging down towards the ground, and somewhat on one side, hee gape's, and thrust's forth his tongue, which is livid and blackish; and being short breathed, cast's forth much filth at his nose, and much foaming matter at his mouth; in his gate, as if hee suspected and feared all things, hee keepeth no one or certain path, but run's one while to this side, another while to that; and stumbling like one that is drunk, hee oft-times falleth down on the ground; hee violently assail's whatsoever hee meet's withall, whether it be man, tree, wall, dog, or any thing elf; other dogs shun him, and presently sent him a far off. But if another unawars chance to fall foul on him, hee yeeld's himself to his mercy, fawn's upon him, and privily labor's to get from him, though hee be the stronger and greater. Hee is unmindful of eating and drinking, hee bark's not, yet hee bite's all hee meet's without anie difference, not spareing his master, as who at this time hee know's not from a stranger or enemy. For it is the propertie of melancholie to disturb the understanding, so that such persons as are melancholick, do not onely rage against, and use violence to their friends and parents, but also upon themselves. But when as hee see's water, hee tremble's and shake's, and his haire's stand up on end.

Dogs become mad, not onely in the heat of summer, but also in the depth of winter.

Why melancholick persons hurt themselves.

CHAP. XII.

By what signes wee may know a man is bitten by a mad dog.

The bite of a mad dog not verie painful at the first.



It is not so easie at the first to know a man that is bitten with a mad dog; and principally for this reason, because the wound made by his teeth causeth no more pain then other wounds usually do; contrarie to the wounds made by the sting or bite of other poisonous creatures, as those which presently after they are inflicted, cause sharp pain, great heat, swelling and abundance of other malign accidents, according to the nature of the poison; but the malignitie of the bite of a mad dog appear's not before that the venom shall invade the noble parts. Yet when you are suspicious of such a wound, you may acquire a certain knowledge and experience thereof by putting a piece of bread into the quittance that come's from the wound. For if a hungrie dog neglect, yea more flie from it, and dare not so much as smell thereto, it is thought to be a certain sign that the wound was inflicted by a mad dog. Others add, That if anie give this piece of bread to hens, that they will die the same daie they have eaten it; yet this later, I making experiment thereof, failed, for devouring this virulent bread, they became not a jot the worse. Wherefore I think the former sign to be the more certain, for dogs have a wonderful and sure smelling facultie, whereby they sent and perceiv the malignitie of the like creature. But when as the raging virulencie

Signs of the bite of a mad dog.

virulencie hath invaded the noble parts, then the patients, becomming silent and sorrowful, think of manie things, and at the beginning make a noise with their teeth; they make no answer to the purpose, they are more testie then ordinarie, and in their sleeps they are troubled with dreanis, and strange phantasies, and fearful visions: and lastly, they becom affraid of the water. But after that the poison hath fixed it self into the substance of the noble parts, then all their faculties are disturbed, all the light of their memorie, senses, reason and judgment is extinguished. Wherefore becomming stark mad, they know not such as stand by them, nor their friends, no nor themselves, falling upon such as they meet withall and themselves with their teeth, and nails, and feet. Often twitchings like convulsions do suddenly rise in their limbs; I judg them occasioned by extraordinarie driness, which hath as it were wholly drunk up all the humiditie of the nervous parts; there is a great driness of the mouth with intolerable thirst, yet without anie desire of drink, becaus the minde beeing troubled, they becom unmindful and negligent of such things as concern them, and are needful for them; the eies look fierie and red, and all the face is of the same color; they still think of dogs, and seem to see them, yea and desire to bark and bite just after the manner of dogs: I conjecture, that the virulent humor hath changed all the humors and the whole bodie into the like nature, so that they think themselves also dogs; whence their voice becom's hoarf by much endeavouring to bark, having forgot all decencie, like impudent dogs, to the great horror of the beholders. For their voice grow's hoarf by reason of the great driness of the *aspera arteria*; they shun the light, as that which is enemy to melancholie, wherewith the whole substance of the brain is replenished: on the contrarie, they desire darknes, as that which is like and friendly to them. But they are affraid of the water (though good to mitigate their great distemper of heat and driness) and they flie from looking-glasses, becaus they imagin they see dogs in them, whereof they are much affraid, by reason whereof they shun the water, and all polite and clear bodies which may supplie the use of a looking-glass; so that they throw themselves on the ground, as if they would hide themselves therein, lest they should bee bitten again: for they affirm, that hee which is bitten by a mad dog, alwaies hath a dog in his mind, and so remain's fixed in that sad cogitation. Wherefore thinking that hee sees him in the water, hee tremble's for fear, and therefore shun's the water. Others write, that the bodie by madnes becommeth wondrous drie, wherefore they hate the water, as that which is contrarie thereto, beeing absolutely the moistest element, and so they say that this is the reason of their fearing the water. *Ruffus* write's, that madnes is a kinde of melancholie, and that fear is the proper symptom thereof, according to *Hippocrates*; wherefore this or that kinde of melancholie beget's a fear of these or these things, but chiefly of bright things, such as looking-glasses and water, by reason that melancholick persons seek darknes and solitarines; by reason of the black corruption of the humor wherewith they abound. They fall into cold sweats, a fomie, stinking and greenish matter flow's from the ulcer, by reason of the heat of the antecedent caus and ulcerated part. The urine most commonly appear's watrish, by reason that the strainers, as it were, of the kidnies, are straightned by the heat and driness of the venom. Yet somtimes also it appear's more thick and black, as when nature powerfully using the expulsive facultie, attempt's to drive forth by urine the melancholick humor, the seat of the venom. Also somtimes it is wholly supprest, beeing either incrassated by hot driness, or elf the minde beeing carried other-waies, and forgetful of its own dutie, until at length the patients, vexed by the crueltie of so manie symptoms, and overcom by the bitterness of pain, die frantick, by reason that medicines have not been speedily and fitly applied. For few of those who have used remedies in time, have perished of this disease.

Signs, by which you may gather that the noble parts are tainted.

Why men becomming mad bark like dogs.

Why they shun the light.

Why they are affraid of the water.

Aphor. 25. sec. 6.

The bite of a mad dog taken in hand in time, is for the most part cureable.

CHAP. XIII.

Prognosticks.

Wee cannot so easily shun the danger wee are incident to by mad dogs, as that of other beasts, by reason hee is a domestick creature, and housed under the same roof with us. The virulencie that reside's in his foam or slaver is hot and drie, malign, venenate and contagious, so that it cauffeth a distemper like to it self, in the bodie whereto it shall applie it self, and spread it self over the whole bodie by the arteries; for it doth not onely hurt when as it is taken in by a bite or puncture, but even applied to the skin, unless it bee forthwith washed away with salt water or urine. Neither doth this venom hurt equally, or at all times alike, for it harm's more or less, according to the inclination of the air to heat or cold, the depth of the wound, the strength of the patient's bodie, and the ill humors thereof, and their disposition to putrefaction, the freedom and largeness of the passages. Now malign symptoms happen sooner or later, as in som about the fortieth day, in others about six moneths, and in others a year after. There bee som who thereupon are troubled with the falling-sickness, and at length grow mad: such as fall into a fear of the water, never recover. Yet *Avicen* think's their case is not desperate,

The venom of a mad dog applied outwardly onely may caus madnes.

Whether the *Hidrephobia* or fear of water bee incurable if

An historic. if as yet they can know their face in a glasse; for hence you may gather, that all the animal faculties are not yet overthrown, but that they stand in need of strong purgations, as we shall shew hereafter. *Aëtius* tell's, that there was a certain Philosopher, who taken with this disease, and a fear of water, when as hee descended with a great courage unto the bath, and in the water beholding the shape of the dog that bit him, hee made a stand, but ashamed thereof, hee forthwith cried out, *Quid cani cum Balneo?* i.e. What hath a dog to do with a Bath? which words beeing uttered, hee threw himself forcibly into the Bath, and fearlessly drank of the water thereof, and so was freed from his disease together with his erroneous opinion. It is a deadlie sign to tumble themselves on the ground, to have an hoarse voice, for that is an argument that the weazon is becom rough by reason of too excessive driness. Finally, the principal parts beeing possessed, there is no recoverie or life to be hoped for. Men may well fall mad, though they be not bit by a mad dog. For as the humors are often inflamed of themselves, and caus a *Cancer* or Leprosie, so do they also madnes in melancholick persons. The bites of vipers and other venomous creatures caus not like symptoms to these that com by the biteing of a mad dog; becaus they die before such can com forth or shew themselves. Great wounds made by mad dogs are not equally so dangerous as little, for from the former, great plentie of venomous matter flow's out; but in the later, it is almost all kept in.

CHAP. XIV.

What care must be used to such as are bitten by a mad dog.

An historic.  His case also require's speedie remedies; for such things are in vain which com long after the hurt. The Lawyer *Baldus* experienced this to his great harm; for beeing by chance lightly bit in the lip by a little dog wherewith hee was delighted, not knowing that hee was mad, and neglecting the wound, by reason of the smalness thereof, after som four moneths space, hee died mad, having then in vain assaied all manner of medicines. Wherefore observing these things both for evacuation, as also for alteration, which wee have formerly mentioned in the general cure of wounds inflicted by the bite or sting of venomous creatures, and by all the means there specified, wee must draw forth the venom; and if the wound be large, then suffer it to bleed long and much, for so som part of the poison will be exhausted; if it be not great, it shall be enlarged by scarification, or an occult cauterie, neither shall it be healed or closed up at the soonest, till fourtie daies be passed. Sorrel beaten and applied to the wound, and the decoction thereof taken inwardly, is verie effectual in this case, as *Aëtius* affirm's. To the same purpose you may with good success make a lotion and friction with mustard dissolved in urine or vineger, leaving upon the wound a double cloth moistned in the same decoction: lastly, all acrid, biteing, and verie attractive medicines are convenient in this case. Wherefore som applie rocket boiled and beaten with butter and salt; others take the flower of *Orobis*, and temper it with honie, salt and vineger, and applie it hot. Hors-dung boiled in sharp vineger, or brimstone beaten to powder, and tempered with ones spittle, is good. Also black pitch melted with som salt, and a little *Euphorbium* mixed therewith, and so applied, is good. Som write, that the hairs of the dog, whose bite caused the madnes, applied by themselves, by their sympathie or similitude of substance draw the venom from within outwards; for so a Scorpion beaten and applied to the place whereas it stung, by drawing out the poison that it sent in, restore's the patient to health, both these by often experience are affirmed to have certain event. Others chaw unground wheat, and lay it upon the wound, others roste beans under hot embers, then husk them, and cleave them, and so applie them. Also the wound may be wholesomly washed and fomented with a decoction of Docks, and then the herb beaten may be applied thereto; also the patient may drink the decoction; and by this one remedie *Aëtius* affirm's that hee hath recovered divers; for thus it move's urine plentifully, which is thought much to conduce to the cure of this disease. There be som who applie the leavs of betonie and nettles beaten with common salt; others make a medicine to the same purpose and after the same manner of an Onion, the leavs of rue and salt. Yet the rest are exceeded by treacle dissolved in *aqua vite* or strong wine, and rubbed hard upon the part, so that the blood may follow, laying upon the wound when you have wiped it, cloths dipped in the same medicine, then presently applie garlick or onions beaten with common salt and turpentine: by this onely remedie I free'd one of the daughters of *Madamoiselle de Gron* from the symptoms of madnes, & healed the wound, when as a mad dog had bit her grievously in the calf of the right leg. Alto it is good presently to eat garlick with bread, and then to drink after it a draught of good wine, for garlick by its spirituous heat will defend the noble parts from poison. There be som who wish to eat the roasted liver of the dog that hurt them, or els the liver of a goat, of which remedies as yet I have had no experience. Others prescribe a dram of the seeds of *Agnus castus* to be drunk with wine and butter. Others the powder of river-crabs, burnt and drunk in wine. Or, *R. rad. gent. ʒiij. astacorum fluviat. in fumo combust. & in pollinem redact. ʒiij. terra sigil. ʒʒ. misc.* Give ʒi. of this

The force of Sorrel.

The force of Docks.

An historic.

this same powder in the decoction of river-crabs, and let them drink thereof oft at sundrie times. Manie have cast themselvs into the sea, neither have they thence had anie help against madnes, as *Ferrand Pozet* the Cardinal testifieth in his book of poisons; wherefore you must not relie upon upon that remedie, but rather you must have recourse to such things as are set in the books of Physicians, and approved by certain and manifold experience. But seeing that no poison can kill, unless it bee taken or admitted into the bodie, wee must not fear anie harm by sprinkling our bodies with the *sanies* of a mad dog, viper, toad, or anie other such like venemous creature, if so bee that it bee presently wiped or washed clean away.

Leaping into the sea no certain remedie against madnes.

CHAP. XV.

What cure must bee used to such as fear the water, but yet are able to know themselvs in a glass.



Such as have not their animal facultie as yet o'recom by the malignitie of the rageing venom, must have strong purgations given them. Wherefore, if in anie case Antimonic bee useful, then is it in this, as that which causeth sweats, looseth the bellie, and procure's vomiting. For it is a part of extreme and dangerous madnes to hope to overcome the cruel malignitie of this poison already admitted into the bowels, by gentle purging medicines. Assuredly, such and so great danger is never overcome without danger. Bathes also conduce, which may disperse and draw forth the poison by causing sweats. Also manie and frequent treacle-potions are good to retund the venom, and strengthen the bowels; also it will bee fitting to give them water and all other liquid things, which they so much abhor, in a cup with a cover. Alwaies let such as are poisoned, or bitten, or stung by a mad dog or other venemous beast, keep themselves in some warm and light place, that the poison which by coldnes is forced in, may bee the readilyer drawn out by the means of heat, and the spirits bee recreated by the brightness of the air, and therefore moove from the center to the circumference of the bodie, and let the room bee perfumed with sweet things. To eat verie hot and salt things presently at the beginning, as onions, leeks, all spiced meats, and strong wine not allaied, seem' not to bee besides reason; because such things by their spirituouse heat hinder the diffusion of the poison over the bodie, and strengthen the filled entrails. There bee some also that would have them to feed upon gross and viscous meats, which by obstructing the vessels, may hinder the passage of the poison to the heart and other parts; and by the same reason it will bee better to fill themselves with meat to satietie then otherwise; because the malignitie of humors is encreased by hunger, then which nothing can bee more harmful to venemous wounds. Yet within a short while after, as within five or six daies, they must return to a mediocritie, and use all things temperate, boiled meats rather then roasted, and that in a decoction of opening things, so to moove urine. Lastly, they must keep such a diet as melancholick persons ought to do; neither shall they let blood, lest so the poison should bee further drawn into the veins; but it is good that the patient's bodie bee soluble from the verie first. Let their drink bee wine indifferently allaied with water, *oxymel simplex*, or the syrup of the juice of Citron with boiled water; or elf this following Julip. *Rx. succi limonum, & malorum cirri, an ʒβ. suc. gran. acid. ʒii. aquæ acetosæ, min. & ros. an. ʒi. aq. font. colt. quantum sufficit, fiat Julep, ut ariis est.* Sleep is to bee avoided until the force of the poison is abated; for by sleep the humors flow back into the bowels. All things that resist poison must bee given anie waie whatsoever, as lemons, oranges, *angelica*-roots, gentian, tormentil, burnet, *vervin*, *carduus benedictus*, borage, bugloss, and the like. Let all things that are afterwards set before the patient bee meats of good juice, poisoned, such as are veal, kid, mutton, partridge, pullets, capons, and the like.

The force of Antimonic against madnes.

Why sleep is hurtful to such as are bitten by a mad dog, and all such as are poisoned.

CHAP. XVI.

Of the biteing of a Viper or Adder, and the symptoms and cure thereof.



He remedies that were formerly mentioned against the biteings of mad dogs, the same may bee used against all venemous bites and sting, yet nevertheless each poison hath his peculiar antidote. Vipers or Adders (as wee vulgarly term them) have in their gums, or the spaces between their teeth, little bladders filled with a virulent *sanies*, which is pressed out into the part that they bite with their teeth. There forthwith ariseth a pricking pain, the part at the first is much swollen, and then the whole bodie, unless it bee hindered: gross and bloodie filth sweats out of the wound, little blisters rise round about it, as if it were burn't, the wound gnaws, and as it were feeds upon the flesh, great inflammation possesseth the liver and the gums, and the whole bodie becom's verie drie, becomming of a pale or yelloweish color, with thirst unquenchable; the bellie is griped by fits, a cholerick vomiting molesteth them, the stomach is troubled with a hicketing, the patients are taken with often swooundings, with cold sweat, the fore-runner of death, unless you provide by fit medicines for the noble parts, before the

The bites of vipers how virulent.

The symptoms

the

An historic. the poison shall invade them. *Matthiolus* tell's that hee saw a countrie-man, who, as hee was mowing a meadow, by chance cut an Adder in two with his sithe, which when hee thought it was dead, hee took the one hal fwhereon the head remained, without anie fear in his hand, but the enraged creature, turning about her head, cruelly bit him by one of his fingers, which finger, as men usually do (especially when as they think of no such thing) hee put into his mouth, and sucked out the blood and poison, and presently fell down dead.

An historic. When as *Charls* the ninth was at *Montpelier*, I went into the shop of one *Farges* an Apothecarie, who then made a solemn dispensation of Treacle, where not satisfying my self with the looking upon the vipers which were there in a glasse, readie for the composition, I thought to take one of them in my hands, but whilst that I too curiously and securely handled her teeth which were in her upper jaw, covered with a skin, as it were a case to keep the poison in, the beast caught hold of the verie end of my fore-finger, and bit mee in the space which is between the nail and the flesh; whence presently there arose great pain, both by reason of the part endued with most exquisite sense, as also by the malignitie of the poison: forthwith I exceeding straitly bound my finger above the wound, that so I might press forth the blood and poison, lest they should diffuse themselves further over the bodie. I dissolved old treacle in *aqua vitæ*, wherein I dipped and moistned cotton, and so put it to the wound, and within a few daies I throwly recovered by this onely medicine. You may use in stead of Treacle, Methridate and sundrie other things, which by reason of their heat are powerful drawers, as a quill rosted in hot embers, garlick and leeks beaten and applied, barlie flour tempered with vineger, honie, and goats-dung, and so applied like a pultis. Som think it sufficient forthwith to wash and foment the wound with vineger, salt, and a little honie.

Remedies for the bite of a viper.

Lib. de thériac.

Galen write's that the poison inflicted by the bite of a viper, may be drawn forth by applying to the wound the head of a viper, but otherfom applie the whole viper beaten to mash.

CHAP. XVII.

Of the Serpent called Hæmorrhous.

The Hæmorrhous why so called.



The Serpent *Hæmorrhous* is so called, becauf by biteing hee causeth blood to drop out of all the passages of the wounded bodie; hee is of a small bodie, of the bigness of a viper, with eies burning with a certain fierie brightness, and a most beautiful skin. The back of him (as *Avicen* write's) is spotted with manie black spots, his neck little, and his tail verie small: the part which hee bite's forthwith grow's blackish, by reason of the extinction of of the native heat, which is extinguished by such poison which is contrarie thereto in its whole substance. Then follow's a pain of the stomach and heart, these parts beeing touched with the pestiferous qualitie of the poison. These pains are seconded by vomiting, the orifice of the ventricle beeing relaxed by a *Diarrhea*, the retentive facultie of all the parts of the bellie beeing weakned, and the veins which are spred through the guts, not beeing able to retain the blood contained in them. For the blood is seen to flow out, as in streams, from the nose, mouth, ears, fundament, privities, corners of the eies, roots of the nail, and gums, which putrefie, the teeth falling out of them. Moreover there happen's a difficultie of breathing, and stoppage of the urine, with a deadlie convulsion.

Wonderfull bleedings.

The cure is forthwith to scarifie, and burn the bitten part, or els to cut it quite off, if that it may be don without danger of life, and then to use powerfullie drawing Antidotes.



CHAP. XVIII.

Of the Serpent called Seps.

The reason of the name, and description of the Seps.

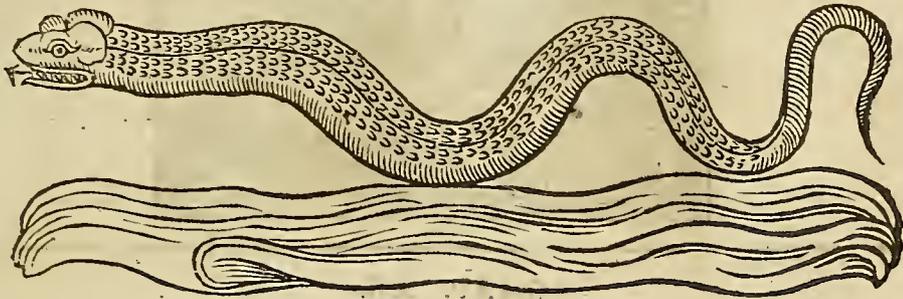


The Serpent *Seps* is so called, becauf it causeth the part which it bite's, forthwith to putrefie, by reason of the cruel malignitie of its poison. It is not much unlike the *Hæmorrhous*, but that it curl's or twine's up the tail in divers circles. *Pausanias* write's that this serpent is of an ash-colour, a broad head, small neck, big bellie, writhen tail, and as hee goe's, hee run's aside like a crab. But his skin is variegated and spotted with several colors, like to *Tapistrie*. By the crueltie of his caustick and

and putrefying venom, hee burn's the part which hee hath bit, with most bitter pain; hee causeth the shedding of the hairs, and as *Aëtius* addeth, the wound at the first calleth forth manifest blood, but within a little while after, stinking filth. The putrefied affected parts wax white, and the bodie all over becom's of the color of that scurf, which is termed *Alphos*, so that by the wickedness of this putrefactive poison, not onely the spirits are resolv'd, but also the whole bodie consumed, as by fire, a peitilent carbuncle, and other putrid tumors, arising from a hot and humid or suffocating constitution of the air. Now for the remedies, they must bee such as are formerly prescribed against the biteings of a viper.

The symptoms.

The figure of the Serpent Seps.



CHAP. XIX.

Of the Basilisk or Cockatrice.

THe Basilisk far exceed's all kindes of Serpents in the curstness of its poison. Therefore it is affirmed by *Nicander*, that into what place soever hee com's, other venomous creatures do forthwith flie thence, for that none of them can so much as endure his hissing; for hee is thought to kill all things even with this, and not with his biteing and touch onely; besides, if anie of them happen to get anie meat or drink, and perceiv that the Basilisk is not far from thence, he flie's back, and neglect's the getting of nourishment necessarise for life. *Galen* write's, that the Basilisk is a yellowish serpent, with a sharp head, and three riseings distinguished with white spots, and riseing up in form of a crown, by reason whereof hee is stiled the King of Serpents. Certainly the violence of his poison in killing men is so great, that hee is therefore thought to kill men, and other creatures by his sight onely. *Solinus* affirm's, that the bodie of a dead Basilisk hath wondrous faculties. Wherefore the inhabitants of *Perganum*, in antient times, gave a mightie price for one, to hang upon the joists of the temple of *Apollo*, so to drive away the Spiders and Birds, lest they should there weave their webs, or the other build their nests in that sacred place. Verily no ravenous creature will touch their carcases; but if constrained by hunger they do touch it, then they forthwith fall down dead in the same place: and this happen's not onely by eating their bodie, but also by devouring of the bodies of such beasts as are killed by their biteings. They kill the trees and shrubs by which they pass, not onely by their touch, but even with their breath. Among the western *Æthiopians* is the fountain *Nigris*, near which there is a serpent called *Catablepas*, small in bodie, and slow, haveing a great head; wch it scarce can carrie, but that it lie's alwaies upon the ground, otherwise it would kill abundance of people, for it forthwith kil's all that see's the eies thereof, the Basilisk hath the same force; hee is bred in the province of *Cyrene*, of the length, of som twelv fingers, with a white spot in his head, resembling a crown; hee chafeth away all serpents with his hiss: Weasels are the destruction of such monsters: thus it pleased nature, that nothing should bee without its equal; they assail them in their dens, beeing easily known by the barrenness or consumption of the soil. These kill them also by their sent, and they die, and the fight of nature is ended: thus nature to the magnanimous Lion, lest there should bee nothing which hee might fear, hath opposed the weak creature the Cock, by whose crowing onely hee is terrified and put to flight. *Erasistratus* write's, that a golden yellowness affect's the bitten part of such as are hurt by a Basilisk, but a blackness and tumor possesseth the rest of the bodie, all the flesh of the muscles within a while after falling away peece-meal. An antidote against this must bee made of a dram of *Castoreum*, dissolved in wine and drunken, or in the juice of poppie. But *Aëtius* think's it superfluous to write remedies against the Basilisk, when as the sight and hearing onely kill's such as either see or hear her.

The efficacy of the poison of the Basilisk.

Lib. de theriac.

Why the Basilisk is thought to kill by his onely sight.

Plin. lib. 8. cap. 21.

The *Catablepas*.

Nothing in nature without its equal. Symptoms.

Cure.

The figure of a Basilisk.



CHAP. XX.

Of the Salamander.

The malignity of a Salamander.



He Salamander kill's not onely such as it bite's, by making a venemous impression, but it also infect's the fruits and herbs over which it creep's, with a spittle or gross moisture which sweat's out of all the bodie, to the great danger of the health and life of such as eat these things at unawares: wherefore it need not seem strange, which is received by som late writers, that som families have all died by drinking water out of the pits, whereinto a Salamander by accident was fallen. For if it shall creep upon a tree, it infect's all the fruit with the qualities of cold and moist poison, wherein it yield's not to Aconite.

The temper of her.

Symptoms.

The cure.

Lib. 2. cap. 54.

How a Salamander may be said to live in the fire.

Aëtius write's, that such as are infected with the poison of a Salamander, certain parts of their bodie grow livid, so that they fall away often, being putrefied. At the first there appear white spots over the bodie, then red, afterwards black with putrefaction, and the falling away of the hairs. The cure is, to procure vomit, to loof the bellie with a glyster, and to give them Treacle and Mithridate in potions. *Avicen* prescribe's the same things against this kinde of poison as against *opium*, by reason of the cold nature of them both; the proper antidote is turpentine, *styrax*, nettle-seeds, and cypress-leaves. *Dioscorides* write's, that the Salamander is a kinde of Lizard, dull, variegated, and which is falsly reputed not to bee burnt by fire. But *Plinie* saith shee is so cold, that shee extinguisheth the fire by her touch onely, being laied upon hot coals. On the contrarie, *Matthiolus* saith, that cast into a great flame, they are quickly consumed. It is easie out of *Aëtius* to reconcile these disagreeing opinions. This creature, saith hee, passeth through a burning flame, and is not hurt, the flame divideing it self, and giving her way, but if shee continue anie time in the fire, the cold humor being consumed in her, shee is burnt. Now the Salamander is black, variegated, with yellow spots, star-fashion.

The figure of a Salamander.



CHAP. XXI.

Of the Torpedo.

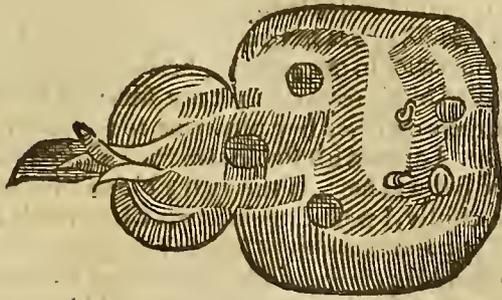
The craft of the Torpedo.

His stupefying force.

The *Torpedo* hath his name from the effect, by reason that by his touch and power the members becom torpid and numb; in muddie shoars it live's upon fish, which shee catcheth by craft. For lying in the mud, shee so stupefie's those that are nigh her, that shee easily prey's upon them; shee hath the same power over men, for shee send's a numness not onely into the arm of the fisher-man, but also over all his bodie, although his fishers pole bee between them.

The

The effigies of a Torpedo.



CHAP. XXII.

Of the Biteings of Asps.



He wound which is made by an Asp is verie small, as if a needle were thrust into the part, and without anie swelling. These symptoms follow upon her bite, sudden darknes cloud's their eies, much agitation in all their bodies, but gentle notwithstanding; a moderate pain of the stomach trouble's them, their fore-heads are continually troubled with convulsive twitchings, their cheeks tremble, and their eie-lids fall gently to rest and sleep; the blood which flow's from the wound is little, but black; death no longer deferred then the third part of a daie, will take them away by convulsions, unless you make resistance with fitting remedies. The male Asp make's two wounds, the female four, as it also happen's in the biteings of vipers. Now for that that the poison of Asps congeal's the blood in the veins and arteries, therefore you must use against it such things as are hot and subtil of parts, as mithridate or treacle dissolved in *aqua vitæ*, and the same powred into the wound; the patient must bee warmed by baths, frictions, walking, and the like. When as the hurt part becommeth purple, black or green, it is a sign that the native heat is extinct and suffocated by the malignitie of the venom. Therefore then it is best to amputate the member, if the partie bee able to endure it, and there bee nothing which may hinder. *Vigo* write's, that hee saw a Mountebank at Florence, who, that hee might sell the more of his Antidotes, and at the better rate, let an Asp to bite him by the finger, but hee died thereof som four hours after. To the same purpose you may read *Matthiolus*, whereas hee write's that those Impostors or Mountebanks to cozen the better, and deceiv the people, use to hunt and take vipers and asps long after the spring, that is, then when as they have cast forth their most deadlie poison; then they feed them with meats formerly unusual to them, so that by long keeping and care, at the length they bring it to pass, that they put off a great of their venomous nature; neither beeing thus satisfied, they make them oftentimes to bite upon peeces of flesh, that so they may cast forth into them the venom which is contained in the membrane between their teeth and gums. Lastly, they force them to bite, lick and swallow down an astringent medicine, which they compose and carrie about for the same purpose, that so they may obstruct the passages by wch the venom used to flow out, for thus as length their bites will bee harmles, or without great danger. This therefore is their art, that so they may sell their counterfeit treacle to the people at a high rate, as that which is a most safe remedie against all poisonous bites. *Christopher Andrew* in his book called *Oicoiatria*, write's that the Islands of Spain are everie where full and stor'd with serpents, asps, and all sorts of venomous beasts, against whose bites they never observed or found anie benefit in treacle. But the efficacie of the following Antidote is so certain and excellent, and approved by so manifold experience, that in the confidence thereof, they will not bee afraid to let themselves bee bitten by an Asp. Now this medicine is composed of the leavs of Mullet, Avenes and red-stock-gilliflowrs in like quantitie, which they boil in sharp vinegar and the urine of a sound man, and therewith foment the wounded part. Yet if hee have not taken nor used anie thing of a good while after the wound, it will bee better and more certain, if the patient drink three ounces of this decoction fasting two hours before meat.

Symptoms.

Curing.

An historie.

By what means Asps may bee made less hurtful.

Gal. lib. de Ther. ad pisonem.

Against the bites of what serpents treacle doth no good.

A certain remedie against the biting of Asps.

CHAP. XXIII.

Of the biting of a Snake.

I Have thought good in a true historie to deliver the virulent malignitie of the bite of a Snake, & the remedies thereof. When as King *Charls* the ninth was at *Moulins*, *Monsieur Le*

An historie.

Ferre,

The cure. Feure the King's Physician, & I were called to cure the Cook of the Ladie of Castelpers. Who gathering hops in a hedg to make a sallet, was bit on the hand by a snake that there lay hid, hee putting his hand to his mouth, sucked the wound to ease the pain by sucking forth the venom. But his tongue forthwith swelled so big, that hee could not speak his minde: besides, his whole arm, even to his shoulder, was in like sort much swelled, his pain was so vehement, that it made him swoon twice in my presence, his face was wan and livid like to a dead bodie; and though I despaired of his recoverie, yet not suffering him to bee quite forsaken, I washed his mouth with treacle dissolved in white wine, and gave him som thereof to drink, adding thereto som *aqua vite*. I opened his swoln arm with manie and deep scarifications, especially in the place where hee was hurt, I suffered the blood which was wholly serous and sanious, to flow more plentifully, I washed the wovnds with treacle and mithridate dissolved in *aqua vite*, and then I put him exceeding warm in bed, procureing sweat, and making him to lie awake, lest sleep should draw the poison inwards to the entrails. I by these means so far prevailed, that on the day after hee was free'd from all his malign symptoms. Therefore I judged, it onely remained for a perfect cure, that the wound should bee long kept open and washed with treacle; neither was I deceived, for within a few daies hee was perfectly recovered.

CHAP. XXIV.

Of the biteings of Toads.

The bites of Toads how harmful.



Though Toads want teeth, yet with their hard and rough gums they so straitly press or pinch the part which they shall take hold on, that they will force their poison therinto, and so over the whole bodie by the pores of the pressed part. Moreover they cast forth their venom by urine, spittle and vomit upon herbs, but chiefly upon Strawberries, the which they are reported greatly to affect. Hence manie suddenly and ignorantly catch their deaths.

An historic.

The symptoms occasioned by the poison of Toads.

I heard from a man of verie good credit, that there were two merchants not far from the Citie *Tholous*, who whilest dinner was provideing, walked into the Garden that belonged to the Inn, where they gathered som sage leaves, and unwashed as they were put them into their wine. They had not as yet dined, when beeing taken with a sudden *Vertigo*, the whole Inn seemed to run round, then losing their sight, they fell into a swoon, intermixed now and then with convulsions. But they stammered with their lips and tongues becomming black; a froward and horrid look, with continual vomiting, and a cold sweat, the fore-runner of death, which presently seized upon them, their bodies becomming exceedingly much swoln. But the Justices of the place suspecting that they were poisoned, made the Inn-keeper and the Guests to bee apprehended, beeing examined they all constantly and with one voice answered, That the dead parties ate of the same meat and drink which the rest did, but onely that they put sage into their wine. A Physician was asked the question whether sage might bee poisoned; hee answered, it might: but to com to the purpose, it must appear whether anie venomous creature hath poisoned the plant with her spittle or venomous *sanies*. This which was lightly pronouced, and onely by conjecture, was by the eie found to bee true. For at the root thereof there was found a hole in the ground full of Toads, who got out by putting in of warm water, made it credible that the plant was poisoned by their spittle and urine, whereby you may understand how unwisely they do, who devour herbs and fruits newly gathered without washing. Also wee must take heed lest falling asleep in the fields, wee lie not near the holes which toads or other venomous beasts of the same nature have made their habitation. For thence a venomous or deadlie air may bee drawn into the lungs. For the same caus wee must abstain from eating of frogs in the month of May, becaus then they engender with toads. Oxen in seeding somtimes lick up small toads together with the grass, which presently will breed their great harm, for thereupon the oxen swell so big, that they often burst withall. Neither is the venom of toads deadly onely becing taken inwardly, but even sprinkled upon the skin, unless they forthwith wipe the place, and wash it with urine, water and salt. Such as are poisoned by a toad turn yellow, swell over all their bodies, are taken with an Asthmatick difficultie of breathing, a *Vertigo*, convulsion, swoounding, and lastly by death it self. These so horrid symptoms are judged inherent in the poison of toads, not onely by reason of the elementarie qualities thereof, coldness and moisture, which are chiefly predominant therein; but much rather by the occult propertie which is apt to putrefie the humors of that bodie whereto it shall happen. Therefore it will bee convenient to procure vomit, especially if the poison bee taken by the mouth, to give glisters, and to weaken the strength of the poison by hot and attenuateing Antidotes, as treacle and mithridate dissolved in good wine; but in conclusion to digest it by bathes, stoves, and much and great exercise. *Rondeletius* in his book *de piscibus*, affirm's the same things of the cursed venom of toads, as wee have formerly delivered: yet that they seldom bite, but that they cast forth either their urine, the which they gather in a great quantitie in a large bladder, or

May-frogs.

The cure.

elf their venomous spittle or breath against such as they meet withall, or assail; besides, the herbs which are tainted by their poisonous breath, but much more such as are sprinkled with their spittle or urine, are sufficient to kill such as eat them. The Antidotes are juice of betonie, plantane, mug-wurt, as also the blood of Tortoises made with flower into pills, and forthwith dissolved in wine, and drunken. *Plinie* write's, that the hearts and spleens of Toads resist poison. The vulgar opinion is false, who think that the Toad-stone is found in their heads, which is good against poison.

Antidotes against the poison of Toads.

CHAP. XXV.

Of the stinging of a Scorpion.



Scorpion is a small creature with a round bodie in form of an egg, with manie feet, and a long tail consisting of manie joints, the last whereof is thicker, and a little longer then the rest, at the verie end thereof is a sting, in som two, hollow and replete with cold poison, the which by the sting it cast's into the obvious bodie; it hath five legs on each side forked with strong claws, not unlike to a Crab or Lobster, but the two foremost are bigger then the rest; they are of a blackish or footie color, they go aside, aside; and oftimes fasten themselves with their mouths and feet so fast to men, that they can scarce bee plucked there-hence. There bee som who have wings like the wings of Locusts, wasteing the corn, and all green things with their biteing and burning. Such are unknown in France. These flee divers countries, like winged Ants. This is likely to bee true by that which *Matthiolus* write's, that the husband-men in Castile in Spain, in digging the earth oftimes finde a swarm of Scorpions, which betake themselves thither against winter. *Plinie* write's, that Scorpions laid waste a certain part of Æthiopia, by chafeing away the inhabitants. The Antients made divers kindes of Scorpions, according to their varietie or difference of colors, som beeing yellow, others brown, reddish, ash-colored, green, whitish, black, duskie; som have wings, and som are without. They are more or less deadlie, according to the countries they inhabit. In Tuscanie and Scithia they are absolutely deadlie, but at Trent, and in the Iland Pharos their stinging is harmles. The place stung by a Scorpion presently begin's to bee inflamed, it waxeth red, grow's hard, and swell's, and the patient is again pained, hee is one while hot, another while cold, labor presently wearie's him, and his pain is som-whiles more, and som-whiles less, hee sweat's and shake's as if hee had an Ague, his hair stand's upright, paleness discolor's his members, and hee feel's a pain, as if hee were pricked with needles over all his skin, winde flieth out backwards, hee strive's to vomit and go to stool, but doth nothing; hee is molested with a continual fever and swoounding, which at length proov's deadlie, unless it bee remedied. *Dioscorides* write's, that a Scorpion beaten and laid to the place where hee is stung, is a remedie thereto; as also eaten roasted to the same purpose. It is an usuall, but certain remedie to annoint the stung place with the oil of Scorpions. There bee som who drop into the wound the milkie juice of figs; others applie calamint beaten, other-som use barlie-meal mixed with a decoction of Rue. Snails beaten together with their shells, and laid thereon, presently asswage pain. Sulphur vivum mixed with Turpentine, and applied plaster-wise, is good; as also the leavs of Rue beaten, and laid thereto. In like sort also the herb *Scorpioides*, which thence took its name, is convenient, as also a bryonie-root boiled and mixed with a litile sulphur and old oil. *Dioscorides* affirm's, Agarick in powder, or taken in wine to bee an Antidote against poisons, verily it is exceeding good against the stingings or biteings of Serpents. Yet the continual use of a bath stand's in stead of all these, as also sweat, and drinking wine somewhat allai'd. Now Scorpions may bee chased away by a fumigation of Sulphur and Galbanum; also oil of Scorpions dropped into their holes, hinder's their conning forth. Juice of raddish doth the same. For they will never touch one that is besmeared with the juice of radish or garlick, yea verily, they will not dare to com near him.

The description of a Scorpion. His tail.

Winged Scorpions.

Symptoms.

Lib. 2. cap. 10.
Lib. 6. ca. 44.

Lib. 3. cap. 1.

Scorpions chased away with the juice of Garlick or Radish.

CHAP. XXVI.

Of the stinging of Bees, Wasps, &c.



Bees, Wasps, Hornets and such like, caus great pain in the skin wounded by their stinging, by reason of the curstness of the venom which they send into the bodie by the wound, yet are they seldom deadlie, but yet if they set upon a man by multitudes, they may com to kill him. For thus they have somtimes been the death of horses. Wherefore becauf such as are stung by these, by reason of the crueltie of pain, may think they are wounded by a more virulent and deadlie creature, I think it not amiss to set down what signes follow upon their stingings. Great pain presently ariseth, which continueth untill the sting left in the part is taken forth, the part becom's red and swoln, and there riseth a push or litile blister. The cure is, forthwith to suck the wound

Symptoms.

The cure.

verie hard, and thereby to draw forth the stings, which if they cannot thus bee gotten out, the place, if nothing hinder, is to bee cut, or elſ temper ashes with leaven or oil, and so applie them: the part also may bee verie conveniently put into hot water, and there fomented for an houres space, and at length washed in sea-water. Cresses beaten and applied, aswage the pain and discurſ the humor causing the tumor. Ox-dung macerated in oil and vineger, and applied hot, doth the same. There are som who applie to the part the same creatures beaten, as wee formerly said of Scorpions; beans chawed and laid to the part aswage pain. Vineger, honie and salt applied exceeding hot, are good, if besides, you dip a cloth therein, and lay it upon the place; *sulphur vivum* tempered with spittle hath the same effect. The milkie juice of unripe figs incorporated with honie, is judged verie effectual, but it is much the better, mixed with treacle. Wasps will not sting nor bite such as annoint their bodies with the juice of mallows mixed with oil. They may bee quickly chased away with the fume of brimstone and such like things. A wasp is said, if shee finde a viper dead, to dip her sting in the others poison, and thence men learned to empoison the heads of their arrows. The rough and hairie worms, which are commonly called Bear-worms, especially those which breed about a Pine-tree, caus great itching, redness and swelling in the part which they bite, touch or grate upon verie hard. A remedie hereof is onions beaten with vineger, and the rest of the things formerly mentioned.

The bites of
Bear-worms.

CHAP. XXVII.

Of the bite of a Spider.

Differences of
Spiders.



Spiders weav webs with various art, yet in these they alwaies make a lurking-hole, so to lie in wait to catch the intrapped flies, and so to prey upon them. There are manie sorts of Spiders; one is termed *Rbagium*, round, and like a black-berry, whence it taketh the name; it hath a verie small mouth under the mid'st of the bellie, and most short feet, as if they were imperfect; her bite is as painful as the sting of a Scorpion. Another is called *Lupus*, or the Wolf-Spider, becaus shee doth not onely lie in wait to catch Flies, but also Bees and Wasps, and all such things as may flee into her web. The third is named *Myrmecion*, it is larger then an Ant, but headed like one, the bodie thereof is black, and hath white spots or streaks running towards the back. The fourth kinde may bee called *Vesparium*, in other things resembling a Wasp, but that it want's the wings; of a reddish color, and living onely on herbs. The Antients have thought their biteings to bee venomous. Now their poison is therefore thought to bee cold, becaus the symptoms thence arising are winde in the bellie, refrigerations of the extreme parts of the bodie, numbness in the bitten part, with sens of cold and shakeing. The wound must forthwith bee washed with verie hot vineger; then must you lay thereto Onions, and such like things beaten, then procure sweat by art, as by baths and stoves, yet nothing is more effectual then treacle and mithridate.

CHAP. XXVIII.

Of Cantharides and Buprestes.

The description
of *Cantharides*.



Cantharides shine as it were with a golden color, acceptable to the eie, by reason of the commixture of a blewish or greenish color therewith, yet their smell is ungrateful. They are hot and drie in the fourth degree, and so caustick, corrosive and venomous, not onely by reason of their caustick qualitie, but becaus of a secret antipathie which they naturally have against the urinarie parts; which effects they produce not onely if they bee taken by the mouth into the bodie, but even applied outwardly to rais blisters. Such as have taken them inwardly, have the taste of pitch, or som thing like *cedria*, or the rosin of Cedars in their mouths; it is likely that this taste proceed's from the humors dissolved by the putredinous heat in the stomach, guts & liver, and the vapors that there-hence arise; for taken inwardly, they gnaw, exulcerate and burn all parts from the mouth even to the bellie, whence ensueth a bloodie-flux, excrements flowing out, which resemble the washings of new-killed flesh. Then follow's a burning fever, *vertigo*, madness, restlessness, the brain beeing disturbed by the plentie of vapors lifted up from the corroded and burnt parts and humors, which therefore when as they appear, you may know the affect is uncureable. In the parts appointed for the receiving and conveyance of the urine they caus a burning inflammation, excoriation, strong and continual erection of the yard, whence ensue's a bloodie and painful strangurie, in stead of which there oftimes happen's or succeed's an *Ischurie*, or stoppage of the water, whence a gangrene and mortification of the part, and so in conclusion of the whole bodie besides. When as *Cantharides* are taken inwardly, the remedie is vomiting, drinking of Cows-milk to correct the heat and driness, good also to mitigate the ulcers, and stay the *dysenterie*; it is good also to inject it into the guts by glyster.

Enemies to
the Bladder.
Symptoms.

In stead thereof sallet-oil, or oil of sweet almond's is convenient to retund the acrimonie of the poison fastned to the sides of the stomach. The rest and whole cure of this poison you may learn by the following historie. A certain whore, the better to enjoy the companie of a young Abbot who loved her, entertained him with a banquet, and sprinkled divers of their cates with the powder of *Cantharides*, to incite him the more to venerie. The next day, when as the Abbot cast forth pure blood at his fundament and yard which stood verie stiffe, hee called som Physicians, who presently by the fore-mentioned symptoms, which were all verie apparent in him, understood that hee had *Cantharides* given him: wherefore they purged him upwards with vomits, and downwards by glysters made with French-barlie, Rice, a decoction of mallows, seeds of line and fenugreek, oil of lillies, goats-suet: then presently after they gave him a little treacle with a good quantitie of *conserv's* of violets, which might draw the poison outwards, they gave him milk to drink, and caused him to use injections into the urinarie passage and guts made of refrigerateing things, as the juice of lettuce, purslaine, cucumbers, gourds, melons; of tough and viscid things, that so they might stick the more easly and longer to the ulcerated parts; as the mucilages of *psilium*, mallows, quince-seeds, syrup of water-lillies, poppies and violets; fresh butter, and oil of sweet almonds, and they made him drink onely barlie-water, or the common ptisan; they let him feed on veal, kid, and pork boiled with lettuce, purslaine, barley and violet leaves, the which by their humiditie might relax the bellie, and by their toughnes lenifie the roughnes of asperitie; they applied also refrigerateing things to the loines, share and *perineum* to aswage the heat of the urine. At length they put him into a warm bath, and to conclude, they left nothing unattempted to draw forth or weaken the poison. But all their endeavors were in vain, for the Abbot died, not being destitute of remedies conveniently prescribed, but overcom by the contumacious malignitie of the poison. The Physicians

A historie.

The cure.

A historie.

Cantharides applied to the head, ulcerate the bladder.

A remedie against Leprous pustles.

The reason of the name.

Buprestes also are of the kinde of *Cantharides*, beeing like unto them in shape and facultie. If an Ox or sheep or anie other creature shall in feeding devour one of them, hee will presently swell up like a Tun; whence also they take their name: if a man take them inwardly, he shall endure the like symptoms as in takeing *Cantharides*, and over and besides both his stomach and his whole bellie shall bee wonderfully puffed up, as if hee had a Dropsie. It is probable that this inflation like a tympanie happeneth by humors diffused and resolved into vapors by the fierie acrimonie of the venom: They are to be cured after the same manner as such as have drunk *Cantharides*, Lastly, as in all other poisons which are taken into the bodie, so also here, if the poison taken by the mouth be thought as yet to be in the stomach, you must then procure vomit. If it be gotten into the guts, then must it be drawn away by glysters; if diffused over all the bodie, then must you make use of such things as may drive the poison forth from the center to the circumference, such as are baths and stoves.

CHAP. XXIX.

Of Horf-leeches.

Horf-leeches are also venomous, especially such as live in muddie stinking ditches, for these are less hurtful which reside in clear and pure waters. Wherefore, before they are virulent.

What horf-leeches most to

Divers remedies according to the diversitie of the parts.

to bee used in cases of physick, they must bee kept for som daies space in clean water, that so they may purge themselvs; otherwise they may chance to leav ulcers hard to cure in the places whereto they shall bee applied, and the rather, if they bee violently plucked off, because they by that means leav their teeth fastned in the part. Now hee which by chance hath swallowed a Horf-leech, must bee asked in what part hee feeleth her, that is, the sens of her sucking. For if shee stick in the top of the throat or gullet, or in the midd't thereof, the part shall bee often washed with mustard dissolved in vineger. If shee bee near the orifice of the ventricle, it is fit that the patient by little and little swallow down oil with a little vineger. But if shee fasten to the stomach, or the bottom of the ventricle, the patient, by the plucking of the part, shall perceiv a certain sens of sucking, the patient will spit blood, and will for fear becom melancholick. To force her thence, hee shall drink warm water with oil; but if shee cannot so bee loosed, then shall you mix aloës therewith, or som thing endued with the like bitterness, for shee will by that means leav her hold, and so bee cast forth by vomit. You may perceiv this by such as are applied to the skin, on the external parts, for by the aspersion of bitter things, whether they bee full or emptie, they will forsake their hold. Then shall the patient take astringent things, which may stop the blood flowing forth of the bitten part, such is *Conserv of Roses*, with *terra sigillata*, *Bole-Armenick*, and other more astringent things, if need so require. For if they shall adhere to som greater branch of som vein or arterie, it will bee more difficult to stop the flowing blood.

But for that not the earth onely, but the sea also produceth venemous creatures, wee will in like sort treat of them, as wee have already don of the other, beginning with the Lampron.

CHAP. XXX.

Of the Lampron.

The description of the Lampron.



The Lampron, called in Latine *Muræna*, is a sea-fish something in shape resembling a Lamprie, but shee is bigger and thicker, and hath a larger mouth, with teeth long, sharp and bending inwards, shee is of a duskie color, distinguished with whitish spots, and som two cubits length; the Antients had them in great esteem, because they yield good nourishment, and may bee kept long alive, in pools or ponds, and so taken as the owners pleas to serv their table, as it is sufficiently known by the historie of the Roman *Crassus*. Shee by her biteing induceth the same symptoms as the viper, and it may bee helped by the same means. Verily the Lampron hath such familiaritie with the Viper, that leaving her natural element the sea, shee leapeth ashoar, and seeketh out the Viper in her den to join with her in copulation, as it is written by *Ælian* and *Nicander*.

The natural friendship of the Lampron and Viper.

CHAP. XXXI.

Of the Draco-marinus, or sea-Dragon.



The sea-Dragon, called by the French *Viva*, for his vivacitie (and by the English a *Viver*, or as som say, a *Qua-viver*) because being taken in fishing, and drawn out of the sea, shee is said long to survive. Her pricks are poisonous, but chiefly those that are at the edges of her gills. Which is the reason that Cooks cut off their heads before they serv them up to the table; and at Roven the fisher-men lay them not upon their stalls to sell before they have cut off their heads. The wounded part of such as are hurt, pain's them much with inflammation, a fever, swounning, gangrene and deadlie mortification, unless it bee quickly withstood. Not verie long ago the wife of *Monsieur Fromaget*, Secretarie of the requests, was wounded with a prick of this fish in her middle-finger, there followed a swelling and redness of the part, without much pain; but perceiving the swelling to encreas, being made more warie by the mischance of her neighbor the wife of *Monsieur Bargelonne*, Lievtenant particular in the Chastelet of Paris, who died not long before by the like accident being neglected, sent for mee; I understanding the caus of her disease, laid to her pained finger and her whole hand, besides a pulvis made of a great Onion roasted under the coles, leaven, and a little treacle. The next day I wished her to dip her whole hand into warm water, so to draw forth the poison, then I divided the skin about it with much scarification, but onely superficially; to the gashes I applied Leeches, which by sucking drawing a sufficient quantitie of blood, I put thereto treacle dissolved in *aqua vite*. The next day the swelling was asswaged, and the pain eased, and within a few daies shee was perfectly well. *Dioscorides* write's, that this fish divided in the midd't, and applied to the wound, will cure it.

Symptoms.

An historie.

The cure.

CHAP. XXXII.

Of the *Pastinaca marina*, or *Sting-Ray*, which some call the *Fierce-claw*.

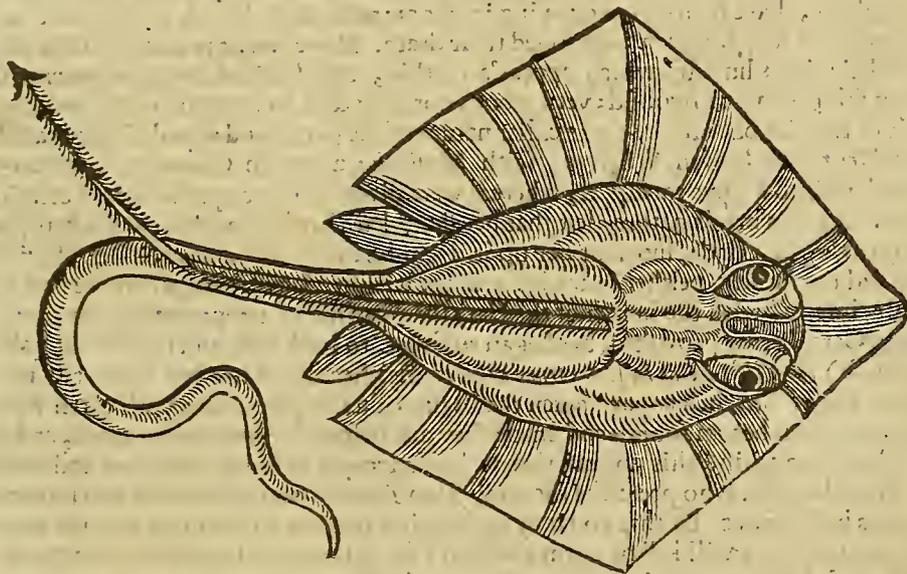
Such as are stung by a *Sting-Ray* (as *Aëtius* hath written) the place of the wound doth manifestly appear; there ensue's thereon lasting pain and the numbness of the whole bodie. And seeing that it hath a sharp and firm sting, whereby the nervs by the deepness of the stroke may be wounded, it so happen's that some die forthwith, their whole bodies suffering convulsions. Moreover, it will kill even the verie trees into whose roots it is fastned. Yet *Plinie* affirm's, that it is good against the pain of the teeth, if the gums be scarified therewith, yea, and it being made into powder with white *Hellebore*, or of it self, will cause teeth to fall out without anie pain, or anie violence offered to them. This fish is good meat, the head and tail excepted; some of them have two stings, other some but one; these stings are sharp like a saw with the teeth turned towards their heads. *Oppianus* write's, that their stings are more poisonous then the *Persian's* arrows, for the force of the poison remaineth, the fish being dead, which will kill not onely living creatures, but plants also. Fisher-men, when they catch this fish, presently spoil him of his sting, lest they should be hurt therewith. But if by chance they be hurt therewith, then take they forth his liver, and lay it to the wound; furthermore, the fish being burnt and made into powder, is the true antidote of his wound. The *Sting-Ray* live's in muddie places near the shoar, upon the fishes that hee hunteth and catcheth with his sting, having the teeth thereof turned towards his head for the same purpose. Hee is not unlike a *Ray*, and I have here given you his figure.

The symptoms.

Lib. 9. cap. 48.

The virulencie of her sting.

The figure of a *Sting-Ray*.



CHAP. XXXIII.

Of the *Lepus marinus*, or *Sea-hare*.

P*linie* call's the *Sea-hare*, a mass or deformed piece of flesh. *Galen* saith it is like a *Snail* taken forth of the shell. It is exceedingly poisonous in the judgment of the *Antients*; wherefore it is not amiss to set down the description of it, lest wee might eat it at unawares, too earnestly view it, or smell thereto, as also that wee may use it against the poison thereof; it is an inhabitant not onely of the sea, but also of lakes of sea-water, especially such as are muddie; it is of the same color as the hair of the land-hare is, it hath a hole in the head, out of which hee putteth a certain piece of flesh, and pluck's it back again when as hee is seen. *Paulus*, *Aëtius*, *Plinie*, *Galen* and *Nicander* are of one opinion, and agree in this, that if a woman big with childe do too earnestly look upon one, shee will vomit, and presently after abort. They which have drunk this poison, saith *Dioscorides*, are troubled with pain in the bellie, and their urine is stopped. If they do make water, then is it bloodie; they run down with stinking sweat, which smell's of fish; a cholerick vomiting sometimes mixed with blood ensue's thereon.

The description of the Sea-hare.

The earnest beholding of a Sea-hare will cause abortion.

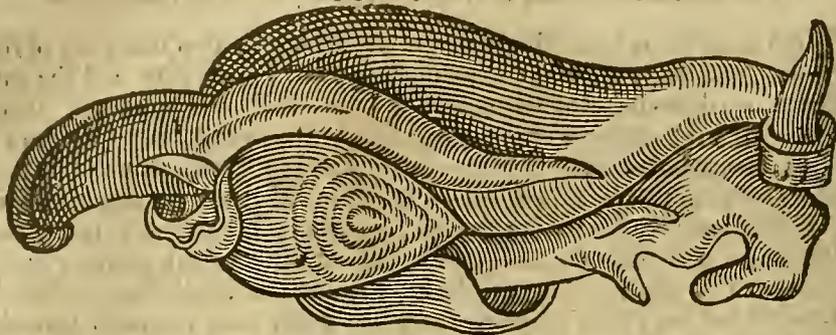
The symptoms.

The antidote.

Aëtius write's, that all their bodies turn yellow, their faces swell, and their feet, but chiefly their genital member, which is the cause they cannot make water freely. *Galen* write's, that it is the propertie of the *Sea-hare* to exulcerate the lungs. Their antidote is *Asses-milk*, *muskadine*, or honied-wine continually drunken, or a decoction of the roots and leavs of mallows.

Mallows. It is good for the falling away of the hair. I have here given you the figure thereof out of *Rondeletius* his book of Fishes.

The figure of a Sea-Hare.



CHAP. XXXIV.

Of the poison of Cats.

A Cat's hair most subject to choak.



The breath of a Cat most hurtful to the lungs.

An historie.

A wonderful antipathie between a man and a Cat.

The Antidote against the brains of a Cat.

Cats dangerous for children.

Not onely the brain of a Cat, beeing eaten, is poisonous and deadlie to man, but also their hair, their breath, yea and their verie presence to som prove deadlie. For although anie hair devoured unawares, may bee enough to choak one, by stopping the instruments of respiration, yet the hairs of a Cat by a certain occult propertie, are judged most dangerous in this case: besides also, their breath is infected with a certain hurtful malignitie. For *Matthiolus* saith, that hee knew som, who beeing so delighted with Cats, that they could never go to bed without them, have by so often drawing in the air with their breath, fallen into a consumption of the lungs, which occasioned their death. Moreover, it is manifest that the verie sight of their eies is hurtful, which appears by this, that som but seeing or hearing them, presently fall down in a swoone; yet I would not judge that to happen by the malicious virulencie of the Cat, but also by the peculiar nature of the partie, and a qualitie generated with him, and sent from heaven. When as, saith *Matthiolus*, a certain Germane in winter-time, came with us into a stove to supper, whereas were divers of our acquaintance, a certain woman, knowing this man's nature, lest that hee should see her kistling which shee kept, and so should go away in a chafe, shee shut her up in a cup-board in the same chamber. But for all that hee did not see her, neither heard her crie, yet within a little space, when hee had drawn in the air, infected with the breath of the Cat, that qualitie of temperament, contrarie, or enemie to Cats, beeing provoked, hee began to sweat, to look pale, and to crie out (all of us admiring it) *Here lies a Cat in som corner or other*; neither could hee bee quiet till the Cat was taken away. But such as have eaten the brains of a Cat, are taken with often *Vertigo's*, and now and then becom foolish and mad: they are helped by procureing vomit, and taking the Antidote against this poison, that is, half a scruple of Musk, dissolved and drunk in wine. There bee som who prescribe the confection *Diamoschum* to bee taken everie morning, four hours before meat. By this you may gather, that it is not so fabulous that the common sort report, that Cats will kill or harm children; for lying to their mouths with the weight of their whole bodies, they hinder the passage forth of the fuliginous vapors, and the motion of the chest, and infect and stifle the spirits of tender infants, by the pestiferous air and exhalation which they send forth.

CHAP. XXXV.

Of certain poisonous Plants.

Apium viscus.



His Antidote. *Napellus*, or Monk-hood.

Having described the poisons that com from living creatures, I com to speak of such as are from Plants, beginning with the Sardonian herb, which is also called *Apium viscus*: this is a kinde of *Ranunculus*, or Crow-foot: (and, as it is thought, the round-leaved water Crow-foot, called Marsh-crow-foot, or Spear-wort) it taketh away the understanding of such as eat thereof, and by a certain distention of the nervs, contract's the cheeks, so that it make's them look as if they laughed; from this affect came that proverbial speech of the *Sardonian laughter*, taken in evil part. His *Bezoar*, as one may term it, is the juice of Balm. The juice, fruit, and substance of *Napellus* taken inwardly, killeth a man the same day, or at the furthest in three daies: yea, and such as escape the deadlie force thereof by the speedie and convenient use of Antidotes, fall into an hettick fever, or consumption, and becom subject to the falling-sickness, as *Avicen* affirmeth. And hence it is, that barbarous people poison their arrows therewith. For the lips are forthwith inflamed, and the tongue so swell's, that by reason thereof it cannot bee contained in the mouth, but hang's out with great horror; their eies are inflamed, and stand forth of their head, and they are troubled with a *Vertigo* and swoounding,

swounding, they becom so weak that they cannot stir their legs, they are swoln and puffed in their bodies, the violence of the poison is so great. The Antidote thereof is a certain little creature like a Mouf, which is bred, and live's on the root of *Napellus*, beeing dried and drunk in powder, to the weight of two drams. In want hereof, you may use the seed of Raddish or Turnips to drink, and annoint the bodie also with oil of Scorpions.

Dorycinum and *Solanum Manicum*, or deadlie Night-shade, are not much different in their mortal symptoms or effects. *Dorycinum* beeing drunk, resembleth milk in taste, it causseth continual hicketting, it troubleth the tongue with the weight of the humor, it causseth blood to bee cast forth of the mouth, and certain mucous matter out of the bellie, like that which commeth away in the bloodie flux. A remedie hereto are all shell-fishes, as well crude as rosted, also Sea-Lobsters and Crabs, and the broth or liquor wherein they are boiled, beeing drunk. Now the root of *Solanum Manicum* drunk in the weight of one dram in wine, causseth vain and not unpleasing imaginations, but double this quantitie causseth a distraction or alienation of the minde for three daies; but four times so much kill's. The remedies are the same as these prescribed against *Dorycinum*.

Hen-bane drunken, or otherwise taken inwardly by the mouth, causseth an alienation of the minde like drunkennes; this also is accompanied with an agitation of the bodie, and exsolation of the spirits like swounding. But amongst others, this is a notable symptom, that the patients so dote, that they think themselves to bee whipped: whence their voice becom's so various, that somtimes they bray like an Ass or Mule, neigh like an Hors, as *Avicen* write's. The Antidote is pistick nuts eaten in great plentie, treacle also and mithridate dissolved in sack, also worm-wood, *rue* and milk.

Of Mushrooms, som are deadlie and hurtfull of their own kinde and nature, as those, which broken, presently becom of divers colours, and putrefie: (such as *Avicen* faith those are which be found of a grayish or blewish colour) others though not hurtfull in qualitie, yet eaten in greater measure then is fitting, becom deadlie; for seeing by nature they are verie cold and moist, and consequently abound with no small viscositie, as the excrementitious phlegm of the earth or trees whereon they grow, they suffocate and extinguish the heat of the bodie, as overcome by their quantitie, and strangle as if one were hanged, and lastly kill. Verily I cannot chuse, but pitying Gourmondizers, who though they know that Mushrooms are the seminarie and gate of death, yet do they with a great deal of doo, most greedily devour them; I say, pitying them, I will shew them, and teach them the art, how they may feed upon this so much desired dish, without the endangering of their health. Know therefore that Mushrooms may bee eaten without danger, if that they bee first boiled with wilde pears: but if you have no wilde pears, you may supplie that defect with others which are the most harsh, either newly gathered, or dried in the sun. The leaves, as also the bark of the same tree, are good, especially of the wilde; for pears are their Antidote: yet *Conciliator* give's another, to wit, garlick eaten crude, whereto in like sort vineger may bee fitly added, so to cut and attenuate the tough, viscos and gross humors, heaped up, and in danger to strangle one by the too plentiful eating of Mushrooms, as it is delivered by *Galen*.

Ephemerum, which som call *Colchicum* or *Bulbus sylvestris*, that is, meadow saffron, beeing taken inwardly, causseth an itching over all the bodie, no otherwise then those that are nettled, or rubbed with the juice of a Squill. Inwardly they feel gnawings, their stomach is troubled with a great heaviness, and the disease encreasing, there are streaks of blood mixed with the excrements. The Antidote thereof is woman's milk, Asses or Cows-milk drunken warm, and in a large quantitie.

Mandrag taken in great quantitie, either the root or fruit causseth great sleepiness, sadness, resolution and languishing of the bodie, so that after many scrites and gripeings, the patient fall's asleep in the same posture as hee was in, just as if hee was in a Lethargie. Wherefore in times past they gave Mandrag to such as were to bee dismembred. The apples, when as they are ripe, and their seeds taken forth, may bee safely eaten, for beeing green and with their seeds in them, are deadlie. For there ariseth an intolerable heat, which burn's the whole surface of the bodie, the tongue and mouth wax drie, by reason whereof they gape continually, so to take in the cold air; in which case unless they bee presently helped, they die with convulsions. But they may easily bee helped, if they shall presently drink such things as are convenient therefore. Amongst which, in *Conciliator*'s opinion, excell raddish-seeds eaten with salt and bread for the space of three daies. Sneefing shall bee procured, if the former remedie do not quickly refresh them, and a decoction of Coriander or Pennie-rovall in fair water shall bee given them to drink warm.

The ungrateful taste of the juice of black poppie, which is termed *Opium*, as also of Mandrag, easily hinder's them from beeing put into meat or drink, but that they may bee discerned, and chiefly for that neither of them can kill, unless they bee taken in a good quantitie. But becaus there is danger, lest they bee given in greater quantitie then is fitting by the ignorance of Physicians, or Apothecaries, you may by these signs finde the error.

* Our Autor is deceived by the *Arabians*, who (it may bee) mistook the greek word *μύξα*, and in stead thereof read *μύω* for a Flie, a Mouf; for there is no Mouf to bee found, but whole swarms of Flies, which feed thereon: you may finde the description of an Antidote made with them in *Lobel's Stirp. advers. pag. 302.*

Dorycinum and *Solanum Manicum*, or deadlie Night-shade.

The symptoms.

Hen-bane.

The Antidote.

Mushrooms.

Their Antidote.

In 5. epidemi.

Colchicum, or Meadow-Saffron.

The Antidote.

Mandrag.

The cure.

Opium.

Why not used in poisoning.

The symptoms.

There ensue's heaue sleep, with a vehement itching, so that the patient oftimes is forced thereby to cast off his dull sleep wherein hee lay, yet hee keep's his eie-lids shut, beeing unable to open them. But by this agitation there flow's out sweat, which smel's of *orium*, the bodie waxeth pale, the lips burn, the jaw-bone is relaxed, they breath little and seldom. When as their eies wax livid; unless they bee drawn aside, and that they are depressed from their orb, wee must know that death is at hand. The remedie against this is two drams of the powder of *Castoreum* given in wine.

Hemlock.

Hemlock drunken, causeth *Vertigo's*, troubleth the minde, so that the patients may bee taken for mad men; it darkneth the sight, causeth hicketting, and benum's the extreme parts, and lastly strangle's with convulsions, by suppressing or stopping the breath of the Arterie. Wherefore at the first, as in other poisons, you must endeavor to expell it by vomit; then inject glysters, to expell that which is got into the guts; then use wine without mixture, which is verie powerful in this case. *Peter Aponensis* think's the Bezoar or Antidote thereof to bee a potion of two drams of Treacle, with a decoction of *Dictamnus* or *Gentian* in wine. Hee which further desire's to enform himself of the effects of Hemlock, let him read *Matthiolus* his commentarie upon *Dioscorides*, where as hee treat's of the same subject.

The symptoms

The Antidote.

In lib. 6. diosc.

Aconitum.

Aconitum called of *Aconis* a town of the *Periendines*, where as it plentifully grow's. Accordind to *Matthiolus*, it kill's Wolvs, Foxes, Dogs, Cats, Swine, Panthers, Leopards; and all wilde beasts, mixed with flesh, and so devoured by them, but it kill's mice by onely smelling thereto. Scorpions, if touched by the root of Aconite, grow numb and torpid, and so die thereof; arrows or darts dipped therein, make incureable wounds. Those who have drunk Aconite, their tongue forthwith waxeth sweet with a certain astringtion, which within a while turneth to bitterness; it causeth a *Vertigo*, and shedding of tears, and a heaviness or straitness of the chest and parts about the heart; it make's them break winde downwards, and make's all the bodie to tremble. *Plinie* attribute's so great celeritie and violence to this poison, that if the genitals of female creatures bee touched therewith, it will kill the same daie; there is no presenter remedie then speedie vomiting after the poison is taken. But *Conciliator* think's *Aristolochia* to bee the Antidote thereof. Yet som have made it usefull for man by experimenting it against the stinging of Scorpions, beeing given warm in wine. For it is of such a nature, that it killeth the partie unless it finde something in him to kill, for then it strive's therewith as if it had found an adversarie. But this fight is onely when as it finde's poison in the bodie; and this is marvelous that both the poisons beeing of their own nature deadlie, should die together, that man may by that means live. There are divers sorts thereof, one whereof hath a flower like an helmet, as if it were armed to man's destruction; but the other here delineated hath leavs like to sow's-bread, or a cucumber, and a root like the tail of a Scorpion.

Lib. 27. cap. 2.

Aconite good against the poison of Scorpions.

The differences.

The figure of a certain kinde of Aconite.



The Yew.

* This is true in som countries, as in Provence, Italie, Greece, &c. but it is not so here with us in England, as both *Lobel* and *dailie* experience can testify.

Trees also are not without poison, as the Yew and Walnut tree may witness: Cattel if they feed on the leavs of Yew, are killed therewith. * But men, if they sleep under it, or sit under the shadow thereof, are hurt therewith, and oftimes die thereof. But if they eat it, they are taken with a bloodie flux, and a coldness over all their bodies, and a kinde of strangling or stoppage of their breath. All which things the Yew causeth, not so much by an elementarie and cold qualitie, as by a certain occult malignitie, whereby it corrupteth the humors, and shaveth the guts. The same things are good against this, as wee have set down against Hemlock; *Nicander* affirm's, that good wine beeing drunken is a remedie thereto. There is also malignitie in a Wall-nut-tree, which *Grevinus* affirm's that hee found by experience, whil'st hee unawares fate under one, and slept there in the mid'st of Summer. For wakeing, hee had a sens of cold over all his bodie, a heaviness of his head, and pain that lasted six daies. The remedies are the same as against the Yew.

The Antidote.

The Wall-nut tree.

CHAP. XXXVI.

Of Bezoar, and Bezoartick medicines.



OR that wee have made mention of *Bezoar*, in treating of the remedies of What poison is poisons, I judg I shall not do amiss, if I shall explain, what the word mean's, and the reason thereof. Poison absolutely taken is that which kill's by a certain specifick antipathie contrarie to our nature. So an Antidote or Counter-poison is by the Arabians in their mother-tongue termed *Bedezabar*, as the preservers of life. This word is unknown to the Greeks and Latines, and in use onely with the Arabians and Persians, becaus the thing it self first came from them, as it is plainly shewed by *Garcias ab horto*, Physician to the Vice-roy of the Indies, in his historie of the Spices and *Simples* of the East-Indies. In Persia (saith hee) and a certain part of India is a certain kinde of Goat called *Pazain* (wherefore in proper speaking, the stone should bee termed *Pazar*, of the word *Pazain*, that signifie's a Goat; but wee corruptly term it *Bezar* or *Bezoar*) the color of this beast is commonly reddish, the height thereof indifferent, in whose stomach concrete's the stone called *Bezoar*; it grow's by little and little about a straw or som such like substance in scales like to the scales of an onion, so that when as the first scale is taken off, the next appear's more smooth and shineing as you still take them away, the which amongst others is the sign of good *Bezoar* and not adulterate. This stone is found in sundrie shapes, but commonly it resemble's an Acorn or Date-stone; it is sometimes of a sanguin color, and other- A sign of true Bezoar. whiles of a honie-like or yellowish color, but most frequently of a blackish or dark green, resembling the color of mad Apples, or els of a Civet-Cat. This stone hath no heart nor kernel in the mid'st, but powder in the cavities thereof, which is also of the same facultie. Now this stone is light and not verie hard, but so that it may easily bee scraped or rasped like alabaster, so that it will dissolv, beeing long macerated in water; at first it was common amongst us, and of no verie great price, becaus our people who trafficked in Persia, bought it at an easie rate. But after that the faculties thereof were found out, it began to be more rare The use of Bezoar. and dear, and it was prohibited by an Edict from the King of the Countrey, that no bodie should sell a Goat to the stranger-Merchants, unless hee first killed him and took forth the stone, and brought it to the King. Of the notes by which the stone is tried, (for there are manie counterfeits brought hither) the first is already declared; the other is, it may bee blown up by the breath, like an ox's hide; for if the winde break through, and do not stay in the densitie thereof, it is accounted counterfeit. They use it, induced thereto by our example, not onely against poisons, but also against the bites of venomous beasts. The richer sort of the Countrey purge twice a year, to-wit, in *March* and *September*; and then, five daies together they take the powder of this stone macerated in *Rose-water*, the weight of ten grains at a time: for by this remedie they think their youth is preserved, as also the strength of their members. There bee som who take the weight of thirtie drams; yet the more warie exceed not twelv grains. The same Autor addeth that hee useth it with verie good success in inveterate melancholick diseases, as the itch, scab, tetter and leprosie; therefore by the same reason it may well bee given again a quartane fever. Besides, hee affirmeth for certain that the powder contained in the mid'st of the stone, put upon the bites of venomous beasts, presently free'th the patient from the danger of the poison, as also applied to to pestilent Carbuncles when they are opened, it draw's forth the venom. But becaus the small pocks and meazles are familiar in the Indies, and oftimes dangerous, it is there given with good success, two grains each daie in *Rose-water*. *Matthiolus* subscribeth to this opinion of *Garcias*, witnessing that hee hath found it by frequent experience, that this stone by Lib. 5. in Diosc. cap. 73. much exceed's not onely other *simple* medicines of this kinde, but also such as are termed *iberiacalia*, and what other Antidotes soever. Hereto also consent's *Abdanalarach*; Wee (saith hee) have seen the stone which they call *Bezabar*, with the sons of *Almirama* the observer of the Law of the God; with which stone hee bought a stately and almost princely hous at *Corduba*.

Som years ago, a certain Gentleman who had one of these stones which hee brought out An historie. of Spain, bragged before King *Charls* then beeing at *Clermount in Avern*, of the most certain efficacy of this stone against all manner of poisons. Then the King asked of mee, whether there were anie Antidote which was equally and in like manner prevalent against all poisons? I answered, that nature could not admit it; for neither have all poisons the like effects, neither do they arise from one caus; for som work from an occult and specifick proprietie of their whole nature, others from som elementarie qualitie which is predominant. Wherefore each must bee withstood with its proper and contrarie antidote; as to the hot, that which is cold, and to that which assail's by an occult proprietie of form, another which by the same force to oppugn it, and that it was an easie matter to make trial hereof on such as were condemned to bee hanged. The motion pleased the King, there was a Cook brought by the Jailor who was to have been hanged within a while after for stealing two silver-dishes out of his master's hous. Yet the King desired first to know of him, whether No one thing can bee an Antidote against all poisons. hee

hee would take the poison on this condition, that if the Antidote which was predicated to have singular power against all manner of poisons, which should bee presently given him after the poison, should free him from death, that then hee should have his life saved. The Cook answered chearfully, that hee was willing to undergo the hazard, yea, and greater matters, not onely to save his life, but to shun the infamie of the death hee was like to be adjudged to. Therefore hee then had poison given him by the Apothecarie that then waited, & presently after the poison, som of the *Bedezzabar* brought from Spain, which being taken down, within a while after hee began to vomit, and to avoid much by stool with grievous torments, and to crie out that his inward parts were burn't with fire. Wherefore being thirstie, and desiring water, they gave it him; an hour after, with the good leav of the Jailor, I was admitted to him; I finde him on the ground going like a beast upon hands and feet, with his tongue thrust forth of his mouth, his eies fierie, vomiting, with store of cold sweats, and lastly, the blood flowing forth by his ears, nose, mouth, fundament and yard. I gave him eight ounces of oil to drink, but it did him no good, for it came too late. Wherefore at length hee died with great torment and exclamation, the seventh hour from the time that hee took the poison being scarcely passed. I opened his bodie in the presence of the Jailor and four others, and I found the bottom of his stomach black and drie, as if it had been burn't with a Cauterie; whereby I understood hee had *sublimate* given him; whose force the Spanish *Bedezzabar* could not repress, wherefore the King commanded to burn it.

The caustick force of *sublimate*.

CHAP. XXXVII.

Of Mineral Poisons.

Minerals or metals are either so taken forth of the bowels of the earth, or elf from furnaces. Of these manie are poisonous, as arsenick, *sublimate*, *plaster*, *cerufs*, *litharg*, *verdegrease*, *orpiment*, filings of Iron, *brass*, the load-stone, lime and the like. Such as have taken *sublimate*, the tongue and jaws becom straightned & rough, as if they drunk the juice of unripe *services*: you cannot amend this asperitie wth lenitive gargarisms but wth labor & time; for assoon as it descend's into the stomach, it sticketh to it. Therefore presently after it fret's & exulcerate's; it causseth unquenchable thirst, and unexplicable torments; the tongue is swoln, the heart faint's, the urine is suppress, the chest can scarce perform the office of breathing, the bellie is griped, and so great pains happen to other extreme parts, that unless they bee helped, the patient will die; for presently will grow upon them, unless it bee speedily hindered, the devouring and fierie furie of the poison, rending or eating into the guts and stomach, as if they were seared with an hot iron, and blood floweth out of the ears, nose, mouth, urinarie passage and fundament, and then their case is desperate. These and who elf soever shall take anie corrodeing poison, shall bee cured with the same remedies, as those that have taken *Cantharides*.

The symptoms of such as have taken *sublimate*.

Verdegreas.

Verdegreas so stop's the instruments of respiration, that it strangle's such as have taken it. The cure is performed by the same remedies as help those that have taken Arsenick.

Litharge.

Litharge causseth a heaviness in the stomach, suppresseth urine, make's the bodie swelled and livid. Wee remedie this, by giving a vomit presently, then after it pigeons-dung mixed in strong wine, and so drunken. *Peter Aponensis* wiltheth to give oil of sweet almonds and figs. Also it is good to give relaxing and humecting glysters, and to annoint the bellie with fresh butter, or oil of lillies.

The scales of Brass.

The scales of Brass drunk by troubling the stomach, caus a casting and scouring. The remedie is, if the patient forthwith vomit, if hee enter into a bath made of the decoction of Snails, if hee annoint his bellie and brest with butter or oil of lillies, and inject laxative and humecting glysters.

The Load-stone.

The Load-stone make's them mad that take it inwardly. The Antidote thereof is the powder of gold and an emerald drunk in strong wine, and glysters of milk and oil of sweet almonds.

Fileings of Lead and scale of Iron.

The fileings of Lead, and the scales or *refuse* of Iron, caus great torment to such as take them down. The which wee help with much milk and fresh butter dissolved therein, or with oil of sweet almonds drawn without fire, with relaxing and humecting glysters used until the pain bee perfectly asswaged.

Arnick, Rose-aker or Rat-bane.

Risagallum, Rose-aker or Rat-bane, becaus it is of a most hot and drie nature, induce's thirst and heat over all the bodie, and so great colliquation of all the humors, that although the patient by medicines speedily given escape death, yet can they not dureing the residue of their lives, use their members as they formerly did, being destitute of their strength, by reason of the great driness and contraction of the joints. The Antidote thereof is oil of Pine-kernels speedily given, and that to the quantitie of half a pinte; then procure vomit, then give much milk to drink, and glysters of the same, and let them sup up fat broths.

Unquench't-Lime and *Auripigmentum*, or Orpiment drunk, gnaw the stomach and guts with

with great tormenting pain, and caus unquenchable thirst, an asperitie of the jaws and throat, difficultie of breathing, stopping of the urine, and a bloodie flux. They may bee helped by all fat, humecting, and relaxing things which retund the acrimonie, by lenitive potions, and such things as lubricate the bellie; as also by creams, and the mucilages of some seeds, as with a decoction of the seeds of *Line*, mallows, marsh-mallows and other such things set down at large in the cure of *Cantharides*.

These exceeding acrid and strong waters wherewith Gold-smiths and Chymists separate gold from silver, being taken into the bodie, are hard to cure, becaus they are forthwith diffused over all the bodie, first burning the throat and stomach. Yet it may bee helped by the means prescribed against unquenched Lime and Orpiment.

Cerufs causeth hicketting and a cough, make's the tongue drie, and the extreme parts of the bodie numb with cold, the eies heavie to sleep. The patients verie often in the mid'st of the day see some vain phantasie or apparition, which indeed is nothing; they make a black and oftimes bloodie water, they die strangled unless they bee helped. The Antidote, in the opinion of *Aëtius* and *Avicen*, is Scammonie drunk in new wine, or honie and wine, and other diuretick things, and such things as procure vomit, and purge by stool.

Plaster, becaus it concreteth and becommeth stonie in the stomach, causeth strangulation, by straitning and stopping the instruments that serv for breathing. The patients receive cure by the same remedies, as those who have eaten mushrooms, or drunk Cerufs: you must add Goose-greaf in the glysters, and annoint the bellie with oil of lillies and butter.

CHAP. XXXVIII.

Of Quick-silver.

Quick-silver is so called becaus it resembleth silver in the color, and is in perpetual motion, as if it had a spirit or liveing soul. There is a great controversie amongst authors concerning it. For most of them affirm it hot, among whom is *Galen*, *Haly-abas*, *Rhases*, *Aristotle*, *Constantine*, *Isack*, *Platearius*, *Nicolas Massa*: they maintain their opinion by an argument drawn from things helping and hurting; besides from this, that it is of such subtil parts, that it penetrate's, dissolv's and performeth all the actions of heat upon dens and hard metals; to wit, it attenuateth, incideth, drieth, causeth salivation by the mouth, purgeth by the stool, mooveth urine and sweat over all the bodie, neither doth it stir up the thinner humors onely, but in like sort the gross, tough and viscos, as those which have the *Lues Venerea* finde by experience, using it either in ointments or Plasters.

Others affirm it verie cold and moist, for that put into emplasters and so applied, it aswageth pain by stupefaction, hindering the acrimonie of pustles and cholerick inflammations. But by its humiditie it softeneth scirrhus tumors, dissolveth and dissipateth knots and *tophous* knobs; besides, it causeth the breath of such as are annointed therewith to sink, by no other reason, then that it putrefie's the obvious humor by its great humiditie. *Avicen*'s experiment confirm's this opinion, who affirmeth, that the blood of an Ape that drunk Quick-silver, was found concrete about the heart, the carcass being opened. *Matthiolus* moved by these reasons, write's that Quick-silver killeth men by the excessive cold and humid qualitie, if taken in a large quantitie, becaus it congeal's the blood and vital spirits, and at length the verie substance of the heart, as may bee understood by the historie of a certain Apothecarie, set down by *Conciliator*; who, for to quench his feverish heat, in stead of water, drunk off a glas of Quick-silver, (for that came first to his hands;) he died within a few hours after, but first hee evacuated a good quantitie of the Quick-silver by stool, the residue was found in his stomach being opened, and that to the weight of one pound; besides, the blood was found concrete about his heart. Others use another argument to prove it cold, and that is drawn from the composition thereof, becaus it consist's of Lead and other cold metals. But this argument is verie weak. For unquench't Lime is made of flints and stonie matter, which is cold, yet nevertheless it exceed's in heat. *Paracelsus* affirmeth that Quick-silver is hot in the interior substance, but cold in the exterior, that is, cold as it com's forth of the Mine. But that coldness to bee lost as it is prepared by art, and heat onely to appear and bee left therein, so that it may serv in stead of a tincture in the trans-mutation of metals. And verily it is taken for a rule amongst Chymists, that all metals are outwardly cold, by reason of the waterie substance that is predominant in them, but that inwardly they are verie hot, which then appear's when when as the coldness together with the moisture is segregated; for by calcination they becom caustick. Moreover manie account quick-silver poison, yet experience denie's it. For *Marianus Sanctus Boraltanus* tell's that hee saw a woman, who for certain causes and effects, would at several times drink one pound and a half of quick-silver, which came from her again by stool without anie harm. Moreover hee affirmeth that hee hath known sundrie who in a desperate Colick (which they commonly call *miserere mei*) have been free'd from imminent death, by drinking three pound of quick-silver with water

Unquenched
Lime and Or-
piment.

Aqua fortis.

Cerufs.

Plaster.

The reason
why it is so
called.Lib. 4. simp. in 2.
practic. c. 148.
3. ad alman. 4.
Meteor.

In l. 6. Dios. c. 28

An historie.

Lib. 4. de nar-
rerum.Tract. de casu
& offenz.

ter

Quick-silver
good for wo-
men in travel.

For the disease
called *Malum
sancti manis*.

Lib. de comp.
med. secund. loc.
Against malign
ulcers.

Against the
Parotides.

Against lice
and flies, &c.
The kindes
thereof.

How to puri-
fic it.

ter onely. For by the weight it open's and unfold's the twined or bound up gut, and thrust's forth the hard and stopping excrements; hee addeth that others have found this medicine effectual against the colick, drunk in the quantitie of three ounces. *Antonius Musa* write's, that hee usually giveth Quick-silver to children readie to die of the worms. *Avicen* confirmeth this, averring that manie have drunk Quick-silver without anie harm, wherefore hee mixeth it in his ointments against scales and scabs in little children; whence came that common medicine amongst cuntry people to kill lice by anointing the head with Quick-silver mixed with butter or *axungia*. *Matthiolus* affirmeth that manie think it the last and chiefest remedie to give to women in travel that cannot bee delivered. I protest to satisfie my self concerning this matter, I gaveto a whelp a pound of Quick-silver, which beeing drunk down, it voided without anie harm by the bellie. Whereby you may understand that it is wholly without anie venomous qualitie. Verily it is the onely and true Antidote of the *Lues Venerea*, and also a verie fit medicine for all malign ulcers, as that which more powerfully impugns their malignitie then anie other medicines that work onely by their first qualities. Besides, against that contumacious scab, which is vulgarly called *Malum sancti manis*, there is not anie more speedie or certain remedie. Moreover *Guido* write's, that if a plate of lead bee besmeared or rubbed there with, and then for som space laid upon an ulcer, and conveniently fastned, that it will soften the callous hardness of the lips thereof, and bring it to cicatrization, which thing I my self have oftentimes found true by experience.

Certainly before *Guido*, *Galen* much commended Quick-silver against malign ulcers and cancers. Neither doth *Galen* affirm that lead is poisonous (which manie affirm poisonous, becaus it consist's of much Quick-silver) but hee onely saith thus much, that water too long kept in leaden pipes and cisterns, by reason of the drossines that it useth to gather in lead, causeth bloodie fluxes, which also is familiar to brasse and copper. Otherwise manie could not without danger bear in their bodies leaden bullets dureing the space of so manie years, as usualy they do. It is reported. It is declared by *Theodoret Heret* in the following histories, how powerful Quick-silver is to resolv and assuage pains and inflammations. Not long since, (saith hee) a certain Doctor of Physick his boy was troubled with *parotides*, with great swelling, heat, pain and beating; to him by the common consent of the Physicians ther present, I applied an *Anodine* medicine, whose force was so great, that the tumor manifestly sublided at the first dressing, and the pain was much asswaged. At the second dressing all the symptoms were more mitigated. At the third dressing, I wondring, at the so great effect of an *Anodine* Cataplasme, observed that there was Quick-silver mixed therewith, and this happened through the negligence of the Apothecarie, who mixed the simple *Anodine* medicine prescribed by us, in a mortar wherein but a while before hee had mixed an ointment wherinto Quick-silver entred, whose reliques, and som part thereof yet remained theerein. This which once by chance succeeded well, I afterwards wittingly and willingly used to a certain Gentle-woman troubled with the like disease, possessing all the region behinde the ears, much of the throat, and a great part of the cheek, when as nature helped by common remedies, could not evacuate neither by resolution nor suppuration, the contained matter greatly vexing her with pain and pulsation. I to the medicine formerly used, by the consent of the Physicians, put som Quick-silver, so within a few daies, the tumor was digested and resolved. But som will say, it resolves the strength of the nerves and limbs, as you may see by such as have been anointed therewith for the *Lues Venerea*, who tremble in all their limbs dureing the rest of their lives. This is true, if any use it too intemperately without measure, and a disease that may require so great a remedie; for thus wee see the *Gilders*, *Plumbers* and such as dig in mines, by the continual ascent of the vapors of Quick-silver to the brain, the fountain of the nerves, by resolving the spirits, and dissipating the radical and substantifick moisture, maketh them subject to the trembling of their joints. Verily, if it bee killed and incorporate with hog's-grease, and a list besmeared therewith, which may encompass the bodie like a girdle, it will drive away lice, fleas and *cimices*; and anointed about the navel, it kill's the worms in the guts. There are two sorts of Quick-silver, the one natural, the other artificial. The natural is found running or flowing in the veins and bowels of the earth, and amongst metals, and in the fornaces of silver-mines. The Artificial is made of *minium* (as it is in *Vitruvius*) and of the powder of *Ivorie*. Also it is probable that by art it may be extracted out of all metals, but chiefly out of Lead and *Cinnabaris*. You may easily distinguish these kindes by the dull and blackish color, tough and gross substance, which as it run's, leav's an impression like melted grease, beeing as it were the excrement of lead. The best Quick-silver of all is pure, clear, thin, and verie white: it may bee cleansed with the dross of lead, and becom's more then beeing boiled in sharp vinegar, with *sage*, *rosemarie*, *time*, *lavander*,. Or els give it by a pound at a time to a whelp, to drink down, and beeing cast forth by it, boil it again in vinegar, for thus it hath wondrous faculties, and fitly given produceth marvelous effects; nothing is more contrarie thereto then fire. For Quick-silver, though of its own nature ponderous, flieth upwards by the force of the fire, and forsaketh gold by that means, then which nothing is more friendlye to it.

CHAP. XXXIX.

Of the Unicorn's horn.

Here are verie manie at this daie who think themselvs excellently well armed against poison and all contagion, if they bee provided with som powder of Unicorns-horn, or som infusion made therewith. Therefore I have thought it good to examine more diligently how much truth this inveterate, and grounded opinion hath. The better to perform this task, I will propound three heads, whereto I will direct my whole discours. The first shall bee of the signification of this word *Unicorn*. The second, whether there bee anie such thing really and truly so called, or whether it bee not rather imaginarie; like as the *Chimera* and *Tragelaphus*? The third, whether that which is said to bee the horn of such a beast, hath anie force or facultie against poisons? For the first, that is, the name, it is somewhat more obscure what the word (being *Licorn*) in French may signifie, then what the Latin or Greek word is. For the French name is further from the word and signification; but it is so clear and manifest, that this word *Unicornis* amongst the Latines signifieth a beast having but one horn, as it is vulgarly known; the same thing is meant by the Greek word *Monoceros*. But now for the second, I think that beast that is vulgarly called and taken for an Unicorn, is rather a thing imaginarie then really in the world. I am chiefly induced to believ thus, by these conjectures. Because of those who have travelled over the world, there is not one that professeth that ever hee did see that creature. Certainly the Romans conquered the world, and being most diligent searchers after all things which were rare and so excellent, if anie where in anie corner of the world this beast could have been found, they would have found it out, and engraven it upon their coins, or arms, as they did Crocodiles, Elephants, Eagles, Panthers, Lions, Tigers, and other creatures unknown to these countries. For these that have written of the Unicorn, either that they have heard, or that hath bren delivered by tradition, or what they in their own mindes and fancies have conceived, you shall scarce finde two that agree together, either in the description of the bodie, or in the nature and condition of her. *Plinie* write's, that Unicorns are for the fashion of their bodies like to an Hors; that is, as *Cardane* interpret's it, of the bigness of an Hors, with the head of an Hart, the feet of an Elephant, the tail of a Bore, with one black horn in the mid'st of his fore-head, of the length of two cubits. *Munster*, who (as *Matthiolus* jest's) never saw Unicorns besides painted ones, doth on the contrarie affirm them not to bee of the bigness of an Hors, but of an Hinde-calf of three months old, not with feet like an Elephant, but cleft like those of Goats, with an horn not onely of two, but oftimes of three cubits long, of a Weazel-color, with a neck not verie long, nor verie hairie, but haveing few and short hairs hanging to the one side of the neck, the legs are lean and small, the buttocks high, but verie hairie. *Cardane* dissenting from both these, write's, that hee hath an horn in the mid'st of his fore-head, but that it is onely the length of three fingers. *Andrew Thevet* mention's an Unicorn seen by a certain Turkish Sangjach, which was of the bigness of a Bull of five or six moneths old, and had one horn, but that not in the mid't of the fore-head, but upon the top of the crown of the head; hee was legg'd and footed like an Ass, but longer haired, and had ears not much unlike the *Rangifer*, a beast not unknown in the *subpolare* or northern countries.

Thus various therefore is the report concerning the shape of this Beast. Neither is there less difference concerning her nature and conditions. For *Plinie* write's, that the Unicorn is a most fierce beast, and hath a great bellowing voice, and that shee cannot therefore bee taken alive. *Cardane* render's a reason of this fierceness, Because (saith hee) it inhabit's the deserts of *Aethiopia*, a region squalid, and filthy, abounding with Toads, and such like venomous creatures. Others on the contrarie affirm her to bee of a most milde, amiable, and gentle nature of all others, unless one purposely offend her, or use her too harshly; for seeing shee feed's not by stooping her head to the ground, because shee is hindered therefrom by the length of her horn, shee must necessarily feed upon the fruit that hangeth upon trees; out of cratches or man's hand shee ferelessly and harmlessly takes all manner of fruits, herbs, sheaves of corn, apples, pears, oranges and pulc. And herein they have proceeded so far, that they feign they will love Virgins, entised by their beantie, so that staid in the contemplation of them, and allured by their entisements, they by this means are often taken by hunters. In this opinion is *Lewes Vartoman*, who denies that Unicorns are wilde or fierce; for hee saith that hee saw two, which were sent out of *Ethiopia* to the Sultan, who kept them shut up in *Pennis*, in *Mecha*, a citie of *Arabia felix*, renowned by the Sepulcher of *Mahomet*. *Thevet* traveling thither, tel's that hee diligently inquired of the inhabitants, what there opinion was of such a beast, yet could hee never hear anie tidings thereof. Whence it is easie to discern, that such beasts have neither been in our, nor in *Vartoman's* times. The so great varietie of dissenting opinions, easly induceth mee to beleiv that this word, *Unicorn*, is not the proper name of anie beast in the world, and that it is a thing onely feigned by Painters, and Writers of natural things, to delight the readers and beholders. For as there is but one right waie, but

what the name imports.

That there is no such beast as an Unicorn.

Lib. 8. cap. 21.

Munsters opinion concerning unicorns.

Tom. 1. lib. 5. Cap. 5. cosmogr.

Vartomans opinion of the nature of the unicorn.

What the ordinarie Unicorns horns are.

The Unicorn's horn is not effectual against poison.

Lib. de ponder. cap. 19. Horns and bones not effectual unless to drie.

In what cases good.

manie by-waies and windeings, so the speech of truth is but one, and that alwaies simple and like it self; but that of a lie is divers, and which may easily refel it self, by the repugnancie and incongruities of opinions, if one should say nothing. What therefore (will som say) of what creatures are these horns, which wee see wholly different from others, if they be not of Unicorns? *Thevet* think's them nothing elf then Elephants bones turned and made into the fashion that wee see them; for thus in the Eastern Countries, som craftie merchants and cunning companions turn, hollow, and beeing softened, draw to what length they pleas the teeth of the fish Rohard, which live's in the Red and Ethiopian Sea, and beeing so handled, they sell them for Unicorn's horn. Verily that which is termed Unicorn's horn, beeing burnt, send's forth a smell like to Ivorie. Now *Cardanus* affirm's that the teeth and bones of Elephants made soft by art, may bee drawn forth, and brought into what form you pleas, like as Ox-bones are. For what is there in the world which the thirsting desire of gold will not make men to adulterate and counterfeit? But it is time that wee com to the third scope. Grant there bee Unicorns, must it therefore follow that their horns must bee of such efficacie against poisons? If wee judg by events, and the experience of things, I can protest thus much, that I have often made trial thereof, yet could I never finde anie good success in the use thereof against poisons, in such as I have had in cure. If the matter must bee tried by witnesses and authorities, a great part of the Physicians of better note have long since bid it adieu, and have detracted from the divine and admirable vertues for which it formerly was so much desired. And this they have don, mooved thereto by manie just, but two especial reasons. The first is of *Rondeletius*, who in this case affirm's that horns are endued with no taste nor smell; and therefore have no effect in physick, unless it bee too drie. Neither (saith hee) am I ignorant that such as have them, much predicate their worth, so to make the greater benefit and gain by them, as of the shaveings or scrapeings of Unicorn's horn, which they sell for the weight in gold, as that which is singular good against poisons and worms; which things, I think, Hart's-horn and Ivorie do no less effectually perform; which is the caus why, for the same disease, and with the like success, I prescribe Ivorie to such as are poor, and Unicorn's horn to the rich, as that they so much desire. This is the opinion of *Rondeletius*, who, without anie difference, was wont, for Unicorn's horn, to prescribe not onely Hart's-horn or Ivorie, but also the bones of Horses and Dogs, and the stones of Myrabalanes. Another reason is, that whatsoever resist's poison is cordial, that is, fit to strengthen the heart, which is chiefly assailed by poisons; but nothing is convenient to strengthen the heart, unless it bee by laudable blood or spirit, which two are onely familiar to the heart, as beeing the work-hous of the arterious blood and vital spirits. For all things are preserved by their like, as they are destroyed by their contraries; for all things that generate, generate things like themselves. But Unicorn's horn, as it contain's no smell, so neither hath it anie aërie parts, but is wholly earthie and drie; neither can it bee converted into blood by the digestive facultie, for as it is without juice, so is it without flesh. For as it cannot bee turned into *Chylus*, so neither is it fit to becom *Chymus*, that is, juice or blood. Therefore it is joined to the heart by no similitude, nor familiaritie. Furthermore, there is not a word in *Hippocrates* and *Galen* concerning the Unicorn's horn, who notwithstanding have in so manie places commended Hart's-horn. Therefore *D. Chapelain*, the chief Physician of King *Charles* the Ninth, often used to say, that hee would verie willingly take away that custom of dipping a piece of Unicorn's horn in the King's cup, but that hee knew that opinion to bee so deeply ingrafted in the mindes of men, that hee feared, that it would scarce bee impugned by reason. Besides (hee said) if such a superstitious medicine do no good, so certainly it doth no harm, unless it bee to their estates that buy it with gold, or elf by accident, becaus Princes, whil't they relie more then is fitting upon the magnified vertues of this horn, negle& to arm themselves against poisons by other more convenient means, so that death oftentimes take's them at unawares. When as upon a time I inquired of *Lewes Duret* the Kings Physician and Professor (by reason of the great opinion that all learned men justly had of his learning and judgment) what hee thought of this horn; Hee answered, that hee attributed no faculties thereto: for the confirmation whereof hee rendred the second reason I have formerly given, but more largely and elegantly; neither feared hee to affirm it aloud, and in plain words to his audiorie of learned men, comming from all parts to hear him. But if at anie time (ore'com by the fault of the times and place) hee prescrib'd this horn; that hee did it for no other intent, then to help faintings or swooundings that happen by the abundance of serous humors, floating in the orifice of the ventricle, which make's men ill disposed, becaus this mixed with other things endued with the like facultie, hath power to drink up the waterish humiditie by its earthie drieness. But som will replie, that neither the Lemnian, nor Armenian earth, have anie juice in them, neither anie smell, nor aërie spirit. It is granted; neither truly are such things truly and properly called cordial, but onely by event and accident, for that by the excellent astrictive facultie they have, and stopping the passages of the vessels, they hinder the poison from entering into the heart. This is my opinion of Unicorn's horn, which if anie do not approov of, hee shall do mee a favor, if for the publick good, hee shall freely oppose his; but in the *interim* take this in good part which I have don.

 Of the PLAGUE.

 The twentieth second Book.

CHAP. I.

The description of the Plague.


He Plague is a cruel and contagious disease, which everie-where, like a common disease, invading Man and Beast, kill's verie manie; being attended, and as it were associated with a continual fever, botches, carbuncles, spots, nauſeousness, vomitings, and other such malign accidents. This disease is not so pernicious or hurtful, by anie elementarie qualitie, as from a certain poisonous and venenate malignitie, the force whereof exceed's the condition of common putrefaction. Yet I will not denie, but that it is more hurtful in certain bodies, times and regions, as also manie other diseases, of which *Hippocrates* make's mention. But from hence wee can onely collect, that the force and malignitie of the plague may bee encreased, or diminished, according to the condition of the elementarie qualities concurring with it; but not the whole nature and essence thereof to depend thereon.

What the
Plague is

Stell. 3. aphor.

This pestiferous poison principally assails the vital spirit, the store-hous and original whereof is the heart, so that if the vital spirit prove stronger, it drive's it far from the heart; but if weaker, it being overcome and weakened by the hostile assault, flie's back into the fortress of the heart, by the like contagion infecting the heart, and so the whole bodie, being spread into it by the passages of the arteries.

How it comes
to kill.

Hence it is, pestilent fevers are sometime simple and solitarie; other-whiles associated with a troop of other affects, as botches, carbuncles, blanes and spots, of one or more colors.

It is probable such affects have their original from the expulsive facultie, whether strong or weak, provoked by the malignitie of the raging matter: yet assuredly divers symptoms and changes arise, according to the constitution of the bodie of the patient, and condition of the humor in which the virulencie of the plague is chiefly inherent, and lastly, in the nature of the efficient cause.

The original
buboes, car-
buncles, &c. in
the plague.

I thought good, by this description, to express the nature of the plague, at this my first entrance into this matter; for wee can scarce comprehend it in a proper definition. For although the force thereof be definite, and certain in nature, yet it is not altogether certain and manifest in mens mindes, because it never happen's after one sort: so that in so great varietie, it is verie difficult to set down anie thing general and certain.

CHAP. II.

Of the Divine causes of an extraordinarie Plague.

It is a confirmed, constant, and received opinion in all Ages amongst Christians, that the plague and other diseases, which violently assail the life of man, are often sent by the just anger of God punishing our offences. The Prophet *Amos* hath long since taught it, saying, *Shall there be affliction? shall there be evil in a Citie, and the Lord hath not done it?* On which truly wee ought daily to meditate, and that for two causes: The first is, that wee alwaies bear this in minde, that wee enjoy health, live, move, and have our beeing's from God, and that it descend's from that Father of Light; and for this cause wee are alwaies bound to give him great and exceeding thanks. The other is, that knowing the calamities, by sending whereof the Divine anger proceed's to revenge, wee may at length repent, and leaving the way of wickedness, walk in the paths of godliness. For thus wee shall learn to see in God, our selves, the Heaven and Earth, the true knowledg of the causes of the plague, and by a certain Divine Philosophie teach, God to be the beginning and cause of the second-causes, which cannot well without the first cause go about nor attempt; much less perform anie thing. For from hence they borrow their force, order, and constancie of order; so that they serv as instruments for God, who rule's and govern's us, and the whole world, to perform all his works, by that constant course of order, which hee hath appointed unchangeable from the beginning. Wherefore all the cause of a plague is not to be attributed to these near and inferior causes or beginnings, as the Epicures and Lucianists commonly

Amos 3.
Acts 17.

The second
causes have
their power
from God as
the first cause.

commonly do, who attributeing too much, yea all things to Nature, have left nothing to God's providence. On the contrarie, wee ought to think, and beleev in all our things, That even as God by his omnipotent Power hath created all things of nothing, so hee by his eternal Wisdom preserv's and govern's the same, lead's and incline's them as hee pleaseth, yea verily at his pleasure changeth their order, and the whole courf of nature.

This caus of an extraordinarie Plague, as wee confels and acknowledg, so here wee will not prosecute it anie further, but think fit to leav it to Divines, becaus it exceed's the bounds of Nature, in which I will now contain my self. Wherefore let us com to the natural causses of the Plague.

CHAP. III.

Of the Natural causses of the Plague, and chiefly of the Seminarie of the Plague by the corruption of the Air.

The general
causses of the
Plagu.
*Lib. 6. de loc.
affectis.*



The general and natural causses of the Plague are absolutely two, that is, the infection of corrupt air, and a preparation and fitnes of corrupt humors to take that infection; for it is noted before out of the doctrine of *Galen*, that our humors may bee corrupted, and degenerate into such an alienation which may equal the malignitie of poison.

How the seasons of the year may bee said to want their seasonableness.

The air is corrupted, when the four seasons of the year have not their seasonableness, or degenerate from themselves, either by alteration, or by alienation: as if the constitution of the whole year bee moist and rainie, by reason of gros and black clouds; if the Winter bee gentle and warm, without anie Northerly winde, which is cold and drie, and by that means contrarie to putrefaction; if the Spring, which should bee temperate, shall bee faultie in anie excess of distemper; if the Autumn shall bee ominous by fires in the air, with stars shooting, and as it were falling down, or terrible comets, never seen without som disaster; if the Summer bee hot, cloudie and moist, and without windes, and the clouds flie from the South into the North. These and such like unnatural constitutions of the seasons of the year, were never better, or more excellently handled by anie, then by *Hippocrates* in his Books *Epidemion*. Therefore the air from hence draw's the seeds of corruption and the pestilence, which at length, the like excess of qualities beeing brought in, it send's into the humors of our bodies, chiefly such as are thin and *serous*. Although the pestilence doth not alwaies necessarily arise from hence, but som-whiles som other kinde of cruel and infectious disease.

How the air may bee corrupted.

But neither is the air onely corrupted by these superior causses, but also by putrid and filthy stinking vapors spread abroad through the air encompassing us, from the bodies and carcaffes of things not buried, gapeings and hollownes of the earth, or sinks and such like places beeing opened: for the sea often overflowing the land in som places, and leaving in the mud or hollownes of the earth (caused by earth-quakes) the huge bodles of monstrous fishes, which it hide's in its waters, hath given both the occasion and matter of a plague. For thus in our time, a Whale cast upon the Tuscan shore, presently caused a plague over all that countrie.

Lib. 8. hist. anim.

But as fishes infect and breed a plague in the air, so the air beeing corrupted often, causeth a pestilence in the sea among fishes, especially when they either swim on the top of the water, or are infected by the pestilent vapors of the earth lying under them, and rising into the air through the bodie of the water, the later whereof *Aristotle* saith, hapneth but seldom. But it often chanceth, that the plague rageing in anie countrie, manie fishes are cast upon the coast, and may bee seen lying on great heaps. But sulphureous vapors, or such as partake of anie other malign qualitie, sent forth from places under the ground, by gapeings and gulfs opened by earth-quakes, not onely corrupt the air, but also infect and taint the seeds, plants, and all the fruits which wee eat, and so transfer the pestilent corruption into us, and those beasts on which wee feed, together with our nourishment. The truth whereof *Empedocles* made manifest, who by shutting up a great gulf of the earth, opened in a vaille between two mountains, freed all Sicilie from a plague caused from thence.

If windes rising suddenly shall drive such filthy exhalations from those regions in which they were pestiferous, into other places, they also will carrie the plague with them thither.

If it bee thus, som will say, it should seem that wheresoever stinking and putrid exhalations arise, as about standing-pools, sinks and shambles, there should the Plague reign, and straight suffocate with its noisom poison the people which work in such places: but experience finde's this fall.

Pestiferous
putrefaction is
far different
from ordinarie
putrefaction.

Wee do answer, that the putrefaction of the Plague is far different, and of another kinde then this common, as that which partake's of a certain secret malignitie, and wholly contrarie to our lives, and of which wee cannot easily give a plain and manifest reason. Yet that vulgar putrefaction wheresoever it bee, doth easily and quickly entertain and welcom the pestiferous contagion, as often as, and whensoever it com's, as joined to it by a certain familiaritie,

familiaritie, and at length, it self degenerateing into a pestiferous malignitie, certainly no otherwise then those diseases which arise in the plague-time, the putrid diseases in our bodies, which at the first wanted virulencie and contagion, as Ulcers, putrid Fevers, and other such diseases, raised by the peculiar default of the humors, easily degenerate into pestilence, presently receiving the tainture of the plague, to which they had before a certain preparation. Wherefore in time of the plague, I would advise all men to shun such exceeding stinking places, as they would the plague it self: that there may bee no preparation in our bodies, or humors to catch that infection (without which, as *Galen* teacheth, the Agent hath no power over the Subject, for otherwise in a plague-time, the sickness would equally seiz upon all) so that the impression of the pestiferous qualitie may presently follow that disposition.

In a pestilent constitution of the air, all diseases become pestilent. *Lib. 1. de differ. feb.*

But when wee say the air is pestilent, wee do not understand that sincere, elementarie, and simple as it is of its own nature, for such is not subject to putrefaction; but that which is polluted with ill vapors rising from the earth, standing-waters, vaults, or sea, and degenerate's, and is changed from its native puritie and simplicitie. But certainly amongst all the constitutions of the air, fit to receive a pestilent corruption, there is none more fit then an hot, moist and still season; for the excess of such qualities easily causeth putrefaction. Wherefore the South winde reigning, which is hot and moist, and principally in places near the sea, there flesh cannot long bee kept, but it presently is tainted and corrupted.

How the air may bee said to putrefie.

Further, wee must know, that the pestilent malignitie which riseth from the carkasses or bodies of men, is more easily communicated to men; that which riseth from oxen, to oxen; and that which com's from sheep, to sheep; by a certain sympathy and familiaritie of Nature: no otherwise then the Plague which shall seiz upon som one in a Familie, doth presently spread more quickly amongst the rest of that Familie, by reason of the similitude of temper, then amongst others of another Familie, disagreeing in their whole temper. Therefore the air thus altered and estranged from its goodness of nature, necessarily drawn in by inspiration and transpiration, bring's in the seeds of the Plague, and so consequently the Plague it self, into bodies prepared and made readie to receive it.

A Southerly constitution of the air is the fuel of the Plague.

CHAP. IV.

Of the preparation of humors to putrefaction, and admission of pestiferous impressions.

Having shewed the causes from which the air doth putrefie, become corrupt, and is made partaker of a pestilent and poisonous constitution; wee must now declare what things may cause the humors to putrefie, and make them so apt to receive and retain the pestilent air and venenate qualitie.

Humors putrefie either from fulness, which breed's obstruction; or by distemperate excess; or lastly, by admixture of corrupt matter and evil juice, which ill feeding doth specially cause to abound in the bodie: For the Plague often follow's the drinking of dead and mustie wines, muddie and standing water, which receive the stinks and filth of a Citie; and fruits and pult eaten without discretion in scarcitie of other corn, as Peas, Beans, Lentils, Vetches, Acorns, the roots of Fern, and Grasse made into bread. For such meats obstruct, heap up ill humors in the bodie, and weaken the strength of the faculties, from whence proceed's a putrefaction of humors, and in that putrefaction a preparation and disposition to receive, conceive, and bring forth the seeds of the Plague: which the filthy scabs, malign sores, rebellious ulcers, and putrid fevers, being all fore-runners of greater putrefaction and corruption, do testifie. Vehement passions of the minde, as anger, sorrow, grief, vexation and fear, help forward this corruption of humors, all which hinder nature's diligence and care of concoction: For as in the Dog-Daies, the lees of wine subsiding to the bottom, are by the strength and efficacie of heat drawn up to the top, and mixed with the whole substance of the wine, as it were by a certain ebullition, or working; so melancholick humors, being the dregs or lees of the blood, stirred up by the passions of the minde, defile or taint all the blood with their feculent impuritie.

Three causes of the putrefaction of humors.

Passions of the minde help forward the putrefaction of the humors.

Wee found that som years ago by experience, at the battel of *S. Dennis*. For all wounds, by what weapon soever they were made, degenerated into great and filthy putrefactions and corruptions, with fevers of the like nature, and were commonly determined by death, what medicines, and how diligently soever they were applied; which caused manie to have a false suspicion that the weapons on both sides were poisoned. But there were manifest signs of corruption and putrefaction in the blood *let* the same day that anie were hurt, and in the principal parts dissected afterwards, that it was from no other cause, then an evil constitution of the air, and the mindes of the Souldiers perverted by hate, anger and fear.

CHAP. V.

What signs in the Air and Earth prognosticate a Plague.



Ye may know a Plague to bee at hand and hang over us, if at anie time the air and seasons of the year swarv from their natural constitution, after those waies I have mentioned before; if frequent and long continuing Meteors, or sulphureous Thunders infect the air; if fruits, seeds and pulf bee worm-eaten: If Birds forsake their nests, eggs or young, without anie manifest caus; if wee perceiv women commonly to abort, by continual breathing in; the vaporious air, beeing corrupted and hurtful both to the Embryon and original of life, and by which it beeing suffocated, is presently cast forth and expelled. Yet notwithstanding, those airie impressions do not solely corrupt the air, but there may bee also others raised by the Sun from the filthie exhalations and poisonous vapors of the earth and waters, or of dead carkasses, which by their unnatural mixture, easily corrupt the air, subject to alteration, as which is thin and moist, from whence divers Epidemial diseases, and such as everie-where seiz upon the common sort, according to the severall kindes of corruptions, such as that famous *Catarrh* with difficultie of breathing, which in the year 1510 went almost over all the world, and raged over all the Cities and Towns of France, with great heaviness of the head (whereupon the French named it *Cuculla*) with a straightness of the heart and lungs, and a cough, a continual fever, and somtimes raveing.

This, although it seized upon manie more then it killed, yet becaus they commonly died who were either let blood, or purged, it shewed it self pestilent by that violent and peculiar and unheard of kinde of malignitie.

Why aborti-
ons are fre-
quent in a pe-
stilent season.

A *Catarrh* with
difficultie of
breathing kil-
ling manie.

The English
*Sweating-sick-
ness*.

Such also was the English *Sweating-sickness*, or *Sweating-fever*, which unusual, with a great deal of terror invaded all the lower parts of Germanie, and the Low-Countries, from the year 1525 unto the year 1530, and that chiefly in Autumn.

As soon as this pestilent disease entred into anie Citie, suddenly two or three hundred fell sick-on one day, then it departed thence to som other place. The people stricken with it languishing, fell down in a swoond, and lying in their beds, sweat continually, haveing a fever, a frequent, quick, and unequal pulf; neither did they leav sweating, till the disease left them, which was in one or two daies at the most: yet free'd of it, they languished long after, they all had a beating, or palpitation of the heart, which held som two or three years, and others all their life after.

At the first beginning it killed manie, before the force of it was known: but afterwards verie few, when it was found out by practice and use, that those who furthered and continued their sweats, and strengthened themselvs with cordials, were all restored. But at certain times many other popular diseases sprung up, as putrid fevers, fluxes, bloodie-fluxes, catarrhs, coughs, phrenzies, squinances, plurities, inflammations of the lungs, inflammation of the eies, apoplexies, lithargies, small pocks and meazles, scabs, carbuncles, and malign pustules. Wherefore the Plague is not alwaies, nor everie-where of one and the same kinde, but of divers; which is the caus that divers names are imposed upon it, according to the varietie of the effects it bring's, and symptoms which accompanie it, and kindes of putrefaction, and hidden qualities of the air.

The Plague is
not the definite
name of one
disease.

What signs in
the earth fore-
tell a Plague.

They affirm, when the Plague is at hand, that Mushrooms grow in greater abundance out of the earth, and upon the surface thereof manie kindes of poisonous *insecta* creep in great numbers, as Spiders, Caterpillers, Butter-flies, Grass-hoppers, Beetles, Hornets, Wasps, Flies, Scorpions, Snails, Locusts, Toads, Worms, and such things as are the off-spring of putrefaction. And also wilde beasts tired with the vaporious malignitie of their dens and caves in the earth, forsake them; and Moles, Toads, Vipers, Snakes, Lizards, Asps and Crocodiles are seen to flie away, and remoov their habitations in great troops. For these, as also som other creatures, have a manifest power by the gift of God, and the instinct of Nature, to presage changes of weather, as rains, shows, and fair weather; and seasons of the year, as the Spring, Summer, Autumn, Winter, which they testifie by their singing, chirping, crying, flying, playing, and beating with their wings, and such like signs: so also they have a perception of a Plague at hand. And moreover, the carkasses of som of them which took less heed of themselvs, suffocated by the pestiferous poison of the ill air contained in the earth, may bee everie-where found, not onely in their dens, but also in the plain fields.

How pestilens
vapors may
kill plants and
trees.

These vapors corrupted not by a simple putrefaction, but an occult malignitie, are drawn out of the bowels of the earth into the air, by the force of the Sun and Stars, and thence condensed into clouds, which by their falling upon corn, trees and grass, infect and corrupt all things which the earth produceth, and also kill's those creatures which feed them; yet brute beasts sooner then men, as which stoop and hold their heads down towards the ground (the maintainer and breeder of this poison) that they may get their food from thence. Therefore at such times, skilful husbandmen, taught by long experience, never drive their

their Cattel or Sheep to pasture, before that the Sun, by the force of his beams, hath wafted and dissipated into air this pestiferous dew hanging and abiding upon boughs and leaves of trees, herbs, corn and fruits.

But on the contrarie, that pestilence which proceed's from some malign qualitie from above, by reason of evil and certain conjunction of the Stars, is more hurtful to men and birds, as those who are nearer to heaven.

CHAP. VI.

By using what cautions in Air and diet, one may prevent the Plague.



Having declared the signs fore-shewing a Pestilence: now we must shew by what means wee may shun the imminent danger thereof, and defend our selves from it. No prevention seemed more certain to the Antients, then most speedily to remoov into places far distant from the infected place, and to bee most slow in their return thither again. But those, who by reason of their business or employments, cannot change their habitation, must principally have a care of

Change of places the surest prevention of the Plague.

two things: The first is, that they strengthen their bodies, and the principal parts thereof against the dailie imminent invasions of the poison, or the pestiferous and venenate Air. The other, that they abate the force of it, that it may not imprint its virulencie in the bodie; which may bee don by correcting the excess of the qualitie inclincing towards it, by the opposition of its contrarie. For if it bee hotter then is meet, it must bee tempered with cooling things; if too cold, with heating things: yet this will not suffice. For wee ought besides, to amend and purge the corruptions of the venenate malignitie diffused through it, by smels and perfumes resisting the poison thereof. The bodie will bee strengthened and more powerfully resist the infected Air, if it want excrementitious humors, which may bee procured by purgeing and bleeding; and for the rest a convenient diet appointed, as shunning much varietie of meats, and hot and moist things, & all such which are easily corrupted in the stomach, and caus obstructions, such as those things which bee made by Confit-makers; wee must shun satietie and drunkenness, for both of them weaken the powers, which are preserved by the moderate use of meats of good juicē

Two things of chief account for prevention.

Diet for prevention of the Plague.

Let moderate exercisēs in a clear Air, and free from anie venemous tainture, precede your meals.

Let the bellie have due evacuation either by Nature or Art.

Let the heart, the seat of life, and the rest of the bowels bee strengthened with Cordials and Antidotes applied and taken (as wee shall hereafter shew) in the form of epithemes, ointments, emplasters, waters, pills, powders, tablets, opiates, fumigations, and such like.

Make choice of a pure air, and free from all pollution, and far remote from stinking places, for such is most fit to preserv life, to recreate and repair the spirits; whereas on the contrarie, a cloudie or mistie Air, and such as is infected with gross and stinking vapors, dull's the spirits, deject's the appetite, make's the bodie faint and ill colored, oppresseth the heart, and is the breeder of manie diseases.

Discommodities of a cloudie or foggie Air.

The Northern winde is healthful, becaus it is cold and drie. But on the contrarie, the Southern winde, becaus it is hot and moist, weaken's the bodie by sloth or dulness, open's the pores, and make's them pervious to the pestiferous malignitie. The Western winde is also unwholsom, becaus it com's near to the nature of the Southern: wherefore the windows must bee shut up on that side of the hous on which they blow, but opened on the North and East-side, unless it happen the Plague com from thence.

Why the South winde is pestilent.

Kindle a clear fire in all the lodging Chambers of the hous, and perfume the whole hous with Aromatick things, as Frankincens, Myrrh, Benzoin, *Ladanum*, *Styrax*, Roses, Mirtle-leavs, Lavander, Rosemarie, *Sage*, *Savorie*, wilde *Time*, *Marjarum*, *Broom*, *Pine-apples*, peeces of *Firr*, *Juniper-berries*, *Cloves*, *Perfume's*: and let your cloaths bee aired in the same.

The efficacy of fire against the Plague.

There bee some, who think it a great preservative against the pestilent Air, to keep a Goat in their houses, becaus the capacitie of the houses, filled with the strong *sent* which the Goat send's forth, prohibit's the entrance of the venemous Air: which same reason hath place also in sweet smels; and besides it argue's, that such as are hungrie are apter to take the Plague then those who have eaten moderately: for the bodie is not onely strengthened with meat, but all the passages thereof are filled by the vapors diffused from thence, by which otherwise the infected Air would finde a more easie entrance to the heart.

Moderate repletion good for prevention.

Yet the common sort of people yeeld another reason for the Goat, which is, that one ill *sent* drive's away another, as one wedg drive's forth another; which calleth to my minde that which is recorded by *Alexander Benedictus*, that there was a Scythian Physician, which caused a Plague, arising from the infection of the Air, to cease, by causing all the dogs, cats, and such like beasts which were in the Cittie, to bee killed, and cast their carcasses up and down the streets, that so by the comming of this new putrid vapor as a stranger, the former pestiferous

A strange Art to drive away the Plague.

The antipathie of poisons with poisons. pestiferous infection, as an old guest, was put out of its lodging, and so the Plague ceased, For poisons have not onely an antipathie with their Antidotes, but also with som other poisons.

Whil'st the Plague is hot, it is not good to stir out of door before the rising of the Sun: wherefore wee must have patience, until hee have cleansed the Air with the comfortable light of his Beams, and dispersed all the foggie and nocturnal pollutions, which commonly hang in the Air in dirtie, and especially in low places and Vallies.

All publick and great meetings and assemblies must bee shunned.

Whether in the Plague-time one must travel by night or by daie.

If the Plague begin in Summer, and seem principally to rage, being helped forward by the Summers-heat, it is best to perform a journie begun; or undertaken for necessarie affairs, rather upon the night-time, then on the daie; because the infection take's force, strength and subtiltie of substance, by which it may more easily permeate and enter in by the heat of the Sun; but by night men's bodies are more strong, and all things are more gross and dens. But you must observ a clean contrarie course, if the malignitie seem to borrow strength and celeritie from coldness. But you must alwaies eschew the beams of the Moon, but especially at the Full: for then our bodies are more languid and weak, and fuller of excrementitious humors. Even as trees which for that cause must bee cut down in their season of the Moon, that is, in the decreas thereof.

Why the Moon is to bee shunned.

Garlick good against the Plague.

After a little gentle walking in your Chamber, you must presently use som means that the principal parts may bee strengthened by suscitaeing the heat and spirits, and that the passages to them may bee filled, that so the waie may bee shut up from the infection comming from without. Such as by the use of garlick have not their heads troubled, nor their inward parts inflamed, as Countrie-People and such as are used to it; to such there can bee no more certain preservative and antidote against the pestiferous fogs or mists, and the nocturnal obscuritie, then to take it in the morning with a draught of good wine; for it being abundantly diffused presently over all the bodie, fill's up the passages thereof, and strengthneth it in a moment.

What water to be made choice of in the plague-time.

For water; if the Plague proceed from the tainture of the Air, wee must wholly shun and avoid Rain-water, because it cannot but bee infected by the contagion of the Air. Wherefore the water of Springs and of the deepest Wells are thought best. But if the malignitie proceed from the vapors contained in the earth, you must make choice of Rain-water. Yet it is more safe to digest everie sort of water by boiling it, and to prefer that water before other, which is pure and clear to the sight, and without either taste or smell, and which besides suddenly take's the extremest mutation of heat and cold.

CHAP. VII.

Of the Cordial Remedies by which wee may preserv our bodies in fear of the Plague, and cure those already infected therewith.



Aqua theriacalis good against the Plague both inwardly taken and outwardly applied.

Such as cannot eat without much labor, exercise and hunger, and who are no lovers of Break-fasts, having evacuated their excrements, before they go from home must strengthen the heart with som Antidote against the virulencie of the infection. Amongst which *Aqua Theriacalis*, or Treacle-water, two ounces, with the like quantitie of Sack, is much commended being drunk, and rubbing the nostrils, mouth and ears with the same; for the Treacle-water strengthen's the heart, expell's poison, and is not onely good for a preservative, but also to cure the disease it self: For by sweat it drive's forth the poison contained within. It should bee made in June, at which time all simple medicines, by the vital heat of the Sun, are in their greatestt efficacie.

The composition thereof

The composition whereof is thus: Take the roots of *Gentian*, *Cyperus*, *Tormentil*, *Diptam*, or *Fraxella*, *Elecampane*, of each one ounce; the leavs of *Mullet*, *Carduus Benedictus*, *Dive's-bit*, *Burnet*, *Scabious*, *Sheeps-forrel*, of each half a handful; of the tops of *Rue* a little quantitie; *Mirtle-berries* one ounce; of red *Rose-leavs*, the flowers of *Bugloss*, *Borage* and *S. John's-wurt*, of each one ounce: let them bee all cleansed, dried and macerated for the space of twentie-four hours in one pound of white wine or *Malmisie*, and of *Rose-water* or *Sorrel-water*; then let them bee put in a vessel of glafs, and add thereto of *Treacle* and *Mithridate*, of each four ounces: then distill them in *Balneo Mariae*, and let the distilled water bee received in a glafs-Vial, and let there bee added thereto of *Saffron* two drams, of *Bole-Armenick*, *Terra sigillata*, yellow *Sanders*, shavings of *Ivorie* and *Hart's-horn*, of each half an ounce; then let the glafs bee well stopped, and set in the Sun for the space of eight or ten daies. Let the prescribed quantitie bee taken everie morning so oft as shall bee needful. It may bee given without hurt to sucking children, & to women great with childe. But that it may be the more pleasant, it must be strain'd through an *Hippocras-bag*, adding thereto som *fuger* & *cinnamon*.

Som think themselves sufficiently defended with a root of *Elecampane*, *Zedoarie*, or *Angelica*, rowled in their mouth, or chawed between their teeth.

Others drink everie morning one dram of the root of *Gentian* bruised, being macerated for

for the space of one night in two ounces of white wine.

Others take Worm-wood-wine.

Others sup up in a rere egg one dram of *Terra Sigillata*, or of Hartf-horn, with a little Saffron, and drink two ounces of wine after it.

There bee som that do infuse Bole-Armenick, the roots of *Gentian*, Tormentil, Diptam, the berries of Juniper, Cloves, Mace, Cinnamon, Saffron, and such like, in *aqua vite* and strong white wine, and so distill it in *Balneo Mariæ*.

This Cordial water that followeth is of great vertue. Take of the roots of the long and round *Aristolochia*, Tormentil, Diptam, of each three drams, of Zedoarie two drams, *Lignum Aloës*, yellow Sanders, of each one dram, of the leavs of Scordium, St. John's-wurt, Sorrel, *Rue*, *Sage*, of each half an ounce, of Bay and Juniper-berries, of each three drams, Citron-seeds one dram, Cloves, Mace, Nutmegs, of each two drams, of Mastich, *Olibanum*, Bole-Armenick, *Terra Sigillata*, shaveings of Hartf-horn and Ivorie, of each one ounce, of Saffron one scruple, of the *Conservs* of Roses, Buglofs-flowers, water-lillies and old Treacle, of each one ounce, of Camphire half a dram, of *aqua vite* half a pinte, of white wine two pintes and a half, make thereof a distillation in *Balneo Mariæ*. The use of this distilled water is even as Treacle water is. A Cordial water.

The Electuarie following is verie effectual. Take of the best Treacle three ounces, Juniper-berries and Carduus-seeds of each one dram and a half, of Bole-Armenick prepared half an ounce, of the power of the Electuarie *de Geminis* and *Diomargariton frigidum*, the powder of Hartf-horn, and red Coral, of each one dram: mix them with the syrup of the rindes and juice of Pome-Citrons as much as shall suffice, and make thereof a liquid Electuarie in the form of an Opiate, let them take everie morning the quantitie of a Filberd, drinking after it two drams of the water of Scabious, Cherries, *Carduus Benedictus*, and of som such like cordiall thing, or of strong wine. A Cordial Electuarie.

The following Opiate is also verie profitable, which also may bee made into Tablets. Take of the roots of Angelica, *Gentian*, Zedoarie, Elecampane, of each two drams; of Citron and Sorrel-seeds of each half a dram; of the dried rindes of Citrons, Cinnamon, Bay and Juniper-berrie, and Saffrom, of each one scruple; of *conseru* of Roses and Buglofs, of each one ounce; and fine hard Suger as much as is sufficient: make thereof Tablets of the weight of half a dram, let him take one of them two hours before meat: or make thereof an Opiate with equal parts of *conservs* of Buglofs and *Mel Anthosatum*, and so adding all the rest drie and in powder. Or take of the roots of Valerian, Tormentil, Diptam, of the leavs of *Rue*, of each half an ounce; of Saffron, Mace, Nutmegs, of each half a dram; of Bole-Armenick prepared half an ounce; of *conseru* of Roses and syrup of Lemmons as much as will bee sufficient to make thereof an Opiate liquid enough. Or take of the roots of both the *Aristolochia's*, of *Gentian*, Tormentil, Diptam, of each one dram and an half; of Ginger three drams; of the leavs of *Rue*, *Sage*, Mints and Pennie-royal, of each two drams; of Bay and Juniper-berries, Citron-seeds, of each four scruples; of Mace, Nutmegs, Cloves, Cinnamon, of each two drams; of *Lignum aloës*, and yellow Sanders, of each one dram; of Male-Frankincens, *i. Olibanum*, Mastich, shaveings of Hartf-horn and Ivorie, of each two scruple; of Saffron half a dram; of Bole-Armenick, *Terra Sigillata*, red Coral, Pearl, of each one dram; of *conservs* of Roses, Buglofs-flowers, water-lillies and old Treacle, of each one ounce; of loaf-suger one pound and a quarter: a little before the end of the making it up, add two drams of *confectio Alkermes*, and of Camphire dissolved in Rose-water one scruple; make thereof an Opiate according to Art, the dose thereof is from half a dram to half a scruple. An Opiate. Another. Another.

Treacle and Mithridate faithfully compounded, excell all Cordial medicines, adding for everie half ounce of them, one ounce and an half of *conservs* of Roses, or of Buglofs, or of Violets, and three drams of Bole-Armenick prepared: Of these beeing mix't with stirring, and incorporated together, make a *conseru*: It must bee taken in the morning the quantitie of a Filberd. You must chuse that Treacle that is not less then four years old, nor above twelve: that which is somewhat new, is judged to bee most meet for cholerick persons; but that which is old, for flegmatick and old men. For at the beginning the strength of the *Opium* that enter's into the composition thereof, remain's in its full vertue for a year: but afterwards the more years old it waxeth, the strength thereof is more abolished, so that at length the whole composition becommeth verie hot.

The confection of *Alkermes* is verie effectual both for a preservative against this disease, and also for the cure.

The quantitie of a Filberd of Rubarb, with one Clove chewed or rowled in the mouth, is supposed to repell the comming of the pestilent Air: as also this composition following.

Take of preserved Citron and Orange pills, of each one dram; of *conseru* of Roses, and of the roots of Buglofs, of each three drams; of Citron-seeds half an ounce; of Annis-seeds and Fennel-seeds, of each one dram; of Angelica-Roots four scruples; suger of Roses as much as sufficeth: Make a Confection, and cover it with leavs of Gold, and take a little of it upon a spoon before you go abroad everie morning. A Confection to bee taken in the morning against the pestilent Air.

Or take of Pine-apple-kernels, and Fisick-nuts, infused for the space of six hours in the water. A March-pane water

water of Scabious and Roses, of each two ounces; of Almonds blanched in the fore-named waters half a pound: of preserved Citron and Orange pills, of each one dram and an half: of Angelica-roots four scruples: make them according to art, unto the form of March-pane, or of anie other such like confection, and hold a little piece thereof often in your mouth.

The Tablets following are most effectual in such a case. Take of the roots of Diptam, Tormentil, Valerian, Elecampane, Eringoes, of each half a dram; of *Bole-Armenick*, *Terra Sigillata*, of each one scruple; of Camphir, Cinnamon, Sorrel-seeds, and Zedoarie, of each one scruple; of the *species* of the Electuarie *Diamargariton frigidum*, two scruples; of *conserv* of Roses, Bugloss, preserved-Citron-pills, Mithridate, Treacle, of each one dram; of fine Sugar dissolved in *Scabious* and *Carduus*-water, as much as shall suffice: Make thereof Tablets, of the weight of a dram, or half a dram: take them in the morning before you eat.

Pills of *Ruffus*.

The pills of *Ruffus* are accounted most effectual preservatives, so that *Ruffus* himself saith, that hee never knew anie to bee infected that used them: the composition of them is thus.

Take of the best Aloës half a dram, of Gum-*Ammoniacum* two drams, of Myrrh two drams and an half, of Mastich two drams, of Saffron seven grains: put them all together, and incorporate them with the juice of Citrons, or the syrup of Limons, and make thereof a mass, and let it bee kept in leather: Let the patient take the weight of half a dram everie morning two or three hours before meat, and let him drink the water of Sorrel after it, which through its tartness, and the thinness of its parts, doth infringe the force and power of the malignitie or putrefaction: For experience hath taught us, that Sorrel beeing eaten or chewed in the mouth, doth make the pricking of Scorpions unhurtful. And for those ingredients which do enter into the composition of those pills, Aloës doth cleanse and purge, Myrrh resist's putrefaction, Mastich strengthen's, Saffron exhilarate's and make's livelieth the spirits that govern the bodie, especially the vital and animal.

Other pills.

Those pills that follow are also much approved. Take of Aloës one ounce, of Myrrh half an ounce, of Saffron one scruple, of Agarick in Trochisces two drams, of Rubarb in powder one dram, of Cinnamon two scruples, of Mastich one dram and an half, of Citron-seeds twelve grains: powder them all as is requisite; and make thereof a mass with the syrup of Maiden-hair: let it bee used as aforesaid.

If the mass begin to wax hard, the pills that must presently bee taken, must bee mollified with the syrup of Limons.

Other pills.

Take of washed Aloës two ounces, of Saffron one dram, of Myrrh half an ounce, of *Ammoniacum* dissolved in white wine one ounce, of honie of Roses, Zedoarie, red Sanders, of each one dram, of *Bole-Armenick* prepared two drams, of red Coral half an ounce, of Camphir half a scruple: make thereof pills according to art. But those that are subject or apt to the hemorrhoids ought not at all, or verie seldom to use those kindes of pills that do receive much Aloës.

They say, that King *Mithridates* affirmed by his own writeing, that whosoever took the quantitie of an hazel-nut of the preservative following, and drank a little wine after it, should bee free from poison that day. Take two Wall-nuts, those that be verie drie, two Figs, twentie leavs of *Rue*, and three grains of Salt: beat them, and incorporate them together, and let them bee used as is aforesaid.

This remedie is also said to bee profitable for those that are bitten or stung by som venomous beast, and for this onely, because it hath *Rue* in the composition thereof. But you must forbid women that are with childe the use of this medicine; for *Rue* is hot and drie in the third degree, and therefore it is said to purge the womb, and provoke the flowers, whereby the nourishment is drawn away from the childe. Of such varietie of medicines, every one may make choice of that that is most agreeable to his taste, and as much thereof as shall bee sufficient.

CHAP. VIII.

Of local medicines to bee applied outwardly.



Those medicines that have proper and excellent virtues against the pestilence, are not to bee neglected to bee applied outwardly, or carried in the hand. And such are all aromatical, astringent, or spirituous things, which therefore are endued with virtue to repel the venomous and pestiferous air from coming and entering into the bodie, and to strengthen the heart and the brain. Of this kinde are *Rue*, Balm, Rosemarie, *Scordium*, *Sage*, Worm-wood, Cloves, Nut-megs, Saffron, the roots of Angelica, and Lovage, and such like, which must bee macerated one night in sharp Vineger and *Aqua vite*, and then tied in a knot as big as an egg: or rather let it bee carried in a sponge made wet, or soaked in the said infusion. For there is nothing that doth sooner and better hold the spirituous virtue and strength of aromatick things, then a sponge. Wherefore it is of principal use either to keep or hold sweet things to the nose, or to applie Epithems and Fomentations to the heart.

Of what nature the medicines outwardly used ought to be.

Those

Those sweet things ought to bee hot or cold, as the season of the year, and kinde of the pestilence is. As for example, in the Summer you ought to infuse and macerate Cinnamon and Cloves, beaten together, with a little Saffron in equal parts, of vineger of Roses, and Rose-water, into which you must dip a sponge, which rowled in a fair linnen cloth, you may carrie in your hand, and often smell to.

Take of Worm-wood half a handful; ten Cloves, of the roots of *Gentian* and *Angelica*, of each two drams; of vineger and Rose-water, of each two ounces; of Treacle and Mithridate, of each one dram; beat and mix them all well together, and let a sponge bee dipped therein, and used as above-said. They may also bee enclosed in boxes made of sweet wood, as of Juniper, Cedar, or Cypress, and so carried for the same purpose.

But there is nothing more easie to bee carried then Pomanders: the form of which is thus: Take of yellow Sanders, *Mace*, Citron-pills, Rose and Mirtle-leavs, of each two drams; of Benzoin, *Ladanum*, *Storax*, of each half a dram; of Cinnamon and Saffron, of each two scruples; of Camphire and Amber-Greece, of each one scruple; of Musk three grains. Make there-
Pomanders
of a Pomander, with Rose-water, with the infusion of Tragacanth. Or take red-Rose-leavs, the flowers of Water-lillies and Violets, of each one ounce; of the three Sanders, Coriander-seeds, Citron-pills, of each half an ounce; of Camphire, one dram; let them all bee made into powder, and with Water of Roses and Tragacanth make a pomander.

In the Winter it is to bee made thus. Take of *Storax*, Benzoin, of each one dram and a half; of Musk, half a scruple; of Cloves, Lavander and *Cyperus*, of each two drams; of the root of Orris, *i. e.* *Flower-de-Luce*, and *Calamus aromaticus*, of each two drams and a half; of Amber-Greece, three drams; of Guni-Tragacanth dissolved in Rose-water and *aqua vite*, as much as shall suffice: make thereof a Pomander.

And for the same purpose you may also use to carrie about with you sweet powders, made
Sweet-pow-
of Amber-Greece, *Storax*, Orris, Nutmegs, Cinnamon, *Mace*, Cloves, Saffron, Benzoin, Musk, ders.
Camphire, Roses, Violets, *Juncus odoratus*, Marjoram and such like, of which beeing mixed together, Powders may may bee compounded and made.

Take of the roots of Orris two drams, of *Cyperus*, *Calamus aromaticus*, red Roses, of each half an ounce; of Cloves half a dram, of *Storax*, one dram; of Musk, eight grains: mix them, and make a powder for a bag: or take the roots of Orris two ounces; red-Rose-leavs, white Sanders, *Storax*, of each one dram; of *Cyperus*, one ounce; of *Calamus aromaticus*, one ounce; of Marjoram, half an ounce; of Cloves, three drams; of Lavander, half a dram; of Coriander-seeds, two drams; of good Musk, half a scruple; of *Ladanum* and Benzoin, of each a dram; of Nutmegs and Cinnamon, of each two drams: Make thereof a fine powder, and sow it in a bag.

It will bee verie convenient also to applie to the *region* of the heart, a bag filled with yel- Bags.
low Sanders, *Mace*, Cloves, Cinnamon, Saffron and Treacle shaken together, and incorporated, and sprinkled over with strong vineger and Rose-water in Summer, and with strong wine and Muskadine in the Winter.

These sweet Aromatick things thar are so full of spirits, smelling sweetly and strongly, have admirable virtues to strengthen the principal parts of the bodie, and to stir up the expulsive facultie to expel the poison.

Contrarie-wise, those that are stinking and unfavorie, procure a desire to vomit, & disso- Unfavorie
lution of the powers, by which it is manifest how foolish and absurd their perswasion is, that things to bee
counsel such as are in a pestilent constitution of the Air, to receiv and take in the stinking and eschewed.
unfavorie vapors of *sinks* and *privies*, and that especially in the morning.

But it will not suffice to carrie those preservatives alone, without the use of anie other thing, but it will bee also verie profitable to wash all the whole bodie in Vineger of the decoction of Juniper and Bay-berries, the Roots of *Gentian*, Marigolds, S. John's-Wurt, and such like, with Treacle or Mithridate also dissolved in it. For vineger is an enemy to all poisons in general, whether they bee hot or cold: for it resisteth and hindereth putrefaction. Neither is it to bee feared, that it should obstruct the pores, by reason of its coldness, if the bodie bee bathed in it: for it is of subtil parts, and the spices boiled in it, have virtue to open.

Whosoever accounteth it hurtful to wash his whole bodie therewith, let him wash onely his arm-holes, the *region* of his heart, his *temples*, groins, parts of generation; as having great and marvelous sympathie with the principal and noble parts.

If anie mislike batheing, let him annoint himself with the following Unguent. Take oil. An Unguent
of Roses, four ounces; oil of Spike, two ounces; of the powder of Cinnamon and Cloves, of each, one ounce and a half; of Benzoin, half an ounce; of Musk, six grains; of Treacle, half a dram; of Venice-Turpentine, one dram and a half; of Wax, as much as shall suffice: make thereof a soft Unguent.

You may also drop a few drops of oil of Mastich, of *Sage*, or of Cloves, and such like, into the ears, with a little Civet or Musk.

CHAP. IX.

Of other things to be observed for prevention, in fear of the Plague.

Why Venerie
is to be shun-
ned.



VENERIE is chiefly to be eschewed, for by it the powers are debilitated, the spirits dissipated, and the breathing places of the bodie diminished, and lastly, all the strength of nature weakned. A sedentarie life is to be shunned, as also excess in diet, for hence proceed's obstruction, the corruption of the juices, and preparation of the bodie to putrefaction and the pestilence.

Running ul-
cers good in
time of pesti-
lence.

Women must be verie careful that they have their courses duely, for stopping besides the custom, they easily acquire corruption, and draw by contagion the rest of the humors into their societie. Such as have fistulous, or otherwise old ulcers; must not heal them up in a pestilent season; for it is then more convenient rather to make new ones and these in convenient and declining places; that as by these channels, the sink of the humors of the bodie may be emptied.

Places to be
shunned in
time of plague.

The Hemorrhoids, bleedings, and other the like accustomed evacuations, must not be stopped, unless they exceed measure. Moreover, they must at such times take heed that they touch or handle not anie of these things wherein the seeds or fuell of the pestilence may lie hid; such as are hemp, flax, quilts and coverings wherein such as have had the Plague have laid; skins and all lether-things, hangings and cloaths. You must dwell far from Church-yards; especially from those wherein the corps of such as have died of the Plague are not buried dead in the ground, as in the Church of *Innocents* in *Paris*, in which place by the same reason it sundrie times happen's that the bodies are plucked up, rent and torn by dogs. Also let them dwell far from places of execution, shambles of flesh and fish, from tan-houses, diars, tallow-chandlers, cloth-dressers, farriers, skinners, and from the places wherein metals are cast or wrought. The filth and dung, especially of Swine, Privies, standing and muddie waters, and lastly all things of the like evil smell, must be far remote from your habitation; the bellie must not be emptied into those places, into which the excrements of such as have the plague are cast. The companie of such as usually visite those sick of the plague,

What compa-
nie to be a-
voided.

must be eschewed, as of Physicians, Apothecaries, Surgeons, Nurs-Keepers, Grave-makers and Bearers. For though they have not the Plague, yet coming out of a pestilent place, they may carrie with them lying in their garments, the seeds thereof. You may gather this by such have for a little while staid in a perfumer's shop, for the perfume diffused in the air, bestow's the smell upon the garments of such persons, so that gon from thence, such as meet them, will judg them to carrie perfumes with them. They shall also shun long watchings found sleeping, all passions of the minde, especially anger, hunger, thirst, journeying in the Sun, for that hath oftimes occasioned a diarie fever, which hath not seldom been seen to turn into a pestilent one; for by dilateing the pore of the skin, they have given entrance to the pestilent air, which by that means hath easily taken hold of the humor disposed to putrefaction.

You must do
nothing in a
pestilent sea-
son whereby
you may grow
too hot.

CHAP. X.

Of the Office of Magistrates in the time of the Plague.



Magistrates ought to have a special care that no filth be heaped up, either in private or publick places: let all things be kept neat in everie hous, and let all the streets be kept clean, the dung and filth be carried forth of the Cittie, as also the dead carcasses of killed dogs & cats, for becauf they oftimes lick and devour the excrements of such as have the Sicknes, therefore they may by their familiar entrie into sound houses, there propagat the Plague. Wherefore they

Why dogs and
cats must be
killed in a
Plague-time.

must either be drive'n forth of the Citie, or killed, and so be carried forth and buried deep in the ground. Wells, springs, and rivers themselvs, must be free'd and cleansed from all impuritie. Care must be had that mustie corn, tainted flesh, nor stinking fish be not set to sale. Publick baths and hot-houses must be prohibited, for that in these, men's bodies are weakned, and made more yeelding and pervious to the pestiferous air. They shall commit the cure of such as have the Plague, to learned, skilful and honest Physicians and Apothecaries and Surgeons.

Why Baths
and hot-houses
are not then to
be allowed.

Such as are known to have the Plague, shall be separated from such as are free there-from, and be sent to such fit places as shall be provided for them; for this is better and more humanely don then to shut up everie man in his own hous. They shall provide and fore-see that the household-stuff of such as have the Plague be not set to sale. They shall set signs and noted marks upon the houses seized upon by this diseaf, lest they should unawares run into danger. Wherefore to the same purpose they shall procure that the Surgeons and others that visite the sick of the Plague may be known by som conspicuous mark, that such as pass by them may be admonished of the danger; they shall also take care that the bodies of the

the dead bee buried as speedily as may bee. For they sooner and more grievously putrefie in a short time, then the bodies of others of what death soever they die. Wherefore, neither birds, nor ravenous beasts dare once touch their bodies, though unburied; for by tasting them they should quickly com to their deaths. The keepers of the gates of the Cittie shall bee admonished, that they take special care that such as are infected, or com from a visited place, do not enter into the Cittie; for from one, the evil may com to spread it self further; for one spark may set a whole Cittie on fire, and one scabbie sheep infect a whole flock. And becaus there is nothing which may more perfectly purge the air, and cleane it from all manner of noisomness and infection, then fire; they shall command that there bee kindled, and perpetually kept burning-fires, made with odoriferous and strong-smelling things, as Juniper, Turpentine, Broom, and the like.

In stead hereof *Levinus* tell's, that the Souldiers of the Garrison of Tornie used in a Plague-time to discharge their Canons laded onely with powder, turning their mouths upon the Cittie, and that morning and evening; that by the vehemencie of the mooved air, the pestiferous fogs might bee chased away; and by the heat of the burned powder, the venenate and noisom qualitie of the air might bee amended. Lastly, I judg it fit to admonish Magistrates, that they have their eies and mindes attentive upon a murderous and impious kinde of Bearers and Nurs-keepers; which allured with a desire of gain (which whil't the Plague reign's, they get abundantly) annoint the walls, doors, thresholds, knockers of gates and locks with the filth and ointments taken from such as have the Plague, that the Plague within a while after seizing upon these also, the masters of them flying away, and the familie dispersed, they may there reign alone, and freely and without punishment carrie thence what they pleas; oftimes strangling such as lie readie to die, lest recovering, they might bee their accusers. This I remember happened at *Lions*, *Anno Dom.* 1565.

Such as die of the Plague do quickly putrefie.

Lib. 2. de oculis. nat. mirac.

The villanie of som base people.

CHAP. XI.

What caution must bee used in chusing Physicians, Apothecaries and Surgeons, who may have care of such as are taken with the Plague.



IT is the part of Magistrates in the so great necessitie of the afflicted Commonwealth, to appoint learned, skilful, and honest Physicians, Surgeons, and Apothecaries, and such as have more regard to the Law of God then to gain, to have the care and cure of such as are visited. But principally let them not take Surgeons and Apothecaries called by proclamation with sound of trumpet, that if they will take this charge, they shall becom free without examination or reward. But let them rather bee allured by gifts and honest rewards, not onely then when as necessitie urgeth; but also after the Plague is over. For such servant-Surgeons and Apothecaries as are called by proclamation, so to gain freedom, are most commonly unskilful and unexperienced Dunces; who, conscions of their own ignorance, and fearing to undergo the examination of the Masters of their Companies, refuse no hazard, however dangerous, with desire to obtain their freedom.

It is far worf and more dangerous to fall into the hands of such, then into the hands of thevs and murderers; for these, by providence or strength, wee may chance to escape; but wee seek for and embrace the other, and having found them, lay our throats bare unto them, so by their unskilfulness to bee butchered. Certainly by the fault of the times, and the neglect of Magistrates, it is almost com to this pass, that if anie honest and learned Physicians and Surgeons shall undertake this cure, they are commonly forced thereto by the Magistrate for fear of banishment or fineing. Therefore becaus they do it against their wills, they shew themselvs less vigilant, cheerful and painful about the sick. They com unwillingly, and compelled hereto, becaus by the memorie of the fore-past time, they sufficiently know, how sordid and basely Magistrates, when the Plague hath been over-past, have been in paying the promised reward to men of their condition, who have stoutly run into danger; for thence it happen's, that dureing the rest of their lives, they may sit idle at home, for that they are infamous, and feared by the people onely for this, that a while ago they visited such as had the Plague. Therefore I would have Magistrates prudent, faithful, and free in chusing honest, learned and skilful men, who may undergo this so difficult and dangerous a charge.

CHAP. XII.

How such as undertake the cure of the Plague ought to arm themselves.

FIRST they must think and hold for certain, that they are not called to this office by men, but by God, so directing the counsels and actions of men as hee thinketh fit. Therefore they shall confidently enter into the cure thereof, for that our lot, life and death

Our lots are in the hands of the Lord.

Where to
make issues in
the time of the
Plague.

are in the hands of the Lord : but notwithstanding they ought not to neglect remedies, which are given to men for prevention, lest by neglecting the gifts of God, they may seem to neglect him also that is the giver of so manie good and excellent benefits. Therefore first let them by purgeing and bleeding evacuate the humors subject to putrefaction, and to conceiv the seeds of the pestilence. Let them make two fontanella's by application of cauteries, to bee as rivelets to evacuate the excrementitious humors which are daily by little and little heaped up in us; let one of them bee in the right arm a little below the muscle *E-pomis*; the other the space of three fingers under the knee on the in-side of the left leg. This is found by experience a verie certain means of prevention. Let them wash their whole bodies with the following lotion. *R. aque ros. acetii rosati, aut sambucini, vini albi aut malvatici, an. lb. vi. rad. enule camp. angelice, gentian. bistortæ, zedoar. an. ℥iii. baccar. juniperi, & hederæ, an. ℥ii. salvia, rorismar. absinth. ruta, an. m. i. corticis citri, ℥β. theriacæ & mithridat. an. ℥i. conquassanda conquassent, bulliant lento igni, & ferventur ad usum antè commemoratum.* The epithems, unguents and bags formerly described shall bee applied to the region of the heart. I have read it noted by *John Baptist Theodosius*, that amongst other things, Arsenick may bee profitably applied to the region of the heart, that so it may by little and little accustom it self to poisons, that afterwards it may bee less harmed by their incurfion, first makeing their assault upon it.

Cap. 8.

Epist. 2.

What to wear.

How to visit
your patients.

Let their garments bee made of Chamelet, Dutch-Sarge, Satin, Taffatie, or the like. Or elf if they cannot of these, let them bee of som other handsom Stuff, but not of Cloth, Freez, or the like, that they may take the venenate air, and carrie it with them to the infection of the sound. They shall oftimes change their cloaths, shirts and other linnen, and perfume them with aromatick things; let them warily approach to the sick, more warily speak unto him, with their faces looking away from him, rather then towards him, so that they may not receiv the breath of his mouth, neither the vapor nor smell of anie of his excrements.

An historie.

When as I upon a time being called to visit one that lay sick of the Plague, came too near and heedlessly to him, and presently by sudden casting off the cloaths, laid him bare, that so I might the better view a *Bubo*, that hee had in his right groin, and two Carbuncles that were on his bellie, then presently a thick, filthie and putrid vapor arising from the broken abscess of the Carbuncle, as out of a raked puddle, ascended by my nostrils to my brain, whereupon I fainted, and fell down senseless upon the ground; raised up a little after, all things seemed to mee to run round; and I was readie to fall again, but that I staid my self by takeing hold of the bed-post. But one thing comforted mee, that there appeared no signs that my heart was affected, either by pain or panting, or the strong and contumacious failing of my powers. An argument that the animal spirits were onely dissipated by a venenate vapor, and that the substance of the heart was no way wronged, was a sneezing which took mee so violently, that I sneezed ten times, and then fell a bleeding at the nose; which excretion, I believ, free'd mee from all the impression of the malignitie. Let others, warned by this mine example, learn to bee wiser and more warie in this case, lest they com to a worf mishap then besel mee.

CHAP. XIII.

Of the signs of such as are infected with the Plague.

Whence cer-
tain signs of
the Plague
may bee taken.



Ye must not stay so long before wee pronounce one to have the Plague, until there bee pain and a tumor under his arm-holes, or in his groin, or spots (vulgarly called *Tokens*) appear over all the bodie; or carbuncles arise: for manie die through the venenate malignitie, before these signs appear. Wherefore the chiefest and truest signs of this diseas are to bee taken from the heart, beeing the mansion of life, which chiefly and first of all is wont to bee assailed by the force of the poison. Therefore they that are infected with the Pestilence, are vexed with often swooundings and fainting; their puls is feebler and slower then other, but somtimes more frequent, but that is specially in the night-season; they feel prickings over all their bodie, as if it were the pricking of needles; but their nostrils do itch especially by occasion of the malign vapors rising upwards from the lower and inner, into the upper parts, their breast burneth, their heart beateth with pain under the left dug, difficultie of takeing breath, pitifick, cough, pain of the heart, and such an elation or puffing up of the *Hypochondria*, or sides of the bellie, distended with the abundance of vapors raised by the force of the feverish heat, that the patient will in a manner seem to have the Tympanie. They are molested with a desire to vomit, and oftentimes with much and painful vomiting, wherein green and black matter is seen, and alwaies of divers colors, answering in proportion to the excrements of the lower parts, the stomach being drawn into a consent with the heart, by reason of the vicinitie and communion of the vessels; oftentimes blood alone, and that pure, is excluded and cast up in vomiting; and is not onely cast up by vomiting out of the stomach, but also verie often out of the nostrils, fundament; and in women, out of the womb; the inward parts are often burned,

The caus of
vomiting in
such as have
the plague.

burned, and the outward parts are stiff with cold, the whole heat of the patient being drawn violently inward, after the manner of a Cupping-glass, by the strong burning of the inner parts; then the eye-lids wax blew, as it were through some contusion, all the whole face hath an horrid aspect, and as it were the color of lead, the eyes are burning red, and as it were swollen, or puffed up with blood, or any other humor, shed tears; and to conclude, the whole habit of the bodie is somewhat changed, and turned yellow.

Their looks are suddenly changed.

Manie have a burning fever, which doth shew its self by the patient's ulcerated jaws, unquenchable thirst, driness and blackness of the tongue, and it causeth such a phrensie by inflaming the brain, that the patients, running naked out of their beds, seek to throw themselves out of windows into the pits and rivers that are at hand. In some the joints of the bodie are so weakened, that they cannot go nor stand; from the beginning they are as it were buried in a long swoond and deep sleep, by reason that the fever sendeth up to the brain the gross vapors from the crude and cold humors, as it were from green wood newly kindled to make a fire.

Why some that are taken with the plague are sleepe.

Such sleeping doth hold him especially while the matter of the sore or carbuncle is drawn together, and beginneth to com to suppuration. Oftentimes when they are awaked out of sleep, there do spots and marks appear dispersed over the skin, with a stinking sweat. But if those vapors bee sharp that are stirred up unto the head, in stead of sleep they cause great waking, and alwaies there is much diversitie of accidents in the urine of those that are infected with the Plague, by reason of the divers temperature and condition of bodies: neither is the urine at all times, and in all men of the same consistence and color: For sometimes they are like unto the urine of those that are found and in health, that is to say, laudable in color and substance; because that when the heart is affected by the venemous air, that entreth in unto it, the spirits are more greatly grieved and molested then the humors: but those, i.e. the spirits, are infected and corrupted when these do begin to corrupt.

Why their urines are like those that are found.

But Urines onely shew the dispositions of the humors or parts in which they are made, collected together, and through which they pass.

This reason seemeth truer to mee then theirs which say, that nature terrified with the malignities of the poison avoid's contention, and doth not resist or labor to digest the matter that causeth the disease.

Manie have their appetites so overthrown, that they can abstain from meat for the space of three daies together.

And to conclude, the varietie of accidents is almost infinite, which appear and spring up in this kinde of disease, by reason of the diversitie of the poison, and condition of the bodies and grieved parts: but they do not all appear in each man; but some in one, and some in another.

CHAP. XIV.

What signs in the Plague are mortal.

IT is a most deadlie sign in the Pestilence, to have a continual and burning fever; to have the tongue drie, rough, and black, to breathe with difficultie, and to draw in a great quantitie of breath, but breathe out little; to talk idly; to have phrensie and madness together, with unquenchable thirst and great watching; to have convulsions, the hicket, heart-beating, and to swoond verie often and vehemently: further, tossing and turning in the bed, with a loathing of meats, and dailie vomits of a green, black, and bloodie color; and the face pale, black, of an horrid and cruel aspect, bedewed with a cold sweat, and verie mortal signs.

There are some which at the verie beginning have ulcerous and painful weariness, pricking under the skin, with great torment of pain; the eyes look cruelly and staringly, the voice waxeth hoarse, the tongue rough and stutting, and the understanding decaying; the patient uttereth and talketh of frivolous things. Truly, those are verie dangerously sick, no otherwise then those whose urine is pale, black, and troubled like unto the urine of carriage-beasts, or lee, with divers colored clouds or contents; as blew, green, black, fattie and oylie, as also resembling in shew a Spiders web, with a round bodie swimming on the top.

An ulcerous and painful weariness from the beginning sheweth the Plague to bee deadlie.

If the flesh of the carbuncle bee drie and black, as it were seared with an hot iron, if the flesh about it bee black and blew, if the matter do flow back, and turn in, if they have a lask with greatly stinking, liquid, thin, clammy, black, green or blewish ordure; if they avoid worms, by reason of the great corruption of the humors, and yet for all this the patient is never the better; if the eyes wax often dim, if the nostrils bee contracted or drawn together, if they have a grievous cramp, the mouth bee drawn aside, the muscles of the face being drawn or contracted equally or unequally; if the nails bee black; if they bee often troubled

with the Hicket, or have a Convulsion and resolution over all the bodie, then you may certainly prognosticate that death is at hand, and you may use cordial medicines onely, but it is too late to purge, or let blood.

CHAP. XV.

Signs of the Plague comming by contagion of the air without anie fault of the humors.



You shall understand, that the Pestilence proceed's from the corruption of the air, if it bee verie contagious, and dispereth it self into sundrie places in a moment. If it kill quickly and manie, so that whil'st sundrie persons go about their usual buliness, walk in the places of common resort, and through the streets, they suddenly fall down and die, no sign of the disease or harm appearing, nor anie pain oppressing them; for the malignitie of the corrupt air is quick and verie speedie in infecting our spirits, overthrowing the strength of the heart, and killing the patient. The patients are not troubled with great agitation, becaus the spirits dissipated by the rapid malignitie of the poison, cannot endure that labor; besides they are taken with frequent swooundings, few of them have Bubo's, few have Blains com forth; and by the same reason their urines are like to those of sound men.

Why they have no sores.

CHAP. XVI.

Signs of the Plague drawn into the bodie by the fault and putrefaction of humors.



Formerly wee have reckoned up the causes of the corruption of humors from plenitude, obstruction, distemper, and the ill juice of meats. Now must wee deliver the signs of each corrupt humor which reign's in us, that it may bee reduced to soundness and perfection of nature by the opposition of its contrarie, or els bee evacuated by physick. Therefore if the bodie bee more yellow then usual, it is a sign of choler offending in quantitie and qualitie. If more black, then of melancholie; if more pale, then of phlegm; if more red, with the veins swoln up and full, then of blood. Also the color of the rising blains, tumors and spots, expresse the color of the predominant humor, as also the excrements cast forth by vomit, stool and otherwise; the heaviness and cheerfulness of the affected bodie; the manner of the present fever; the time of the year, age, region, diet. Such things as have a cutting, penetrateing, attenuateing, and cleaning facultie, take away obstruction. By means of obstruction fevers oftentimes accompanie the Plague, and these not onely continual, but also intermitting, like tertians or quartanes. Therefore that Plague that is fixed in the infection or corruption of a cholerick humor, shew's it self by the fore-mentioned signs of predominateing choler, to wit, the heat of the skin, blains, and excrements, as also in the quickness of killing, and vehemencie of the symptoms, bitterness of the mouth, a painful and continual endeavour of going to stool, by reason of the acrimonie of choler stimulateing and rakeing the guts in the passage forth. That which reside's in the corrupt substance of gross humors, as of blood; sheweth it self by manie and plentiful sweats, by a scouring, by which are avoided manie and various humors; and oftentimes also bloodie matter that proceed's from corrupt phlegm, it invade's with more sound sleep, and causeless weariness of all the members; when they are awakened out of their sleep, they are not seldom troubled with a trembling over all their joints, the entrance and way of the spirits into the members being obstructed by the grossness of the humors. That which is seated in the corruption of a melancholick humor, is accompanied with heaviness and pain of the head, much pensiveness, a deep and small puls. But the most certain sign of the Plague resideing in the corruption of the humors, is to bee taken from the urine. For the signs of the vitiated humors cannot but shew themselvs in the urines: therefore troubled urines, and such as are like those of carriage-beasts, as also black and green, give certain notice thereof. But som are much troubled with thirst, others not at all; becaus choler or phlegm somtimes onely putrefie in the stomach or orifice of the ventricle; somtimes besides they will weaken the government of the natural faculties of the part, as of the appetite. But if the fever happen by the default and infection both of the air and humors; then will there bee a great confusion of the fore-mentioned signs and symptoms.

Signs of choler.

When the urine is to bee looked upon.

Why som are much troubled with thirst, others not at all.

CHAP. XVII.

Of the Prognostication that is to bee instituted in the Plague.



YO U may well fore-tell the future motions and events of diseases, when you thoroughly know the nature of the disease, and accidents thereof, and the condition, function, and excellencie of the bodie and grieved parts: Although that this may bee spoken in general, That there is no certain prediction in pestilent diseases, either to health or death, for they have verie unconstant motions, sometimes swift and quick, sometimes slow, and sometimes choaking or suffocateing in a moment, while one breath's in the venemous air, as hee is going about anie of his necessarie affairs, having pustles riseing in the skin with sharp pain, and as though the whole bodie were pricked all over with needles, or the stings of Bees. Which I have seen with mine eyes in the Plague that was at *Lions* when *Charls* the French King lay there. It manie times commeth to pass that the accidents that were verie vehement and raging a little before, are suddenly aswaged, and the patients do think themselvs better, or almost perfectly sound. Which happen's to *Marie* one of the Queen-Mother her maids, in that notable pestilent constitution of the Air, that year when *Charls* the French-King lay at the Castle of *Rossilion*: For when shee was infected, a great tumor or *Bubo* arose in her groin, and suddenly it went in again, so that the third day of her sickness, shee said shee was without anie grief or disease at all, but that shee was troubled with the difficultie of makeing water; and I think it was becaus the bladder was enflamed by the reflux of the matter; but shee was sound in minde and bodie, and walked up and down the chamber on the same day that shee died. The strangeness of which thing made the King so fearful, that hee halted to depart thence.

No certain prediction in the Plague.

An historie.

Although this disease doth spare no man of what age, temperature, complexion, diet and condition soever, yet it assaulteth young men that are cholericke and sanguine, more often than old men that are cold and drie, in whom the moisture that is the nourisher of putrefaction by reason of their age is consumed, and the waies, passages and pores of the skin, whereby the venemous air should enter and pierce in, are more strait and narrow. And moreover, becaus old men do alwaies stay at home, but young men for their necessarie business, and also for their delight and pleasure, are alwaies more abroad in the day-time, in the air, whence the pollution of the pestilence commeth more often.

Why young men sooner take the Plague then old.

That pestilence that com's by the corruption of the humors, is not so contagious as that which commeth by the default of the air. But those that are phlegmaticke and melancholick, are most commonly grieved with that kinde of pestilence; becaus in them the humors are more clammy and gross, and their bodies more cold and less perspirable, for which causes the humors sooner and more speedily putrefie.

What Plague most contagious.

Men that are of an ill juice are also most apt to this kinde of pestilence, for in the naughtie qualitie of the juice there is a great preparation of the humors unto putrefaction: You may know it by this, that when the pestilence reigneth, there are no other diseases among the common people, which have their original of anie ill juice, but they all degenerate into the Plague. Therefore when they begin to appear and wander up and down, it is a token that the pestilence will shortly cease, or is almost at an end.

But here also I would have you to understand those to bee of an ill juice, which have no pores in their skin, by which, as it were by rivers, the evil juice which is contrarie to nature, may bee evacuated and purged. And I have noted and observed, that those are less in danger of the pestilence which have cancerous ulcers and stinking sores in their noses, and such as infected with the French Pocks, have by reason thereof, tumors and rotten ulcers, or have the King's-evil running upon them, the Leprosie or the Scab: and to conclude, all those that have fistula's and running in their bodies.

Who least subject to take the Plague.

I think those that have quartane Fevers are the better privileged for the same, becaus that by the *Fit* causing sweat, that commeth everie fourth daie, they avoid much of the evil juice that was engendred.

This is more like to bee true, then to think that the poison that commeth from without, may bee driv'n away by that which lurketh within.

Contrariwise, women that are great with childe, as I have noted, becaus they have much ill juice, being prohibited from their accustomed evacuations, are verie apt to take this disease, and so seldom recover after they are infected.

Who subject thereto.

Black or blew impostumes, and spots and pustles of the same color, dispersed over the skin, argue that the disease is altogether incurable and mortal.

Signs the disease is incurable.

When the swelling or sore goeth or commeth before the Fever, it is a good sign; for it declareth that the malignitie is verie weak and feeble, and that nature hath overcome it, which of it self is able to drive so great portion thereof from the inner parts. But if the sore or tumor com after the Fever, it is a mortal and deadlie sign, for it is certain that it commeth of the venemous matter not translated, but dispersed; not by the victorie of nature, but through

A good sign.

A deadlie sign.

the multitude of the matter, with the weight whereof nature is overcom.

When the Moon decreaseth, those that are infected with the Pestilence are in great doubt and danger of death, because then the humors that were collected and gathered together before the Full of the Moon, through delay and abundance, do swell the more, and the faculties by which the bodie is governed, become more weak and feeble, because of the imbecillitie of the native heat, which before was nourished and augmented by the light, and so consequently by the heat of the full-Moon: For as it is noted by *Aristotle*, the wainings of the Moon are more cold and weak: and thence it is that women have their menstrual fluxes chiefly or most commonly at that time.

In what air
most contagi-
ous.

In a gross and cloudie Air the pestilent infection is less vehement and contagious than in a thin and subtil Air; whether that thinness of the Air proceed from the heat of the Sun, or from the North winde and cold. Therefore at *Paris*, where naturally; and also through the abundance of filth that is about the Citie, the Air is dark and gross, the pestilent infection is less fierce and contagious than it is in *Province*, for the subtiltie of the Air stimulates or helps forward the Plague.

What effects
ear and confi-
dence produce
in the Plague.

But this disease is mortal and pernicious wheresoever it bee, because it suddenly assaulteth the heart; which is the Mansion, or as it were the fortress or castle of life: but commonly not before the signs and tokens of it appear on the bodie: and yet you shall scarce finde any man that thinketh of calling the Physician to help to preserve him from so great danger before the signs thereof bee evident to bee seen and felt: but then the heart is assaulted: And when the heart is so assaulted, what hope of life is there, or health to bee looked for. Therefore because medicines come oft-times too late, and this maladie is as it were a sudden and winged messenger of our death, is commeth to pass that so manie die thereof. And moreover, because of the first suspicion of this so dire and cruel a disease, the imagination and minde (whose force in the diversly much stirring up of the humors is great & almost incredible) is so troubled with fear of imminent death, and despair of health, that together with the perturbed humors, all the strength and power of nature falleth and sinketh down.

This you may perceiv and know, by reason that the keepers of such as are sick, and the bearers which are not fearfull, but verie confident, although they do all the basest offices which may bee for the sick, are commonly not infected, and seldom die thereof if infected.

CHAP. XVIII.

How a pestilent fever com's to bee bred in us.



The Plague oft-times findeth fuel in our bodies, and oft-times allurements, to wit the putrefaction of humors, or aptness to putrefie: but it never thence hath its first originall, for that com's alwaies from the defiled air; therefore a pestilent fever is thus bred in us: The pestilent Air drawn by inspiration into the lungs and transpiration into the utmost mouths of the veines and arteries (spread over the skin, the blood or elf the humors already putrefying or apt to putrefie therein, are infected and turned into a certain kinde of malignitie resembling the nature of the agent. These humors, like unquench't lime when it is first sprinkled with water, send forth a putrid vapor, which carried to the principal parts and heart especially, infecteth the spirituous blood boiling in the ventricles thereof, and therewith also the vitall spirits; and hence proceed's a certain feverish heat. This heat diffused over the bodie by the arteries, together with a malign quality, taint's all, even the solid parts of the bones with the pestiferous venom; and besides, causseth divers symptoms, according to the nature thereof, and the condition of the bodie and the humors wherein it is. Then is the conflict of the malignitie assailing, and nature defending, manifest; in which if nature prevail, it, using the help of the expulsive facultie, will send and drive it far from the noble parts, either by sweats, vomits, bleeding, evacuation by stool or urine, buboes, carbuncles, pustles, spots, and other such kindes of breakings out over the skin. But on the contrarie, if the malignitie prevail, and nature bee too weak, and yeeld, and that first hee bee troubled with often panting or palpitation of the heart; then presently after with frequent faintings, the patient then at length will die. For this is a great sign of the Plague or a pestilent fever, if presently at the first, with no labor, nor any evacuation worth the speaking of, their strength fail them, and they become exceeding faint. You may finde the other signs, mentioned in our preceding discours.

The original
of the Plague
alwaies from
the Air.

Signs that nature
is overcom.

CHAP. XIX.

Into what place the Patient ought to betake himself so soon as hee finde's himself infected.



We have said that the perpetual and first original of the pestilence commeth of the Air, therefore so soon as one is blasted with the pestiferous Air, after hee hath taken som preservative against the malignitie thereof, hee must withdraw himself into som wholesome Air, that is, clean and pure from any venomous infection or contagion; for there is great hope of health by the alteration of the Air; for wee do most frequently and abundantly draw in the Air of all things, so that wee cannot want it for a minute of time: therefore of the Air that is drawn in dependeth the correction, amendment, or increas of the poison or malignitie that is received, as the Air is pure, sincere, or corrupted.

There bee som that do think it good to shut the patient in a close chamber, shutting the windows to prohibit the entrance of the Air as much as they are able: But I think it more convenient that those windows should bee open from whence that winde bloweth that is directly contrarie unto that which brought in the venomous Air: For although there bee no other cause, yet if the Air bee not mooved, or agitated, but shut up in a close place, it will soon bee corrupted. Therefore in a close and quiet place that is not subject to the entrance of the Air, I would wish the Patient to make winde, or to procure Air with a thick and great cloth dipped or macerated in water and vineger mixed together, and tied to a long staff, that by tolling it up and down the close chamber, the winde or air thereof may cool and recreate the Patient. The Patient must everie daie bee carried into a fresh chamber, and the beds and the linnen cloaths must bee changed: there must alwaies bee a clear and bright fire in the patient's chamber, and especially in the night, whereby the air may bee made more pure, clean, and void of nightly vapors, and of the filthie and pestilent breath proceeding from the Patient, or his excrements. In the mean time, lest (if it bee in hot weather) the Patient should bee weakned or made more faint by reason that the heat of the fire doth disperf and waste his spirits, the floor or ground of his chamber must bee sprinkled or watered with vineger and water, or strowed with the branches of Vines made moist in cold water, with the leavs and flowers of Water-lillies, or Poplar, or such like. In the fervent heat of Summer hee must abstain from Fumigations that do smell too strongly, becauf that by assaulting the head, they increas the pain.

If the Patient could to that cost, it were good to hang all the chamber where hee lieth, and also the bed, with thick or course linnen cloaths moistned in vineger and water of Roses. Those linnen cloaths ought not to bee verie white, but somewhat brown, becauf much and great whiteness doth disperf the sight, and by walleing the spirits, doth increas the pain of the head: for which cause also the chamber ought not to bee verie lightsom.

Contrariwise, on the night season there ought to bee fires and perfumes made, which by their moderate light, may moderately call forth the spirits.

Sweet fires may bee made of little peeces of the wood of Juniper, Broom, Ash, Tamarisk, of the rinde of Oranges, Linmons, Cloves. Benzoin, gum-Arabick, Orris-roots, Myrrh, grossly beaten together, and laid on the burning coals put into a chafing-dish. Truly the breath or smoak of the wood or berries of Juniper, is thought to drive serpents a great waie from the place where it is burn't. The virtue of the Ash-tree against venom is so great, as *Plinie* testifieth, that a serpent will not com under the shadow thereof, no, not in the morning, nor evening, when the shadow of anie thing is most great and long, but hee will run from it. I my self have proved that if a circle or compass bee made with the boughs of an Ash-tree, and a fire made in the mid'st thereof, and a serpent put within the compass of the boughs, that the serpent will rather run into the fire then through the Ash-boughs.

There is also another means to correct the Air. You may sprinkle vineger of the decoction of *Rue*, *Sage*, *Rosemarie*, *Bay-berries*, *Juniper-berries*, *Cyperus-nuts*, and such like, on stones or bricks red hot, and put in a pot or pan, that all the whole chamber where the patient lieth may bee perfumed with the vapor thereof.

Also Fumigations may bee made of som matter that is more gross and clammy, that by the force of the fire the fume may continue the longer, as of *Ladanum*, *Myrrh*, *Mastic*, *Rosin*, *Turpentine*, *Storax*, *Olibanum*, *Benzoin*, *Bay-berries*, *Juniper-berries*, *Cloves*, *Sage*, *Rosemarie*, and *Marjoram*, stamped together, and such like.

Those that are rich and wealthie may have Candles and Fumes made of wax, or Tallow mixed with som sweet things.

A sponge macerated in vineger of Roses, and Water of the same, and a little of the decoction of *Cloves*, and of *Camphire* added thereto, ought alwaies to bee readie at the patient's hand, that by often smelling unto it, the animal-spirits may bee recreated and strengthened.

The water following is verie effectual for this matter. Take of *Orris* four ounces; of *Zedoarie*, *Spikenard*, of each six drams; of *Storax*, *Benzoin*, *Cinnamon*, *Nutmegs*, *Cloves*, to smell to.

Change of the Air conduceth to the cure of the Plague.

Air pen't up is apt to putrefie.

The materials for sweet fires.

Lib. 16. cap. 13.

Perfumes.

Sweet candles.

of each one ounce and a half; of old Treacle, half an ounce: bruise them into gross powder, and macerate them for the space of twelve hours in four pound of white and strong wine; then distill them in a Limbeck of glass on hot ashes, and in that liquor wet a sponge, and then let it be tied in a linnen cloth, or closed in a box, and so often put into the nostrils. Or take of the vinegar and water of Roses, of each four ounces; of Camphire, six grains; of Treacle, half a dram: let them be dissolved together, and put into a vial of glass, which the patient may often put into his nose.

A *Nodula* to
finell to.

This *Nodula* following is more meet for this matter. Take of Rose-leaves, two pugils; of Orris, half an ounce; of *Calamus aromaticus*, Cinnamon, Cloves, of each two drams; of Storax and Benzoin, of each one dram and a half; of *Cyperus*, half a dram; beat them into a gross powder, make thereof a *Nodula* between two peeces of Cambrick or Lawn of the bigness of an hand-ball, then let it be moistned in eight ounces of Rose-water, and two ounces of Rose-vineger, and let the patient smell to it often. Those things must be varied according to the time: For in the Summer you must use neither Musk nor Civet, nor such like hot things: and moreover women that are subject to *fits* of the *Mother*, and those that have Fevers or the head-ach, ought not to use those things that are so strong smelling and hot, but you must make choice of things more gentle: Therefore things that are made with a little Camphire and Cloves bruised and macerated together in Rose-water and vineger of Roses, shall be sufficient.

CHAP. XX.

What Diet ought to be observed, and first of the choice of Meat.



Why such as
have the plague
may feed more
fully.

The order of Diet in a pestilent disease ought to be cooling and drying; not slender, but somewhat full; because by this kinde of disease there commeth wasting of the spirits, and exsolution of the faculties, which inferreth often swoounding, therefore that loss must be repaired as soon as may be with more quantitie of meats that are of easie concoction and digestion. Therefore I never saw anie being infected with the pestilence that kept a slender diet, that recovered his health, but died; and few that had a good stomach, and fed well, died.

Puls must be
thinned.

The maner
of Diet.

Sweet, gross, moist and clammy meats, and those which are altogether, and exquisitely of subtil parts, are to be avoided; for the sweet do easily take fire, and are soon inflamed; the moist will putrefie; the gross and clammy obstruct, and therefore engender putrefaction; those meats that are subtil parts, over-much attenuate the humors, and inflame them; and do stir up hot and sharp vapors into the brain, whereof commeth a Fever. Therefore wee must eschew Garlick and Onions, Mustard, salted and spiced Meats, and all kinde of Puls must also be avoided, because they engender gross windes, which are the authors of obstruction: but the decoction of them is not alwaies to be refused, because it a provoker of urine. Therefore let this be their order of diet: let their bread be of Wheat or Barlie, well wrought, well leavened and salted, neither too new, nor too stale: let them be fed with such meat as may be easily concocted and digested, and may engender much laudable juice, and verie little excremental, as are the flesh of Wether-Lambs, Kids, Leverets, Pullets, Partridges, Pigeons, Thrushes, Larks, Quails, Black-Birds, Turtle-Doves, Moor-Hens, Pheasants, and such like; avoiding water-Fowls. Let the flesh be moistned in Ver-juice of unripe Grapes, Vineger, or the juice of Limmons, Oranges, Citrons, tart-Pomgranats, Barberries, Gooseberries, or red Currance, or of garden and wilde-sorrel: for all these sower things are verie wholesome in this kinde of disease, for they do stir up the appetite, resist the venomous qualitie and putrefaction of the humors, restrain the heat of the Fever, and prohibit the corruption of the meats in the stomach. Although that those that have a more weak stomach, and are endued with a more exact sense, and are subject to the Cough and diseases of the Lungs, must not use these, unless they be mixed with Sugar and Cinnamon.

If the patient at anie time be fed with sodden meats, let the brothes be made with Lettuce, Purslain, Succorie, Borage, Sorrel, Hops, Bugloss: Cresses, Burnet, Marigolds, Chervil, the cooling Seeds, French-Barlie and Oat-meal, with a little Saffron, for Saffron doth engender manie spirits, and resisteth poison. To these opening roots may be added to avoid obstruction; yet much broth must be refused by reason of moisture. The fruit of Capers eaten at the beginning of the Meal provoke the appetite, and prohibit obstructions; but they ought not to be seasoned with over-much oil and salt, that they may also with good success be put into broths.

Fishes are altogether to be avoided, because they soon corrupt in the Stomach: but if the patient be delighted with them, those that live in stonie places must be chosen; that is to say, those that live in pure and sandie water, and about rocks and stones, as are Trouts, Pikes, Pearches, Gudgeons and Crevises boiled in milk, Wilks, and such like. And concerning Sea-fish, he may be fed with Gilthead, Gurnarts, with all the kindes of Cod-fish, Whiteings not seasoned with salt, and Turbutts.

Eggs

Eggs potched and eaten with the juice of Sorrel, are verie good. Likewise Barlie-water seasoned with the grains of a tart Pomgranat, and if the Fever bee vehement, with the seeds of white Poppie. Such barlie-water is easie to bee concocted and digested, it cleanseth greatly, and moisten's and mollifieth the bellie. But in som it procure's an appetite to vomit, and pain of the head, and those must abstain from it. But in stead of Barlie-water they may use pap, and bread crummed in the decoction of a Capon.

For the second courf, let him have raisins of the Sun newly sodden in Rose-water with Sugar, fowr Damask-Prunes, tart Cherries, Pippins and Katharine-Pears: For the second courf.

And in the later end of the *Meal*, Quinces roasted in the embers, Marmalate of Quinces, and *conservs* of Bugloss or of Roses, and such like, may bee taken: or elf this powder In the end of the *Meal*. following.

Take of Coriander-seeds prepared, two drams: of Pearl, Rose-leaves, shaveings of Hartshorn and Ivorie, of each half a dram; of Amber, two scruples; of Cinnamon one scruple; of Unicorn's horn, and the bone in a Staggs heart, of each half a scruple; of Sugar of Roses, four ounces: make thereof a powder, and use it after meats.

If the patient bee somewhat weak, hee must bee fed with Gellie made of the flesh of a Capon, and Veal sodden together in the water of Sorrel, *Carduus Benedictus*, with a little quantity of Rose-vineger, Cinnamon, Sugar, and other such like, as the present necessitie shall seem to require.

In the night season for all events and mischances, the patient must have readie-prepared broth of meats of good digestion, with a little of the juice of Citrons or Pomgranats.

This restaurative that followeth may serv for all. Take of the *conserv* of Bugloss, Borage, Violets, Water-lillie, and Succorie, of each two ounces; of the powder of the Electuarie *Diamargaritum frigidum*, of the Trochisces of Camphir, of each three drams; of Citron-seeds, *Carduus*-seeds, Sorrel-seeds, the roots of *Dictamnus*, Tormentil, of each two drams; of the broth of a young Capon, made with Lettuce, Purslain, Bugloss and Borage boiled in it, six pintes; put them in a Limbeck of glafs with the flesh of two Pullets, of so manie Partridges, and with fifteen leavs of pure Gold: make thereof a distillation over a soft fire. Then take of the distilled liquor, half a pinte, strain it through a woollen bag, with two ounces of white Sugar, and half a dram of Cinnamon: Let the patient use this when hee is thirstie. Or elf put the flesh of one old Capon, and of a leg of Veal, two minced Partridges, and two drams of whole Cinnamon without anie liquor, in a Limbeck of glafs, well luted and covered, and so let them boil in *Balneo Mariae* unto the perfect concoction. For so the fleshes will bee boiled in their own juice, without anie hurt of the fire; then let the juice bee pressed out there-hence with a Press: give the patient for everie dose, one ounce of the juice with som cordial waters, som *Trisantalum*, and *Diamargaritum frigidum*. A restaurative drink.

The *preservs* of sweet fruits are to bee avoided, because that sweet things turn into cholier but the confectio of tart prunes, Cherries, and such like may bee fitly used. But because there is no kinde of sickness that so weaken's the strength, as the plague; it is alwaies necessarie, but yet sparingly and often, to feed the patient, still haveing respect unto his custom, age, the region, and the time: for through emptiness there is great danger, lest that the venomous matter that is driv'n out to the superficial parts of the bodie, should bee called back into the inward parts, by an hungrie stomach, and the stomach it self should be filled with choleric, hot, thin, and sharp excremental humors, whereof commeth biting of the stomach, and gripeings in the guts.

CHAP. VII.

What drink the patient infected ought to use.



If the fever bee great and burning, the patient must abstain from wine, unless that hee bee subject to swoounding: and hee may drink the *Oxymel* following in stead thereof.

Take of fair water, three quarts; wherein boil four ounces, of honie untill the third part bee consumed, scumming it continually; then strain it, and put it into a clean vessel, and add thereto four ounces of vineger, and as much cinnamon as will suffice to give it a tast. Or elf a sugred water, as followeth. Take two quarts of fair water; of hard sugar, six ounces; of cinnamon, two ounces; strain it through a woollen bag or cloth without anie boiling; and when the patient will use it, put there to a little of the juice of Citrons. The syrup of the juice of Citrons excelleth amongst all others that are used against the pestilence. An *Oxymel*.

The use of the Julip following is also verie wholesom. Take of the juice of Sorrel well clarified, half a pinte; of the juice of Lettuce so clarified, four ounces; of the best hard sugar, one pound; boil them together to a perfection; then let them be strained & clarified, adding a little before the end a little vineger, and so let it be used between meals with boiled water, or with equal portions of the water of Sorrel, Lettuce, Scabious and Bugloss: or take of this A Julip. former

mer described Julip strained and clarified four ounces; let it be mixed with one pound of the fore-named cordial waters, and boil them together a little. And when they are taken from the fire, put thereto of yellow Sanders one dram; of beaten Cinnamon half a dram; strain it through a cloth: when it is cold, let it be given the patient to drink with the juice of Citrons.

Those that have been accustomed to drink sicer, perrie, beer or ale, ought to use that drink still, so that it be clear, transparent, and thin, and made of those fruits that are somewhat tart; for troubled and dreggish drink doth not onely engender gross humors, but also cru-
 The commodities of oxycrate.

The commodities of oxycrate.

To whom hurtfull.

Oxycrate being given in manner following, doth assuage the heat of the fever, and repress the putrefaction of the humors, and the fierceness of the venom, and also expelleth the water through the veins, if so be that the patients are not troubled with spitting of blood, cough, yexing, and altogether weak of stomach: for such must avoid tart things.

Take of fair water, one quart; of white or red vinegar three ounces; of fine sugar, four ounces; of syrup of Roses, two ounces: boil them a little, and then give the patient thereof to drink. Or take of the juice of Limons and Citrons, of each half an ounce; of the juice of sower Pomgranats, two ounces; of the water of Sorrel and Roses, of each an ounce; of fair water boiled, as much as shall suffice: make thereof a Julip, and use it between meals. Or take the syrup of Limmons and of red currance, of each one ounce; of the water of lillies, four ounces; of fair water boiled, half a pinte; make thereof a Julip. Or take of the syrups of water-Lillies and vinegar, of each half an ounce; dissolve it in five ounces of the water of Sorrel; of fair water one pinte: make thereof a Julip.

The drinking of cold water to whom and when profitable.

But if the patient be young, and have a strong and good stomach, and choleric by nature, I think it not unmeet for him to drink a full & large draught of fountain-water cold; for that is effectual to restrain and quench the heat of the Fever; and contrariwise, they that drink cold water often, and a verie small quantitie at a time, as the Smith doth sprinkle water on the fire at his Forge, do increase the heat and burning, and thereby make it endure the longer. Therefore by the judgment of *Celsus*, when the disease is in the chief increase, and the patient hath endured thirst for the space of three or four daies, cold water must be given unto him in great quantitie, so that hee may drink past his satietie, that when his bellie and stomach are filled beyond measure, and sufficiently cooled, hee may vomit.

Lib. 3. cap. 7.

Some do not drink so much thereof as may cause them to vomit, but do drink even unto satietie, and so use it for a cooling medicine; but when either of these is done, the patient must be covered with manie cloaths, and so placed that hee may sleep; and for the most part after long thirst and watching, and after long fulness, and long, and great heat, sound sleep cometh; by which great sweat is sent out, and that is a present help.

But thirst must sometimes be quenched with little pieces of Melons, Gourds, Cucumbers, with the leaves of Lettuce, Sorrel, and Purslain, made moist or soaked in cold water, or with a little square piece of a Citron, Limmon, or Orange macerated in Rose-water, and sprinkled with Sugar, and so held in the mouth, and then changed.

But if the patient be aged, his strength weak, slegmatick by nature, and given to wine, when the state of the Fever is somewhat past, and the chief heat beginning to assuage, hee may drink wine verie much allayed at his meat; for to restore his strength, and to supplie the want of the wasted spirits. The patient ought not by anie means to suffer great thirst, but must mitigate it by drinking, or else allay it by washing his mouth with oxycrate and such like; and hee may therein also wash his hands and his face, for that doth recreate the strength. If the flux or lack trouble him, hee may verie well use to drink steeled water, and also boiled milk, wherein manie stones coming red-hot out of the fire have been manie times quenched. For the driness and roughness of the mouth, it is verie good to have a cooling, moistening & lenifying lotion of the mucilaginous water of the infusion of the seeds of Quince, *psilium*, *id est*, Flea-wurt, adding thereto a little Camphir, with the Water of Plantain and Roses; then cleanse and wipe out the filth, and then moisten the mouth, by holding therein a little oil of sweet Almonds mixed with a little syrup of Violets. If the roughness breed or degenerate into ulcers, they must be touched with the water of the infusion of *sublimates*, or *Aqua fortis*.

For driness or roughness of the mouth.

For the Ulcers thereof.

The choice of waters.

But because wee have formerly made frequent mention of drinking of water, I have here thought good to speak somewhat of the choice and goodness of waters. The choice of waters is not to be neglected, because a great part of our diet depend's thereon; for besides that wee use it either alone, or mixed with wine for drink, wee also knead bread, boil meat, and make broths therewith. Manie think that rain-water which falls in summer, and is kept in a cistern well placed and made, is the wholesomest of all. Then next thereto they judge that spring water which run's out of the tops of mountains, through rocks, cliffs & stones: in the third place they put Well-water; or that which riseth from the foots of hills. Also the river-water is good that is taken out of the mid'st or stream. Lake or pond-water is the worst, especially if it stand still for such is fruitfull of and stored with manie venomous creatures, as Snakes, Toads, and the like. That which com's by the melting

melting of Snow and Ice is verie ill, by reason of the too refrigerateing facultie and earthlie nature. But of spring and Well-waters these are to bee judged the best, which are insipid, without smell, and colour; such as are clear, warmish in winter, and cold in summer, which are quickly hot, and quickly cold, that is, which are most light, in which all manner of puffs, turnips, and the like, are easily and quickly boiled. Lastly, when as such as usually drink thereof, have clear voices and shrill, their chests sound, and a livelie and fresh colour in their faces.

*Hip. sect. 5.
apher. 26.*

CHAP. XXII.

Of Antidotes to bee used in the Plague.

Now wee must treat of the proper cure of this disease, which must bee used as soon as may bee possible, because this kinde of poison in swiftness exceedeth the celeritie of the medicine. Therefore it is better to err in this, that you should think everie disease to bee pestilent in a pestilent season, and to cure it as the Pestilence: because that so long as the air is polluted with the seeds of the Pestilence, the humors in the bodie are soon infected with the vicinity of such an air, so that then there happeneth no disease void of the Pestilence, that is to say, which is not pestilent from the beginning by his own nature, or which is not made pestilent.

Manie begin the cure with blood-letting, som with purgeing; and som with Antidotes. Wee, taking a consideration of the substance of that part that is assaulted, first of all begin the cure with an Antidote; because that by its specificke propertie, it defends the heart from poison, as much as it is offended therewith. Although there are also other Antidotes which preserv and keep the heart and the patient from the danger of Poison and the Pestilence, not onely because they do infringe the power of the poison in their whole substance, but also because they drive and expel it out of all the bodie by sweat, vomiting, scouring, and such other kindes of evacuations.

The beginning of the cure must bee by Antidotes.

The Antidote must bee give'n in such a quantitie as may bee sufficient to overcome the poison; but because it is not good to use it in greater quantitie then needeth, lest it should overthrow our nature, for whose preservation onely it is used; therefore that which cannot bee taken together at once, must bee taken at several times, that som portion thereof may daily bee used so long, untill all the accidents, effects and impressions of the poison bee past; and that there bee nothing to bee feared. Som of those Antidotes consist of portions of venomous things, being tempered together, and mixed in an apt proportion with other medicines, whose power is contrarie to the venom: as Treacle, which hath for an ingredient the flesh of Vipers, that it being thereto mixed may serv as a guide to bring all the Antidote unto the place where the venenate malignitie hath made the chief impression; because by the similitude of nature and sympathie, one poison is suddenly snatched and carried into another. There are other absolutely poisonous; which nevertheless are Antidotes one unto another: as a Scorpion himself cureth the pricks of a Scorpion. But Treacle and Mithridate excel all other Antidotes: for by strengthening the noblest part, and the mansion of life, they repair and recreate the wasted Spirits, and overcome the poison, not onely being taken inwardly, but also applied outwardly to the region of the heart, Botches and Carbuncles: for by an hidden propertie they draw the poisons unto them, as Amber doth Chaff, and digest it when it is drawn, and spoil and rob it of all its deadlie force; as it is declared at large by *Galen*, in his book *de Theriaca ad Pisonem* by most true reasons and experiments. But you will say that these things are hot, and that the plague is often accompanied with a burning fever. But thereto I answer, there is not so great danger in the fever, as in the pestilence, although in the giving of Treacle, I would not altogether seem to neglect the fever, but think it good to minister or applie it mixed with cordial-cooling medicines, as with the Trochisces of Camphir, syrup of Limmons, of water-Lillies, the water of Sorrel, and such like. And for the same cause wee ought not to chuse old Treacle, but that which is of a middle age, as of one or two years old: to those that are strong, you may give half a dram; and to those that are more weak, a dram.

In what quantitie they must bee taken.

Why poisonous things are put into Antidotes.

Som poisons Antidotes to other-som.

The patient ought to walk presently after hee hath taken Treacle, Mithridate, or any other Antidote; but yet as moderately as hee can: not like unto manie, which when they perceiv themselves to bee infected, do not cease to courf and run up and down, until they have no strength to sustain their bodies; for so they dissolv nature, so that it cannot suffice to overcome the contagion. After moderate walking, the patient must bee put warm to bed, and covered with manie cloaths, and warm brick-bats or tiles applied to the soles of his feet; or in stead thereof you may use swines bladders filled with hot water, and applie them to the groins and arm-holes, to provoke sweat: for sweating in this disease is a most excellent remedie, both for to evacuate the humors in the fever, and also to drive forth the malignitie in the pestilence, although everie sweat brings not forth the fruit of health. For

How to walk after the taking of an Antidote.

Agricola saith, that hee saw a woman at *Misnia* in Germanie, that did sweat so for the space of three daies, that the blood came forth at her head and breast, and yet nevertheless shee died.

A sudorifick
potion.

This potion following will provoke sweat. Take the roots of *China* shaved in thin pieces one ounce and half; of *Guaicum* two ounces; of the bark of *Tamarisk* one ounce; of *Angelica*-roots two drams; of the shavings of *Hart-horn* one ounce; of *Juniper-berries* three drams; put them into a vial of glass that will contain six quarts, put thereto four quarts of running or river-water that is pure and clear, macerate them for the space of one whole night on the ashes: and in the morning boil them all in *Balneo Marie*, untill the half bee consumed, which will bee done in the space of six hours; then let them bee strained through a bag, and then strained again, but let that bee with six ounces of sugar of *Roses*, and a little *Treacle*: let the patient take eight ounces or fewer of that liquor, and it will provoke sweat.

A sudorifick
powder.

The powder following is also verie profitable. Take of the leav's of *Diſtammus*, the roots of *Tormentil*, *Betonic*, of each half an ounce; of *Bole-Armenick* prepared one ounce; of *Terra Sigillata* three drams; of *Aloës* and *Myrrh*, of each half a dram; of *Saffron* one dram; of *Mastich* two drams: powder them all according to art, and give one dram thereof dissolved in *Rose-water*, or the water of *wilde-forrel*, and let the patient walk so soon as hee hath taken that powder; then let him bee laid in his bed to sweat as I have shewed before.

A distilled wa-
ter against the
Plague.

The water following is greatly commended against poison. Take the roots of *Gentian* and *Cyperus*, of each three drams; of *Carduus benedictus*, *Burnet*, of each one handful; of *Sorrel-seeds* and *Divels-bit*, of each two pugils; of *Ivie* and *Juniper-berries*, of each half an ounce; of the flowers of *Bugloss*, *Violets*, and *red-Roses*, of each two pugils: powder them somewhat grossly; then soak or steep them for a night in white wine and *Rose-water*: then add thereto of *Bole-Armenick* one ounce; of *Treacle* half an ounce; distill them all in *Balneo Marie*, and keep the distilled liquor in a vial of glass well covered or close stopped for your use: let the patient tak six ounces thereof with *Sugar* and a little *Cinnamon* and *Saffron*: then let him walk, and then sweat as is aforesaid: the *treacle* and *cordial-water* formerly prescribed, are verie profitable for this purpose. Also the the water following is greatly com-

Another.

mended. Take of *Sorrel* six hand-fuls; of *Rue* one handful: drie them and macerate them in *vineger* for the space of four and twentie hours, adding thereto four ounces of *Treacle*: make thereof a distillation in *Balneo Marie*, and let the distilled water bee kept for your use; and so soon as the patient doth think himself to bee infected; let him take four ounces of that liquor, then let him walk and sweat: Hee must leav sweating when hee beginneth to wax faint and weak; or when the humor, that run's down his bodie begins to wax cold; then his bodie must bee wiped with warm cloaths, and dried. The patient ought not to sweat with a full stomach; for so the heat is called away from performing the office of concoction: also hee must not sleep when hee is in his sweat; lest the malignitie go inwardly with the heat and spirits unto the principal parts: but if the patient bee much inclined to sleep, hee must bee kept from it with hard rubbing, and bands tied about the extreme parts of his bodie, and with much nois of those that are about him, and let his friends comfort him with the good hope that they have of his recoverie; but if all this will not keep him from sleep, dissolv *Castoreum* in tart *vineger*, and *aqua vite*, and let it bee injected into his nostrils: and let him bee kept continually wakeing the first day, and on the second and third, even unto the fourth; that is to say, unto the perfect expulsion of the venom; and let him not sleep above three or four hours on a daie and a night. In the mean time let the *Physician* that shall bee present consider all things by his strength: for it is to bee feared, that great watchings will dissolv the strength, and make the patient weak: you must not let him eat within three hours after his sweating; in the mean season, as his strength shall require, let him take the rinde of a *preserved Citron*, *conserv* of *Roses*, bread tosted and steeped in wine, the meat of *preserved Myrabolane*, or som such like thing.

What mean to
hee used in
sweating.

CHAP. XXIII.

Of Epithems to bee used for the strengthening of the principal parts.

Whereof they
must be made.



Repercussives
not fit to bee
applied to
Carbuncles.

Here are also som topick medicines to bee reckoned amongst *Antidotes*, which must bee outwardly applied as speedily as may bee, as *cordial* and *hepatick* Epithems for the safetie of the noble parts, and strengthening of the faculties, as those that drive the venenate air far from the bowels: they may bee made of *cordial* things not onely hot, but also cold, that they may temper the heat, and more powerfully repercuss. They must bee applied warm with *scarlet*, or a double linnen cloth, or a soft sponge dipped in them, if so bee that a *Carbuncle* do not possess the regions of the most noble parts; for it is not fit to use *repercussives* to a *Carbuncle*. You may make Epithems after the following forms; *Rx. aquar. ros. plantag. & solan. an. ℥iv. aque acetos. vini granat. & aceti, an. ℥iii. santal. rub. & coral. rub. pulveris. an. ℥iii. theriac. vet. ℥β. camph. ℥ii. croci ℥i. carioph. ℥β. misce, fiat epithema.* Or else, *Rx. aqu. ros. & plantag. an. ℥x. aceti*

acet. ros. ℥iv. caryoph. sant. rub. coral. rub. pulveris. pul. diamargarit. frigid. an. ℥iſſ. capburæ moschi an. ℥i. fiat epithema. Or, R. aquar. rosar. & melissæ, an. ℥iv. acetii ros. ℥iii. sant. rub. ℥i. caryophil. ℥ſſ. croco ℥ii. capburæ ℥i. boli arm. terra sigil. & zedoar. an. ℥i. fiat epithema. Or els, R. acetii ros. & aquæ rosar. an. ℥ſſ. capburæ ℥ſſ. theriac. & mithridat. an. ℥i. fiat epithema. Or els, aqu. rosar. nenuph. buglos. acetose, acetii rosar. an. ℥ſſ. sant. rub. ros. rub. an. ℥iii. flor. nenuph. violar. capbur. an. ℥ſſ. methridat. & theriac an. ℥ii. terantur & misceantur simul omnia. When you intend to use them; take som portion of them in a vessel by its self, wherewith let the affected bowel bee fermented warm.

CHAP. XXIV.

Whether purging and blood-letting bee necessarie in the beginning of pestilent diseases.



SOON as the heart is strengthened and corroborated with cordials and antidotes, wee must com to phlebotomie and purging. As concerning blood-letting in this case there is a great controversie among Physicians. Those that wish it to bee used, say or affirm that the pestilent Fever doth infix it self in the blood, and therein also the pestilent malignitie taketh its seat; and therefore it will soon infect the other humors, unless that the blood bee evacuated, and the infection that remaineth in the blood bee thereby taken away. Contrariwise, those that do not allow phlebotomie in this case, alledg, that it often commeth to pass that the blood is void of malignitie when the other humors are infected with the venemous contagion. If anie man require my judgment in this doubtful question, I say, that the pestilence somtimes doth depend on the default of the Air: this default beeing drawn through the passages of the bodie, doth at length pierce unto the intrails, as we may understand by the abscesses which break out one while behinde the ears, somtimes in the arm-holes, and somtimes in the groins, as the brain, heart or liver are infected. And hereof also com Carbuncles, and other collections of matter, and eruptions, which are seen in all parts of the bodie; by reason that nature using the strength of the expulsive facultie, doth drive forth whatsoever is noisome or hurtful. Therefore if the Physician will follow this motion of nature, hee must neither purge nor let blood, lest that by a contrarie motion, that is, by drawing in from without, the motion of nature which proceed's outwardly from within, should bee troubled. So wee often see in those who are purged or let blood for such Buboes as com through unlawful copulation, that the matter is thereby made contumacious, and by drawing it inwardly, it speedily causseth the French Pocks.

Reasons for and against blood-letting in the Plague.

The composing of this controversie

Wherefore, when Buboes, Carbuncles, and other pestilent eruption appear, which com through the default of the air, wee ought to abstain from purging and phlebotomie; but it is sufficient to fore-arm the heart inwardly and outwardly with Antidotes that are endued with a proper virtue of resisting the poison. For it is not to bee doubted, but that when nature is debilitated with both kindes of evacuation, and when the spirits together with the blood are exhausted, the venemous air will soon pierce, and bee received into the emptie bodie, where it exerciseth its tyrannie to the utter destruction thereof.

In the year of our Lord God 1566. in which year there was greaat mortalitie throughout all France, by reason of the pestilence and pestilent diseases, I earnestly and diligently inquired of all the Physicians and Chyrurgians of all the Citties (through which King Charles the Ninth passed in his progress unto Bayon) what successe their patient had after they were let blood and purged; whereunto they all answered alike, that they had diligently observed, that all that were infected with the Pestilence, and were lett bleed som quantitie of blood, or had their bodies somewhat strongly purged, thenceforwards waxed and weaker, and so at length died; but others which were not let blood nor purged, but took cordial Antidotes inwardly, and applied them outwardly, for the most part escaped and recovered their health: for that kinde of Pestilence took its original of the primitive and solitarie default of the Air, and not of the corruption of the humors.

An historic.

The like event was noted in the hoarfness that wee spake of before: that is to say, that the patients waxed worse and worse by purging and phlebotomie; but yet I do not disallow either of those remedies, if there bee great fullness in the bodie, especially in the beginning, and if the matter have a cruel violence, whereof may bee feared the breaking in unto som noble part. For wee know that it is confirmed by Hippocrates, that what disease soever is caused by repletion, must bee cured by evacuation; and that in diseases that are verie sharp, if the matter do swell, it ought to be remedied the same day, for delai in such diseases is dangerous; but such diseases are not caused or infected upon man's bodie by reason or occasion of the pestilence, but of the diseased bodies, and diseases themselvs commixed together with the pestilence: therefore then peradventure it is lawful to purge strongly, and to let a good quantitie of blood, lest that the pestilent venom should take hold of the matter that is prepared, and so infect it with a contagion, whereby the pestilence

When purging and bleeding may be used.

Aph. 22. sect. 2.
Aph. 10. sect. 4.

Cap. 7. lib. 3.

Why blood
must bee let on
the left arm in
the Plague.

taketh new and for greater strength; especially as *Celsus* admonisheth us, where hee saith, that, by how much the sooner those sudden invasions do happen, by so much the sooner remedies must bee used, yea or rather rashly applied; therefore if the veins swell, the face wax fierie red; if the arteries of the temples beat strongly; if the patient can verie hardly breath by reason of a weight in his stomach; if his spittle bee bloodie; then ought hee to bee let blood without delaie, for the causes before-mentioned. It seem's best to open the *Liver-vein* on the left arm, whereby the heart and spleen may bee better discharged of their abundant matter; yet blood-letting is not good at all times, for it is not expedient when the bodie beginneth to wax stiff by reason of the comming of a Fever; for then by drawing back the heat and spirits inwardly, the outward parts being destitute of blood, wax stiff and cold; therefore blood cannot bee letten then without great los of the strength, and perturbation of the humors. And it is to bee noted, that when those plethorick causes are present, there is one Indication of blood-letting in a simple pestilent Fever, and another in that which hath a *Bubo*, *id est*, a Botch or a Carbuncle joined therewith. For in one or both of these, being joined with a vehement and strong burning Fever, blood must bee letten by opening the vein that is nearest unto the tumor or swelling against nature, keeping the straightness of the fibres, that this being open, the blood might bee drawn more directly from the part affected; for all and everie retraction of putrefied blood unto the noble parts, is to bee avoided, because it is noisom and hurtful to nature, and to the patient. Therefore, for example sake, admit the patient bee plethorick by repletion; which is called *Ad Vasa*, *id est*, unto the Vessels, and *Ad Vires*, *id est*, unto the Strength: and therewithal hee hath a tumor that is pestilent in the parts belonging unto head or neck; the blood must bee let out of the cephalick or median vein, or out of one of their branches dispersed in the arm on the grieved side. But if through occasion of fat, or anie other such like cause, those veins do not appear in the arm, there bee som that give counsel in such a case to open the vein that is between the fore-finger and the thumb, the hand being put into warm water, whereby that vein may swell and bee filled with blood gathered thither by means of the heat.

If the tumor bee under the arm-hole, or about those places, the *liver-vein*, or the median must bee opened which runneth alongst the hand: if it bee in the groin, the vein of the hamni, or *Saphena*, or anie other vein above the foot that appeareth well, but alwaies on the grieved side. And phlebotomie must bee performed before the third daie: for this disease is of the kinde or nature of sharp diseases; because that within four and twentie hours it runneth past help. In letting of blood you must have consideration of the strength. You may perceiv that the patient is readie to swoond, when that his forehead waxeth moist, with a small sweat suddenly arising, by the akeing or pain at the stomach, with an appetite to vomit, and desire to go to stool, gapeing, blacknes of the lips, and sudden alteration of the face unto paleness: and lastly most certainly by a small and slow puls: and then you must lay your finger on the vein, and stop it until the patient com to himself again, either by nature, or elf restored by art; that is to say, by giving unto him bread dipped in wine, or anie other such like thing: then if you have not taken blood enough, you must let it go again, and bleed so much as the greatness of the disease, or the strength of the patient will permit or require: which being don som of the Antidotes that are prescribed before will bee verie profitable to bee drunk, which may repair the strength, and infringe the force of the malignitie.

CHAP. XXV.

Of purging medicines in a Pestilent disease.

What purges fit
in the Plague.

Pils.

If you call to minde the proper indications, purging shall seem necessarie in this kinde of disease, and that must bee prescribed as the present case and necessitie requireth; rightly considering that the disease is sudden, and doth require medicines that may with all speed drive out of the bodie the hurtful humor wherein the noisom qualitie doth lurk and is hidden; which medicines are divers by reason of the diversitie of the kinde of the humor, and the condition or temperature of the patient. For this purpose six grains of Scammonie beaten into powder, or elf ten grains are commonly ministred to the patient with one dram of Treacle. Also pils may bee made in this form: Take of Treacle and Mithridate, of each one dram; of *Sulphur vivum* finely powdred half a dram; of *Diagridium* four grains: make thereof Pils. Or, take three drams of Aloës; of Myrrh and Saffron of each one dram; of white Hellebore and *Asarabacca*, of each four ℥. make thereof a mass with old treacle, and let the patient take four scruples thereof for a dose, three hours before meat. *Ruffus* his pils may bee profitably given to those that are weak. The antient Physicians have greatly commended *Agarick* for this disease, because it doth draw the noisom humors out of all the members: and

and the virtues thereof are like unto those of Treacle; for it is thought to strengthen the heart, and to draw out the malignitie by purging. To those that are strong, the weight of two drams may be given, and to those that are more weak, half a dram. It is better to give the infusion in a decoction, than in substance; for being elected and prepared truly into Trochiscs, it may be called a divine kinde of medicine.

Antimonium is highly praised by the experience of manie; but because I know the use thereof is condemned by the council and decree of the School of Physicians at Paris, I will here cease to speak of it.

Those medicines that cause sweats are thought to excel all others, when the Pestilence commeth of the venemous Air; among whom the efficacy of that which followeth hath been proved, to the great good of manie in that Pestilence which was lately throughout all Germanie, as *Matthias Rodler* Chancellor to Duke *George* the Count Palatine signified unto mee by letters.

They do take a bundle of Mugwort, and of the ashes thereof after it is burn't, they make a lee with four pintes of water; then they do set it over the fire, and boil it in a vessel of earth well leaded, until the liquor be consumed, the earthie dregs falling into the bottom like unto salt, whereof they make Trochiscs of the weight of a crown of gold: then they dissolve one or two of these Trochiscs, according to the strength of the patient, in good Muskadine, and give it the patient to drink, and let him walk after that hee hath drunk it for the space of half an hour; then lay him in his bed, and there sweat him two or three hours, and then hee will vomit, and his bellie will be loosened as if hee had taken Antimonie; and so they were all for the most part cured, especially all those that took that remedie betimes: and before the disease went to their heart; as I my self have proved in some that were sick at Paris, with most happy success: Truly Mugwort is highly commended by the Antient Physicians, being taken and applied inwardly or outwardly against the biteings of venemous creatures; so that it is not to be doubted but that it hath great virtue against the Pestilence.

An effectual
sudorifick and
also purging
medicine.

The virtues of
Mugwort.

I have heard it most certainly reported by *Gilbertus Heroaldus* physician of *Mompilier*, that eight ounces of the pickle of Anchovis, drunk at one draught, is a most certain & approved remedie against the Pestilence, as hee and manie other have often found by experience. For the Plague is no other thing but a verie great putrefaction; for the correction and amendment whereof, there is nothing more apt or fit then this pickle or substance of Anchovis, being melted by the Sun and force of the salt that is strewd thereon. There be some which infuse one dram of Walwurt-seed in white wine, and affirm that it drunken will perform the like effect as Antimonie. Others dissolve a little weight of the seed of *Rue* being bruised in Muskadine, with the quantitie of a bean of Treacle, and so drink it. Others beat or bruise a handful of the leavs or tops of Broom in half a pinte of white wine, and so give it to the patient to drink, to cause him to vomit, loose his bellie, and make him to sweat. Truly those that are wounded or bit with venemous beasts, if they binde broom above the wound, it will prohibit or hinder the venom from dispersing it self, or going any further: therefore a drink made thereof will prohibit the venom from going any nearer the heart. Some take of the root of Elecampane, *Gentian*, Tormentil, Kermes-berries and broom; of the powder of Ivorie and Hartshorn, of each half a dram: they do bruise and beat all these, and infuse them for the space of four and twentie hours in white wine and *aqua vite* on the warm embers, and then strain it, and give the patient three or four ounces thereof to drink; this provoke's sweat, and infringeth the power of the poisons: and the potion following hath the same virtue.

Vide Rondelet.
Lib. 7. de pis. c. 3.

Take good Mustard half an ounce; of Treacle or Mithridate the weight of a bean; dissolve them in white wine, and a little *aqua vite*, and let the patient drink it, and sweat thereon with walking. You may also roast a great Onion made hollow, and filled with half a dram of Treacle and vinegar under the embers; and then strain it, and mix the juice that is pressed out of it with the water of Sorrel, *Carduus Benedictus*, or any other cordial thing, and with strong wine; and give the patient to drink thereof to provoke sweat, and to repel the malignitie. Or else take as much Garlick as the quantitie of a big Nut; of *Rue* and *Celandine*, of each twentie leavs; bruise them all in white wine and a little *aqua vite*; then strain it, and give the patient thereof to drink. There be some that do drink the juice that is pressed out of *Celandine* and *Mallows*, with three ounces of Vineger, and half an ounce of the oil of Wall-nuts, and then by much walking do unburthen their stomach and bellie upwards and downwards, and so are helped. When the venemous air hath already crept into and infected the humors, one dram of the dried leavs of the Bay-tree macerated for the space of two daies in Vineger and drunk, is thought to be a most soveraign medicine to provoke sweat, looseness of the bellie, and vomiting.

A Potion.

Matthiolus in his Treatise de *Morbo gallico* writeth, that the powder of *Mercurie* ministred unto the patient with the juice of *Carduus Benedictus*, or with the Electuarie de *Gemmis*, will drive away the pestilence before it be confirmed in the bodie, by provokeing vomit, loos-

ness of the bellie and seat : one dram of Calchanchum or white Copperas dissolved in Rose-water, performeth the like effect in the same disease. Some do give the patient a little quantitie of the oil of Scorpions with white wine to expel the poison by vomit, and therewithal they annoint the region of the heart, the brest and the wrists of the hands. I think these verie meet to bee used often in bodies that are strong and well exercised, becaus weaker medicines do evacuate little or nothing at all, but onely moov the humors, whereby cometh a Fever. When a sufficient quantitie of the malignitie is evacuated, then you must minister things that may strengthen the bellie and stomach, and with-hold the agitation or working of the humors : and such is the confectiō of Alkermes.

CHAP. XXVI.

Of manie Symptoms which happen together with the Plague : and first of the pain of the head.

The cause of
phrensie in the
Plague.

IF the malignitie bee carried into the brain, and nature bee not able to expel it, it inflame's not onely it, but also the membranes that cover it : which inflammation doth one while hurt, trouble, or abolish the imagination; another while the judgment; and somtimes the memorie; according to the situation of the inflammation, whether it bee in the former, hinder, or middle part of the head; but hereof commeth alwaies a Phrensie, with fierie redness of the eies and face and heaviness and burning of the whole head. If this will not bee amended with Clysters, and with opening the Cephalick vein in the arm, the arteries of the *temples* must bee opened, takeing so much blood out of them, as the greatness of the Symptoms and the strength of the patient shall require and permit. Truly the incision that is made in opening of an arterie will close and join together as readily, and with as little difficultie, as the incision of a vein. And of such an incision of an arterie, commeth present help; by reason that the tense and sharp vapors do plentifully breath out together with the arterious blood. It were also verie good to provoke a flux of blood at the nose, if nature bee apt to exonerate herself that way. For as *Hippocrates* saith, when the head is grieved, or generally aketh, if matter, water, or blood flow out at the nostrils, mouth, or ears, it presently cure's the disease. Such bleeding is to bee provoked by strong blowing, or striving to cleanse the nose, by scratching or picking of the inner side of the nostrils, by pricking with an horse-hair, and long holding down of the head.

The benefit of
opening an ar-
terie.

Apb. 10. sect. 6.

An historic.

To stay bleed-
ing.

The Lord of *Fontains*, a Knight of the Order, when wee were at *Bayon*, had a bleeding at the nose, which came naturally for the space of two daies, and thereby hee was free'd of a pestilent Fever which hee had before, a great sweat rising therewithal, and shortly after his Carbuncles came to suppuration, and by God's grace hee recovered his health being under my cure. If the blood do flow out and cannot bee stopped when it ought, the hands, arms, and legs must bee tied with bands; and sponges wet in Oxycrate must bee put under the arm-holes, cupping-glasses must bee applied unto the dugs, the region of the *Liver* and *Spleen*; and you must put into the nostrils, the doun of the willow-tree, or anie other astringent medicine, incorporatd with the hairs pluck't from the flank, bellie or throat of an Hare, Bole-Armenick, *Terra Sigillata*, the juice of Plantane and Knot-grass mixed together; and furthermore the patient must bee placed or laied in a cool place. But if the pain bee nothing mitigated notwithstanding all these fluxes of blood, wee must com to medicines that procure sleep, whose forms are these.

Medicines to
procure sleep.

Take of green Lettuce one handful; flowrs of water-Lillies and Violets, of each two pugils; one head of white-Poppie bruised; of the four cold seeds, of each two drams; of Liquorice and Raisins, of each one dram: make thereof a decoction, and in the straining dissolve one ounce and a half of *Diacodion*: make thereof a large potion to bee given when they go to rest. Also Barlie-cream may bee prepared in the water of water-Lillies and of Sorrel, of each two ounces; adding thereto six or eight grains of *Opium*: of the four cold seeds, and of white-Poppie seeds, of each half an ounce; and let the same bee boiled in broths with Lettuce and Purslain; also the pills de *Cynoglossa*, i. e. Hounds-tongue may bee given. Clysters that provoke sleep must bee used which may bee thus prepared.

Take of Barlie-water half a pinte; oil of Violets and water-Lillies, of each two ounces; of the water of Plantain and Purslain, or rather of their juices, three ounces; of Camphir seven grains, and the whites of three eggs: make thereof a Clyster. The head must bee fomented with Rose-vineger, the hair being first shaven away, leaving a double cloth wet therein on the same, and often renewed. Sheeps-lungs taken warm out of the bodies, may bee applied to the head, as long as they are warm. Cupping-glasses with and without scarification may bee applied to the neck and shoulder-blades. The arms and legs must bee strongly bound, being first well rubbed to divert the sharp vapors and humors from the head. Frontals may also be made on this manner. Take of the oil of Roses and water-Lillies, of each two ounces; of the oil of Poppie half an ounce; of *Opium*, one dram; of Rose-vineger, one ounce; of Camphir half a dram; mix them together. Also Nodules may

may bee made of the flours of Poppies, Henbane, water-Lillies, Mandrags beaten in Rose-water with a little Vineger, and a little Camphir, and let them bee often applied to the nostrils: for this purpose Cataplasms also may bee laid to the forehead. As, Take of the mucilage of the seeds of *Psilium*, *id est*. Flea-wurt, and Quince-seeds extracted in Rose-water, three ounces; of Barlie-meal four ounces; of the powder of Rose-leavs, the flowers of water-Lillies and Violets, of each half an ounce; of the seeds of Poppies and Purslain, of each two ounces; of the water and vineger of Roses, of each three ounces: make thereof a Cataplasme, and applie it warm unto the head. Or take of the juice of Lettuce, water-Lillies, Henbane, Purslain, of each half a pinte; of Rose-leavs in powder, the seeds of Poppie, of each half an ounce; oil of Roses three ounces; of vineger two ounces; of Barlie-meal as much as shall suffice: make thereof a Cataplasme in the form of a liquid Pultis. When the heat of the head is mitigated by these medicines, and the inflammation of the brain asswaged, wee must com unto digesting and resolving fomentations, wick may dispers the matter of the vapors. But commonly in pain of the head, they do use to binde the forehead and hinder part of the head verie strongly, which in this case must bee avoided.

CHAP. XXVII.

Of the heat of the Kidnies.



The heat of the Kidnies is tempered by anointing with *unguent. refrigerans Galen* newly made, adding thereto the whites of eggs well beaten, that so the ointment may keep moist the longer; let this liniment bee renewed everie quarter of an hour, wipeing away the reliques of the old. Or, R^x. *aq. ros. ℥.ss. succi plant. ℥iv. alb. ovorum iv. olei rosacei, & nenuph. an. ℥ii. aceti ros. ℥iii. misce ad usum.* When you have annointed the part, lay thereon the leavs of water-Lillies or the like hold herbs, and then presently thereupon a double linnen cloth dipped in oxycrate and wrung out again, and often changed; the patient shall not lie upon a fether-bed, but on a quilt stuffed with the chaff of Oats, or upon a Mat with manie doubled cloaths or Chamelet spread thereon. To the *region* of the heart may in the mean time bee applied a refrigerateing and alexiterial medicine, as this which followeth. R^x. *ung. rosat. ℥iii. olei nenupharini, ℥ii. aceti. ros. & aq. ros. an. ℥i. theriacæ, ℥i. croci, ℥ss.* Of these melted and mixed together make a soft ointment, which spread upon a scarlet cloth may bee applied to the *region* of the heart. Or, R^x. *theriacæ opt. ℥i. succi citri acidi, & limonis, an. ℥ss. coral. rub. & sem. rosar. rub. an. ℥ss. capburæ & croci, an. gra. iiii.* let them bee all mixed together, and make an ointment or liniment.

An ointment for the reins.

An ointment for the heart.

At the head of the patient as hee lie's in his bed, shall bee set an Ewr or cock with a basin under it to receiv the water, which by dropping may resemble rain. Let the soles of the feet and palms of the hands bee gently scratched, and the patient lie far from nois, and so at length hee may fall to som rest.

The nois of dropping water draw's on sleep.

CHAP. XXVIII.

Of the Eruptions and Spots, which commonly are called by the name of Purples and Tokens.



The skin, in pestilent Fevers, is marked and variegated in divers places with spots, like unto the biteings of Fleas or Gnats, which are not alwaies simple, but manie times arise in form like unto a grain of millet. The more spots appear, the better it is for the patient: they are of divers colors according to the virulencie of the malignitie, and condition of the matter, as red, yellow, brown, violet or purple, blew and black. And becauf for the most part they are of a purple color, therefore wee call them purples. Others call them *Lenticule*; becauf they have the color and form of Lentiles. They are also called *Papiliones*, (*i.*) Butterflies; becauf they do suddenly seiz or fall upon divers *regions* of the bodie, like unto winged Butterflies; somtimes the face, somtimes the arms and legs, and somtimes all the whole bodie; oftentimes they do not onely affect the upper part of the skin, but go deeper into the flesh, specially when they proceed of matter that is gross and adust. They do somtimes appear great and broad, affecting the whole arm, leg or face, like unto an *Erysipelas*: to conclude, they are divers according to the varietie of the humor that offend's in quantitie or qualitie.

The differences of the spots in the Plague:

Their several names, and the reasons of them.

If they are of a purple or black color, with often swoounding, and sink in suddenly without anie manifest caus, they fore-shew death.

When signs of death.

The caus of the breaking out of those spots, is the working or heat of the blood, by reason of the crueltie of the venom received, or admitted. They often arise at the beginning of a pestilent Fever: manie times before the breaking out of the Sore, or Botch or Carbuncle;

and manie times after : but then they shew so great a corruption of the humors in the bodie, that neither the sores nor carbuncles will suffice to receive them; and therefore they appear as fore-runners of death. Sometimes they break out alone, without a botch or carbuncle, which if they bee red, and have no evil symptoms joynd with them, they are not wont to prove deadlie: they appear, for the most part, on the third or fourth daie of the disease, and sometimes later, and sometimes they appear not before the patient bee dead; because the working or heat of the humors being the off-spring of putrefaction, is not as yet restrained and ceased.

Why they
sometimes ap-
pear after the
death of the
patient.

Wherefore then principally the putrid heat, which is greatest a little before the death of the patient, drive's the excremental humors, which are the matter of the spots unto the skin; or else, because nature in the last conflict hath contended with som greater endeavor then before (which is common to all things that are readie to die) a little before the instant time of death, the pestilent humor being presently driven unto the skin; and nature thus weakned by these extreme conflicts falleth down prostrate, and is quite overthrown by the remnant of the matter.

CHAP. XXIX.

Of the cure of Eruptions and Spots.



They are to
bee cured by
driving forth.

You must first of all take heed, lest you drive in the humor that is coming outwards with repercussives: therefore beware of cold, all purging things, phlebotomie, and drowsie or sound sleeping. For all such things do draw the humors inwardly, and work contrarie to nature. But it is better to provoke the motion of nature outwardly, by applying of drawing medicines outwardly, and ministring medicines to provoke sweat inwardly; for otherwise by repelling and stopping the matter of the eruptions, there will bee great danger, lest the heart bee oppressed with the abundance of the venom flowing back; or else by turning into the bellie, it infer's a mortal bloodie flux: which discommodities that they may bee avoided, I have thought good to set down this remedie, whose efficacie I have known and proved manie times, and on divers persons, when by reason of the weakness of the expulsive facultie, and the thickness of the skin, the matter of the spots cannot break forth, but is constrained to lurk under the skin, lifting it up into bunches and knobs.

The indicati-
on of curing
taken from the
like.

I was brought unto the invention of this remedie, by comparison of the like. For when I understood, that the essence of the French pocks (and likewise of the pestilence) consisted in a certain hidden virulencie, and venomous qualitie, I soon descended unto that opinion, that even as by the anointing of the bodie with the unguent compounded of Quick-silver, the gross and clammy humors which are fixed in the bones, and unmoovable, are dissolved, relaxed, and drawn from the center into the superficial parts of the bodie, by strengthening and stirring up the expulsive facultie, and evacuated by sweating and fluxing at the mouth; that so it should com to pass in pestilent fevers, that nature being strengthened with the same kinde of unction, might unload her self of som portion of the venomous and pestilent humor, by opening the pores and passages, and letting it break forth into spots and pustles, and into all kinde of eruptions. Therefore I have anointed manie in whom nature seemed to make passage for the venomous matter verie slowly, first loosing their bellie with a glyster, and then giving them treacle-water to drink, which might defend the vital facultie of the heart, but yet not distend the stomach, as though they had the French pocks, and I obtained my expected purpose: In stead of the treacle-water you may use the decoction of *Guaicum*, which doth heat, drie, provoke sweat, and repel putrefaction, adding thereto also vinegar; that by the subtiltie thereof, it may pierce the better, and withstand the putrefaction. This is the description of the unguent.

An ointment
to draw them
forth when
they appear
too slowly.

Take of Hogf-greas one pound, boil it a little with the leavs of *Sage*, *Time*, *Rosemarie*, of each half an handfull, strain it, and in the straining extinguish five ounces of Quick-silver, which hath been first boiled in vinegar with the fore-mentioned herbs; of *Sal Nitrum* three drams; the yelks of three eggs boiled until they bee hard: of Treacle and Mithridate, of each half an ounce; of Venice-Turpentine, oil of Scorpions and Bays, of each three ounces; incorporate them altogether in a mortar, and make thereof an unguent, wherewith anoint the patient's arm-holes and groins, avoiding the parts that belong to the head, breast, and back-bone: then let him bee laid in his bed, and covered warm, and let him sweat there for the space of two hours, and then let his bodie bee wiped and cleansed; and if it may bee, let him bee laid in another bed, and there let him bee refreshed with the broth of the decoction of a Capon, reer eggs, and with such like meats of good juice that are easie to bee concocted and digested; let him bee anointed the second and third daie, unless the spots appear before.

If the patient flux at the mouth, it must not be stopped: when the spots and pustles do all appear, and the patient hath made an end of sweating, it shall bee convenient to use diurectick

diuretick medicines, for by these the remnant of the matter of the spot, which happily could not all breath forth, may easily bee purged and avoided by urine.

If anie noble or gentlemen refuse to bee annointed with this unguent, let them bee enclosed in the bodie of a Mule or Horse that is newly killed, and when that is cold, let them bee laied in another, until the pustles and eruptions do break forth, beeing drawn by that natural heat. For so *Matthiolus* writeth that *Valentinus*, the son of Pope *Alexander* the sixt, was delivered from the danger of most deadlie poison which hee had drunk. *In proem. lib. 6. Di. 6.*

CHAP. XXX.

Of a pestilent Bubo, or Plague-fore.

A Pestilent *Bubo* is a tumor at the beginning long and moveable, and in the state, and full perfection copped, and with a sharp head, unmoveable and fixed deeply in the glandules, or kernels; by which the brain exonerate's it self of the venemous and pestiferous matter into the kernels that are behinde the ears, and in the neck: the heart into those that are in the arm-holes; and the *Liver*, into those that are in the groin; that is, when all the matter is gross and clammy, so that it cannot bee drawn out by spots and pustles breaking out on the skin; and so the matter of a Carbuncle is sharp, and so fervent, that it maketh an *Eschar* on the place where it is fixed. In the beginning, while the *Bubo* is breeding, it maketh the patient to feel, as it were, a cord or rope stretched out in the place, or a hardned nerv with pricking pain: and shortly after the matter is raised up as it were into knob, and by little and little it groweth bigger, and is inflamed, these accidents before mentioned accompanying it. If the tumor be red, and increas by little & little, it is a good and salutarie sign: but if it bee livid or black, and com verie slowly unto his just bigness, it is a deadlie sign; It is also a deadlie sign if it increas suddenly, and com to his just bigness as it were with a swift violence, and as in a moment, have all the symtoms in the highest excess; as pain, swelling and burning. Buboos or Sores appear somtimes of a natural color, like unto the skin, and in all other things like unto an oedematous tumor, which notwithstanding will suddenly bring the patient to destruction; like those that are livid and black, wherefore it is not good to trust too much to those kindes of tumors. *What a pestilent Bubo is.*

CHAP. XXXI.

Of the cure of Buboos, or Plague-sores.

Soon as the *Bubo* appear's, applie a Cupping-glass with a great flame unto it, unless it bee that kinde of *Bubo* which will suddenly have all the accidents of burning and swelling in the highest nature; but first the skin must bee annointed with the oil of lillies, that so it beeing made more loof, the Cupping-glass may draw the stronger and more powerfully; it ought to stick to the part for the space of a quarter of an hour, and bee renewed and applied again everie three quarters of an hour, for so at length the venom shall bee the better drawn forth from anie noble part that is weak, and the work of suppuration or resolution, which soever nature hath assailed, will the better and sooner bee absolved and perfected: which may bee also don by the application of the following ointment. *The use of cupping-glasses in curing of a Bubo.*

Take of *Unguentum Dialthea* one ounce and a half; oil of Scorpions half an ounce; of *Mithridate* dissolved in *Aqua vite*, half a dram; this liniment will verie well relax and loosen the skin, open the pores thereof, and spend forth portion of that matter which the Cupping-glass hath drawn thither: in stead thereof mollifying fomentations may bee made, and other drawing and suppurating medicines, which shall bee described hereafter.

A vesicatorie applied in a meet place below the *Bubo* profit's them verie much but not above; as for example. If the *Bubo* bee in the throat, the Vesicatorie must bee applied unto the shoulder-blade on the same side; if it bee in the arm-holes, it must bee applied in the mid't of the arm, or of the shoulder-bone, on the inner side: if in the groin, in the mid't of the thigh on the inner side, that by the double passage that is open for to draw out the matter, the part wherein the venom is gathered together, may bee the better exonerated. *A liniment.*

Spurge, Crow-foot, Arsmart, Bear-foot, Brionie, the middle bark of Travellers-joy, the rindes of Mullet, *Flammula* or upright Virgins-bower, are fit for raising blisters. If you cannot com by those simple medicines, you may applie this which followeth, which may bee prepared at all times.

Take *Cantharides*, Pepper, *Euphorbium*, Pellitorie of Spain, of each half a dram; of fower leaven, two drams; of Mustard one dram, and a little Vineger; the vineger is added there- to to withhold or restrain the vehemencie of the *Cantharides*; but in want of this medicine it shall suffice to drop scalding oil or water, or a burning candle, or to lay a burning coal on *A compound vesicatorie.*

on the place: for so you may raise blisters, which must presently be cut away, and you must see that you keep the ulcers open & flowing as long as you can, by applying the leav's of red-colwurts, Beets, or Ivie dipped in warm water, and annointed with oil or fresh butter. Som applie Cauteries, but Veficatories work with more speed: for before the Eschar of the Cauteries will fall away, the patient may die: therefore the ulcers that are made with Veficatories will suffice to evacuate the pestilent venom, becauf that doth work rather by its qualitie then by its quantitie. Let the abscess be fomented as is shewed before: and then let the medicine following, which hath vertue to draw, be applied.

Why veficatories are better then cauterics in a pestilent Bubo.

Strong drawing cataplasmes.

Fill a great onion, beeing hollowed, with Treacle and the leav's of *Rue*, then rost it under the hot Embers, beat it with a little Leaven, and a little Swines-greaf, and so applie it warm unto the abscess or fore; let it be changed everie six hours. Or take the roots of Marsh-mallows and Lillies, of each half a pound; of *Line*, Fenugreek, and Mustard-seeds, of each half an ounce; of Treacle one dram; ten Figs, and as much Hogs-greaf as shall suffice: make thereof a cataplasme according to Art. Or, take of Onions and Garlick rosted in the Embers, of each three ounces: bruif them with one ounce of fowr leaven, adding thereto *Unquentum Basilicon*, one ounce; Treacle one dram; Mithridate half a dram; of old Hogs-greaf on ounce; of *Cantharides* in powder one scruple; of Pigeons-dung two drams: beat them and mix them together into the form of a cataplasme. Hereunto old Rennet is verie profitable, for it is hot, and therefore attractive, beeing mixed with old Leaven and *Basilicon*: you ought to use these until the abscess be grown unto its full ripeness and bigness; but if presently after the beginning there be great inflammation, with sharp pain, as it often happeneth, especially when the abscesses be of the kinde of Carbuncles; wee must abstain from those remedies that are hot and attractive, and also from those that are verie emplastick and clammy; becauf they do altogether close the pores of the skin; or becauf they resolv the thinner part of the collected matter, which if it might remain, would bring the other sooner to suppuration: or els becauf they may perchance draw more quantitie of the hot matter then the part can bear; whereof commeth rather corruption then maturation: and last of all becauf they increaf the fever and pain, which inferreth danger of a convulsion or mortal Gangrene. Therefore in such a case it is best to use cold and temperate local medicines, as the leavs of Henbane and Sorrel rosted under the coales, *Galen's* pulvis, and such like.

Against such as cut away Plague-sores.

There are manie that for fear of death, have with their own hands pulled away the *Bubo* with a pair of Smiths-pincers: others have digged the flesh round about it, and so gotten it wholly out. And to conclude others have becom so mad, that they have thrust an hot iron into it with their own hand, that the venom might have a passage forth: of all which I do not allow one; for such abscesses do not com from without, as the biteings of virulent beasts, but from within, and moreover becauf pain is by these means increased, and the humor is made more malign and fierce. Therefore I think it sufficient to use medicines that relax, open the pores of the skin, and digest portion of the venom by transpiration, as are these that follow. Take the roots of Marsh-mallows and Lillies, of each six ounces; of Camomil and Melilot-flowers, of each half an handful; of Lin-seeds half an ounce; of the leav's of *Rue* half an handful: boil them and strain them, dip sponges in the straining, and therewith let the tumor be fomented along time. Or, take the crum of hot bread, and sprinkle it with Treacle-water, or with *aqua vite*, and Cows-milk or Goats-milk, and the yelks of three eggs, put them all on stupes or flax, and applie them warm unto the place. Or, take of fowr Rie-leaven four ounces; of *Basilicon* two ounces; three yelks of eggs; oil of Lillies two ounces; Treacle one dram: let be received on stupes, and applied in like manner. Or, take of *Diachylon* and *Basilicon*, of each two ounces; oil of Lillies one ounce and an half: let them be melted and mixed together, and let it be applied as is abovesaid.

A digestive fomentation.

An anodyne Cataplasme.

Why it is best to open a plague-fore with a potential cauterie.

When you see, feel and know, according to reason, that the *Bubo* is com to perfect suppuration, it must be opened with an incision-knife, or an actual or potential Cauterie, but it is best to be don with a potential Cauterie, unless that happely there be great inflammation, becauf it doth draw the venom from beneath unto the superficial parts, and maketh a larger orifice for the matter that is contained therein: neither must it be looked for, that nature should open it of her self; for then there were danger that lest while nature doth work slowly, a venemous vapor should be stirred up, which strikeing the heart by the arteries, the brain by the nervs, and the liver by the veins, should cauf a new increaf of the venemous infection. For fear whereof there be som that will not expect the perfect maturation and suppuration, but as it were in the mid't of the cruditie and maturitie will make an orifice for it to pass forth at: yet if it be done before the tumor be at his perfect maturitie, pain, a Fever, and all accidents are stirred up and enraged, whereof commeth a malign ulcer that often degenerat's into a Gangrene. For the most part about the tenth or eleventh daie the work of suppuration seemeth perfected and finished; but it may be sooner or later by reason of the application of medicines, the condition of the matter, and state of the part: when the matter commeth forth, you must yet use suppurative and mollifying medicines, to mature

maturate the remains thereof; in the mean while cleansing the ulcer by putting mundificatives into it, as wee shall declare in the cure of Carbuncles. But if the tumor seem to sink in, or hide it self again, it must bee revoked and procured to com forth again, by applying of Cupping-glasses with scarification, and with sharp medicines, yea, and with Cauteries both actual and potential.

How to draw
forth a sore
that seem's to
go in again.

When the Cauteries are applied, it shall bee verie good to applie a vesicatorie a little below it, that there might bee som passage open for the venom while the Eschar is in falling away. For so they that are troubled with the French-Pocks, so long as they have open and flowing ulcers, so long are they void of any pain that is worth the speaking of; which ulcers being closed and cicatrized, they do presently complain of great pain. If you suspect that the *Bubo* is more malign by reason that it is of a green, or black and inflamed color, as are those that com of a melancholick humor by adustion, turned into a gross and rebellious melancholick humor, so that by the more copious influx thereof into the part, there is danger of a gangrene and mortification; then the places about the abscess must bee armed with repercussives, but not the abscess it self: and this may bee the form of the repercussives:

When reper-
cussives may
bee applied.

Take of the juice of houf-leek, Purslain, Sorrel, Night-shade, of each two ounces; of Vineger one ounce, the whites of three eggs, of oil of Roies and water-Lillies, of each two ounces and a half: stir them together, and applie it about the *Bubo*, and renew it often: or boil a Pomgranat in vineger, beat it with *Unguentum Rosatum*, or *Populeon* newly made, and applie it as is aforesaid. If these things do not stop the influx of other humors, the abscess it self and the places about it must bee scarified round about, if the part will permit it; that the part exonerated of portion of the venom may not stand in danger of the extinction of the proper and natural heat, by the greater quantitie and malignitie of the humors that flow unto it. In scarifying you must have care of the great vessels, for fear of an irrepugnable flux of blood, which in this case is verie hard to bee stayed or resisted; both becaus the part it self is greatly inflamed, and the humor verie fierce; for the expulsion whereof, nature, careful, for the preservation of the part and all the bodie besides, seemeth to labor and work. But yet you must suffer so much of the blood and humor to flow out as the patient is able to abide without the los of his strength. Moreover, you may spend forth the superfluous portion of the malignitie, with relaxing, mollifying, and resolving fomentations: as, Take the roots of Marsh-mallows, Lillies and Elecampane, of each one pound; of Lin-seeds and Fenugreek, of each one ounce; of Fennel-seeds and Anise-seeds, of each half an ounce; of the leavs of *Kue*, *Sage*, *Rosemarie*, of each one handfull, of *Camomil* and *Melilot*-flowers, of each three handfuls; boil them all together, and make thereof a decoction for a fomentation; use it with a sponge according to Art. Also after the aforesaid scarification, wee may put Hens, or Turkies that lay eggs (which therefore have their fundaments more wide and open, and for the same purpose put a little salt into their fundaments) upon the sharp top of the *Bubo*, that by shutting their *bills* at several times they may draw and suck the venom into their bodies, far more strongly and better then cupping-glasses, becaus they are endued with a natural propertie against poison, for they eat and concoct Toads, Efts, and such like virulent beasts: when one Hen is killed with the poison that shee hath drawn into her bodie, you must applie another, and then the third, fourth, fift and sixt within the space of half an hour. There bee som that will rather cut them, or elf use whelps cut asunder in the mid'st, and applied warm unto the place; that by the heat of the creature that is yet scarce dead, portion of the venom may bee dissipated and exhaled. But if nevertheless there bee anie fear of a Gangrene at hand, you must cut the flesh with a deeper scarification, not onely avoiding the greater vessels, but also the nervs, for fear of convulsion: and after the scarification and a sufficient flux of blood, you must wash it with *Ægyptiacum*, Treacle and Michridate dissolved in sea-water, *aqua vite* and Vineger. For such a lotion hath virtue to stay putrefaction, repel the venom, and prohibit the blood from concretion: but if the Grangrene cannot bee avoided so, cauteries may bee applied to the part: especially actual, becaus they do more effectually repel the force of the poison, and strengthen the part. Presently after the impression of the hot iron, the Eschar must bee cut away even unto the quick-flesh, that the venomous vapors and the humors may have a free passage forth; for it is not to bee looked for that they will com forth of themselfs. With these inunctions they are wont to hasten the falling away of the Eschar. Take of the mucilage of marsh-mallows and Lin-seeds, of each two ounces; fresh butter, or Hog's-greaf one ounce; the yelks of three eggs; incorporate them together, and make thereof an ointment: butter, Swines-greaf, oil of Roses, with the yelks of eggs, perform the self same thing. When the Eschar is fallen away wee must use digestives. As take of the juice of Plantane, Water-Betonie, and Smallage, of each three ounces; honie of Roses four ounces; Venice-Turpentine five ounces; Barlie-flower three drams; Aloës two drams; oil of Roses four ounces; Treacle, half a dram: make a mundificative according to Art. Or, Take of Venice-Turpentine four ounces; syrup of dried Roses and Wormwood, of each an ounce; of the powder of Aloës, Mastich, Myrrh, Barlie-flower, of each one dram; of Michridate half an ounce; incorporate them together. This unguent that followeth is verie meet for putrefied and corroding ulcers:

Why too much
bleeding is to
bee feared.

Liniments to
hasten the fall-
ing away of
the Eschar.

Against eating
Ulcers.

Take

The praise of
Ægyptiacum.

Take red Orpiment one ounce; of unquenched Lime, burnt Alum, Pomgranat-pills, of each six drams; of *Olibanum*, *Galls*, of each two drams; of Wax and Oil as much as shall suffice, make thereof an unguent. This doth mundifie strongly, consume putrefied flesh, and drie up virulent humidities that engender Gangrenes. But there is not a more excellent unguent then *Ægyptiacum* increased in strength, for besides manie other virtues that it hath, it doth consume and waste the proud flesh; for there is neither oil nor wax that goeth into the composition thereof, with which things the virtue of sharp medicines convenient for such ulcers, is delayed, and as it were dulled and hindered from their perfect operation so long as the ulcer is kept open. There have been manie that being diseased with this disease, have had much matter and venomous filth com out at their abscesses; so that it seemed sufficient, and they have bin thought well recovered, yet have they died suddenly. In the mean while when these things are in doing, cordial medicines are not to be omitted to strengthen the heart. And purgations must be renewed at certain seasons, that nature may be everie waie unloaded of the burthen of the venenate humors.

CHAP. XXXII.

Of the Nature, Causes and Signes of a pestilent Carbuncle.

What a Carbuncle is.



Pestilent Carbuncle is a small tumor, or rather a malign pustle, hot and rageing, consisting of blood vitiated by the corruption of the proper substance. It often commeth to pass through the occasion of this untameable malignitie, that the Carbuncle cannot be governed or contained within the dominion of nature. In

The signs of a Carbuncle.

the beginning it is scarce so big as a seed or grain of Millet or Peas, sticking firmly unto the part and immoveable, so that the skin cannot be pulled from the flesh; but shortly after it increaseth like unto a *Bubo* unto a round and sharp head, with great heat, pricking pain, as if it were with needls, burning and intolerable, especially a little before night, and while the meat is in concocting, more then when it is perfectly concocted. In the mid'st thereof appeareth a bladder puffed up and filled with sanious matter. If you cut this bladder, you shall finde the flesh under it parched, burned and black; as if there had bin a burning cole laid there, whereby it seemeth that it took the name of Carbuncle; but the flesh that is about the place is like a Rain-Bow, of divers colours, as red, dark, green, purple, livid, and black; but yet alwaies with a shineing blackness, like unto stone-pitch, or like unto the true precious stone which they call a *Carbuncle*, whereof som also say it took the name. Som call it a *Nail*, becaus it inferreth like pain as a nail driven into the flesh. There are manie Carbuncles which take their beginning with a crustie ulcer without a pustle, like to the burning of a hot iron: and these are of a black colour, they increas quickly, according to the condition of the matter whereof they are made. All pestilent Carbuncles have a Fever joined with them, and the grieved part seemeth to be so heavie, as if it were covered or pressed with lead tied hard with a ligature. there commeth mortal swounings, faintings, tossing, turning, idle-talking, rageing, gangrens and mortifications; not onely to the part, but also to the whole bodie; by reason (as I think) of the oppression of the spirits of the part, and the suffocation of the naturall heat, as wee see also in manie that have a pestilent *Bubo*. For a *Bubo* and Carbuncle are tumors of a near affinitie, so that the one doth scarce com without the other, consisting of one kinde of matter, unless that which maketh the *Bubo* is more gross and clammy, and that which causeth the Carbuncle more sharp, burning and rageing, by reason of its greater subtiltie, so that it maketh an Eschar on the place where it is, as wee noted before.

When so called.

Symptoms of Carbuncles.

How the matter of a *Bubo* and Carbuncle differ.

CHAP. XXXIII.

What Prognosticks may be made in pestilent Buboes and Carbuncles.



Why it is deadly to have a sore com after the Fever.

Om having the pestilence have but one Carbuncle, and som more in divers parts of their bodie, and in manie it happeneth that they have the *Bubo* and Carbuncle before they have anie Fever; which giveth better hope of health, if there be no other malign accident therewith: for it is a sign that nature is the victor, and hath gotten the upper-hand, which excluded the pestilent venom before it could com to assault the heart. But if a Carbuncle and *Bubo* com after the Fever, it is mortal; for it is a token that the heart is affected, and incensed with the furious rage of the venom; whereof presently commeth a feverish heat or burning, and corruption of the humors, sent as it were from the center unto the superficies of the bodie. It is a good sign when the patient's minde is not troubled from the beginning untill the seventh daie; but when the *Bubo* or Carbuncle sinketh down again shortly after that it is risen, it is a mortall sign, especially if ill accidents follow it. If after they are brought to suppuration they presently wax drie without anie reason thereof, it is an ill sign:

Those

Those Carbuncles that are generated of blood have a greater Eschar then those that are made of choler; becaus that blood is of a gross consistence, and therefore occupieth a greater room in the flesh: contrariwise, a cholerick humor is more small in quantitie and thin, and it taketh little room in the vpper part of the flesh onely, as you may see in an *Erysipelas*. And I have seen Carbuncles whose Eschars were as broad and as large as half the back: also I have seen others, which going up by the shoulders to the throat, did so eat away the flesh that was under them, that the rough arterie or winde-pipe might bee seen bare, when the Eschar was fallen away: I had once a Carbuncle which was in the mid'st of my bellie, so that when the Eschar was fallen away, I might verie plainly see the *Piritoneum* or Rim: and the cicatrice that remaineth is as broad as my hand: but they do not spread themselvs so far without the great danger or death of the patient. There are also som Carbuncles which beginning at the parts under the chin, dispers themselves by little and little unto the pattel-bones, and so strangle the patient. So in manie, the *Buboes* in the groin arise above a great part of the muscles of the *Epigastrium*. Truly of those abscesses that are so large and great in quantitie, and so terrible to bee seen, there is great danger of death to the patient, or at least to the grived part. For after the consolidation, the part remaineth as if it were leprous, which abolissheth the action of the part, as I have seen in manie. Oftentimes also the corruption of the matter is so great, that the flesh leaveth the bones bare: but Carbuncles often leav the joints and ligaments quite resolved through the occasion of the moisture that is soaked and sunk in unto them; for they often cast out putrefied and virulent sanious matter: whereby eating and creeping ulcers are bred, manie blisters and pustles arising up in the parts round about it; which shortly breaking into one, make a great ulcer. These com verie seldom and slowly unto suppuration, or at least to cast out laudable matter, especially if they have their original of choler; becaus the matter is sooner burned with heat, then suppurated. Therefore then, if they can bee brought to suppuration by no medicines; if the tumor still remain black; if when they are opened, nothing at all, or elf a verie little sharp moisture doth com forth, they are altogether mortal; and there is scarce one of a thousand who hath these accidents that recovereth health: dispersed small blisters, comming of vapors stirred up by the matter that is under the skin, and are there staid and kept from passage forth, do not necessarily fore-shew death in Carbuncles. But if the part bee swoln or puffed up, if it bee of a green or black color, and if it feel neither pricking nor burning, it is a sign of a mortal Gangren. *Buboes* or Carbuncles seldom or never com without a Fever: but the Fever is more vehement when they are in the emunctories, or nervous parts, then when they are in the fleshlie parts, yet it is less, and all Symptoms are less, and more tolerable in a man that is strong and of a good temperature: Carbuncles not onely affect the outward, but also the inward parts, and oftentimes both together. If the heart bee vexed in such fort with a Carbuncle that nothing thereof appeareth forth on the superficial parts, all hope of life is past, and those die suddenly, eating, drinking or walking, and not thinking anie thing of death. If the Carbuncle bee in the midriff or lungs, they are soon suffocated: If it bee in the brain, the patient becommeth frantick, and so dieth. If it bee in the parts appointed for the passage of the urine, they die of the suppression of their water, as it happened in the Queen-mother's waiting maide at the Castle of *Rossilion*, of whom I speak before. If it bee in the stomach, it inferreth the accidents that are shewed in this historie following.

While I was Surgeon in the Hospital of Paris, a young and strong Monk of the order of *St. Victor*, beeing overseer of the woman that kept the sick people of that place, fell into a continual Fever verie suddenly, with his tongue black, drie, rough, (by reason of the putrefied and corrupted humors, and the vapors rising from the whole bodie unto that place) and hanging out like unto an hound's, with unquenchable thirst, often swoounding and desire to vomit. Hee hath convulsions over all his bodie through the vehemencie and malignitie of the disease, and so hee died the third day: Wherefore those that kept the sick people in the Hospital, thought that hee had been poisoned, for the certain knowledg whereof the Governors of the Hospital commanded his bodie to bee opened.

I therefore calling to mee a Physician and Surgeon, wee found in the bottom of his stomach a print or impression, as if it had been with an hot Iron or potential Cauterie, with an Eschar or crust as broad as one's nail, all the rest of his stomach was greatly contracted and shrunk up together, and as it were hornie; which wee considering, and especially the Eschar which was deep in the substance of the stomach, wee all said with one voice that hee was poisoned with *Sublimate* or Arsenick. But behold, while I was sowing up his bellie, I perceived manie black spots dispersed diversly throughout the skin: then I asked my companie what they thought of those spots; truly (said I) it seemeth unto mee that they are like unto the purple spots or marks that are in the pestilence. The Physician and the Surgeon denied it, and said that they were the biteings of fleas. But I perswaded them to consider the number of them over all the whole bodie, and also of their great depth and depression into the flesh; for when wee had thrust needls deep into the flesh in the midst of them, and so cut away the flesh about the needle, wee found the flesh about the needle to bee black: moreover his nostrils, nails, and ears were livid, and all the constitution of his bodie

Huge pestilent
Abscesses commonly deadlie.

Deadlie Carbuncles.

An historie.

How to distinguish purple spots from flea biteings.

was

was contrarie, and far unlike to the bodies of those that died of other sicknesses or diseases. Also it was credibly reported unto us by those that kept him, that his face was so altered a little before hee died, that his familiar friends could hardly know him. Wee persuaded by these proofs, revoked our former opinion and sentence, and made a *Certificate* to bee sent unto the Governors and Masters of the Hospital, setting our hands and seals unto it, to certifie them that hee died of a pestilent Carbuncle.

CHAP. XXXIV.

Of the cure of a pestilent Carbuncle.

Why emplasticke, verie hot, and great drawers are not good for a Carbuncle.



BY the fore-named signs of a pestilent Carbuncle, and especially by the bitterness of the pain, malignitie of the venemous matter, and by the burning fever that is therewithal annexed, I think it manifest, that verie hot, emplasticke, and drawing medicines should not bee applied to this kinde of tumor; because they prohibit or hinder the exhalation, or wasteing forth of the venenate malignitie; because that by stopping the pores of the skin, they increas and caus a greater heat in the part then there was before. Therefore it is better to use resolving medicines, which may asswage heat, and resolv the pores of the skin. Therefore first the place must bee fomented with water and oil mixed together, wherein a little Treacle hath been dissolved, leaving thereon *stupes* wet therein: you may also use the decoction of Mallows, the roots of Lillies, Line-seeds, Figs, with oil of *Hypericon*, for to make the skin thin, and to draw forth the matter; and the day following you must applie the Cataplasme following.

A Cataplasme for a pestilent Carbuncle. Another.

Take the leavs of Sorrel and Hen-bane, rost them under the hot ashes; afterwards beat them with four yelks of eggs, two drams of Treacle, oil of Lillies, three ounces; Barlie-meal as much as shall suffice: make thereof a Cataplasme in the form of a liquid *pultis*; this asswageth heat, and furthereth suppuration. Or, take the roots of Marsh-mallows and Lillies, of each four ounces; Line-seeds half an ounce; boil them, beat them, and then strain them through a *cerse*, adding thereto of fresh butter one ounce and an half; of Mithridate one dram; of Barlie-meal as much as shall suffice: make thereof a Cataplasme according to art: those Cataplasms that follow are most effectual to draw the venemous matter forth, and to make a perfect suppuration, especially when the flux of the matter is not so great, but that the part may bear it. Take the roots of white Lillies, Onions, Leaven, of each half an ounce; Mustard-seeds, Pigeon's dung, Sope, of each one dram; six Snails in their shels; of fine Sugar, Treacle and Mithridate, of each half a dram; beat them altogether, and incorporate them with the yelks of eggs: make thereof a Cataplasme, and applie it warm. Or, take the yelks of six eggs; of salt powdered one ounce; of oil of Lillies and Treacle, of each half a dram; Barlie-meal as much as shall suffice: make thereof a Cataplasme. Take of ordinarie *Diachylon* four ounces; of *Unguentum Basilicon* two ounces; oil of Violets half an ounce:

The effect of Scabious against a pestilent Carbuncle.

A Raddish root draw's out the venom powerfully.

The top of a Carbuncle, when, why, and with what to bee burned.

The falling of the Eschar promisseth health.

A twofold indication.

make thereof a medicine. Manie antient Professors greatly commend Scabious groun'd, or brayed between two stones, and mixed with old Hog's greas, the yelks of eggs, and a little salt; for it will caus suppuration in Carbuncles: also an egg mixed with Barlie-meal, and oil of Violets doth mitigate pain, and suppurate. A Raddish-root cut in slices, and so the slices laid one after one unto a Carbuncle or pestilent Tumor, doth mightily draw out the poison. The juice of Colt's-foot doth extinguish the heat of Carbuncles. The herb called *Divel's-bit*, being bruised, worketh the like effect. I have often used the medicine following unto the heat of Carbuncles, with verie good success; it doth also asswage pain, and caus suppuration. Take of the foot scraped from a chimnie four ounces, of common salt two ounces; beat them into small powder, adding thereto the yelks of two eggs, and stir them well together until it com to have the consistence of a *pultis*, and let it bee applied warm unto the Carbuncle. In the beginning, the point or head of the Carbuncle must bee burned, if it bee black; by dropping thereinto scalding hot oil, or *aqua fortis*: for by such a burning the venom is suffocated, as touched by lightning, and the pain is much lessened, as I have proved often times: neither is it to bee feared, lest that this burning should bee too painful, for it toucheth nothing but the point of the Carbuncle, which by reason of the Eschar that is there, is void of sens. After this burning, you must go forward with the former-described medicines, until the Eschar seemeth to separate it self from the flesh round about it, which is a token of the patient's recoverie; for it signifieth that nature is strong and able to resist the poison. After the fall of the Eschar you must use gentle mundificatives, as those which wee have prescribed in a pestilent *Bubo*; not omitting sometimes the use of suppurative and mollifying medicines, that while the gross matter is cleansed, that which is as yet crude may bee brought to suppuration: for then the indication is twofold; the one to suppurate that which remain's as yet crude and raw in the part, and the other to cleas that which remain's concocted and perfectly digested in the ulcer.

CHAP. XXXV.

Of the itching and inflammation happening in pestilent ulcers, and how to cicatrize them.



He parts adjoining to a pestilent Ulcer, oft-times are superficially excoriated by reason of ulcerous pustles, which here and there with burning and great itching prick and vellicate the part. The caus may happen either externally or internally; internally, by a thin and biting *sanies*, which sweating from the Ulcer, moisten's the neighboring parts. But externally by the constipation of the pores of the skin induced by the continual application of medicines. To remedie this, the place must bee fomented with discussing and relaxing things, as *aqua fortis*, which the Gold-smiths have used for separateing of metals, Alum-water, the water of Lime, Brine, and the like. But Ulcers left by Carbuncles and pestilent *Bubo's*, are difficultly cicatrized by reason of the corrodeing *sanies*, proceeding from the cholericke, or phlegmaticke and salt blood, which beeing in fault by the corruption of the whole substance causeth the abscess. Besides, such Ulcers are commonly round, and therefore hard to bee cicatrized; for that the Quitture hath no free passage forth; so the *sanies*, of its own nature acrid and corrodeing, doth by delaie acquire greater acrimonie and intrositie; so by its burning touch dissolving the adjacent flesh, it hinder's the conjunction and union of the lips of the Ulcer: but in the *interim*, the lips of the Ulcer becom' callous, which, unless they bee helped by cutting, or eating medicines, the Ulcer cannot bee healed; for that by their densitie they hinder the sweating out of a sufficient quantitie of the dewie glue to heal up the Ulcer. Now the Ulcer beeing plained and brought equal to the other flesh, wee must use Epuloticks, that is, such things as have a facultie to cicatrize Ulcers by condensing and hardening the surface of the flesh: of these there are two kindes; for som without much biting binde and drie: such are Pomegranat-pills, Oak-bark, *Tutia*, Litharge, burn't bones, scales of brass, Galls, Cypress-nuts, *Minium*, Antimonie, *Bole-Armenick*, the burn't and washed shels of Oysters, Lime nine times washed, and manie metalline things. Others are next to these, by which proud flesh is consumed; but such must bee sparingly used: of this kinde is washed Vitriol, burn't Alum, which excelleth other Epuloticks, by reason of the excellent drying and astringent facultie consolidating the flesh, which by beeing moistened by an excrementitious humor, grow's lank. For that the scar which is made, is commonly un-fightly in this kinde of Ulcers, as red, livid, black, swoln, rough, by reason of the great adu'sion imprinted in the part, as by a burning cole: therefore I have thought good here to set down som means, by which this deformitie may bee corrected or amended. If the scar bee too big, or high, it shall bee plained by makeing convenient ligation and straight bindeing to the part a plate of lead rubbed over with Quick-silver, but you may whiten it, by annointing it with Lime nine times washed (that so it may bee more gentle, and lose the acrimonie) and incorporated with oil of Roses. Som take two pound of Tartar or Argole, burn it, and then powder it; put it in a cloth, and so let it hang in a moist Vault or Cellar, and set a vessel under it to receiv the dropping of liquor, which is good to bee rubbed for a good space upon the scar. The same facultie is thought to bee in that moisture of eggs which swear's through the shell, whilst they are rosted at the coles; as also *unguentum citrinum*, and *Emplast. de cerussa* newly made. The three following compositions are much approved. *R. Axungie suille nonies lotæ in aceto acerrimo ℥iv. cinab. succi titri, & alum. usti, an. ℥ss. sulphur. vivi ignem haud experti, ℥ii. caph. ℥ii. fiat pulvis;* then let them all bee incorporated together, and make an ointment: it attenuate's the skin, and cleanseth spots. *R. olei hyos. olei semin. cucurb. an. ℥i. olei tartar. ℥ss. cere alb. ℥iii. liquefiant simul lento igne; deinde adde spermat. ceti ℥vi. removeantur prædicta ab igne donec infrigid. postea adde troch. alb. Rhafis pul. ℥iii. caph. ℥i. tandem cum mali cirei succo omnia diligenter commisce, fiat linimentum.* Or else, *R. rad. serpent. ℥i. bulliat in aqua com. ℔i. ad dimid. deinde adde sulph. vivi ignem non experti, & alum. crudi, pulveris. an. ℥i. colent. prædicti. & addatur caph. ℥i. succi hyoscyami ℥i.* Let this medicine bee kept in a lead or glass-vessel; and when you would use it, dip linnen cloaths therein, and lay them to the part. You may also use these medicines against the redness of the face; and you may fetch them off in the morning, by washing the face with warm water and bran.

Why the adjacent parts are troubled with itching.

A fomentation for this itch.

Why these Ulcers are hard to bee cicatrized.

Two sorts of Epuloticks.

Remedies against the deformitie of scars.

Ointments to attenuate and take away scars.

CHAP. XXXVI.

Of sundrie kindes of Evacuations, and first of Sweating and Vomiting.



He pestilent malignitie is not onely evacuated and sent forth by the eruption of pustles and spots, but also by sweat, vomit, bleeding at nose, at the *hemorrhoids*, by the courses, a flux of the bellie, and other waies; so that nature by everie kinde of excretion may bee free'd from the deadlie poison, especially that which is not as yet arrived at the heart. But chief regard must bee had to the inclination of nature,

Why the pestilent malignitie is not carried away by one way, but by manie.

Wee must have chief regard to the motion of nature. Signs of future sweat.

A *Crisis* must not be expected in the Plague.

How to procure vomit.

Why vomit must not be forced.

ture, and wee must attend what way it chiefly aim's at, and what kinde of excretion it affect's. Yet such evacuations are not alwaies critical, but usually symptomatical; for that oft-times nature is so irritated by the untameable malignity of the matter, that it can no way digest it; but is forced by anie means to send it away crude as it is. Wherefore, if nature may seem by the moistness of the skin, the suppression of urine, and other signs to affect a *crisis* and excretion by sweat, you then shall procure it by the formerly mentioned means. It is delivered by the Antients, that all sweats in acute diseases are salutarie, which happen upon a critical day, which are universal and hot, and signified before the critical day. But in this rapid and deadlie disease of the Plague, wee must not expect a *Crisis*, but as soon as wee can, and by what means wee may, to free nature from so dire and potent an enemy.

But oft-times the tough and gross excrementitious humors may be purged by vomit, which could not be evacuated by strong purges. Therefore also by this manner of excretion may wee hope for the exclusion of the pestilent venom, if there be nothing which may hinder; and nature by frequent nauseousness may seem to affect this way: the endeavor thereof shall be helped by givinge som half a pinte of warm water to be drunk with four ounces of common oil, an ounce of vinegar, and a little juice of raddish: after the taking of the potion, it is fit to thrust into the throat a Goose-quill dipped in the same oil, or elf a branch of Rosemarie; or elf by thrusting in the fingers, to procure vomit; also a potion of eight ounces of the mucilaginous water of the decoction of Line-seeds will procure vomit. Or elf, *Rx. rad. rapb. in taleol. sect. vel sem. ejus, & sem. antriplicis, an. ℥iii. bulliant in aquæ com. quod sufficit pro dosi. in colatura dissolve oxyph. & syr. acet. an. ℥ss exhibeatur ꝑo:io larga & tepida.* Or elf, *Rx. oxym. Gal. ℥vi. ol. com. ℥ii. paretur potio tepid.* But nature must not be forc't, unless of its own accord it undertake this motion; for forced and violent vomiting, distend's the nervous fibres of the ventricle, deject's the strength, break's the vessels of the lungs, whence proceed's a deadlie spitting of blood. Wherefore if the stomach shall trouble it self with a vain and hurtful desire to vomit, it shall rather be strengthened with bags of Roses, Worm-wood, and Sanders, using inwardly the juice of Quinces and Berberies, and broths made for the same purpose.

CHAP. XXXVII.

Of Spitting, Salivation, Sneezing, Belching, Hicketing, and making of Water.

The effect of spitting in pestilent diseases.



That long evacuations may be made by Spitting and Salivation, you may learn by the example of such as have a plurisie; for the matter of the plurisie being turned into pus, the purulent matter suck't up by the rare and spongy substance of the lungs, and thence drawn into the *aspera arteria*, is lastly cast out by the mouth.

The force of Salivation.

There is none ignorant, how much such as have the *Lues Venerea* are helped by Salivation and Spitting. But these shall be procured by Masticatorie of the roots of *Ireos*, *Pellitorie* of Spain, *Mastich*, and the like; the mucilage of Line-seeds held in the mouth will work the same effect.

The force of Sneezing.

That such as have a moist brain may expel their superfluous humors by sneezing and blowing their noses; the brain, by the strength of the expulsive facultie, being stirred up to the exclusion of that which is harmful, may be known by the example of old people and children which are daily purged by their noses; the brain is stirred up to both kinds of excretion from causes either internal or external: from the internal, as by a phlegmatick and vaporous matter, which contained in the brain, offend's it; externally, as by receiving the beams of the sun in the nostrils, or by tickling them with a feather, or blowing into them the powder of Hellebore, *Euphorbium*, *Pyrethrum*, Mustard-seed, and the like sternutamentories. For then the brain is straightened by its own expulsive facultie, to the excretion of that which is troublous unto it. Sneezing breaketh forth with nois, for that the matter passeth through straights; to wit, by the straining passages of the *Os cribrosum*, which is seated at the roots of the nostrils. It is not fit to cause sneezing in a bodie verie plethorick, unless you have first premised general medicines, lest the humors should be more powerfully drawn into the brain, and so cause an *Apoplexie*, *Vertigo*, or the like symptoms.

The commodities of Belching.

By Belching the flatulencies contained in the ventricle, being the off-spring of cruditie, or flatulent meats, are expelled; these by their taste and smell, pleasing, stinking, sweet, bitter or tart, shew the condition and kinde of cruditie of the humors from whence they are raised: now vomiting free'th the stomach of crudities, but the distemper must be corrected by contraries, as altering things to be prescribed by the Physician.

Hicketing is a contraction and extension of the nervous fibres of the stomach, to cast forth such things as are too contumaciously impact in the coats thereof; yet repletion onely is not the cause thereof, but sometimes inanition also; so oft-times a putrid vapor, from som other place, breaking into the stomach, as from a pestilent *Bubo*, or Carbuncle; also all acid

acid and acrid things; becauf they prick, vellicate and provoke the tunicles of the ventricle, as vineger, spiced things, and the like; often and contumacious hicketting after purging, a wound or vomiting is ill; but if a convulsion prefently happen thereon, it is deadlie.

Several remedies must bee ufed according to the varietie of the causses: for repletion help's that hicketting that proceed's from inanition and evacuation, that which happen's by repletion: that which proceed's from a putrid and venemous vapor, is helped by Treacle and Antidotes; that which is occasioned by acid and acrid things, is cured by the use of grofs, fattie, and cold things.

Now the whole bodie is oft-times purged by urine, and by this way the feverish matter is chiefly and properly accustomed to bee evacuated: not a few, beeing troubled with the *Lues Venerea*, when as they could not bee brought to salivation by unctio, have been cured by the large evacuation of urine caussed by diuretick medicines. Diureticks, wherewithall you may moov urine, are formerly described in treating of the stone. But wee must abstain from more acrid diureticks, especially when as inflammation is in the bladder; for otherwise the noxious humors are sent to the affected part, whence there is danger of a deadlie Gangrene. Therefore then it is better to use diversion by sweat.

The whole-bodie purged by urine.

When wee ought to abstain from diureticks.

CHAP. XXXVIII.

Of the Menstrual and Hæmorrhoidal purgation.



Not onely reason, but also manifold experience induceth us to belev, that women, by the benefit of their menstrual purgation, escape, and are free'd from great, pestilent, and absolutely deadlie diseases; wherefore it must bee procured by remedies, both inwardly taken, and outwardly applied: these may bee taken inwardly with good success, *Cassia lignea*, Cinnamon, the Bark of the root of a Mulberrie, Saffron, Agrick, Nutmeg, Savine, *Diagrium*, and divers others. But if the affect require more vehement medicines, the roots of *Tithymel*, *Antimonie*, *Cantharides* (taken in small quantitie) moov the courses most powerfully; frictions and ligatures made upon the thighs and legs conduce hereto, as also cupping in the inner and middle part of the thighs, the opening of the vein *Saphena*, Leeches applied to the orifice of the neck of the womb, pessaries, nodula's, glysters, baths, fomentations made of oderiferous things, which by the fragrancie of their odor, or rather by their heat, may attenuate and cut grofs humors, open the obstructed orifices of the veins; such are the roots of *Marsh-mallows*, *Orris*, *Parflie*, *Fennel*, *Kneholn*, the leavs and flowrs of *Saint John's-wurt*, *Asparagus*, *Rocket*, *Balm*, *Chervile*, *Mug-wurt*, *Mints*, *Pennie-royal*, *Savorie*, *Rosemarie*, *Rue*, *Time*, *Sage*, *Bay-berries*, *Broom*, *Ginger*, *Cloves*, *Pepper*, *Nutmegs*, and the like; the vapor of the boiling whereof, let the woman, sitting upon a perforated seat, receiv by a funnel into the neck of her womb, covering herself warm on all sides, that so nothing may otherwise break forth. Of the same things may bee made baths, as well general, as particular. Also pessaries are good made after this manner. *R. iberiac. mithrid. an. ʒi. castor. gum. ammoniac. an. ʒi. misce cum bombace in succo mercurialis tincto, fiat pessarium.* Or elf, *R. rad. petroselin. & fœnug. sub cineribus coctas, deinde contusas cum pul. staphysag. pyreth. croco & oleo liliorum*, so make a pessarie in the form of a suppositorie or nodula. Or, *R. pulv. myrrb. & aloës, an. ʒi. fol. sabin. nigel. artbewis. an. ʒii. rad. Helleb. nigr. ʒi. croci, ʒi. cum succo mercur. & melle communi*: make a pessarie iu cotton. This which follow's is more effectual. *R. succi rut. absinth. an. ʒii. myrrb. euphorb. castor. sabin. diacrid. terebinth. galban. iberiac. an. ʒi.* make a pessarie according to art; let a thred hang out of the one end of the pessaries, that so you may easily draw them forth as you pleas.

How to provoke the courses.

How aromatick things provoke the courses.

Pessaries to provoke the terms.

But if this menstruous flux one provoked, flow too immoderately, it must bee stopped by using meats of grosser and more viscid juice, by opening a vein in the arm, application of cupping-glasses under the dugs, frictions and ligations of the upper parts, as the arms, putting up of pessaries, application of refrigerateing and astringent plasters, to the lower bellie, *share* and loins, laying the woman in a convenient place, and not upon a feather-bed.

How to stop the courses flowing too immoderately.

This following injection stoppeth the blood flowing out of the womb. *R. aquæ plant. & fabror. an. ʒi. nucum cupres. gallar. immatur. an. ʒii. berber. sumach. balaust. vitriol. rom. alum. roch. an. ʒii. bulliant omnia simul, & fiat decoctio*: of this make injection into the womb. In the performance of all these things, I would have the Surgeon depend upon the advice of a Physician, as the occasion and place shall permit.

But if nature endeavor to free it self of the pestilent matter by the hæmorrhoides, you may provoke them by frictions and strong ligatures in the lower parts, as if the thighs or legs were broken, by *ventoses* applied with great flame to the inner side of the thigh, by application of hot and attractive things to the fundament, such as are fomentations, emplasters, unguents; such as is usually made of an Onion roasted under the embers, and incorporated with Treacle, and a little oil of *Rue*: after the hæmorrhoid veins, by these means, com to shew themselves, they shall bee rubbed with rough linnen clothes, or Fig-leavs,

How to provoke the hæmorrhoids.

or a raw Onion, or an Ox-gall mixt with som powder of *Colloquintida*. Lastly, you may apply Horf-leeches, or you may open them with a lancet, if they hang much forth of the fundament, and bee swoln with much blood. But if they flow too immoderately, they may bee stai'd by the same means as the courfes.

CHAP. XXXIX.

Of procureing evacuation by stool, or a flux of the bellie.



Nature often times, both by it self, of its own accord, as also helped by laxative and purgeing medicines, cast's into the bellie and guts, as into the sink of the bodie, the whole matter of a pestilent disease, whence are caused *Diarrhea's*, *Lienteries*, and *Dysenteries*; you may distinguish these kindes of fluxes of the bellie, by the evacuated excrements. For if they bee thin and sincere, that is, retain the nature of one, and that a simple humor, as of choler, melancholie, or phlegm; and if they bee cast forth in a great quantitie, without the ulceration or excoriation of the guts, vehement, or fretting pain, then it is a *Diarrhea*, which som also call *fluxus humoralis*. It is called a *Lienteria*, when as by the resolved retentive facultie of the stomach and guts caused by ill humors, either there collected, or flowing from som other place; or by a cold and moist distemper, the meat is cast forth crude, and almost as it was taken. A *Dysenteria* is, when as manie and different things, and oft-times mixt with blood, are cast forth with pain, gripeings, and an ulcer of the guts, caused by acrid choler, fretting insunder the coats of the vessels.

What a *Diarrhea* is.

What a *Dysenteria* is.

The caus of various and stinking excrements in the Plague. An historic.

But if in anie kinde of disease, certainly in a pestilent one, fluxes of the bellie happen immoderate in quantitie, and horrible in the qualitie of their contents, as liquid, viscous, frothie, as from melted greaf, yellow, red, purple, green, ash-colored, black, and exceeding stinking. The caus is various, and manie sorts of ill humors, which taken hold of by the pestilent malignitie, turn into divers *species*, differing in their whole kinde both from their particular, as also from nature in general, by reason of the corruption of their proper substance, whose inseparable sign is stinch, which is oft-times accompanied by worms.

In the camp at *Amiens*, a pestilent *Dysenterie* was over all the Camp, in this the strongest souldiers purged forth meer blood: I dissecting som of their dead bodies, observed the mouths of the *Mesaraick* veins and arteries, opened and much swollen; and whereas they entered into the guts, were just like little *Catyledones*, out of which as I pressed them, there flowed blood. For both by the excessive heat of the Summer's sun, and the mindes of the enraged souldiers, great quantitie of acrid and cholerick humor was generated, and so flowed into the bellie: but you shall know whether the greater or lesser guts bee ulcerated, better by the mixture of the blood with the excrements, then by the site of the pain; therefore in the one you must rather work by glysters; but in the other, by medicines taken by the mouth.

A Potion.

Therefore, if by gripeings, a *tensmus*, the murmuring and working of the guts, you suspect in a pestilent disease, that nature endeavor's to disburden it self by the lower parts, neither in the mean while doth it succeed to your desire, then must it bee helped forward by art, as by takeing a potion of $\mathfrak{z}\beta$. of *hiera simplex*, and a dram of *Diaphanicon* dissolved in Worm-wood water.

Also Glysters are good in this case, not onely for that they asswage the gripeings and pains, & draw by continuation or succession from the whole bodie; but also becaus they free the *mesaraick* veins and guts from obstruction and stuffing; so that by opening, and as it were unlocking of the passages, nature may afterwards more freely free it self from the noxious humors. In such Glysters they also somtimes mix two or three drams of Treacle, that by one and the same labor they may retund the venenate malignitie of the matter.

Suppositories.

There may also bee made for the same purpose Suppositories of boiled honie, $\mathfrak{z}\text{i}$. of *hiera picra* and common salt, of each $\mathfrak{z}\beta$. or that they may bee the stronger, of honie $\mathfrak{z}\text{iii}$. of Ox-gall $\mathfrak{z}\text{i}$. of Scammonie, *Euphorbium*, and *Coloquintida* powdred, of each $\mathfrak{z}\beta$. The want of these may bee supplied by *Nodula's* made in this form. *R. vitell. ovor. nu.iii. fellis bubuli, & mellis, an. $\mathfrak{z}\beta$. salis com. $\mathfrak{z}\beta$.* let them bee stirred together, and well incorporated, and so parted into linnen rags, and then bound up into *Nodula's*, of the bigness of a Fil-berd, and so put up into the fundament; you may make them more acrid, by adding som powder of *Euphorbium*, or *Coloquintida*.

CHAP. XL.

Of stopping the flux of the bellie.

Violent and immoderate scourings, for that they resolv the facultie, and lead the patient into a consumption and death; therefore if they shall appear to bee such, they must bee

bee staied in time by things taken and injected by the mouth and fundament. To this purpose may a pudding bee made of wheat-flour boiled in the water of the decoction of one Pomegranat, Berberies, *Bole-Armenick*, *Terra sigillata*, and white Poppie-seeds, of each ʒi . The following Almond-milk strengthen's the stomach, and mitigate's the acrimonie of the cholerick humor, provoking the guts to excretion. Take sweet Almonds boiled in the water of Barlie, wherein steel or iron hath been quenched; beat them in a marble-mortar, and so with som of the same water make them into an Almond-milk, whereto adding ʒi . of *Diarhodon Abbatis*, you may give it to the patient to drink.

A haffie pud-
ding to stay
the lask.

This following medicine I learn't of Dr. *Chappellaine*, the King's chief Physician, who received it of his father, and held it as a great secret, and was wont to prescribe it with happy succes, to his patients. It is thus: *R. boli armen. terra sigil. lapid. hemat. an. ʒi. picis navalis, ʒi. coral. rub. marg. elect. corn. cervi ust. & loti in aq. plant. an. ʒi. saccar. ros. ʒii. fiat pulvisc.* Of this let the patient take a spoonful before meat, or with the yelk of an egg.

D. Chappellain's
medicine to
stay a scour-
ring.

Christopher Andrew in his *æcoiätria*, much commendeth dog's-dung, when as the dog hath for three daies before been fed onely with bones.

Quinces roasted in embers, or boiled in a pot, the *Conserv* of Cornelian-cherries, *Preserved* Berberies and Myrabalans, roasted nutmeg taken before meat, strengthen the stomach, and stay the lask; the patient must feed upon good meats, and these rather roasted then boiled. His drink shall bee *calibeate*-water of the decoction of a fowr Pomegranat beaten, or of the decoction of a Quince, Medlars, Cervices, Mulberries, Bramble-berries, and the like things, endued with a facultie to binde and waste the excrementitious humidities of the bodie: these waters shall bee mixed with syrup of red Currants, julip of Roses, and the like.

Drink.

Let the region of the stomach and bellie bee annointed with oil of Mastich, *Moschatelinum*, Myrtles, and Quinces. Also a crust of bread newly drawn forth of the oven, and steeped in vineger and Rose-water, may bee profitably applied; or elf a cataplasm of red Roses, Sumach, Berberies, Myrtles, the pulp of Quinces, Mastich, Bean-flour, and honie of Roses made up with *calibeate*-water.

Ointments.

Anodyne, abstergent, astringent, consolidating and nourishing glysters shall bee injected. These following retund the acrimonie of humors, and asswage pain. *R. fol. lactuc. hyosc. acetos. portul. an. m. i. flor. violar. & nenuph. an. ʒi. ʒi. fiat clyster.* Or elf, *R. ros. rub. bord. mund. sem. plant. an. p. i. fiat decoctio, in colaturâ adde olei ros. ʒii. vitell. ovor. ii. fiat clyster.* Or, *R. decoctionis capi, crur. vitellin. & capit. vervicin. unâ cum pelle, lb. ii. in quâ coquantur. fol. violar. malv. mercur. plantag. an. m. i. bord. mund. ʒi. quatuor sem. frigid. major. an. ʒi. in colaturâ lb. ʒi. dissolve. cass. recenter extract. ʒi. ol. viol. ʒiv. vitellor. ovor. ii. sacc. rub. ʒi. fiat clyster.* Or, *R. flor. chamæm. melil. aneth. an. p. i. rad. bifmal. ʒi. fiat decoctio in lacte; colaturâ adde mucag. sem. lin. fenagr. extract. in aquâ malv. ʒii. saccar. rub. ʒi. olei cham. & aneth. an. ʒi. vitellor. ovor. ii. fiat clyster.*

Glyster to
stay a flux.

Such glysters must bee long kept, that they may more readily mitigate pain. When shavings of the guts appear in the stools, it is an argument that there is an ulcer in the guts; therefore then wee must use detergent and consolidateing glysters, as this which follow's.

R. bordei integr. p. ii. ros. rub. flor. chamæm. plantag. apii, an. p. i. fiat decoctio, in colaturâ dissolve mellis rosat. & syr. de absinth. an. ʒi. vitell. ovor. ii. This following glyster consolidateeth. *R. succi plantag. centinod. & portulac. nu. ʒii. bol. armen. sang. dracon. amyl. an. ʒi. sebi hircini dissoluti, ʒiii. fiat clyster.* Also Cow's-milk boiled with Plantain, and mixed with syrup of Roses, is an excellent medicine for the ulcerated guts.

A glyster for
ulcerated guts.

This following glyster binde's. *R. cand. equin. plant. polygon. an. m. i. fiat decoctio in lacte ustulato ad quart. iii. & in colaturâ adde boli armen. sigil. sang. dracon. an. ʒii. albumina duor. ovor. fiat clyster.* Or elf, *R. suc. plant. arnoglos. centinod. portulac. residentia facta depuratorum quantum sufficit pro clystere, addendo pul. boli armeni, terra sigil. sang. dracon. an. ʒi. ol. myrithin. & rosat. an. ʒii. fiat clyster.*

A verie astring-
gent glyster.

If pure blood flow forth of the guts, I could wish you to use stronger astringitives. To which purpose I much commend a decoction of Pomegranat-pills, of Cypres-nuts, red Rose leavs, Sumach, and Alum, and Vitriol made with Smith's water; and so made into glysters, without anie oil. It will bee good with the same decoction to foment the fundament, *perineum*, and the whole bellie.

Astringent glysters ought not to bee used before that the noxious humors bee drawn away, and purged by purging medicines, otherwise by the stoppage hereof, the bodie may chance to bee oppressed.

If the patient bee so weak, that hee cannot take or swallow anie thing by mouth; nutritive glysters shall bee given him. *R. decoctionis capi pinguis, & crur. vitulini, coct. cum acetosâ, buglossa, boragine, pimpinellâ, lactucâ, ʒx. vel xii. in quibus dissolve vitellos ovorum, nu. iii. saccari rosati, & aque vite, an. ʒi. butyri recentis non saliti, ʒii. fiat clyster.*

A nourishing
glyster.

CHAP. XLI.

Of evacuation by insensible transpiration.



Tumors are
oftimes dis-
cussed by the
force of nature
after they are
suppurated.

The pestilent malignitie, as it is oftimes drawn by the pores, by transpiration into the bodie, so oftimes it is sent forth invisibly the same way again. For our native heat, that is never idle in us, disperseth the noxious humors, attenuated into vapors and air through the unperceivable breathing-places of the skin. An argument hereof is, wee see that the tumors and abscesses against nature, even when they are com to suppuration, are oftimes resolved and discussed by the onely efficacie of nature, and heat, without anie help of art. Therefore there is no doubt, but that nature, beeing prevalent, may free it self from the pestilent malignitie by transpiration, som Abscess, *Bubo*, or Carbuncle beeing com forth, and som matter collected in som certain part of the bodie. For when as nature and the native heat are powerful and strong, nothing is impossible to it, especially when the passages are also in like manner free and open.

CHAP. XLII.

How to cure Infants and Children taken with the Plague.



The nurs must
bee dieted
when as the
childe is sick.

That it happen that sucking or weaned children bee infected with the pestilence, they must bee cured after another order then is yet described. The Nurs of the sucking childe must govern her self so in diet and the use of medicines, as if shee were infected with the pestilence her self: Her diet consisteth in the use of the six things *not natural*. Therefore let it bee moderate; for the fruit or profit of that moderation in diet cannot chuse but com unto the Nurses milk, and so unto the Infant that liveth by the milk. And the Infant it self must keep the same diet as near as hee can in sleep, wakeing, and expulsion, or avoiding of superfluous humors and excrements of the bodie. Let the Nurs bee fed with those things that mitigate the violence of the feverish heat: as cooling broths, cooling herbs, and meats of a moderate temperature: shee must wholly abstain from wine, and annoint her nipples, as often as shee giveth the Infant suck, with water, or juice of Sorrel, tempered with Sugar of Roses. But the Infants heart must bee fortified against the violence of the increasing venom, by giving it one scruple of Treacle in the Nurse's milk, the broth of a Pullet, or som other cordial water. It is also verie necessarie to annoint the region of the heart, the emunctories, and both the wrists with the same medicine: neither were it unprofitable to smell often unto Treacle dissolved in Rose-water, vineger of Roses, and a little *Aqua vite*, that so nature may bee strengthened against the malignitie of the venom. When the children are weaned, and somewhat well grown, they may take medicines by the mouth; for when they are able to concoct and turn into blood meats that are more gross and firm then milk, they may easily activate a gentle medicine. Therefore a potion must bee prepared for them of twelv grains of Treacle, dissolved with a little of the syrup of Succorie in som cordial water; or the broth of a Capon: unless that anie had rather give it with *Conserve* of Roses, in form of a bole: but Treacle must bee given to children in verie small quantitie, for if it bee taken in anie large quantitie, there is great danger, lest that by inflaming the humors, it infer a fever. Furthermore, broth may bee prepared to bee taken often, made of a Capon seasoned with Sorrel, Lettuce, Purslain and cooling feeds, adding thereto *Bole-Armenick*, and *Terra sigillata*, of each one ounce, beeing tied in a rag, and somtimes pressed out from the decoction. For *Bole-Armenick*, whether it bee by its marvellous facultie of drying, or by som hidden propertie, hath this virtue, that beeing drunken (according as *Galen* witnesseth) it cureth those that are infected with the pestilence, if so bee that they may bee cured by physick; so that those that cannot bee cured with *Bole-Armenick*, cannot bee preserved by anie other medicines. But becaus the bodies of children are warm, moist and vaporous, they are easily delivered of som portion of the venenate matter through the pores of the skin by provokeing sweat, with a decoction of Parslie-seeds, Prunes, Figs, and the roots of Sorrel, with a little of the powder of Hart's-horn, or Ivorie. But that the sweat may bee more abundant and copious, applie sponges dipped and pressed out in the hot decoction of Sage, Rosemarie, Lavender, Bays, Cammomil, Melilot, and Mallows, or elf Swine's bladders half filled with the same decoction, to the arm-holes, and to the groins. In the time that they sweat, let their faces bee fanned to cool them. Also let a nodule of Treacle, dissolved in vineger and water of Roses, bee applied to the nostrils; but alwaies use a moderation in sweating, becaus that children are of a substance that is easie to bee dissipated and resolved: so that oftentimes although they do not sweat, yet they feel the commodities

Medicines
may bee given
to such as are
weaned.

Lib. 9. simp. ca. 7.

The benefit of
children.

Of the Means and Manner to repair or supplie the natural or accidental defects or wants in Man's bodie.

The twentieth third Book.

CHAP. I.

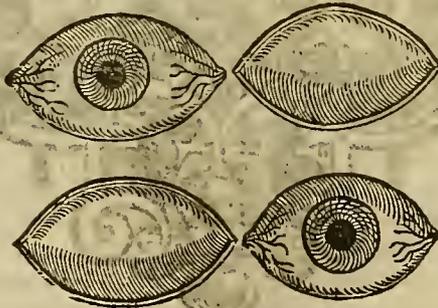
How the loss of the natural or true eie may bee covered, hidden or shadowed.

The fourth
dutie of a Surgeon.



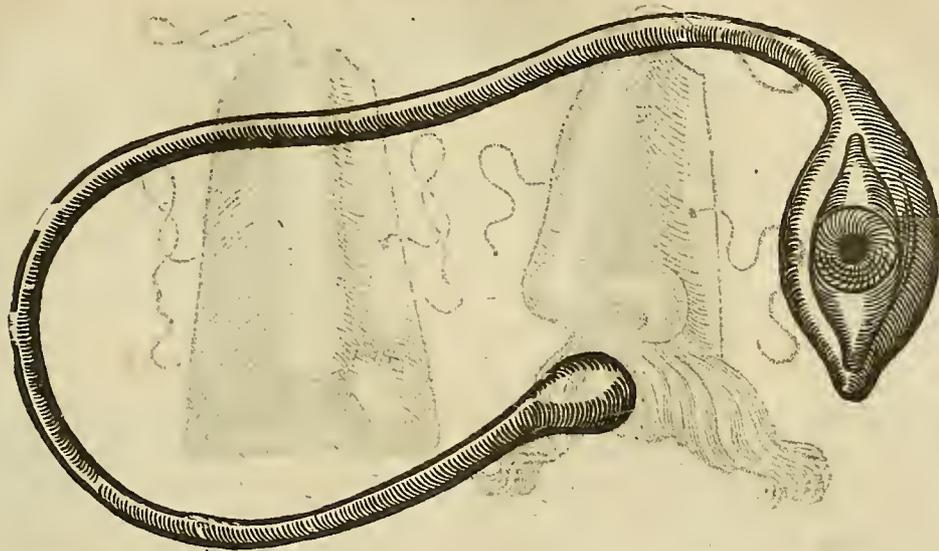
Having at large treated in the former Books of Tumors, Wounds, Ulcers, Fractures and Luxations, by what means things dissolved and dislocated might bee united, things united separated, and superfluities consumed or abated: Now it remain's, that wee speak of the fourth office or dutie of the Chirurgion, which is to supplie or repair those things that are wanting by nature, through the default of the first conformation, or afterwards by some mischance. Therefore, if that through anie mischance, as by anie inflammation, anie man's eie happen to bee broken or put out, and the humors spilt or wasted; or if it bee stricken out of his place or cavities wherein it was naturally placed by anie violent stroke; or if it waste or consume by reason of a consumption of the proper substance, then there is no hope to restore the sight or function of the eie, yet you may cover the deformitie of the eie so lost (which is all you can do in such a case) by this means: If that when you have perfectly cured and healed the ulcer, you may put another eie artificially made of gold or silver, counterfeited and enamelled, so that it may seem to have the brightness, or gemmie decencie of the natural eie, into the place of the eie that is so lost.

The forms of eies artificially made of gold or silver, polished and enamelled, shewing both the inner and outer side.



But if the patient bee unwilling, or by reason of some other means cannot wear this eie so prepared, in his head; you may make another on this wise. You must have a string or wier of iron bowed or crooked, like unto women's ear-wiers, made to binde the head harder or looser, as it pleaseth the patient, from the lower part of the head behinde above the ear, unto the greater corner of the eie; this rod or wier must bee covered with silk; and it must also bee somewhat broad at both ends, lest that the sharpness thereof should pierce or prick anie part that it commeth unto. But that end wherewith the emptie hollownes must bee covered, ought to bee broader then the other, and covered with a thin piece of leather, that thereon the colors of the eie that is lost may bee shadowed or counterfeited. Here followeth the figure or portraiture of such a string or wier.

The form of an iron wiew wherewith the deformitie of an eie that is lost may bee shadowed or covered.



CHAP. II.

By what means a part of the Nose that is cut off, may bee restored; or how in stead of the nose that is cut off, another counterfeit nose may bee fastened, or placed in the stead.

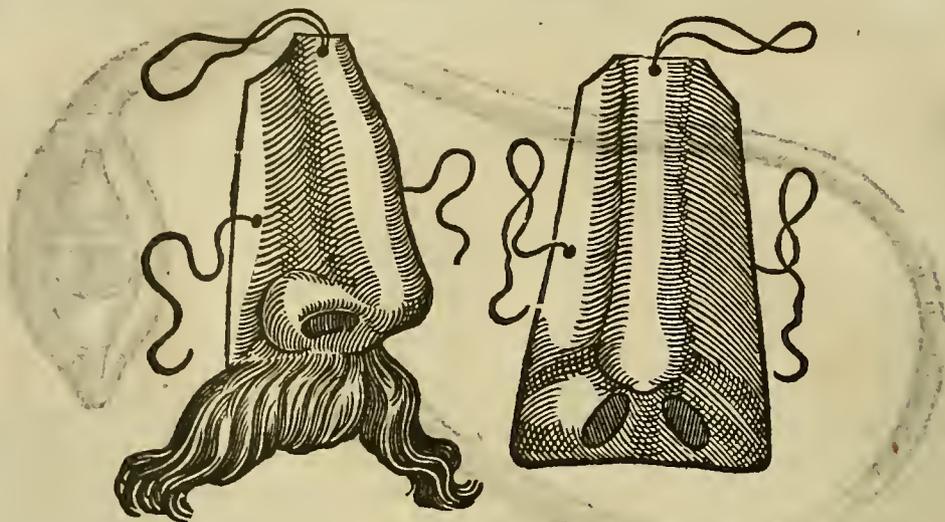


When the whole Nose is cut off from the face, or portion of the nostrils, from the Nose, it cannot bee restored or joynd again; for it is not in men, as it is in plants. For plants have a weak and feeble heat; and furthermore, it is equally dispersed into all the substance of the plant or tree, neither is it easie to bee consumed or waited: for when the boughs or branches of trees are broken, torn, or cut away, they live nevertheless, and will grow again when they are set and grafted; neither is there anie seat for the heart rightly prepared in them from whence the heat must necessarily run, and dispers it self continually into all the parts thereof. But contrariwise, the separated parts of more perfect living creatures, as of men, are incontinently deprived of life; because they have their nourishment, life, sens, and whole sustentation not of themselves, by faculties flowing or coming unto them from som other parts; neither are they governed by their own heat, as plants; but by a borrowed heat: so that above or beside the natural facultie of the liver, another vital facultie commeth unto it from the heart.

Wherefore in stead of the Nose cut away or consumed, it is requisite to substitute another made by art; because that nature cannot supplie that defect: this Nose so artificially made, must bee of gold, silver, paper, or linnen clothes glewed together, it must bee so colored, counterfeited, and made both of fashion, figure and bigness, that it may as aptly as is possible, resemble the natural Nose: it must bee bound or stayed with little threds or laces unto the hinder part part of the head or the hat. Also if there bee anie portion of the upper lip cut off with the nose, you may shadow it with annexing som such thing that is wanting unto the nose, and cover it with the hair on his upper lip, that hee may not want anie thing that may adorn or beautifie the face. Therefore I have thought it necessarie to set down the figure or form of both these kindes.

Why the parts of plants being cut off, may grow again, but those of man cannot.

The form of a nose artificially made, both alone by it self, and also with the upper-lip covered as it were with the hair of the beard,



A strange cure
for a cut-off
nose.

There was a Surgeon of Italie of late years which would restore or repair the portion of the nose that was cut away after this manner. Hee first scarified the callous edges of the maimed nose round about, as is usually don in the cure of hare-lips: then hee made a gash or cavities in the muscle of the arm, which is called *Biceps*, as large as the greatness of the portion of the nose which was cut away did require: and into that gash or cavities so made, hee would put that part of the nose so wounded, and binde the patient's head to his arm, as if it were to a post, so fast that it might remain firm, stable and immoveable, and not lean or bow anie way; and about fortie daies after, or at that time when hee judged the flesh of the nose was perfectly agglutinated with the flesh of the arm; hee cut out as much of the flesh of the arm, cleaving fast unto the nose, as was sufficient to supplie the defect of that which was lost, and then hee would make it even, and bring it, as by licking, to the fashion and form of a nose, as near as art would permit; and in the mean while hee did feed his patient with panadoes, gellies and all such things as were easie to bee swallowed and digested. And hee did this work of cureing the place where the flesh was so cut out, onely with certain balms and agglutinative liquors. A younger brother of the familie of *St. Thoan*, beeing wearie of a silver-nose, which beeing artificially made, hee had worn in the place of his nose that was cut off, went to this Chirurgian into Italie, and by the mean fore-named practice hee recovered a nose of flesh again, to the great admiration of all those that knew him before. This thing truly is possible to bee don, cut it is verie difficult both to the patient suffering, and also to the Chirurgian working. For that the flesh that is taken out of the arm is not of the like temperature as the flesh of the nose is; also the holes of the restored nose cannot bee made as the were before.

An historic.

CHAP. III.

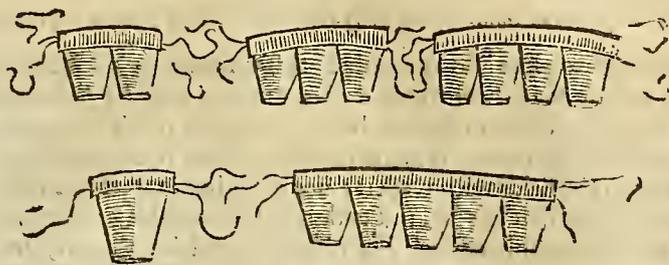
Of the placing of Teeth artificially made in stead of those that are lost or wanting.



It oftentimes happeneth that the fore-teeth are mooved, broken or stricken out of their places by som violent blow, which causeth deformitie of the mouth, and hinder's plain pronounciation. Therefore when the jaw is restored (if it were luxated or fractured) and the gums brought into their former hardness; other teeth artificially made of bone or Ivorie may bee put in the place of those that are wanting, and they must bee joined one' fast unto another, and also so fastned unto the natural teeth adjoining, that are whole; and this must chiefly bee don with a thred of gold or silver, or for want of either, with a common thred of silk or flax, as it is declared at large by *Hippocrates*, and also described in this figure following.

See. 2. lib. de
art. scul. 25.

The figure of Teeth bound or fastned together.



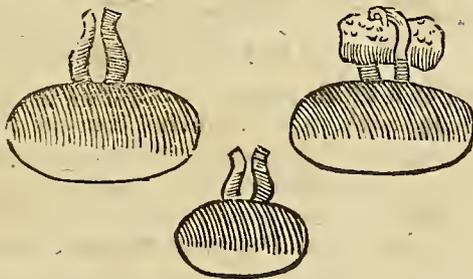
CHAP. IIII.

Of filling the hollownes of the Palat.

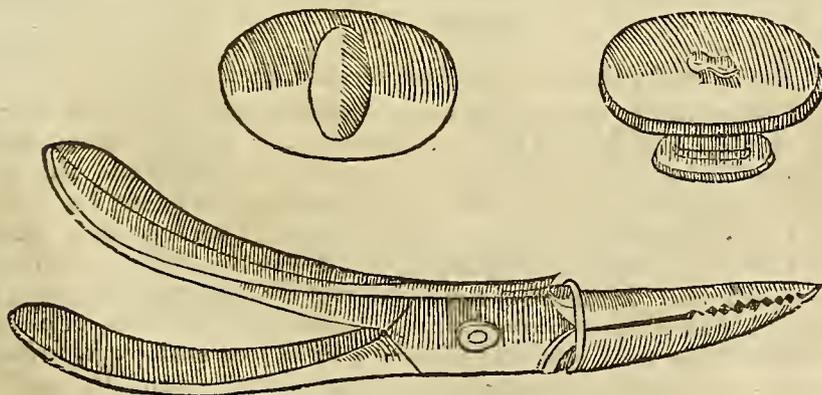
Manie times it happeneth that a portion or part of the bone of the Palat, being broken with the shot of a gun, or corroded by the virulencie of the *Lues Venerea*, fall's away; which make's the patients, to whom this happeneth, that they cannot pronounce their words distinctly, but obscurely, and snuffling: therefore I have thought it a thing worthie the labor to shew the means how it may bee helped by art. It must bee don by filling the cavitie of the Palat with a plate of gold or silver, a little bigger then the cavitie it self is. But it must bee as thick as a French Crown, and made like unto a dish in figure; and on the upper side, which shall bee towards the brain, a little sponge must bee fastened, which, when it is moistened with the moisture distilling from the brain, will becom more swoln, and puffed up; so that it will fill the concavtie of the Palat; that the artificial Palat cannot fall down, but stand fast and firm, as if it stood of it self. This is the true figure of those instruments, whose certain use I have observed not by once or twice, but by manifold trials in the battels fought beyond the Alps.

The causes
and hurt that
ensue's of the
lost palat.

The figure of plates to fill or supplie the defects of the Palat.



The figure of another plate for the Palat, on whose upper side there is a button, which may bee turned when it is put into the place, with a small Raven's bill, like this whose figure is here expressed.



CHAP. V.

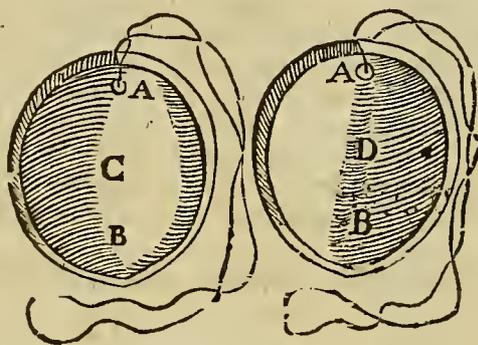
How to help such as cannot speak by reason. of the los of som part of the tongue.

A remedie
found out by
accioent.
An historie.



Hance gave place and autoritie to this remedie, as to manie other in our Art. A certain man dwelling in a village named *Yvoy le Chasteau*, beeing som twentie four miles from *Bourges*, had a great piece of his tongue cut off; by which occasion hee remain'd dumb som three years. It happen'd on a time that as hee was in the fields with reapers, hee drinking in a wooden dish, was tickled by som of the standers by, not endureing the tickling, hee suddenly broke out into articulate and intelligible words. Hee himself wondring thereat, and delighted with the noveltie of the thing, as a miracle, put the same dish to his mouth just in the same manner as before, and then hee spake so plainly and articulately, that hee might be understood by them all. Wherefore a long time following hee alwaies carried this dish in his bosom, to utter his minde, until at length necessitie, the mistress of arts, and giver of wit induceing him, hee caused a wooden instrument to be neatly cut and made for him, like the which is here delineated, which hee alwaies carried hanging at his neck, as the onely interpreter of his minde, and the key of his speech.

An instrument made to supplie the defect of the speech when the tongue is cut off.



The use of the Instrument is this.

A. sheweth the upper part of it which was of the thickness of a nine-pence, which hee did so hold between his cutting teeth, that it could not com out of his mouth nor be seen. B. sheweth the lower part, as thick as a six-pence, which hee did put hard to the rest of his tongue, close to the membranous ligament which is under the tongue. That place which is deprest and somwhat hollowed, marked with the letter C. is the inner part of the instrument. D. sheweth the outside of the same. Hee hanged it about his neck with the string that is tied thcreto.

Textor the Physician of Bourges shewed mee this instrument: and I my self made trial thereof on a young man whose tongue was cut off, and it succeeded well, and took verie good effect. And I think other Surgeons in such cases may do the like.

CHAP. VI.

Of covering or repairing certain defects or defaults in the face.



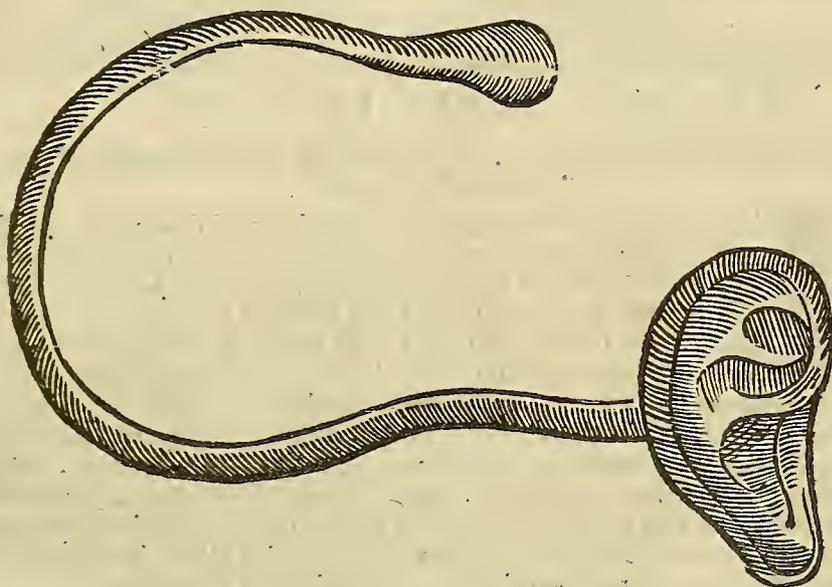
T oftentimes happeneth, that the face is deformed by the sudden flashing of Gun-powder, or by a pestilent Carbuncle, so that one cannot behold it without great horror. Such persons must be so trimmed and ordered, that they may com in seemlie manner into the companie of others. The lips if they be either cut off with a sword, or deformed with the erosion or eating of a pestilent Carbuncle or ulcerated *Cancer*, so that the teeth may be seen to lie bare with great deformitie. If the los or consumption of the lip be not verie great, it may be repaired by that waie which wee have prescribed in the cure of hare-lips, or of an ulcerated *Cancer*. But if it be great, then must there be a lip of gold made for it, so shadowed and counterfeited, that it may not be much unlike in color to the natural lip, and it must be fastned and tied to the hat or cap that the patient weareth on his head, that so it may remain stable and firm.

CHAP. VII.

Of the defects of the Ears.

Such as want their Ears, either naturally or by misfortune, as through a wound, carbuncle, cancer, or the biteing of wilde beasts: if so bee that the Ear bee not wholly wanting, wasted, consumed, or torn away; but that som portion thereof doth yet remain, then must it not bee neglected, but must have manie holes made therein with a bodkin; and after that the holes are cicatrized, let som convenient thing, made like unto the piece of the Ear that is lost, bee tied or fastned unto it by these holes.

But if the Ear bee wholly wanting, another must bee made of paper artificially glewed together, or elf of leather, and so fastened with laces, from the top or hinder part of the head, that it may stand in the appointed place; and so the hair must bee permitted to grow long, or elf som cap worn under the hat, which may hide or cover the deformitie, unless you had rather have it to bee shadowed or counterfeited by som Painter, that thereby it may resemble the color of a natural Ear; and so retain in it the place where it ought to stand, with a rod or wier comming from the top or hinder part of the head, as wee have spoken before in the los of the Eye; and the form thereof is this.



CHAP. VIII.

Of amending the deformitie of such as are crook-back'i.

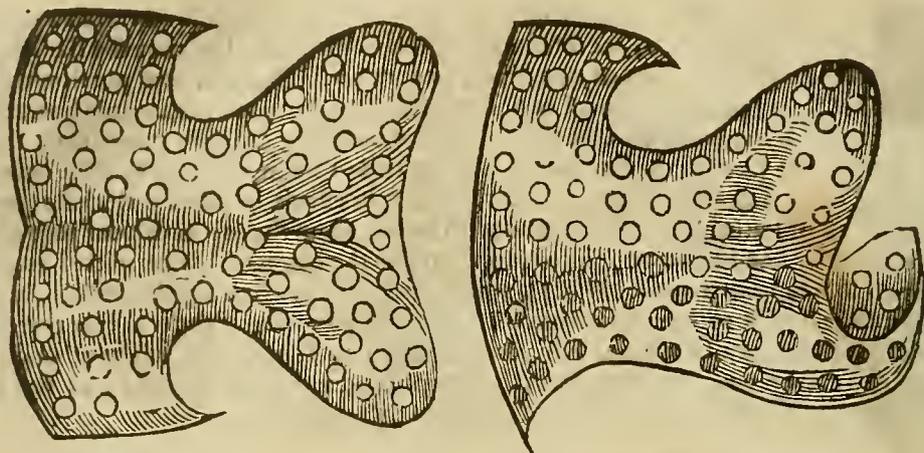
The bodies of manie, especially young maids or girls (by reason that they are more moist and tender then the bodies of boys) are made crooked in process of time, especially by the wrenching aside and crookedness of the back-bone. It hath manie causes, that is to say, in the first conformation in the womb, and afterwards by misfortune; as a fall, bruise, or anie such like accident; but especially by the unhandfom and undecent situation of their bodies, when they are young and tender, either in carrying, sitting or standing (and especially, when they are taught to go too soon) saluting, sewing, writeing, or in doing anie such like thing.

Causes of crookedness.

In the mean while, that I may not omit the occasion of crookedness, that happen's seldom to the Countrey-people, but is much incident to the inhabitants of great Towns and Cities, which is by reason of the straightness and narrowness of the garments that are worn by them, which is occasioned by the follie of mothers, who while they covet to have their young daughters bodies so small in the middle as may bee possible, pluck and draw their bones awrie, and make them crooked. For the ligaments of the back-bone beeing verie tender, soft and moist at that age, cannot stay it straight, and strongly; but beeing pliant, easily permit's the spondels to slip awrie inwards, outwards, or side-wise, as they are thrust or forced.

The remedie for this deformitie is to have breast-plates of iron, full of holes all over them, whereby they may bee lighter to wear; and they must bee so lined with bombaste, that they may hurt no place of the bodie. Everie three months new plates must bee made for those that are not yet arrived at their full growth; for otherwise by the dailie afflux of more matter, they would becom worf. But these plates will do them small good that are alreadie at their full growth.

The form of an iron Breast-plate, to amend the crookedness of the Bodie.



CHAP. IX.

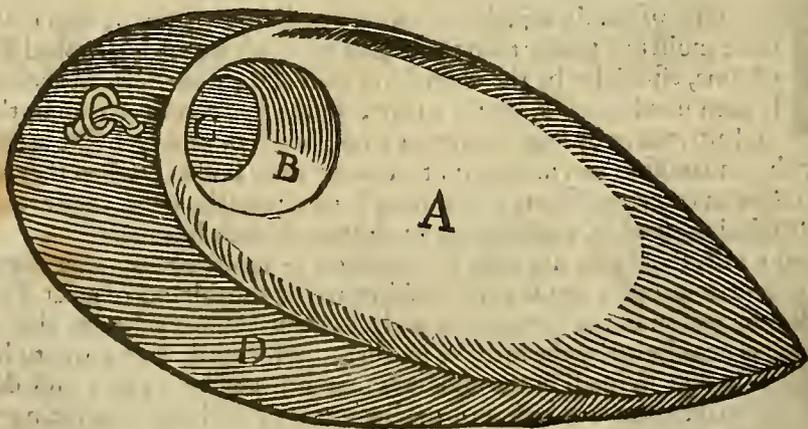
How to reliev such as have their urine flow from them against their wils, and such as want their yards.

An instrument
for such as
cannot hold
their water.



N those that have the Strangurie, of what caus soever that maladie cometh, the urine passeth from them by drops, against their wils and consent. This accident is verie grievous and troublesom, especially to men that travell: and for their sakes onely I have invented the instrument here beneath described. It is made like unto a close breech or hose; it must bee of latin, and to contain som four ounces: it must bee put into the patient's hose, between his thighs, unto which it must bee tied with a point by the ring. Into the open and hollow mouth of this instrument, which is noted with the letter C. the patient must put his yard; and into this concavities or bollowness goeth a stay somewhat deep, it is marked with the letter B. and made or placed there, both to hold or bear the end of the yard, and also by his close joint that it must have unto the vessel, to stay the urine from going back again, when it is once in. But the letters A. and D. do signifie all the instrument; that the former part, and this the hinder part thereof. Now this is the shape thereof.

The figure of an Instrument, which you may call, A Basin, or Receptacle for the Urine.

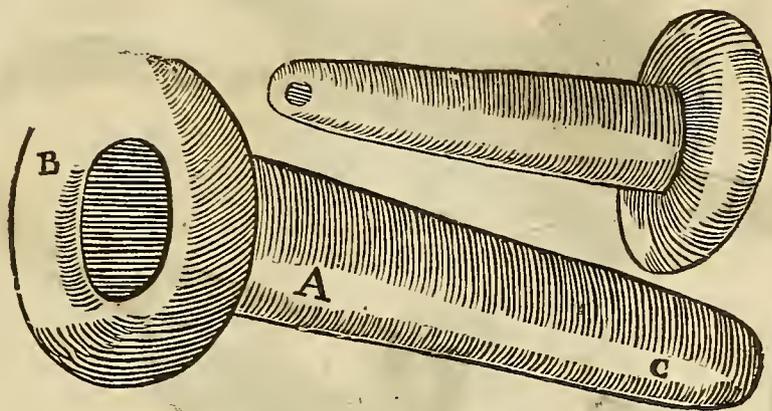


Those that have their yards cut off close to their bellies, are greatly troubled in making of urine, so that they are constrained to sit down like women, for their eas. I have devised this pipe or conduit, having an hole through it as big as one finger, which may bee made of wood, or rather of latin.

A. and C. do shew the bigness and length of the pipe. B. sheweth the brink on the broader end. D. sheweth the out-side of the brink. This Instrument must bee applied to the
lower

lower part of *os pectinis*: on the upper end it is compassed with a brink for the passage of the urine, for thereby it will receiv the urine better, and carrie it from the patient, as hee standeth upright.

The description of a pipe or conduit, serving in stead of the yard in makeing of water, which therefore wee may call an artificall yard.



CHAP. X.

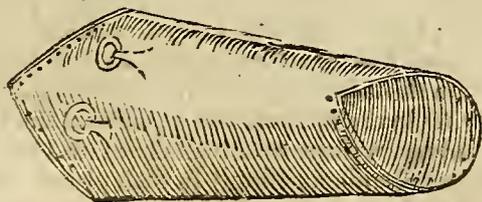
By what means the perished function or action of a thumb or finger may bee corrected and amended.



When a sinew or tendon is cut clean asunder, the action in that part, whereof it was the author, is altogether abolished; so that the member cannot bend or stretch out it self, unless it bee holpen by art: which thing I performed in a certain Gentleman belonging to *Annas of Montmorencie*, General of the French Horse-men, who in the battle of *Dreux* received so great a wound with a back-sword, upon the out-side of the wrist of the right hand, that the tendons that did erect or draw up the thumb were cut clean in sunder; and also, when the wound was throughly whole and consolidated, the thumb was bowed inwards, and fell into the palm of the hand, so that hee could not extend or lift it up, unless it were by the help of the other hand, and then it would presently fall down again; by reason whereof hee could hold neither sword; spear, nor javelin in his hand, so that hee was altogether unprofitable for war, without which hee supposed there was no life. Wherefore hee consulted with mee about the cutting away of his thumb, which did hinder his gripeing, which I refused to do, and told him, that I conceived a means how it might bee remedied without cutting away. Therefore I caused a case to bee made for it of latin, whereinto I put the thumb: this case was so artificially fastened by two strings that were put into two rings, made in it above the joint of the hand, that the thumb stood upright, and straight out, by reason whereof hee was able afterwards to handle anie kinde of weapon.

An historie.

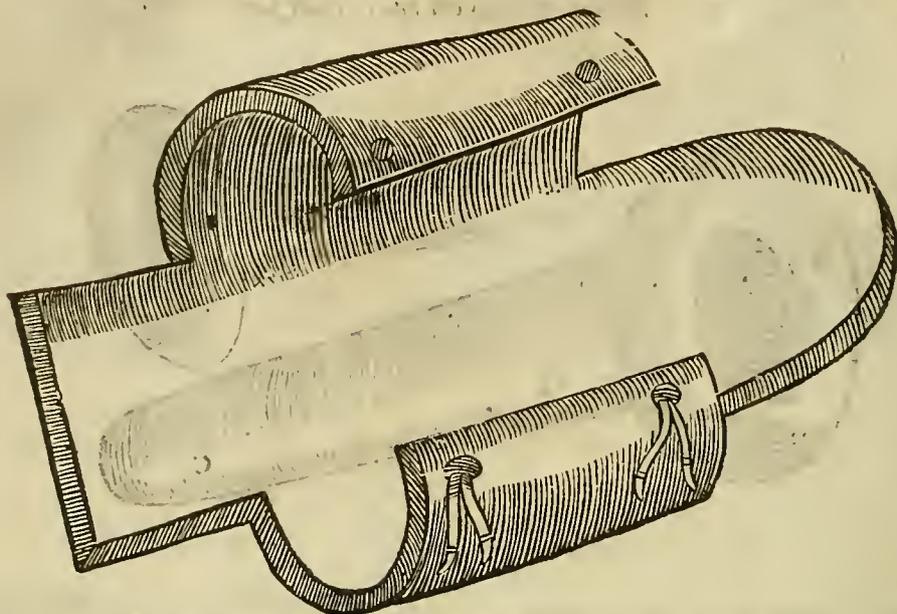
The form of a thumb or finger-stall of iron or latin, to lift up or erect the thumb, or anie other finger that cannot bee erected of it self.



If that in anie man the sinews or tendons, which hold the hand upright, bee cut asunder with a wound, so that hee is not able to lift up his hand, it may easily bee erected or lifted up with this Instrument that followeth, beeing made of an equal, straight, thin, but yet strong plate of latin, lined on the inner side with silk, or anie such like soft thing, and so plac't in the wrist of the hand, that it may com unto the palm, or the first joints of the

fingers; and it must bee tied above with convenient staies, and so the discommoditie of the depression, or hanging of the hand, may bee avoided: therefore this Instrument may bee called the Erector of the Hand.

The Erector of the Hand.



CHAP. XI.

Of helping those that are Vari or Valgi, that is, crook-legged, or crook-footed, inwards or outwards.

What *Vari* is.



Hose are said to bee *Vari*, whose feet or legs are bowed or crooked inwards. This default is either from the first conformation in the womb, through the default in the mother, who hath her legs in like manner crooked; or because that in the time when shee is great with childe, shee commonly sit's with her legs across: or else, after the childe is born, and that, either because his legs bee not well swathed, when hee is lai'd into the cradle, or else, because they bee not well pleased in carrying the infant; or if hee bee not well looked unto by the Nurs, when hee learneth to go: for the bones are verie tender, and almost as flexible as wax.

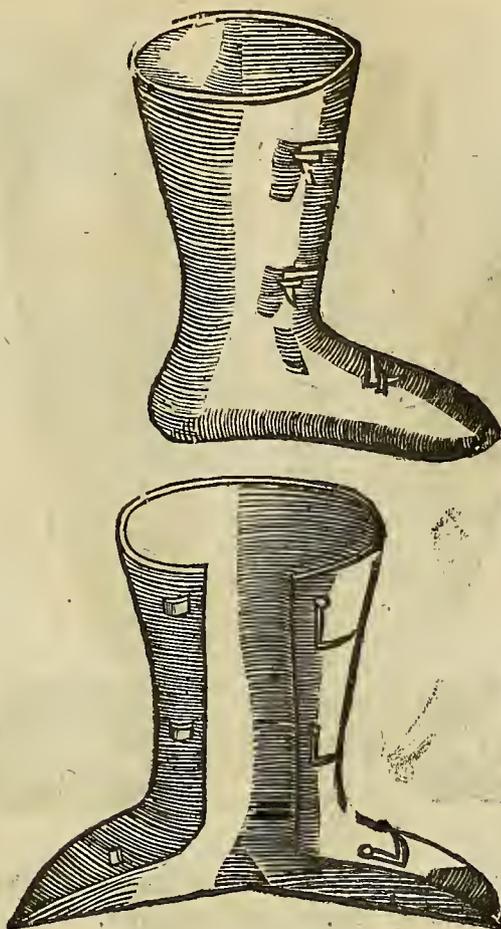
What *Valgia* is.

But contrariwise, those are called *Valgi*, whose legs are crooked or bowed outwards. This may come through the default of the first conformation, as well as the other; for by both, the feet also and the knees may bee made crooked; which thing, whosoever will amend, must restore the bones into their proper and natural place; so that in those that are *varous*, hee must thrust the bones outwards, as though hee would make them *valgous*: neither is it sufficient to thrust them so, but they ought also to bee retained there in their places after they are so thrust; for otherwise they being not well established, would slip back again.

A plaster to hold fast restored bones.

They must bee stai'd in their places, by applying of collars and bolsters on that side whereunto the bones do lean, and incline themselves; for the same purpose boots may bee made of leather, of the thickness of a testone, having a slit in the former part all along the bone of the leg, and also under the sole of the foot, that being drawn together on both sides, they may bee the better fitted, and sit closer to the leg. And let this medicine following bee applied all about the leg. *R. thuris, mastich. aloës, boli armeni, an. ʒi. aluminis roch. resinæ pini sicca, subtilissimè pulveris. an. ʒiii. farina volat. ʒiβ. album. ovor. q.s.* make thereof a medicine. You may also add a little Turpentine, lest it should drie sooner, or more vehemently then is necessarie. But you must beware, and take great heed, lest that such as were of late *varous* or *valgous*, should attempt or strain themselves to go, before that their joints bee confirmed; for so the bones that were lately set in their places, may slip aside again. And moreover, until they are able to go without danger, let them wear high shooes tied close to their feet, that the bones may bee stai'd the better, and more firmly in their places; but let that side of the soale of the shoo bee under-lai'd whither the foot did incline before it was restored.

The form of little Boots, whereof the one is open, and the other shut.

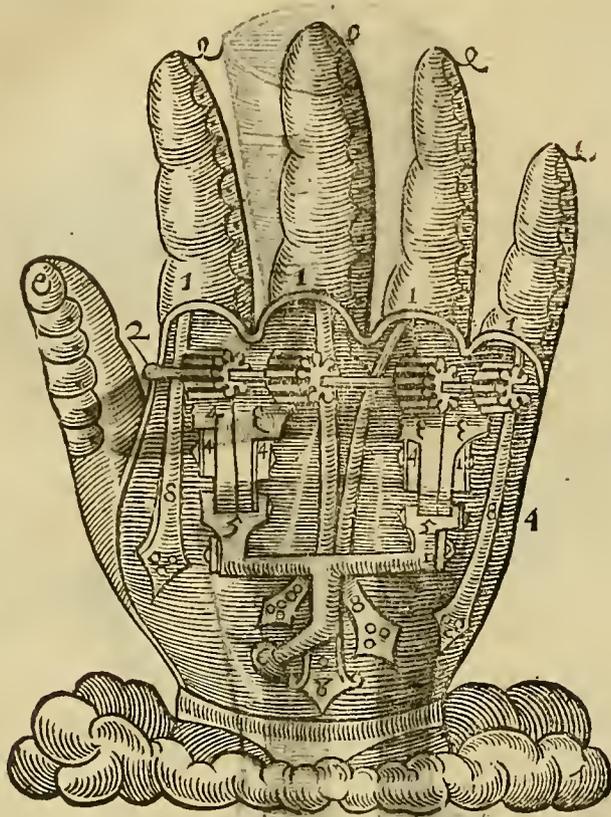


CHAP. XII.

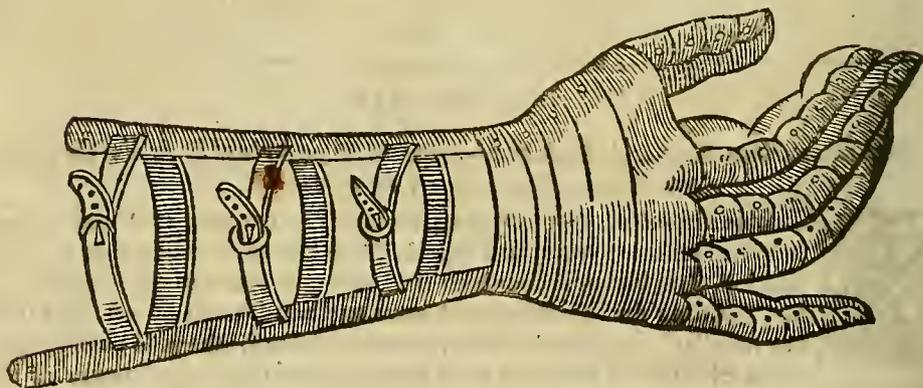
By what means Arms, Legs, and Hands may bee made by art, and placed in stead of the natural Arms, Legs, or Hands that are cut off and lost.

Necessitie oftentimes constrain's us to finde out the meanes whereby wee may help and imitate nature, and supplie the defect of members that are perished and lost. And hereof it commeth that wee may perform the functions of going, standing and handling with arms and hands made by art, and undergo our necessarie flexions and extensions with both of them. I have gotten the forms of all those members made so by art, and the proper names of all the Engines and Instruments whereby those artificially made are called, to my great cost and charges, of a most ingenuous and excellent Smith dwelling at *Pavis*, who is called of those that know him, and also of strangers, by no other name then the little *Lorain*; and here I have caused them to bee portraied, or set down, that those that stand in need of such things, after the example of them, may caus som Smith, or such like work-man to serv them in the like case. They are not onely profitable for the necessitie of the bodie, but also for the decencie and comliness thereof. And here followeth their forms.

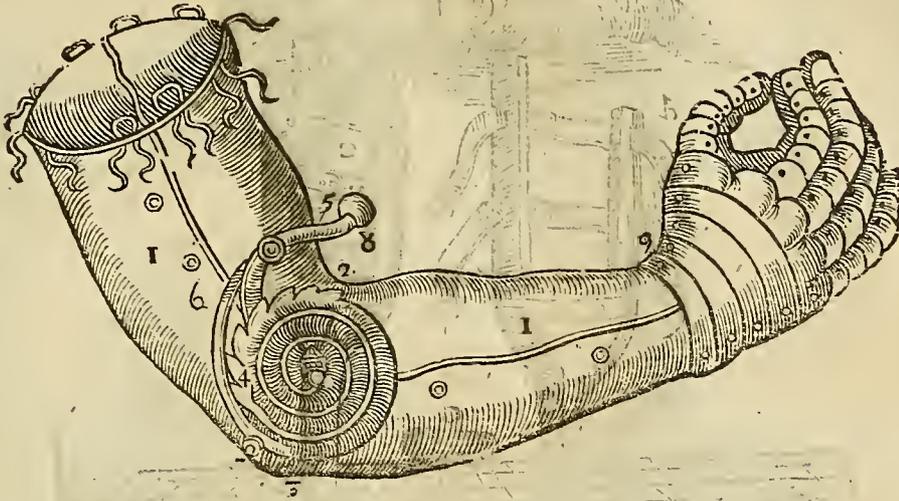
The form of an Hand made artificially of iron.



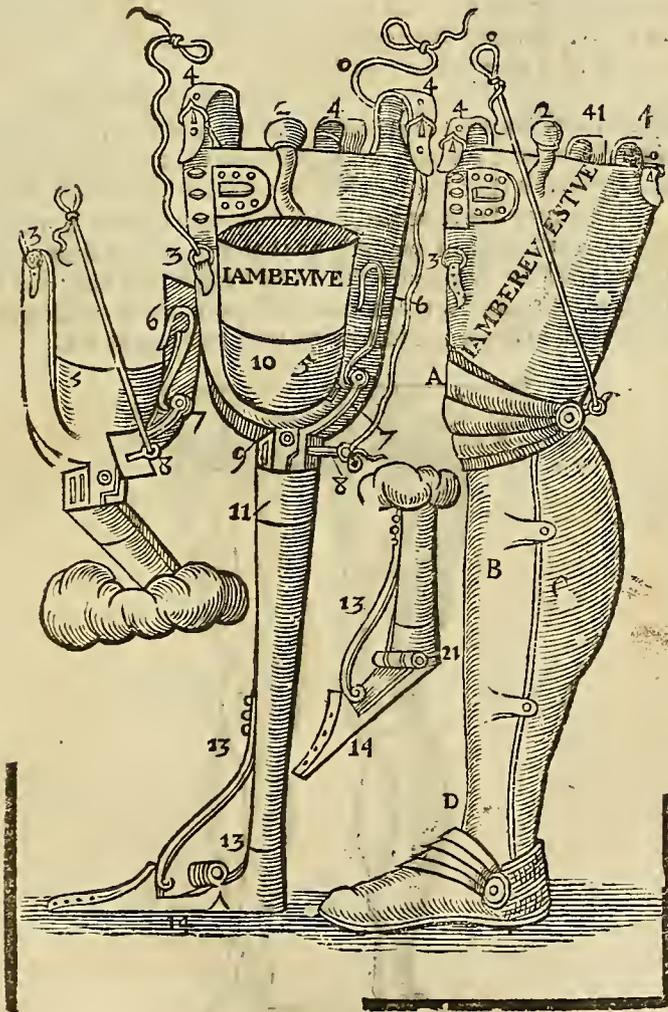
This figure following sheweth the back-side of an Hand artificially made, and so that it may bee tied to the arm or sleev.



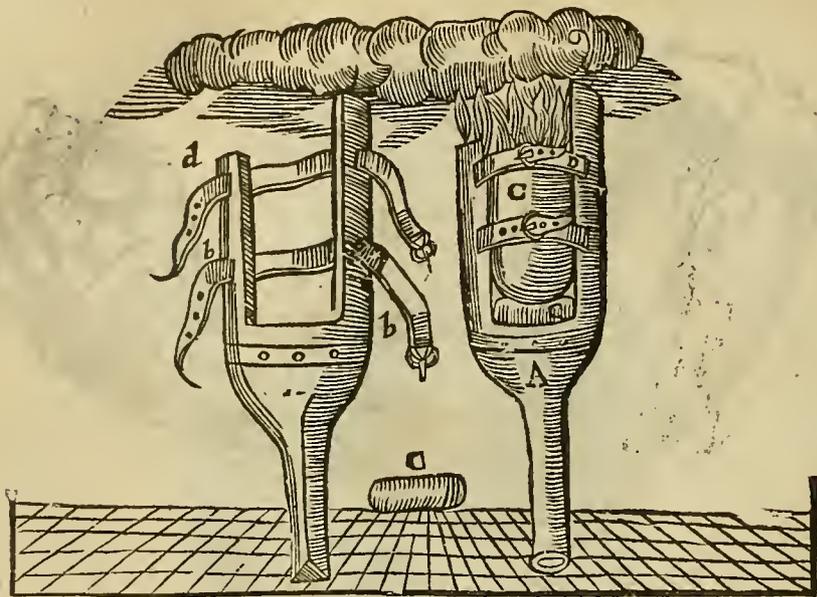
The form of an Arm made of iron verie artificially.



The description of Legs made artificially of iron.

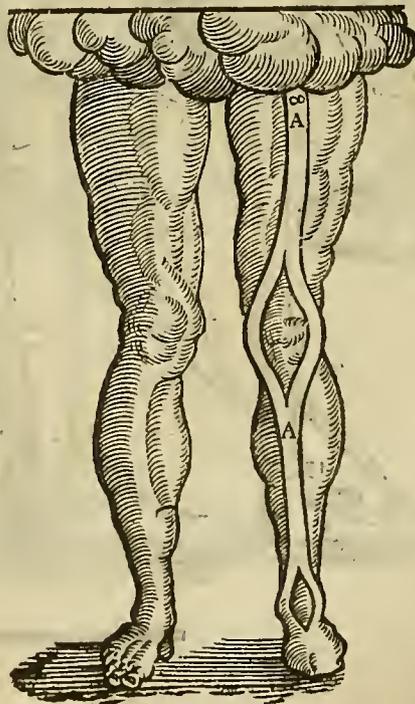


The form of a wooden Leg made for poor men.



A. Sheweth the stump or stock of the wooden Leg. BB. Sheweth the two staves which must bee on both sides of the Leg, the shorter of them must bee on the inner side. CC. Sheweth the pillow or bolster, whereon the knee must rest in the bottom between the two staves, that so it may rest the softer. DD. Sheweth the thongs or girths with their round buckles, put through the two staves on either side to stay the knee in his place firm and immoovable, that it slip not aside. E. Sheweth the thigh it self, that you may know after what fashion it must stand.

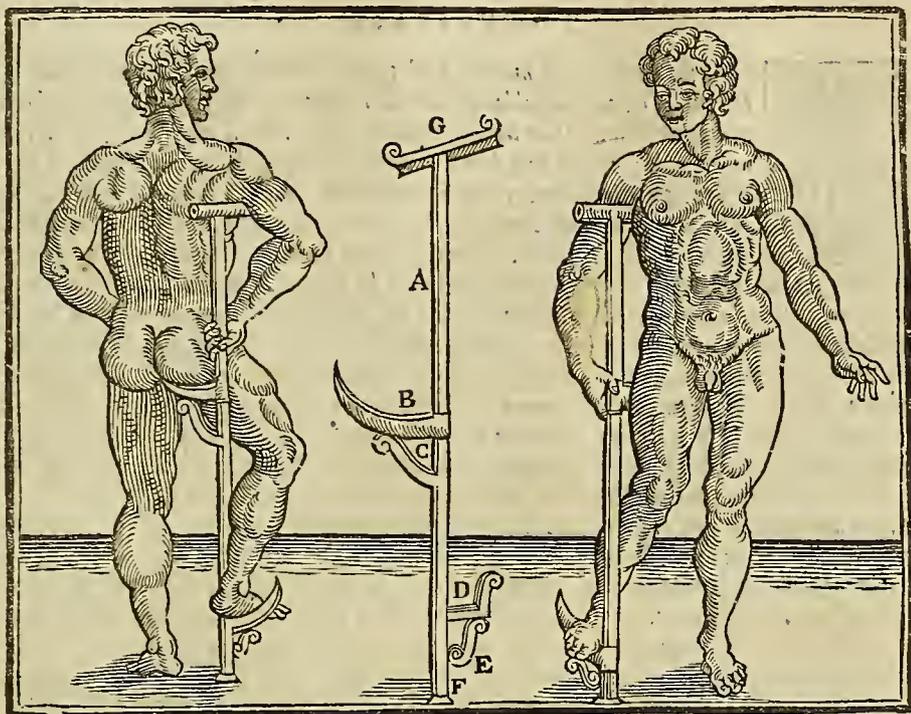
It happen's also manie times, that the patient, that had the nervs or tendons of his Leg wounded, long after the wound is whole and consolidated, cannot go but with verie great pain and torment, by reason that the foot cannot follow the muscle, that should draw it up. That this maladie may bee remedied, you ought to fasten a linnen band made verie strong unto the shoo that the patient weareth on that his pained foot; and at the knee it must have a slit where the knee may com forth in bowing of the Leg: and it must bee trussed up fast unto the patient's middle, that it may the better lift up and erect the foot in going. This band is marked in the figure following with the letters AA.



CHAP. XIII.

Of amending or helping lameness or halting.

Halting is not onely a great deformitie, but also verie troublefom and grievous. Therefore if that anie bee grieved therewith by reason that one of his legs is shorter then the other, it may bee holpen by putting under his short foot this sitting crutch, which, wee are now about to describe. For by the help of this, hee shall not onely go upright, but also more easily and with little labor or no pain at all. It was taught mee by *Nicolas Piccard* Chirurgicalian to the Duke of Lorain. The form thereof is this.



A. Sheweth the staff or stilt of this crutch, which must bee made of wood. B. Sheweth the Seat of iron whereon the thigh resteth, just under the buttock. C. Sheweth a prop which staieth up the seat whereon all the weight of the patient's bodie resteth. D. Sheweth the stirrup, beeing made of iron, and bowing crooked upwards, that the foot may stand firm, and not slip off it when the patient goeth. E. Sheweth the prop that staieth or holdeth up the stirrup to strengthen it. F. Sheweth the foot of the stilt or crutch made of iron with manie pikes, and compassed with a ring or ferule, so to keep it from slipping. G. The cross or head of the crutch which the patient must put under his arm-hole to lean upon, as it is to bee seen in the figure.

The end of the twentie third Book.



Of the GENERATION of Man.

The twentieth fourth Book.

THE PREFACE.

The distinction of male and female.

The cause of this distinction.

What seed is.

The conditions of good seed.

Seed falleth from all the parts of the bodie.

Wherefore manie diseases are hereditarie. How seed is to be understood to fall from the whole bodie.



OD, the Creator and maker of all things, immediately after the Creation of the World, of his unspeakable counsel and inestimable wisdom not onely distinguished mankind, but all other liveing creatures also into a double sex, to wit, of male and female; that so they being moved and enticed by the allurements of lust, might desire copulation, thence to have procreation. For this bountifull Lord hath appointed it as a solace unto everie liveing creature against the most certain and fatal necessitie of death: than for as much as each particular liveing creature cannot continue for ever, yet they may endure by their species or kinde by propagation and succession of creatures, which is by procreation, so long as the world endureth. In this conjunction or copulation replenished with such delectable pleasure, (which God hath chiefly established by the law of Matrimonie,) the male and female yeeld forth their seeds, which presently mixed and conjoined, are received and kept in the female's womb. For the seed is a certain spumous or foamie humor replenished with vital spirit, by the benefit whereof, as it were by a certain ebullition or fermentation, it is puffed up, and swoln bigger, and both the seeds being separated from the more pure blood of both the parents, are the material and formal beginning of the issue; for the seed of the male being cast and received into the womb, is accounted the principal and efficient cause; but the seed of the female is reputed the subjacent matter, or the matter whereon it worketh. Good and laudable seed ought to be white, shining, clammy, knottie, smelling like unto the elder or palm, delectable to bees, and sinking down in the bottom of water being put into it, for that which swimmeth on the water is esteemed unfruitful; for a great portion cometh from the brain, yet som thereof falls from the whole bodie, and from all the parts both firm and soft thereof. For unless it com from the whole bodie, and everie part thereof, all and everie part of the issue cannot be formed thereby: becaus like things are engendred of their like: and therefore it cometh that the childe resembleth the parents, not onely in stature and favor, but also in the conformation and proportion of his lims and members, and complexion and temperature of his inward parts, so that diseases are oft-times hereditarie, the weakness of this or that entrall being translated from the parent to the childe. There are som which suppose this falling of the seed from the whole bodie not to be understood according to the weight and matter, as if it were a certain portion of all the blood separated from the rest; but according to the power and form, that is to say, the animal, natural and vital spirits, being the framers of formation and life, and also the formative facultie to fall down from all the parts into the seed, that is wrought or perfected by the Testicles; for proof and confirmation whereof, they alledg that manie perfect, sound, absolute, and well proportioned children, are born of lame and decrepit parents.



CHAP. I.

Why the generative parts are endued with great pleasure.

What moveth a man to copulation.



Certain great pleasure accompanieth the function of the parts appointed for generation, and before it, in liveing creatures that are of a lustie age, when matter aboundeth in those parts, there goeth a certain fervent or furious desire: the causes thereof manie, of which the chiefest is, That the kinde may be preserved and kept for ever, by the propagation and substitution of other liveing creatures of the same kinde. For brute beasts which want reason, and therefore cannot be solicitous for the preservation of their kinde, never com to carnal copulation, unless they be mooved thereunto by a certain vehement provocation of unbridled lust, and as it were by the stimulation of venerie. But man, that is endued with reason, being a divine and most noble creature, would never yeeld nor make his minde subject to a thing so abject and filthie as is carnal copulation, but that the venerious ticklings, raised in those parts, relax the severitie of his minde; or reason admonisheth him that the memorie of his name ought not to end with his life, but to be preserved unto all generations, as far as may be possible, by the propagation of his seed or issue. Therefore by reason of this profit or commoditie, nature hath

hath endued the genital parts with a far more exact or exquisite sens then the other parts, by sending the great sinews unto them, and moreover shee hath caused them to bee bedewed or moistned with a certain whayish humor, not much unlike the seed sent from the glandules or kernels called *prostate*, situated in men at the beginning of the neck of the bladder, but in women at the bottom of the womb: this moisture hath a certain sharpness or biting, for that kinde of humors of all others can chiefly provoke those parts to their function or office, and yeeld them a delectable pleasure, while they are in execution of the same. For even so whayish and sharp humors, when they are gathered together under the skin, if they wax warm, tickle with a certain pleasant itching, and by their motion infer delight: but the nature of the genital parts or members is not stirred up or provoked to the expulsion of the seed with these provocations of the humors, abounding either in quantitie or qualitie onely, but a certain great and hot spirit or breath contained in those parts, doth begin to dilate it self more and more, which causeth a certain incredible excess of pleasure or voluptuousness, wherewith the genitals beeing replete, are spread forth or distended everie waie unto their full greatness. The yard is given to men whereby they may cast out their seed directly or straightly into the woman's womb, and the neck of the womb to women, whereby they may receive that seed so cast forth, by the open or wide mouth of the same neck, and also that they may cast forth their own seed, sent through the spermatick vessels unto their testicles; these spermatick vessels, that is to say, the vein lying above, and the arterie lying below, do make manie flexions or windings, yet one as manie as the other, like unto the tendrils of vines diversly platted or folded together, and in these folds or bendings the blood and spirit which are carried unto the testicles, are concocted a longer time, and so converted into a white seminal substance. The lower of these flexions or bowings do end in the stones or testicles. But the testicles, forasmuch as they are loof, thin, and spongy or hollow, receiving the humor which was begun to bee concocted in the fore-named vessels, concoct it again themselves: but the testicles of men concoct the more perfectly for the procreation of the issue; and the testicles of women more imperfectly, becaus they are more cold, less, weak and feeble, but the seed becommeth white by the contact or touch of the testicles, becaus the substance of them is white. The male is such as engendeth in another, and the female in her self, by the spermatick vessels which are implanted in the inner capacitie of the womb. But out of all doubt unless nature had prepared so manie allurements, baits and provocations of pleasure, there is scarce anie man so hot or delighted in venereous acts, which considering and marking the place appointed for humane conception, the loathsomness of the filth which daily falleth down unto it, and wherewithall it is humected and moistned, and the vicinitie and nearness of the great gut under it, and of the bladder above it, but would shun the embraces of women. Nor would anie woman desire the companie of man, which once premeditate's or fore-think's with her self on the labor that shee shall sustain in bearing the burthen of her childe nine months, and of the almost deadlie pains that shee shall suffer in her deliverie.

Why the genitals are endued with a whayish moisture.

The cause of the foldings of the spermatick vessels.

Women's testicles more imperfect.

Why manie men and women abhor venereous copulation.

Men that use too frequent copulation, oftentimes in stead of seed cast forth a crude and bloodie humor, and somtimes also meer blood it self; and oft-times they can hardly make water but with great pain, by reason that the clammy and oylie moisture, which nature hath placed in the glandules called *prostate*, to make the passage of the urine slipperie, and to defend it against the sharpness of the urine that passeth through it, is wasted, so that afterward they shall stand in need of the help of a Surgeon to cause them to make water with ease and without pain, by injecting of a little oil out of a Syringe into the conduit of the yard. For in generation it is fit the man cast forth his seed into the womb, with a certain impetuositie, his yard beeing stiff and distended, and the woman to receive the same without delay into her womb, beeing wide open, lest that through delay the seed wax cold, and so become unfruitful by reason that the spirits are dissipated and consumed. The yard is distended or made stiff, when the nervous, spongy and hollow substance thereof is replete and puffed up with a flatulent spirit. The womb allure's or draw's the masculine seed into it self by the mouth thereof, and it receiv's the woman's seed by the horns from the spermatick vessels which come from the testicles into the hollownes or concavities of the womb, that so it may bee tempered by conjunction, commision and confusion with the man's seed, and so reduced or brought unto a certain equalitie: for generation or conception cannot follow without the concurrance of two seeds, well and perfectly wrought in the verie same moment of time, nor without a laudable disposition of the womb both in temperature and complexion: if in this mixture of seeds the man's seed in qualitie and quantitie exceed the woman's, it will bee a man-childe; if not, a woman-childe, although that in either of the kinds there is both the man's and woman's seed; as you may see by the daillie experience of those men who by their first wives have had boies onely, and by their second wives had girls onely: the like you may see in certain women, who by their first husbands have had males onely, and by their second husbands females onely. Moreover one and the same man is not alwaies like affected to get a man or a woman-childe; for by reason of his age, temperature and diet, hee doth somtimes yeeld forth seed endued with a masculine virtue, and somtimes with a feminine or weak

Why the straggurie ensueth immoderate copulation.

What things necessary unto generation.

Why a male, and why a female is engendered.

weak virtue, so that it is no marvel if men get sometimes men, and sometimes women-children.

CHAP. II.

Of what qualitie the seed is, whereof the male, and whereof the female is engendred.

Why men children are sooner formed in the womb then women.

The seed is that in power from whence each thing cometh or floweth.

Why the children are most commonly like unto their fathers.

When children should bee begotten.

Why oftentimes the childre resembleth the Grandfather.

Why sometimes those that are diseased do get found children.

Male children are engendred of a more hot and drie seed, and women of a more cold and moist: for there is much less strength in cold then in heat, and likewise in moisture then in driness; and that is the cause why it will be longer before a girl is formed in the womb then a boy. In the seed lieth both the procreative and the formative power: as for example; In the power of Melon-seed are situate the stalks, branches, leavs, flowrs, fruit, the form, color, smel, taste, seed and all. The like reason is of other seeds; so Apple-grafts engrafted in the stock of a Pear-tree, bear Apples; and wee do alwaies finde and see by experience, that the tree (by virtue of grafting) that is grafted, doth convert it self into the nature of the Siens wherewith it is grafted. But although the childe that is born doth resemble or is verie like unto the father or the mother, as his or her seed exceedeth in the mixture; yet for the most part it happeneth that the children are more like unto the father then the mother, because that in the time of copulation, the minde of the woman is more fixed on her husband, then the minde of the husband on, or towards his wife: for in time of copulation or conception, the forms, or the liknesses of those things that are conceived or kept in minde, are transported and impressed in the childe or issue; for so they affirm that there was a certain Queen of the Æthiopians who brought forth a white childe, the reason was (as shee confessed) that at the time of copulation with her King, shee thought on a marvelous white thing, with a verie strong imagination. Therefore *Hesiod* advertiseth all married people not to give themselves to carnal copulation when they return from burials, but when they com from feasts and plaies, lest that their sad, heavie, and pensive cogitations, should bee so transfused and engrafted in the issue, that they should contaminate or infect the pleasant joyfulness of his life with sad, pensive or passionate thoughts. Sometimes it happeneth, although verie seldom, the childe is neither like the father nor the mother, but in favor resembleth his Grandfather, or anie other of his kindred, by reason that in the inward parts of the parents, the engrafted power and nature of the Grandfather lieth hidden: which when it hath lurked there long, not working anie effect, at length break's forth by means of som hidden occasion: wherein nature resembleth the Painter, making the lively portraiture of a thing, which as far as the subject matter will permit, doth form the issue lik unto the parents in everie habit; so that oftentimes the diseases of the parents are transferred or participated unto the children, as it were by a certain hereditarie title: for those that are crook-back't get crook-back't children, those that are lame, lame; those that are leprous, leprous; those that have the stone, children haveing the stone; those that have the ptisick, children haveing the ptisick; and those that have the gout, children haveing the gout: for the seed follow's the power, nature, temperature and complexion of him that engendereth it. Therefore of those that are in health and sound, healthie and sound; and of those that are weak and diseased, weak and diseased children are begotten, unless happily the seed of one of the parents that is sound doth correct or amend the diseased impression of the other that is diseased, or elf the temperate and sound womb as it were by the gentle and pleasant breath thereof.

CHAP. III.

What is the cause why Females of all brute beasts, beeing great with young, do neither desire, nor admit the males, until they have brought forth their Young.

Why the sens of venereous acts is given to brute beasts.

Why of brute beasts the males raging with lust, follow after the females.

Wherefore a woman when shee is with childe, desireth copulation.

The cause hereof is, forasmuch as they are mooved by sens onely, they applie themselves unto the thing that is present, verie little, or nothing at all perceiving things that are past, and to com. Therefore after they have conceived, they are unmindeful of the pleasure that is past, and do abhor copulation: for the sens or feeling of lust is given unto them by nature, onely for the preservation of their kinde, and not for voluptuousness, or delectation. But the males raging, swelling, and as it were stimulated by the provocations of the heat, or fervencie of their lust, do then run unto them, follow and desire copulation, because a certain strong odor or smell commeth into the air from their secret or genital parts, which pierceth into their nostrils, and unto their brain, and so inferreth an imagination, desire, and heat. Contrariwise, the sens and feeling of venereous actions seemeth to be given by nature to women, not onely for the propagation of issue and for the conservation of mankinde, but also to mitigate and aswage the miseries of man's life, as it were by the entisements of that pleasure: also the great store of hot blood that is about the heart, wherewith men abound, maketh greatly to
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this purpose, which by impulsion of imagination, which ruleth the humors, being driven by the proper passages down from the heart and entrals into the genital parts, doth stir up in them a new lust.

The males of brute beasts, being provoked or mooved by the stimulations of lust, rage, and are almost burst with a *Tentigo* or extension of the genital parts, and sometimes wax mad; but after that they have satisfied their lust with the female of their kinde, they presently becom gentle, and leav off such fierceness:

CHAP. IV.

What things are to bee observed, as necessarie unto generation in the time of copulation.



When the husband commeth into his wife's chamber, hee must entertain her with all kinde of dalliance, wanton behavior, and allurements to venerie; but if hee perceiv her to bee slow, and more cold, hee must cherish, embrace, and tickle her, and shall not abruptly, the nervs being suddenly distended, break into the field of nature; but rather shall creep in by little and little, intermixing more wanton kisses with wanton words and speeches, handling her secret parts and dugs, that shee may take fire, and bee enflamed to venerie; for so at length the womb will strive and wax fervent with a desire of casting forth its own seed, and receiving the man's seed to bee mixed together therewith. But if all these things will not suffice to enflame the woman; for women for the most part are more slow and slack unto the expulsion or yeelding forth of their seed, it shall bee necessarie first to foment her secret parts with the decoction of hot herbs made with Mustadine, or boiled in anie other good wine; and to put a little Musk or Civet into the neck or mouth of the womb: and when shee shall perceiv the efflux of her seed to approach, by reason of the tickling pleasure, shee must advertise her husband thereof, that at the verie instant time or moment, hee may also yeeld forth his seed, that by the concurs or meeting of the seeds, conception may bee made; and so at length a childe formed and born. And that it may have the better success, the husband must not presently separate himself from his wife's embraces, lest the air strike into the open womb, and so corrupt the seeds before they are perfectly mixed together. When the man depart's, let the woman lie still in quiet, laying her legs or her thighs across, one upon another; and raising them up a little, lest that by motion or downward situation, the seed should bee shed or spilt: which is the caus why shee ought at that time not to talk, especialy chideing, nor to cough, nor sneef, but give her self to rest and quietness, if it bee possible.

How women may bee mooved to venerie & conception.

The meeting of the seeds most necessarie for generation.

CHAP. V.

By what signs it may bee known, whether the woman have conceived, or not.



If the seed in the time of copulation, or presently after bee not spilt, if in the meeting of the seeds the whole bodie do somewhat shake, that is to say, the womb drawing it self together for the compression and enterteinment thereof, if a little feeling of pain doth run up and down the lower bellie, and about the navel, if shee bee sleepe, if shee loath the embraceings of a man, and if her face bee pale, it is a token that shee hath conceived.

In som, after conception spots or freckles arise in their face, their eies are depressed and sunk in, the white of their eies waxeth pale, they wax giddie in the head, by reason that the vapors are raised up from the menstrual blood that is stopped, sadness and heaviness griev their mindes, with loathing and waiwardness, by reason that the spirits are covered with the smoakie darkness of the vapors: pains in the teeth and gums, and swoounding often-times commeth; the appetite is depraved or overthrown, with aptness to vomit, and longing, whereby it happeneth, that they loath meats of good juice, and long for and desire illaudable meats, and those that are contrarie to nature, as coles, dirt, ashes, stinking salt-fish, sower, austere and tart fruits, pepper, vinegar, and such like acrid things, and other, altogether contrarie to nature and use, by reason of the condition of the suppressed humor abounding and falling into the orifice of the stomach. This appetite so depraved or overthrown, endureth in som until the time of childe-birth; in others it commeth in the third moneth after their conception, when hairs do grow on the childe: and lastly, it leaveth them a little before the fourth moneth; becaus that the childe, being now greater and stronger, consume's a great part of the excremental and superfluous humor. The suppressed or stopped terms in women that are great with childe, are divided into three parts: the more pure portion maketh the nutriment for the childe, the second ascendeth by little and little into the dugs, and the impurest of all remaineth in the womb about the infant, and maketh the secondine or after-birth, wherein the infant lieth as in a soft bed. Those women are great

Spots or specks in the faces of those that are with childe.

Why manie women beeing great with childe refuse laudable meats, and desire those that are illaudable, and contrarie to nature.

The suppressed terms divided into three parts.

Hip. 1. de morb. mul.

Aph. 41. sect. 5.

with childe, whose urine is more sharp, fervent, and somewhat bloodie, the bladder not onely waxing warm by the compression of the womb; fervent, by reason of the blood contained in it, but also the thinner portion of the same blood being expressed, and sweating out into the bladder. A swelling and hardness of the dugs, and veins that are under the dugs in the breasts and about them, and milk coming out when they are pressed, with a certain stirring motion in the bellie, are certain infallible signs of greatnes with childe. Neither in this greatnes of childe-bearing, the veins of the dugs onely, but of all the whole bodie, appear full and swelled up, especially the veins of the thighs and legs; so that by their manifold folding and knitting together, they do appear varicous, whereof commeth sluggishnes of the whole bodie, heaviness and impotencie, or difficultie of going, especially when the time of deliverance is at hand. Lastly, if you would know whether the woman have conceived or not, give unto her when shee goeth to sleep, som meed or honied water to drink; and if shee have a gripeing in her guts or bellie, shee hath conceived; if not, shee hath not conceived.

CHAP. VI.

That the womb, so soon as it hath received the seed, is presently contracted, or drawn together.

Why the female seed is nutriment for the male seed.



After that the seeds of the male and female have both met, and are mixed together in the capacitie of the womb, then the orifice thereof doth draw it self close together, lest the seeds should fall out. There the female's seed goeth and turneth into nutriment, and the increas of the male's seed; becaus all things are nourished, and do increas by those things that are most familiar, and like unto them. But the similitude and familiaritie of seed with seed is far greater then with blood; so that when they are perfectly mixed and co-agulated together, and so wax warm by the straight and narrow inclosure of the womb, a certain thin skin doth grow about it, like unto that that will bee over unscimmed milk.

A compendious way to understand humane conception.

Moreover, this concretion or congealing of the seed, is like unto an egg laied before the time that it should: that is to say, whose membrane or tunicle that compasseth it about, hath not as yet increas'd or grown into a shellie hardness about it; in folding-wise are seen manie small threds divideing themselvs, over-spread with a certain clammy, whitish or red substance, as it were with black blood. In the midst under it appeareth the navel, from whence that small skin is produced. But a man may understand manie things that appertain unto the conception of mankinde by the observation of twentie eggs, setting them to bee hatched under an Hen, and takeing one everie daie and breaking it, and diligently considering it; for in so doing, on the twentieth daie you shall finde the Chick perfectly formed with the navel. That little skin that so compasseth the infant in the womb is called the secundine or *Chorion*, but commonly the after-birth.

Lib. de nat. puer.

What the *Cotyledones* are.

This little skin is perfectly made within six daies, according to the judgment of *Hippocrates*, as profitable and necessarie not onely to contain the seeds so mixed together, but also to suck nutriment through the orifices of the vessels ending in the womb. Those orifices the Greeks do call *Cotyledones*; and the Latines *Acetabula*, for they are as it were hollowed eminences, like unto those, which may bee seen in the feet or snout of a Cuttle-fish manie times in a double order, both for the working and holding of their meat. Those eminences called *Acetabula* do not so greatly appear in women as in manie brute beasts. Therefore by these the secundine cleaveth on everie side unto the womb, for the conservation, nutrition, and increas of the conceived seed.

CHAP. VII.

Of the generation of the navel.



After the woman hath conceived, to everie one of the aforesaid eminencies groweth presently another vessel, that is say, a vein to the vein, and an arterie to the arterie: these soft, and yet thin vessels, are framed with a little thin membrane, which being spread under, sticketh to them; for to them it is in stead of a membrane, and a ligament, and a tunicle, or a defence; and it is doubled with the others, and made of the vein and arterie of the navel. These new small vessels of the infant, with their orifices, do answer directly one to one to the *Cotyledons* or eminencies of the womb; they are verie small and little, as it were the hairie fibres that grow upon roots that are in the earth, and when they have continued so a longer time, they are combined together, that of two they are made one vessel, until that by continual connexion, all those vessels go and degenerate into two other great vessels, called the *umbilical vessels*, or the vessels of the navel; becaus they do make the navel, and do

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enter into the childe's bodie by the hole of the navel. Here *Galen* doth admire the singular providence of God and Nature; becauf that in fuch a multitude of veffels, and in fo long a paffage or length that they go or are produced; the vein doth never confound it felf, nor ftick to the arterie, nor the arterie to the vein; but everie vefsel joineth it felf to the vefsel of its own kinde. But the umbilical vein, or navel-vein, entering into the bodie of the childe, doth join it felf prefently to the hollow part of the liver; but the arterie is divided into two, which join themfelves to the two Iliack arteries along the fides of the bladder, and are prefently covered with the *peritonæum*; and by the benefit thereof are annexed unto the parts which it goe's unto. Thofe fmall veins and arteries are as it were the roots of the childe; but the vein and arterie of the navel are as it were the bodie of the tree, to bring down the nutriment to nourifh the childe. For firft, wee live in the womb the life of a plant, and then next the life of a fenfitive creature: and, as the firft tunicle of the childe is called *Chorion*, or *Allantoïdes*; fo the other is called *Amnios*, or *Agnina*, which doth compafs the feed or childe about on everie fide. Thefe membranes are moft thin, yea for their thinnefs like unto the Spider's web, woven one upon another; and alfo connexed in manie places by the extremities of certain fmall and hairie fubftances, which at length, by the adjunition of their like do get ftrength; whereby you may understand, what is the cauf why by divers and violent motions of the mother in going and dancing, or leaping, and alfo of the infant in the womb, thofe membranes are not almoft broken. For they are fo conjoined by the knots of thofe hairie fubftances, that between them nothing, neither the urine, nor the fweat can com, as you may plainly and evidently perceiv in the diffection of a woman's bodie that is great with childe, not depending on anie other man's opinion; bee it never fo old or inveterate: yet the ftrength of thofe membranes is not fo great, but that they may bee foon broken in the birth, by the kicking of the childe.

The vein never joineth it felf with the arterie.

Hippocrates calleth all the membranes that compafs the infant in the womb, according to the judgment of *Galen* in his book *de usu partium*, by the name of the *ſezcundines*.

CHAP. VIII.

Of the Umbilical veffels, or the veffels belonging to the navel.

ANIE of the antient Writers have written that there are five veffels found in the navel. But yet in manie, nay all the bodies I fought in for them, I could never finde but three; that is to fay, one vein, which is very large, fo that in the paffage thereof it will receive the tag of a point, and two arteries, but not fo large, but much narrower; becauf the childe wanteth or ftandeth in need of much more blood for his conformation, and the nutriment or increaf of his parts, then of vital fpirit.

An old opinion confuted.

Thefe veffels making the bodie of the navel, which, as it is thought, is formed within nine or ten daies, by their doubling and folding, make knots like unto the knots of a Francifcan Friers girdle, that ftaying the running blood in thofe their knottie windeings, they might more perfectly concoct the fame: as may bee feen in the ejaculatorie ſpermatick veffels, for which ufe alfo the length of the navel is half an ell; fo that in manie infants that are fomewhat grown, it is found three or four times doubled about their neck or thigh.

To what ufe the knots of the childe's navel in the womb ſerveth.

As long as the childe is in his mother's womb, hee taketh his nutriment onely by the navel, and not by his mouth; neither doth hee enjoy the ufe of eies, ears, noſtrils or fundament, neither needeth hee the functions of the heart. For ſpirituouſ blood goeth unto it by the arteries of the navel, and into the Iliack arteries; and from the Iliack arteries unto all the other arteries of the whole bodie, for by the motion of thefe onely the infant doth breathe. Therefore it is not to bee ſuppoſed that the air is carried or drawn in by the lungs unto the heart, in the bodie of the childe; but contrariwife from the heart to the lungs. For neither the heart doth perform the generation or working of blood, or of the vital ſpirits. For the iſſue or infant is contented with them as they are made and wrought by his mother. Which, until it hath obtained a full, perfect and whole deſcription of his parts and members, cannot bee called a childe; but rather an embryo, or an imperfect ſubſtance.

The childe in the womb taketh his nutriment by his navel, not by his mouth.

How the childe breatheth.

CHAP. IX.

Of the ebullition or ſwelling of the ſeed in the womb, and of the concretion of the bubbles or bladders, or the three principal entrals:

IN the ſix firſt daies of conception the new veffels are thought to bee made and brought forth of the eminencies or *cotylidons* of the mother's veffels, and diſperſed into all the whole ſeed, as they were fibres, or hairie ſtrings. Thoſe, as they pierce the womb, ſo do they equally and in like manner penetrate the tunicle *Chorion*. And it is carried this way, being a paffage not onely neceſſarie for the nutriment and conformation of the parts, but alfo into the veins diversly woven and diſperſed into the ſkin *Chorion*. For thereby it connecth

The three bladders.

When the seed is called an embryo.

Why the liver is called *Parenchyma*.

to pass, that the seed it self boileth, and as it were fermenteth or swelleth, not onely through occasion of the place, but also of the blood and vital spirits that flow unto it; and then it riseth into three bubbles or bladders, like unto the bubbles which are occasioned by the rain falling into a river or chanel full of water. These three bubbles or bladders, are certain rude, or new forms, or concretions of the three principall entrals, that is to say, of the liver, heart and brain. All this former time it is called seed, and by no other name; but when those bubbles arise, it is called an embryo, or the rude form of a bodie until the perfect conformation of all the members: on the fourth day after that the vein of the navel is formed, it sucketh grosser blood, that is, of a more full nutriment out of the *Cotylidons*. And this blood, becaus it is more gross, easily congeal's and curdle's in that place, where it ought to prepare the liver fully and absolutely made. For then it is of a notable great bigness above all the other parts; and therefore it is called *Parenchyma*, becaus it is but onely a certain congealing or concretion of blood brought together thither, or in that place. From the gibbous part thereof springeth the greater part or trunk of the hollow vein, called commonly *vena cava*, which doth disperf his small branches, which are like unto hairs, into also the substance thereof: and then it is divided into two branches, whereof the one goeth upwards, the other downwards unto all the particular parts of the bodie.

In the mean season the arteries of the navel suck spirituuous blood out of the eminencies or *Cotylidons* of the mother's arteries, whereof, that is to say, of the more fervent and spirituuous blood, the heart is formed in the second bladder or bubble, beeing endued with a more fleshie, sound, and thick substance, as it behooveth that vessel to bee, which is the fountain from whence the heat floweth, and hath a continual motion.

In this the virtue formative hath made two hollow places; one on the right side, another on the left. In the right, the root of the hollow vein is infixed or ingrafted, carrying thither necessarie nutriment for the heart: in the left is formed the stamp or root of an arterie, which presently doth divide it self into two branches; the greater whereof goeth upwards to the upper parts, and the wider unto the lower parts, carrying unto all the parts of the bodie life and vital heat.

CHAP. X.

Of the third Bubble or Bladder, wherein the head and the brain is formed.

Why the greater portion of seed goeth into generation of the head and brain.



He far greater portion of the seed goeth into this third bubble, that is to say, yeelding matter for the conformation of the brain, and all the head. For a greater quantitie of seed ought to go unto the conformation of the head and brain; becaus these parts are not sanguine or bloodie, as the heart and liver; but in a manner without blood, bonie, marrow, cartilaginous, nervous, and membranous; whose parts, as the veins, arteries, nervs, ligaments, panicles, and skin, are called *spermatick* parts; becaus they obtain their first conformation almost of seed onely: although that afterwards they are nourished with blood, as the other fleshie and musculous parts are. But yet the blood, when it is com unto those parts, degenerateth, and turneth into a thing somewhat spermatick, by virtue of the assimilative facultie of those parts. All the other parts of the head, form and fashon themselvs unto the form of the brain, when it is formed; and those parts which are situated and placed about it for defence especially, are hardened into bones.

Why the head is placed on the top of the bodie.

The head, as the seat of the senses, and mansion of the minde and reason, is situated in the highest place; that from thence, as it were from a loftie tower or turret, it might rule and govern all the other members, and their functions and actions that are under it: for there the soul or life, which is the rectress or governers, is situated; and from thence it floweth, and is dispersed into all the whole bodie. Nature hath framed these three principal entrals, as props and sustentations for the weight of all the rest of the bodie: for which matter also shee hath framed the bones.

The first bones that appear to bee formed, or are supposed to bee conformed, are the bones called *ossa Ilium*, connexed or united by spondyls that are between them: then all the other members are framed and proportioned by their concavities and hollowneses, which generally are seven, that is to say, two of the ears, two of the nose, one of the mouth, and in the parts beneath the head, one of the fundanient, and another of the *yard* or conduit of the bladder; and furthermore in women, one of the neck of the womb, without the which they can never bee made mothers or bear children.

When all these are finished, nature, that shee might polish her excellent work in all sorts, hath covered all the bodie and everie member thereof with skin. Into this excellent work or *Microcosmos* so perfected, God, the author of nature and all things, infuseth or ingrafteth a soul or life: which St. *Augustine* prooveth by this sentence of *Moses*: *If anie man smite a woman with child, so that thereby shee bee delivered before her natural time, and the child be dead, beeing first formed in the womb, let him die the death: but if the child hath not as yet obtained the full proportion* and

and conformation of his bodie and members, let him recompence it with monie. Therefore it is not to bee thought that the life is derived, propagated or taken from Adam or our parents, as it were an hereditarie thing distributed unto all mankinde by their parents; but wee must believ it to bee immediately created of God, even at the verie instant time when the child is absolutely perfected in the lineaments of his bodie, and so given unto it by him.

So therefore the rude lumps of flesh called *mole* that engender in women's wombs, and monsters of the like breeding and confused bigness, although by reason of a certain quaking and shivering motion, they seem to have life, yet they cannot bee supposed to bee endued with a life or a reasonable soul: but they have their motion, nutriment and increas wholly of the natural and infixed facultie of the womb, and of the generative or procreative spirit that is ingrafted naturally in the seed.

But even as the infant in the womb obtaineth not perfect conformation before the thirtieth day, so likewise it doth not move before the sixtieth day: at which time it is most commonly not perceived by women, by reason of the smallness of the motion. But now let us speak briefly of the life or soul, wherein consisteth the principal original of everie function in the bodie, and likewise of generation.

CHAP. XI.

Of the life or soul.



THE soul entreth into the bodie, so soon as it hath obtained a perfect and absolute distinction and conformation of the members in the womb, which in male-children, by reason of the more strong and forming heat which is ingrafted in them, is about the fortieth day, and in females about the fortie fifth day; in som sooner, and in som later, by reason of the efficacie of the matter working, and pliantness or obedience of the matter whereon it worketh. Neither doth the life or soul beeing thus inspired into the bodie presently execute or perform all his functions, because the instruments that are placed about it cannot obtain a firm and hard consistence necessarie for the lively, but especially for the more divine ministeries of the life or soul, but in a long proces of age or time.

Those instruments of the soul are vitiated either in the first conformation, as when the form or fashion of the head is shaped upwards or pyramidal, as was the head of *Thersites*, that lived in the time of the Trojan war, and of *Triboulet* and *Tonin*, that lived in later years; or also by som casualtie, as by the violent handling of the midwife, who by compression, by reason that the scul is then tender and soft, hath caused the capacitie of the ventricles that bee under the brain to bee too narrow for them: or by a fall, stroak, disorder in diet, as by drunkenness, or a fever, which inferreth a lichargie, excessive sleepiness, or phrensie.

Presently after the soul is entred the bodie, God endueth it with divers and fundrie gifts: hereof it commeth that som are endued with wisdom by the spirit; others with knowledge by the same spirit; others with the gift of healing by the same spirit; others with power, dominion and rule; others with prophesie; others with diversities of tongues; and to others other endowments, as it hath pleased the divine providence and bountie of God to bestow upon them, against which no man ought to contend or speak. For it is not meet that the thing formed should say unto him that formed it, why hast thou made mee thus? hath not the Potter power to make of the same lump of claie one vessel to honor and another to dishonor? it is not my purpose, neither belongeth it unto mee or anie other humane creature to search out the reason of those things, but onely to admire them with all humilitie, But yet I dare affirm this one thing, that a noble and excellent soul neglecteth elementarie and transitorie things, and is ravished and mooved with the contemplation of celestial, which it cannot freely enjoie before it bee separated from this earthlie inclosure or prison of the bodie, and bee restored unto its original.

Therefore the soul is the inward *Entelechia* or perfection, or the primitive caus of all motions and functions both natural and animal, and the true form of man. The Antients have endeavoured to expresse the obscure sence thereof by many descriptions. For they have called it a celestial spirit, and a superior, incorporal, invisible, an immortal essence, which is to bee comprehended of its self alone, that is, of the minde or understanding. Others have not doubted but that wee have our souls inspired by the universal divine minde, which as they are alive, so they do bestow life on the bodies unto whom they are annexed or united. And although this life bee dispersed into all the whole bodie, and into everie portion of the same, yet is it void of all corporal weight or mixtion, and it is wholly and alone in everie several part, being simple and invisible, without all composition or mixture, yet endued with manie virtues and faculties; which it

The *mole* in the womb liveth not as the childe.

The life goeth not into the mass of seed that doth engender the childe, before the bodie of the childe and each part thereof hath his perfect proportion and form. Why the life or soul doth not presently execute all his offices.

1 Cor. 6. 12.

What the soul or life is.

The life is in all the whole bodie, and in everie portion thereof. The life or soul is simple and indivisible

doth utter in divers parts of the bodie : For it feeleth, imagineth, judgeth, remembreth, understandeth, and ruleth all our desires, pleasures, and animal motions; it see'th, heareth, smelleth, tasteth, toucheth : and it hath divers names of these so manie and so great functions, which it performeth in divers parts of the bodie. It is called the *soul* or *life*; because it maketh the bodie live, which of it self is dead. It is called the *spirit* or *breath*; because it inspireth our bodies. It is called *reason*; because it discerneth truth from fallhood, as it were by a certain divine rule. It is termed the *minde*; because it is mindeful of things past, in recalling and remembering them : And it is called the *vigor* or *courage*; because it giveth vigor and courage to the sluggish weight, or mass of the bodie. And lastly, it is called the *sens* and *understanding*; because it comprehendeth things that are sensible and intelligible. Because it is incorporeal, it cannot occupie a place by corporeal extension; although notwithstanding it filleth the whole bodie. It is *simple*; because it is but one in essence, not increased, nor diminished : for it is no less in a Dwarf then in a Giant; and it is like perfect and great in an infant as in a man, according to its own nature.

Divers names, and the reason of divers names that are given to humane forms.

Three kindes of living bodies. The superior soul containeth in it self all the powers of the inferior.

But there are three kindes of bodies informed by a soul whereby they live : the first being the most imperfect, is of plants; the second of brute beasts; and the third of men. The plants live by a vegetative; beasts by a sensitive; and men by an intellective soul. And as the sensitive soul of brute beasts is endued with all the virtues of the vegetative; so the humane intellective comprehendeth the virtues of all the inferior, not separated by anie division, but by being indivisibly united with reason and understanding, into one humane form and soul whereon they depend. But because wee have said a little before, that divers functions of the life are resident, and appear in divers parts of the bodie here in this place, omitting all others, wee will prosecute those onely which are accounted the principal.

What the common sens. The function of the common sens is double.

The principal functions of an humane soul, according to the opinion of manie, are four in number, proceeding from so manie faculties, and consequently from one soul; they are these : The Common Sens, Imagination, Reasoning, and Memorie. And they think that the common or interior sens doth receive the forms and images of sensible things, being carried by the spirit through the passage of the nervs, as an instrument of the external senses, as it were a messenger to go between them; and it serv's not onely to receive them, but also to know, perceiv, and discern them. For the eie, wherein the external sens of seeing consisteth, doth not know white or black. Therefore it cannot discern the differences of colors, as neither the tongue taste's, nor the nose savor's, nor the ears sound, nor lastly, the hands their touching qualitie : yea, the eie doth not of it self perceiv that it see'th, nor the nose that it smelleth, nor the ears that they hear, nor the tongue that it tasteth, nor the hands that they touch. For all these things are the offices and functions of the common sens; for this sens knoweth that the eie hath seen som thing, either white, black, red, a man, hors, sheep, or som such like material thing; yea, even when the sight is gon and past; and so likewise the nose to have smelled this or that savor, the ear to have heard this or that sound, the tongue to have tasted this or that taste, and the hand to have touched this or that thing, bee they never so divers. For all the external senses, and all the functions thereof do end, and are referred to the Common sens, as it were the lines of a circle from the circumference into the center, as it is expressed in this figure.



For what caus the internal sens is called the common sens. The common sens understandeth or knoweth those things that are simple onely.

For which caus it is called the common or principal sens; for that therein the primitive power of feeling or perceiving is situated, for it useth the ministerie or service of the external senses, to know manie and divers things, whose differences it doth discern and judg; but simple things, that are of themselves, and without anie composition and connexion, which may constitute anie thing true or fall, or anie argumentation, belongeth onely to the minde, understanding, or reason. For this was the counsel of nature, that the external senses should receive the forms of things superficially, lightly, and gently onely; like as a glass, not to anie other end, but that they should presently send them unto the Common sens, as it were unto their center and prince, which hee (that is to say, the Common sens) delivereth to bee collected unto the understanding or reasoning facultie of the soul, which *Avicen* and *Averrois* have supposed to bee situated in the former part of the brain.

What imagination is.

Next unto the common sens followeth the phantasie or imagination, so called; because of it arise the forms and *Idea's* that are conceived in the minde, called of the Greeks

Phantasmata.

Phantasmata. This doth never rest but in those that sleep: neither alwaies in them, for oft-times in them it causeth dreams, and causeth them to suppose they see and perceiv such things as were never perceived by the senses, nor which the nature of things, nor the order of the world will permit. The power of this facultie of the minde is so great in us, that it often bringeth the whole bodie in subjection unto it.

For it is recorded in historie, that *Alexander* the Great sitting at Table, and hearing *Timotheus* the Musician sing a Martial sonnet unto his Cythern, that hee presently leaped from the table, and called for arms; but when again the Musician mollified his tune, hee returned to the table and sate down as before. The power of imagination caused by musical harmonie, was so great, that it subjected to it the courage of the World's conqueror, by whose various motion, it would now as it were caus him to run headlong to arms, and then pacifie and quiet him, and so caus him to return to his chair and banquetting again. And there was one whosoever it was, who som few years ago, seeing the Turk dance on a rope on high, with both his feet fastned in a basin, turned his eies from so dangerous a sight or spectacle, although came of purpose to see it, and stricken with such fear, that his bodie shook and heart quaked, for fear lest that by sudden falling down headlong hee should break his neck. Manie looking down from an high and loftie place, are so stricken with fear, that suddenly they fall down headlong, beeing so overcome and bound with the imagination of the danger, that their own strength is not able to sustain them. Therefore it manifestly appeareth that God hath dealt most graciously and lovingly with us, who unto this power of imagination, hath joined another, that is, the facultie or power of reason and understanding; which discerning fals dangers and perils from true, doth sustain and hold up a man that hee may not bee overthrown by them.

After this appeareth and approacheth to perform his function, the facultie of Reason, What Reason beeing the Prince of all the principal faculties of the soul; which bringeth together, is-composeth, joineth, and reduceth all the simple and divided forms or images of things into one heap, that by divideing, collecting, and reasoning it might discern and trie truth from fallhood.

This facultie of Understanding or Reason is subject to no facultie or instrument of the bodie, but is free, and penetrateth into everie secret, intricate and hidden thing with an incredible celeritie: by which a man see'th what will follow, perceiveth the originals and causes of things, is not ignorant of the proceedings of things; hee compareth things that are past with those that are present and to com, decreeing what to follow, and what to avoid. This bridleth and with-holdeth the furious motions of the minde, bridleth the over-hastie motions of the tongue, and adimonisheth the speaker that before the words pass out of his mouth, hee ought with diligence and discretion to ponder and consider the thing where-of hee is about to speak. The functions of Reason.

After Reason and Judgment followeth Memorie, which keeping and conserving all forms and images that it receiveth of the senses, and which Reason shall appoint, and as a faithful keeper and conserver, receiveth all things, and imprinteth and sealeth them as well by their own virtue and power, as by the impulsion and adherence of those things in the bodie of the brain, without anie impression of the matter; that when occasion serveth, wee may bring them forth there-hence as out of a treasure or store-hous. For otherwise, to what purpose were it to read, hear, and note so manie things, unless wee were able to keep and retain them in minde by the care and custodie of the Memorie or Brain? Therefore assuredly God hath given us this onely remedie and preservative against the oblivion and ignorance of things, which although of it self and of its own nature it bee of greater efficacie, yet by dailie and often meditation it is trimmed and made more exquisite and perfect. And hence it was that the Antients termed wisdom the daughter of memorie and experience. Manie have supposed that the mansion or seat of the Memorie, is in the hinder part, or in the ventricle of the *Cerebellum*; by reason that it is apt to receiv the forms of things, becauf of the engrafted driness and hardness thereof. What memorie is.
Wisdom the daughter of memorie and experience.

CHAP. XII.

Of the natural excrements in general, and especially of those that the childe or infant beeing in the womb excludeth.

BEfore I declare what excrements the infant excludeth in the womb and by what passages, I think it good to speak of the excrements which all men do naturally void. All that is called an excrement which nature is accustomed to separate and cast out from the laudable and nourishing juice. There are manie kindes of those excrements.

The first is of the first concoction, which is performed in the stomach, which beeing driven down into the intestines or guts, is voided by the fundament.

The second commeth from the Liver and it usually is three-fold, or of three kindes; one choleric- What an excrement is.
The excrement of the first concoction.

The excrement of the second concoction is triple. cholericke, whereof a great portion is sent into the bladder of the gall, that by sweating out there-hence, it might stir up the expulsive facultie of the guts to expel and exclude the excrements. The other is like unto whay, which goeth with the blood into the veins, and is as it were a *vehicula* thereto to bring it unto all the parts of the bodie, and into everie capillar vein for to nourish the whole bodie; and after it hath performed that function, it is partly expelled by sweat, and partly sent into the bladder, and so excluded with the urine. The third is the melancholick excrement which being drawn by the milt, the purer and thinner part thereof goeth into the nourishment of the milt, and after the remnant is partly purged out downwards by the Hemorrhoidal veins, and partly sent to the orifice of the stomach, to insinuate and provoke the appetite. The last commeth of the last concoction, which is absolved in the habit of the bodie, and breathed out, partly by insensible transpiration, is partly consumed by sweating, and partly floweth out by the evident and manifest passages that are proper to everie part: as it happeneth in the brain before all other parts; for it doth unload it self of this kinde of excrement by the passages of the nose, mouth, ears, eyes, palat-bone and sutures of the scul.

The excrement of the third concoction is triple.

Therefore if anie of those excrements bee staied altogether, or anie longer then it is meet they should, the default is to bee amended by diet and medicine. Furthermore, there are other sorts of excrements not natural, of which wee have entreated at large in our book of the pestilence.

The use of the navel-string.

When the infant is in the mother's womb, until hee is fully and absolutely formed in all the lineaments of his bodie, hee send's forth his urine by the passage of the navel or *urachus*. But a little before the time of childe-birth, the *urachus* is closed, and then the man-childe voideth his urine by the conduit of the yard, and the woman-childe by the neck of the womb. This urine is gathered together and contained in the coat *Chorion* or *Allantoides*, together with the other excrements, that is to say, sweat, and such whayish superfluities of the menstrual matter, for the more easie bearing up of the floteing or swimming childe. But in the time of childe-birth, when the infant by kicking breaketh the membranes, those humors run out, which when the midwives perceiv, they take it as a certain sign that the childe is at hand. For if the infant com forth together with those waters, the birth is like to bee more easie, and with the better success; for the neck of the womb and all the genitals are so by their moisture relaxed and made slipperie, that by the endeavor and stirring of the infant the birth will bee more easie, and with the better success: contrariwise, if the infant bee not excluded before all these humors bee wholly flowed out and gon, but remaineth as it were in a drie place, presently through drines the neck of the womb and all the genitals will bee contracted and drawn together, so that the birth of the childe will bee verie difficult and hard, unless the neck of the womb, to amend that default, bee annointed with oil or som other relaxing liquor. Moreover, when the childe is in the womb, hee voideth no excrements by the fundament, unless it bee when at the time of the birth, the proper membranes and receptacles are burst by the striving of the infant, for hee doth not take his meat at the mouth, wherefore the stomach is idle then, and doth not execute the office of turning the meats into *chylus*, nor of anie other concoction; wherefore nothing can go down from it into the guts. Neither have I seldom seen infants born without anie hole in their fundament, so that I have been constrained with a knife to cut in sunder the membrane or tunicle that grew over and stopped it. And how can such excrements bee engendred, when the childe beeing in the womb, is nourished with the more laudable portion of the menstrual blood? therefore the issue or childe is wont to yeeld or avoid two kindes or sorts of excrements, so long as hee is in the womb, that is to say, sweat and urine, in both which hee swim's; but they are separated by themselves, by a certain tunicle called *Allantoides*, as it may bee seen in kids, dogs, sheep, and other brute beasts; for as much as in mankinde the tunicle *Chorion* and *Allantoides* or *Farciminalis*, bee all one membrane. If the woman bee great of a man-childe, shee is more merrie, strong, and better colored, all the time of her childe-bearing; but if of a woman-childe, shee is ill colored, becaus that women are not so hot as men.

Children born without a passage in their fundament.

Aph. 42. sect. 5.

The males begin to stir within three months and an half, but females after: if a woman conceiv a male-childe, shee hath all her right parts stronger to everie work: wherefore they do begin to set forwards their right foot first in going, and when they arise they lean on the right arm, the right dug will sooner swell and wax hard: the male-children stir more in the right side then in the left, and the female-children rather in the left then in the right side.

Aph. 47. sect. 5.

CHAP. XIII.

With what travail the Childe is brought into the world, and of the caus of this labor and travail.

When the natural prefixed and prescribed time of childe-birth is com, the childe being then grown greater, require's a greater quantitie of food : which when hee cannot receiv in sufficient measure by his navel, with great labor and striving hee endeavoreth to get forth: therefore then hee is mooved with a stronger violence, and doth break the membranes wherein hee is contained. Then the womb, becauf it is not able to endure such violent motions, nor sustain or hold up the childe anie longer, by reason that the conceptacles of the membranes are broken asunder, is relaxed. and then the childe pursuing the air which hee feeleth to enter in at the mouth of the womb, which then is verie wide and gapeing, is carried with his head downwards, and so commeth into the world with great pain both unto it self, and also unto his mother, by reason of the tendernefs of his bodie, and also by reason of the nervous neck of his mother's womb, and separation of the bone called *Os Ilium* from the bone called *Os sacrum*. For unless those bones were drawn in sunder, how could not onely twins that cleav fast together, but also one childe alone, com forth at so narrow a passage as the neck of the womb is? Not onely reason, but also experience confirmeth it; for I opened the bodies of women presently after they have died of travail in childe-birth, in whom I have found the bones of *Ilium* to bee drawn the bredth of ones finger from *Os sacrum*: and moreover, in manie unto whom I have been called, being in great extremitie of difficult and hard travail, I have not onely heard, but also felt the bones to cracle and make a noif, when I laid my hand upon the coccyx or rump, by the violence of the distention. Also honest matrons have declared unto mee that they themselves, a few daies before the birth, have felt and heard the noif of those bones separateing themselves one from another with great pain. Also a long time after the birth manie do feel great pain and ach about the region of the coccyx and *Os sacrum*, so that when nature is not able to repair the dissolved continuitie of the bones of *Ilium*, they are constrained to halt all the daies of their life after. But the bones of the share called *Ossa pubis*, I have never seen to bee separated, as manie do also affirm. It is reported that in *Italie* the coccyx or rump in all maidens, that when they com to bee married thee may bear children with the lesser travail in childe-birth; but this is a forged tale, for that bone being broken, is naturally and of its own accord repaired, and ioined together again with a *Callus*, whereby the birth of the childe will bee more difficult and hard.

Why the infant is born sometimes with his head forwards.

In the time of childe birch the bones of *Ilium* and *Os sacrum* are drawn and extended one from another.

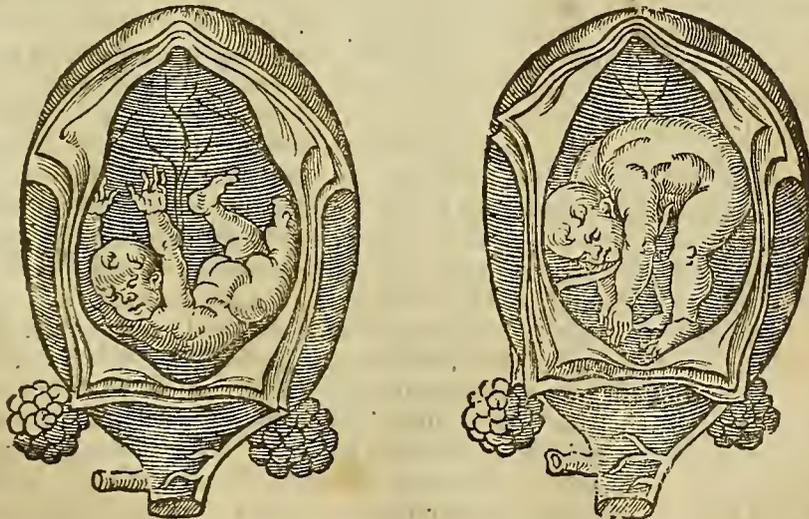
An Italian fa- ble.

CHAP. XIV.

Of the situation of the infant in the womb.

Reason cannot shew the certain situation of the infant in the womb, for I have found it altogether uncertain, variable and divers both in liveing and dead women: in the dead by opening their bodies presently after they were dead; and in the liveing by helping them by the industrie of my hand, when they have been in danger of perishing by travail of childe-birth: for by putting my hand into the womb, I have felt the infant coming forth, sometimes with his feet forwards, someimes with his hands, and sometimes with his hands and feet turned backwards, and sometimes forwards as the figure following plainly describeth.

The situation of the infant in the womb is divers.



I have often found them comming forth with their knees forwards, and sometimes with one of the feet, and sometimes with their bellie forwards, their hands and feet being lifted upwards, as the former figure sheweth at large.

Som-

Sometimes I have found the infant coming with his feet downwards striding a-wide, and sometimes headlong, stretching one of his arms downward out at length, and that was an Hermaphrodite, as the figure following plainly declareth.

One time I observed in the birth of twins, that the one came with his head forwards, and the other with his feet, according as here I have thought good to describe them.



In the bodies of women that died in travail of childe I have sometimes found children no bigger then if they had been but four months in the womb, situated in a round compass like a hoop, with their head bowed down to their knees, with both their hands under the knees, and their heels close to their buttocks. And moreover, I protest before God that I found a childe being yet alive in the bodie of his mother (whom I opened so soon as shee was dead) lying all along stretched out, with his face upwards, and the palms of his hands joined together, as if hee were at praier.

CHAP. XV.

Which is the legitimate and natural, and which the illegitimate or unnatural time of childe-birth.

Mankinde hath no certain time of bringing forth young



O all liveing creatures, except man, the time of conception and bringing forth their young is certain and definite; but the issue of man commeth into the world, sometimes in the seventh, sometimes in the eighth; and sometimes, which is most frequent, in the ninth month; sometimes in the tenth month; yea sometimes in the beginning of the eleventh month. *Massurius* reports that *Lucius*

Papyrius the Pretor, the second heir commencing a suit, gave the possession of the goods away from him, seeing the mother of the childe affirmed that shee went thirteen months therewith, being there is no certain definite time of childe-birth. The childe that is born in the sixth month cannot bee long-lived, becaus that at that time all his bodie or members are not perfectly finished, or absolutely formed. In the seventh month it is proved by reason and experience that the infant may bee long-lived. But in the eighth month it is seldom or never long-lived: the reason thereof is, as the Astronomers suppose, becaus that at that time Saturn ruleth, whose coldness and driness is contrarie to the original of life: but yet the physical reason is more true; for the physicians say that the childe in the womb doth oftentimes in the seventh month strive to bee set at libertie from the inclosure of the womb, and therefore it contendeth and laboreth greatly, and so with laboring and striving it becometh weak, that all the time of the eighth month it cannot recover his strength again, whereby it may renew his accustomed use of striving, and that som by such laboring and striving hurt themselves, and so die. Yet som strong and lustie women are thought to bring forth their children, being livelie and strong, on the eighth month, as *Aristotle* testifieth of the *Egyptians*, the Poets of the inhabitants of the Isle of *Naxus*, and manie of the Spaniards. Furthermore I cannot sufficientjy marvel, that the womb, which all the time of childe-bearing is so closed together, that one can scarce put a probe into it, unless it bee by superfœtation, or when it is open for a short time to purge it self, that presently before the time of childe-birth, it should gape and wax so wide, that the infant may pass through it, and presently after it to close again as if it had never been opened. But becaus that the travail of the first time of childe-birth is wont to bee verie difficult and grievous, I think it not unmeet that all women, a little before the time of their first travail, annoint and relax their privie parts with the unguent here described. R. sper. ceti, Ziv. ol. amigd. dul. Ziv. cere alb. & medul.

Why the childe is scarce alive in the eighth month.

Lib. 4. de hist. anim. cap. 7.

medul. cervin. ℥iii. axung. ans. & gallin. an. ℥i. terreb. venet. ℥ii. make thereof an ointment to anoint the thighs, share, privie-parts and genitals. Furthermore, it shall not bee unprofitable, to make a truss or girdle of most thin and gentle dog-skin, which beeing also annointed with the same unguent, may serv verie necessarily for the better carrying of the infant in the womb. Also baths that are made of the decoction of mollifying herbs, are also verie profitable to relax the privie parts a little before the time of the birth. That is supposed to bee a natural and easie birth, when the infant commeth forth with his head forwards, presently following the flux of water; and that is more difficult, when the infant commeth with his feet forwards: all the other waies are most difficult. Therefore Mid-wives are to bee admonished that as often as they perceiv the childe to bee comming forth none of those waies, but either with his bellie or his back forwards, as it were double; or elf with his hands and feet together, or with his head forwards, and one of his hands stretched out, that they should turn it, and draw it out by the feet; for the doing whereof, if they bee not sufficient, let them crave the assistance and help of som expert Chirurgian.

The natural and easie child-birth.

CHAP. XVI.

Signs of the birth at hand.

Here will bee great pain under the navel, and at the groins, and spreading thence toward the *Vertebrae* of the loins, and then especially when they are drawn back from the *Os sacrum*, the bones *Ilia* and the *Coccyx* are thrust outward, the genitals swell with pain, and a certain Fever-like shakeing invade's the bodie, the face waxeth red by reason of the endeavor of nature, armed unto the expulsion of the infant.

And when these signs appear, let all things bee prepared readie to the childe-birth. Therefore first of all let the woman that is in travail bee placed in her bed conveniently, neither with her face upwards, nor sitting, but with her back upwards and somewhat high, that shee may breath at more libertie, and have the more power or strength to labor. Therefore shee ought to have her legs wide one from another, and crooked, or her heels somewhat bowed up towards her buttocks, so that shee may lean on a staff that must beee placed overthwart the bed. There are som that do travail in a stool or a chair made for the same purpose: others standing upright on their feet, and leaning on the poast or pillar of the bed. But you must take diligent heed that you do not exhort or perswade the woman in travail to strive or labor to expel the birth before the fore-named signs thereof do manifestly shew that it is at hand. For by such labor or pains shee might bee wearied or so weakned, that when shee should strive or labor, shee shall have no power or strength so to do. If all these things do fall out well in the childe-birth, the business is to be committed to nature, and to the Midwife. And the woman with childe must onely bee admonished that when shee feeleth verie strong pain, that shee presently therewith strive with most strong expression, shutting her mouth and nose if shee pleas, and at the same time let the Midwife with her hands force the infant from above downwards. But if the birth bee more difficult and painful, by reason that the waters wherein the infant lay are flown out long before, and the womb bee drie, this ointment following is to bee prepared. *Rx. butyri recentis sine sale in aqua artemesia loti. ℥ii. mucaginis ficuum, semin. lini & altheae, cum aqua sabine extractae, an. ℥ss. olei liliorum, ℥i.* make thereof an ointment, wherewith let the Midwife often annoint the secret parts. Also this powder following may bee prepared. *Rx. Cinnamon. cort. cassiae fistul. diatanni an. ℥i ss. sacch. albi ad pondus omnium:* make thereof a most subtil and fine powder. Let the woman that is in extremitie by reason of difficult and painful travail in childe-birth, take half an ounce thereof at a time, with the decoction of lin-feed, or in white wine, for it will caus more speedie and easie deliverance of the childe.

How the woman that travaileth in child-birth must bee placed in her bed.

An unction to supplie the defect of the waters that are flown out too long before the birth.

A powder to caus speedie deliverance in childe-birth.

Moreover let the midwife annoint her hands with this ointment following as often as shee putteth them into the neck of the womb, and therewith also annoint the parts about it. *Rx. olei ex seminibus lini, ℥i ss. olei de castoreo, ℥ss. galliae moschatae, ℥iii. ladani ℥i.* make thereof a liniment. Moreover, you may provoke sneezing, by putting a little pepper or white Helebores in powder into the nostrils. Lin-feed beaten, and given in potion, with the water of Mugwort and Savine, is supposed to caus speedie deliverance. Also the medicine following is commended for the same purpose. *Rx. corticis cassiae fistul, conquassatae ℥ii. cicer. rub. m ss. bulliant cum vino albo & aqua sufficienti, sub finem addendo sabinae, ℥ii. in colatura pro dosi adde cinam. ℥ss. croci gr. vi.* make thereof a potion, which beeing taken, let sneezing bee provoked, as it is above-said, and let her shut or close her mouth and nostrils.

App. 35. & 45. lib. 5. c.

A potion causing speedie deliverance.

Manie times it happeneth that the infant commeth into the world out of the womb, having his head covered or wrapped about with a portion of the secundine or tunicle wherein it is inclosed, especially, when by the much, strong, and happie striveing of the mother, hee commeth forth together with the water wherein it lieth in the womb, and then the midwives prophesie or fore-tell that the childe shall bee happie, becauf hee is born as it were with a hood on his head. But I suppose that it doth betoken health of bodie both to the infant

What a woman
in travail must
take presently
after her deli-
verance.

fant and also to his mother; for it is a token of ealie deliverance. For when the birth is difficult and painful, the childe never bringeth that membrane out with him, but it remaineth behinde in the passage of the genitals or secret parts; becauf they are narrow. For even so the Snake or Adder when shee should cast her skin thereby to renew her age, creepeth through som narrow or strait passage. Presently after birth, the woman so delivered must take two or three spoonfuls of the oil of sweet almonds extracted without fire, and tempered with sugar. Som will rather use the yelks of eggs with sugar, som the wine called hypocras, others cullises or gellie: but alwaies divers things are to bee used, according as the patient or the woman in childe-bed shall bee grieved, and as the Physician shall give counsel, both to eas and assuage the furious torments and pain of the throws, to recover her strength and nourish her.

The caus of the
after-throws.

Throws com presently after the birth of the childe, becauf that then the veines (nature beeing wholly converted to expulsion) cast out the reliques of the menstrual matter that hath been suppressed for the space of nine months, into the womb with great violence, which becauf they are gros, slimie and dreggish, cannot com forth without great pain both to the veines from whence they com, and also unto the womb whereinto they go: also then by the conversion of that portion thereof that remaineth into winde, and by the undiscreeet admission of the air in the time of the childe-birth, the womb and all the secret parts will swell, unless it bee prevented with som digesting, repelling or mollifying oil, or by artificial rowling of the parts about the bellie.

CHAP. XVII.

What is to bee don presently after the childe is born.

Why the secun-
dine or after-
birth must bee
taken away
presently after
the birth of the
childe.



Presently after the childe is born, the midwife must draw away the secundine or after-birth, as gently as shee can: but if shee cannot, let her put her hands into the womb, and so draw it out, separateing it from the other parts; for otherwise if it should continue longer, it would bee more difficult to bee gotten out, becauf that presently after the birth, the orifice of the womb is drawn together and closed, and then all the secundine must bee taken from the childe. Therefore the navel-string must bee tied with a double thred an inch from the bellie. Let not the knot bee too hard, lest that part of the navel-string which is without the knot should fall away sooner then it ought, neither too slack or loof, lest that an exceeding and mortal flux of blood should follow after it is cut off, and lest that through it (that is to say the navel-string) the cold air should enter into childes-bodie. When the knot is so made, the navel-string must bee cut in sunder the bredth of two fingers beneath it with a sharp knife. Upon the section you must applie a double linnen cloth dipped in oil of Roses, or of sweet Almonds, to mitigate the pain; for so within a few daies after, that which is beneath the knot will fall away beeing destitute of life and nourishment, by reason that the vein and arterie are tied so close, that no life nor nourishment can com unto it: commonly all midwives do let it lie unto the bare bellie of the infant, whereof commeth grievous pain and gripeing, by reason of the coldness thereof which dieth by little and little as destitute of vital heat. But it were far better to roul it in soft cotton or lint, until it bee mortified, and so fall away.

The bindeing
of the childes
navel-string
after the birth.

Those midwives do unadvisedly, who so soon as the infant is born do presently tie the navel-string and cut it off, not looking first for the voiding of the secundine. When all these things are don, the infant must bee wiped, cleansed and rubbed from all filth and excrement with oil of Roses or Myrtles. For thereby the pores of the skin will bee better shut, and the habit of the bodie the more strengthened.

The defaults
that are com-
monly in chil-
dren newly
born.

There bee som that wash infants at that time in warm water and red wine, and afterwards anoint them with the fore-named oils. Others wash them not with wine alone, but boil therein red Roses and the leavs of Myrtles, adding thereto a little salt; and then using this lotion for the space of five or six daies, they not onely wash away the filth, but also resolv and digest, if there bee anie hard or contused place in the infant's tender bodie, by reason of the hard travail and labor in childe-birth. Their toes and fingers must bee handled, drawn asunder and bowed, and the joints of the arms and legs must bee extended and bowed for manie daies and often; that thereby that portion of the excremental humor that remaineth in the joints, by motion may bee heated and resolved. If there bee anie default in the members, either in conformation, construction or societie with those that are adjoining to them, it must bee corrected or amended with speed. Moreover, you must look whether anie of the natural passages bee stoppcd, or covered with a membrane, as it often happeneth. For if anie such cover or stop the orifices of the ears, nostrils, mouth, yard or womb, it must bee cut in sunder by the Chirurgion, and the passage must bee kept open by putting in of tents, pessaries or dosels, lest otherwise they should join together again after they are cut. If hee have one finger more then hee should naturally, if his his fingers do cleav close together, like unto the feet of a Goof or Duck, if the ligamental membrane that is under the tongue bee more short and

The defaults of
conformation
must bee spec-
dily amended.

and stiffer then it ought, that the infant cannot suck, nor in time to com, speak, by reason thereof; and if there bee anie other thing contrarie to nature, it must bee all amended by the industrie of som expert Chirurgicalian.

Manie times in children newly born, there sticketh on the inner side of their mouth and on their tongue, a certain chalkie substance, both in color and in consistence; this affect proceeding from the distemperature of the mouth, the French-men call it the white Cancer. It will not permit the infant to suck, and will shortly breed and degenerate into ulcers that will creep into the jawes, and even unto the throat, and unless it bee cleansed speedily, will bee their death. For remedie whereof, it must bee cleansed by deterfives, as with a linnen cloth bound to a little stick, and dipped in a medicine of an indifferent consistence made with oil of sweet almonds, honie and sugar. For by rubbing this gently on it, the filth may bee mollified, and so cleansed or washed awaie.

Remedies for the Cancer in a childe's mouth.

Moreover it will bee verie meet and convenient to give the infant one spoonful of oil of almonds, to make his bellie loof and slipperie, to assuage the roughness of the weason and gullet, and to dissolv the tough phlegm, which cauffeth a cough, and somtimes difficultie of breathing. If the eie-lids cleav together, or if they bee joined together, or agglutinated to the coats *cornea* or *adnata*; if the waterie tumor called *hydrocephalos* affect the head, then must they bee cured by the proper remedies formerly prescribed, against each disease.

Manie from their birth have spots or marks, which the common people of France call *Signes*, that is, marks or signs. Som of these are plain and equal with the skin, others are raised up in little tumors, and like unto warts, som have hairs upon them, manie times they are smooth, black or pale; yet for the most part red. When they rise in the face, they spread abroad thereon manie times with great deformitie. Manie think the caus thereof to bee a certain portion of the menstrual matter cleaving to the sides of the womb, comming of a fresh flux, if happily a man do yet use copulation with the woman, or els distilling out of the veins into the womb, mixed and concorporated with the seeds at that time when they are congealed, infecting this or that part of the issue; beeing drawn out of the feminal bodie, with their own color. Women refer the caus thereof unto their longing when they are with childe; which may imprint the image of the thing they long for or desire, in the childe or issue that is not as yet formed (as the force and power of imagination in humane bodies is verie great;) but when the childe is formed, no imagination is able to leav the impression of anie thing in it, no more then it could caus horns to grow on the head of King *Chypus* as hee slept presently after hee was returned from attentively beholding Bulls fighting together. Som of those spots bee cureable, others not; as those that are great, and those that are on the lips, nostrils, and eie-lids. But those that are like unto warts, becaus they are partakers of a certain malign qualitie and melancholick matter, which may bee irritated by indeavouring to cure them, are not to bee medled with at all, for beeing troubled and angered, they soon turn into a Cancer (which they call *Noli me tangere*). Those that are cureable are small, and in such parts as they may bee dealt withall without danger. Therefore they must bee pierced through by the roots with a needle and a thread, and so beeing lifted up by the ends of the thread, they must bee cut awaie, and the wound that remaineth must bee cured according to the general method of wounds.

An old fable of King *Chypus*.

Which uncureable.

Which and how they are cureable.

There are som that suppose the red spots that are raised up into little knobs and bunches, may bee washed awaie and consumed by rubbing and anointing them often with menstrual blood, or the blood of the secundine or after-birth. Those that are hairie and somewhat raised up like unto a *Wart* or *Mouf*, must bee pierced through the roots in three or four places, and straightly bound, so that at length beeing destitute of life and nutriment, they may fall awaie. after they are faln awaie, the ulcer that remaineth must bee cured as other ulcers are. If there bee anie superfluous flesh remaining, it must bee taken awaie by applying *Ægyptiacum*, or the powder of *Mercurie*, and such like: but if it bee doubted that it cometh from the root of the tumor that may happily remain, it must bee burned awaie by the root with oil of vitriol or *aqua fortis*.

There is also an other kinde or sort of spots, of a livid or violet-color, comming especialy in the face about the lips, with a soft, slack, lax, thin, and unpainful tumor, and the veins as if they were varicous round about it. This kinde of tumor groweth greater when it ariseth on children that are wayward and crying, and in men of riper years that are cholericke and angrie, and then it will bee of a divers color, like unto a lappet or flap of flesh that hangeth over the *Turkie-cock's bill*. When they have don crying, or ceased their anger, the tumor will return to his own natural color again. But you must not attempt to cure it in people that are of these conditions.

CHAP. XVIII.

How to pull awaie the secundine or after-birth.

Why it is called the secundine.



Suppose that they are called secundines, because they do griev the woman that is with childe the second time, as it were a second birth: for if there bee several children in the womb at once, and of different sexes, they then have everie one their several secundines, which thing is verie necessarie to bee known by all midwives. For they do manie times remain behinde in the womb when the childe is born, either by reason of the weakness of the woman in travail, which by contending and laboring for the birth of her childe, hath spent all her strength: or els by a tumor rising suddenly in the neck of the womb, by reason of the long and difficult birth, and the cold air unadvisedly permitted to strike into the orifice of the womb. For so the liberties of the waies or passages are stopped and made more narrow, so that nothing can com forth: or els because they are doubled and foulded in the womb, and the waters gon out from them with the infant, so that they remain as it were in a drie place: or els because they yet stick in the womb by the knots of the veins and arteries, which commonly happeneth in those that are delivered before their time. For even as apples which are not ripe, cannot bee pulled from the tree but by violence; but when they are ripe, they will fall off of their own accord: so the secundine before the natural time of the birth can hardly bee pulled awaie but by violence; but at the prefixed natural time of the birth, it may easily bee drawn awaie.

The causes of the staying of the secundines.

Accidents that follow the staying of the secundines.

The manner of drawing out the secundines that remain after the birth.

The cause of the falling down of the womb.

The accidents that com of the violent pulling of the womb, together with the secundine.

Manie and grievous accidents follow the staying of the secundine; as suffocation of the womb, often swounding, by reason that gross vapors arise from the putrefaction unto the midriff, heart and brain: therefore they must bee pulled awaie with speed from the womb, gently handling the navel, if it may bee so possibly don. But if it cannot bee don so, the woman must bee placed as shee was wont when that the childe will not com forth naturally, but must bee drawn forth by art. Therefore the midwife having her hand annointed with oil, must put it gently into the womb, and finding out the navel-string, must follow it untill it com unto the secundine, and if it do as yet cleav to the womb by the cotylidons, shee must shake and move it gently up and down, that so when it is shaken and loosed, shee may draw it out gently; but if it should bee drawn with violence, it were to bee feared lest that the womb should also follow: for by violent attraction som of the vessels, and also som of the nervous ligaments, whereby the womb is fastened on each side, may bee rent, whereof followeth corruption of blood shed out of the vessels, and thence commeth inflammation, an abscess or a mortal gangrene. Neither is there less danger of a convulsion by reason of the breaking of the nervous bodies, neither is there anie less danger of the falling down of the womb. If that there bee anie knots or clods of blood remaining together with the secundine, the Midwife must draw them out one by one, so that not anie may bee left behinde.

Som women have voided their secundine, when it could not bee drawn forth by anie meanes, long after the birth of the childe, by the neck of their womb, piece-meal, rotten and corrupted, with manie grievous and painfull accidents. Also it shall bee verie requisite to provoke the indeavor of the expulsive facultie by sternutatories, aromatick fomentations of the neck of the womb, by mollifying injections: and contrariwise, by applying such things to the nostrils as yeeld a rank savor or smell, with a potion made of mug-wort and bay-berries taken in honie and wine mixed together, or with half a dram of the powder of favin, or with the hair of a womans head, burnt and beaten to powder, and given to drink; and to conclude, with all things that provoke the tearms or courses.

CHAP. XIX.

What things must bee given to the infant by the mouth, before hee bee permitted to suck the teat or dug.

To draw steam from the childe's mouth.



It will bee verie profitable to rub all the inner side of the childe's mouth and palat gently with treacle and honie, or the oil of sweet almonds extracted without fire, and if you can, to caus' it to swallow som of those things: for thereby much flegmatick moisture will bee drawn from the mouth, and also will bee mooved or provoked to bee vomited up from the stomach; for if these excremental humors should bee mixed with the milk that is sucked, they would corrupt it, and then the vapors that arise from the corrupted milk unto the brain would infer most pernicious accidents. And you may know that there are manie excremental things in the stomach and guts of children by this, because that so soon as they com into the world, and often before they suck milk or take anie other thing, they void downwards manie excrements diversly colored, as yellow, green, and black. Therefore manie, that they may speedily evacuate the matter that causeth the fretting of the guts, do not onely

onely minister those things fore-named, but also som laxative syrup, as that that is made of damask-Roses. But before the infant bee put to suck the mother, it is fitting to press som milk out of her brest into its mouth, that so the fibres of the stomach may by little and little accustom themselves to draw in the milk.

Milk soon corrupted in a flegmatick stomach.

CHAP. XX.

That mothers ought to nurse or give suck unto their own children.

That all mothers would nurse their own children were greatly to bee wished: for the mother's milk is far more familiar nourishment for the infant then that of anie Nurse: for it is nothing else but the same blood made white in the duggs, wherewith before it was nourished in the womb. For the mother ought not to give the childe suck for the space of a few daies after the birth, but first to expect the perfect expurgation and avoiding of the excremental humors. And in the mean time let her cause her breasts to bee sucked of another, or manie other children, or of som wholsom or sober maid, whereby the milk may bee drawn by little and little unto her breasts, and also by little and little purified.

The mother's milk is most familiar for the childe.

For a certain space after the birth, the milk will bee troubled, and the humors of the bodie mooved: so that by long staying in the duggs, it will seem to degenerate from its natural goodness, as the grossness of it is somewhat congealed, the manifest heat in touching, and the yellow color thereof testifieth evidently. Therefore it is necessarie that others should com in place thereof when it is sucked out, wherewith the infant may bee nourished. But if the mother or the Nurse chance to take anie disease, as a Fever, Scouring, or anie such like, let her give the childe to another, to give it suck, lest that the childe chance to take the Nurses diseases. And moreover, mothers ought to nurse their own children, because for the most part they are far more vigilant and careful in bringing up and attending their children, then hired and mercenarie Nurses, which do not so much regard the infant, as the gain they shall have by the keeping of it, for the most part. Those that do not nurse their own children, cannot rightly bee termed mothers: for they do not absolutely perform the dutie of a mother unto their childe, as *Marcus Aurelius* the Roman Emperor was wont to say. For it is a certain unnatural, imperfect and half kinde of a mother's dutie, to bear a childe, and presently to abandon or put it awaie as if it were forsaken: to nourish and feed a thing in their womb (which they neither know nor see) with their own blood, and then not to nourish it when they see it in the world alive, a creature or reasonable soul, now requiring the help and sustentation of the mother.

The disease of the Nurse is participated unto the childe.

Gel. lib. 12. ca. 1.

CHAP. XXI.

Of the choice of Nurses.

Anie husbands take such pittie on their tender wives, that they provide Nurses for their children, that unto the paines that they have sustained in bearing them, they may not also add the trouble of nursing them: wherefore such a Nurse must bee chosen which hath had two or three children. For the duggs which have been already sucked and accustomed to bee filled, have the veines and arteries more large and capable to receive the more milk. In the choice of a Nurse there is ten things to bee considered verie diligently. as, her age, the habit of her bodie, her behaviour, the condition of her milk, the form, not onely of her duggs or breasts, but also of her teats or nipples, the time from her childe-birth, the sex of her last infant or childe, that shee bee not with childe, that shee bee sound and in perfect health. As concerning her age; shee ought not to bee under twentie five years, nor above thirtie five: the time that is between is the time of strength, more temperate, and more wholsom and healthie, and less abounding with excremental humors. And because her bodie doth not then grow or increase, shee must of necessitie have the more abundance of blood. After thirtie five years in manie the menstrual fluxes do cease, and therefore it is to bee supposed that they have the less nutriment for children.

The best age of a Nurse.

The Nurse must also bee of a good habit, or square or well-set bodie, her breast broad, her color lively, not fat, nor lean, but well-made, her flesh not soft and tender, but thick, and hard or strong, whereby shee may bee the more able to indure watching and taking of paines about the childe; shee must not have a red or freckled face, but brown or somewhat shadowed or mixed with redness: for truly such women are more hot then those that are red in the face, by reason whereof they must needs concoct and turn their meat the better into blood. For according to the judgment of *Sextus Cheronensis*, as blackish or brown ground is more fertile then the white: even so a brown woman hath more store of milk. You must look well on her head, lest shee should have the scurf or running sores; see that her teeth bee not

The best habit of bodie in a Nurse.

Lib. de inf. nutr.

foul or rotten, nor her breath stinking, nor no ulcer nor sore about her bodie, and that shee bee not born of goutie or leprous Parents.

Of what behavior the Nurf must bee.

Shee ought to bee quick and diligent in keeping the childe neat and clean, chaste, sober, merrie, alwaies laughing and smiling on her Infant, often singing unto it, and speaking distinctly and plainly, for shee is the onely Mistresse to teach the childe to speak. Let her bee wel-mannered, becaus the manners of the Nurf are participated unto the Infant together with the milk. For the whelps of dogs, if they do suck Wolves or Lionesses, will become more fierce and cruel then otherwise they would. Contrariwise, the Lions whelps will leave their savageness and fierceness, if that they bee brought up and nourished with the milk of anie Bitch, or other tame beast. If a Goat give a Lamb suck, the same Lamb's-wooll will bee more hard then others: contrariwise, if a Sheep give a Kid suck, the same Kids hair will bee more soft then another Kid's-hair. Shee ought to bee sober, and the rather for this cause, becaus manie Nurfes being overladen with wine and banqueting, often set their children unto their breasts to suck, and then fall asleepe, and so suddenly strangle or choak them.

Why the Nurf must abstain from copulation.

Shee must abstain from copulation: for copulation troubleth and mooveth the humors and the blood, and therefore the milk it self; and it diminisheth the quantitie of milk, becaus it provoketh the menstruall flux, and causeth the milk to have a certain strong and virtuous qualitie, such as wee may perceiv to breath from them that are incensed with the fervent lust and desire of venerie. And moreover, becaus that thereby they may happen to bee with childe, whereof insueth discommoditie both to her own childe that is within her bodie, and also to the nurf-childe: to the nurf-childe, becaus that the milk that it sucketh will bee worse and more depraved then otherwise it would bee, by reason that the more laudable blood after the conception remaineth about the womb, for the nutriment and increasing of the infant in the womb; and the more impure blood goeth into the dugs, which breedeth impure or unclean milk: but to the conceived childe, becaus it will cause it to have scarcitie of food; for, so much as the sucking-childe sucketh, so much the childe conceived in the womb wanteth.

What dugs a Nurf ought to have.

Also shee ought to have a broad breast, and her dugs indifferently big, not slack or hanging, but of a middle consistence, between soft and hard; for such dugs will concoct the blood into milk the better, becaus that in firm flesh the heat is more strong and compact. You may by touching trie whether the flesh bee solid and firm, as also by the dispersing of the veines, easily to bee seen by reason of their swelling and blewness, through the dugs, as it were into manie streams or little rivelets; for in flesh that is loof and slack, they lie hidden. Those dugs that are of a competent bigness, receive or contain no more milk then is sufficient to nourish the infant. In those dugs that are great and hard, the milk is as it were suffocated, stopped or bound in, so that the childe in sucking can scarce draw it out. and moreover, if the dugs bee hard, the childe putting his mouth to the breast, may strike his nose against it, and so hurt it, whereby hee may either refuse to suck, or if hee doth proceed to suck, by continual sucking, and placing of his nose on the hard breast, it may become flat, and the nostrils turned upwards, to his great deformitie, when hee shall come to age. If the teates or nipples of the dugs do stand somewhat low or depressed inwards on the tops of the dugs, the childe can hardly take them between its lips, therefore his sucking will bee verie laborious. If the nipples or teates bee verie big, they will fill all his mouth, that hee cannot well use his tongue in sucking or in swallowing the milk.

What is to be observed in the milk.

Wee may judge of or know the nature and condition of the milk, by the quantitie, qualitie, color, favor and taste; when the quantitie of the milk is so little, that it will not suffice to nourish the infant, it cannot bee good and laudable; for it argueth some distemperature either of the whole bodie, or at least of the dugs, especially a hot and drie distemperature. But when it superaboundeth, and is more then the infant can spend, it exhausteth the juice of the Nurfes bodie; and when it cannot all bee drawn out by the infant, it cluttereth, and congealeth or corrupteth in the dugs. Yet I would rather wish it to abound, then to bee defective, for the superabounding quantitie may bee pressed out before the childe bee set to the breast.

The laudable consistence of milk.

That milk that is of a mean consistence between thick and thin, is esteemed to bee the best. For it betokeneth the strength and vigor of the facultie that ingendereth it in the breasts. Therefore if one drop of the milk bee laid on the nail of ones thumb, being first made verie clean and fair, if the thumb bee not mooved, and it run off the nail, it signifieth that it is waterie-milk: but if it stick to the nail, although the end of the thumb bee bowed downwards, it sheweth that it is too grosse and thick: but if it remain on the nail so long as you hold it upright, and fall from it when you hold it a little aside or downwards by little and little, it sheweth it is verie good milk. And that which is exquisitely white, is best of all. For the milk is no other thing then blood made white.

Why the milk ought to bee verie white.

Therefore, if it bee of anie other color, it argueth a default in the blood: so that if it bee brown, it betokeneth melancholick blood; if it bee yellow, it signifieth choleric blood; if it bee wan and pale, it betokeneth phlegmatick blood; if it bee somewhat red, it argueth the weakness

weakness of the facultie that engendreth the milk. It ought to bee sweet, fragrant, and pleasant in smell; for if it strike into the nostrils with a certain sharpness, as for the most part the milk of women that have red hair and little freckles on their faces doth, it prognosticates a hot and choleric nature: if with a certain sowerness, it portendeth a cold and melancholick nature. In taste it ought to bee sweet, and as it were sugered, for the bitter, saltish, sharp, and stiptick, is naught. And here I cannot but admire the providence of nature, which hath caused the blood wherewith the childe should bee nourished to bee turned into milk: which unless it were so, who is hee that would not turn his face from, and abhor so grievous and terrible a spectacle of the childes mouth so imbrued and besmeared with blood? What mother or Nurf would not bee amazed at everie moment with the fear of the blood so often shed out, or sucked by the infant for his nourishment? Moreover, wee should want two helps of sustentation, that is to say, Butter and Cheef.

Why a woman that hath red hair, or freckles on her face cannot bee a good Nurf.

Neither ought the childe to bee permitted to suck within five or six daies after it is born, both for the reason before alledged, and also becauf hee hath need of so much time to rest quiet, and eas himself after the pains hee hath sustained in his birth: in the mean season the mother must have her breasts drawn by som maid that drinketh no wine, or els shee may suck or draw them her self with an artificiall instrument which I will describe hereafter.

That Nurf that hath born a man childe is to bee preferred before another, becauf her milk is the better concocted, the heat of the male-childe doubling the mother's heat. And moreover, the women that are great with childe of a male-childe, are better colored, and in better strength, and better able to do anie thing all the time of their greatnes, which prooveth the same: and moreover the blood is more laudable, and the milk better. Furthermore, it behooveth the Nurf to bee brought on bed, or to travail at her just and prefixed or natural time: for when the childe is born before his time of som inward caus, it argueth that there is som default lurking and hidden in the bodie and humors thereof.

Why that Nurf that hath born a man-childe is to bee preferred before another.

Why shee cannot bee a good Nurf whose childe was born before the time.

CHAP. XXII.

What diet the Nurf ought to use, and in what situation shee ought to place the infant in the Cradle.

BOTH in eating, drinking, sleeping, watching, exercising and resting, the Nurfs diet must bee divers, according as the nature of the childe both in habit and temperature shall bee: as for example, if the childe bee altogether of a more hot blood, the Nurf both in feeding and ordering her self ought to follow a cooling diet. In general, let her eat meats of good juice, moderate in quantitie and qualitie, let her live in a pure and clear air, let her abstain from all spices, and all salted and spiced meats, and all sharp things, wine, especially that which is not allayed or mixed with water, and carnal copulation with a man, let her avoid all perturbations of the minde, but anger especially, let her use moderate exercise, unless it bee the exercise of her armes and upper parts, rather then the leggs and lower parts, whereby the greater attraction of the blood, that must bee turned into milk, may bee made towards the dugs. Let her place her childe so in the Cradle that his head may bee higher then all the bodie, that so the excremental humors may bee the better sent from the brain unto the passages that are beneath it. Let her swathe it so as the neck and all the back-bone may bee straight and equal. As long as the childe sucketh, and is not fed with stronger meat, it is better to lay him alwaie on his back, then anie other waie, for the back is, as it were the Keel in a ship, the ground-work and foundation of all the whole bodie, whereon the infant may safely and easily rest. But if hee lie on the side, it were danger lest that the bones of the ribs beeing soft and tender, not strong enough, and united with slack bands, should bow under the weight of the rest, and so wax crooked, whereby the infant might becom crook-backed. But when hee beginneth to breed teeth, and to bee fed with more strong meat, and also the bones and connexions of them begin to wax more firm and hard, hee must bee laied one while one this side, another while on that, and now and then also on his back. And the more hee groweth, the more let him bee accustomed to lie on his sides; and as hee lieth in the Cradle, let him bee turned unto that place whereat the light commeth in, lest that otherwise hee may becom purblind, for the eie of its own nature is bright and light-som, and therefore alwaies desireth the light, and abhorreth darkness, for all things are most delighted with their like, and shun their contraries. Therefore vnless the light com's directly into the childe's face, hee turneth himself everie waie beeing verie sorrowful, and striveth to turn his head and eies that hee may have the light; and that often turning and rowling of his eies at length groweth into a custom that cannot bee left: and so it commeth to pass that the infant doth either becom purblind, if hee set his eies stedfastly on one thing, or els his eies do becom trembling, alwaies turning and unstable, if hee cast his eies on manie things that are round about him: which is the reason that Nurfs, beeing taught by experience, caus over the head of the childe lying in the Cradle, an arch or vault of Wickers covered with cloath to bee made, thereby to restrain, direct, and establish the uncertain and wandering motions of the childe's eies.

Anger greatly hurte the Nurf.

The exercise of the arms is best for the Nurf. How the childe should bee placed in the Cradle.

Why an arch of wickers must bee made over the childe's head lying in the Cradle.

Why a squint-
eied Nurse caus-
eth the childe
to bee squint-
eied.

If the Nurse bee squint-eied, shee cannot look upon the childe but side-waies, whereof it commeth to pass that the childe being moist, tender, flexible, and prone to anie thing with his bodie, and so likewise with his eie, by a long and dailie custom unto his Nurse's sight, doth soon take the like custom to look after that sort also, which afterwards hee cannot leav or alter. For those evil things that wee learn in our youth, do stick firmly by us; but the good qualities are easily changed into worf. In the eies of those that are squint-eied, those two muscles which do draw the eies to the greater or lesser corner, are chiefly or more frequently mooved. Therefore either of these being confirmed in their turning aside by long use, as the exercise of their proper office increaseth the strength, soon overcom's the contrarie or withstanding muscles, called the *Antagonists*, and bring's them into their subjection, so that, will they, nill they, they bring the eie unto this or that corner as they list. So children becom left-handed, when they permit their right hand to languish with idleness and sluggishness, and strengthen their left hand with continual use and motion to do everie action therewithall, and so bring by the exercise thereof more nutriment unto that part. But if men (as some affirm) being of ripe years, and in their full growth, by dailie societie and companie of those that are lame and halt do also halt, not mindeing so to do, but it commeth against their wills, and when they think nothing thereof, why should not the like happen in children, whose soft and tender substance is as flexible and pliant as wax unto everie impression? Moreover, children, at they becom lame and crook-back't; so do they also becom squint-eied by the hereditarie default of their parents.

How children
becom left-
handed.

CHAP. XXIII.

How to make pap for children.



Pap is a most meet food or meat for children; becauf they require moist nourishment, and it must bee answerable in thicknes to the milk, that so it may not bee difficult to bee concocted or digested. For pap hath these three conditions, so that it bee made with wheaten flower, and that not crude, butt boiled: let it bee put into a new earthen pot or pipkin, and so set into an oven at the time when bread is set thereinto to bee baked; and let it remain there until the bread bee baked and drawn out: for when it is so baked, it is less clammy and crude. Those that mix the meal crude with the milk, are constrained to abide one of these discommodities or other, either to give the meal gross and clammy unto the childe, if that the pap bee onely first boiled over the fire in a pipkin or skellet, so long as shall bee necessarie for the milk; hence com obstructions in the mesaraick veins, and in the small veins of the liver, fretting and worms in the guts, and the stone in the reins. Or elf they give the childe the milk, despoiled of its butterish and whayish portion, and the terrestriall, and cheef-like, or curd-like remaining, if the pap bee boiled so long, as is necessarie for the meal: for the milk requireth not so great, neither can it suffer so long boiling as the meal.

Three laudable
conditions
of pap.

How the meal
must bee pre-
pared to make
the pap with-
all.

Why the meal
wherewith the
pap must bee
made, must
first bee boiled
or baked.

*Lib. 1. de sanit.
tuend.*

A cataplasim to
relax the
childe's bellie.

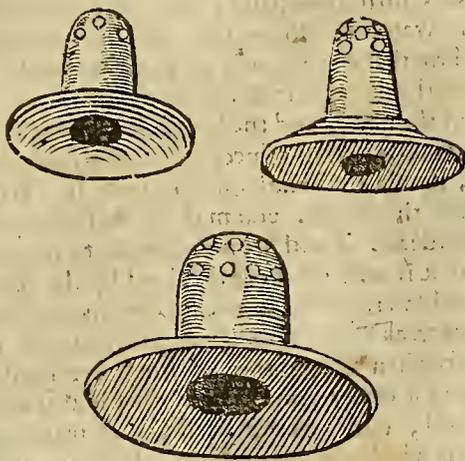
For the fret-
ting of the
gues in chil-
dren.

For the ulcers
of the nipples
or teats.

Those that do use crude meal, and have no hurt by it, are greatly bound to nature for so great a benefit. But *Galen* willeth children to bee nourished onely with the Nurse's milk, so long as the Nurse hath enough to nourish and feed it. And truly there are manie children that are contented with milk onely, and will receive no pap until they are three months old. If the childe at anie time bee costive, and cannot void the excrements, let him have a cataplasim made with one dram of Aloës, of white and black Hellebore, of each fifteen grains, being all incorporated in as much of an Ox gall as is sufficient, and extended or spread on Cotton like unto a *pultis*; as broad as the palm of ones hand, and so applie it upon the navel warm: Moreover, this cataplasim hath also virtue to kill the worms in the bellie. Manie times children have fretting of the guts, that maketh them to crie, which commeth of cruditie. This must bee cured by applying unto the bellie sweatie or moist wooll, macerated in oil of Camonil.

If when the childe's teeth begin to grow, hee chance to bite the nipple of the Nurse's breast, there will bee an ulcer verie contumacious and hard to bee cured; becauf that the sucking of the childe, and the rubbing of the clothes do keep it alwaies raw; it must bee cured with fomenting it with Alum-water, and then presently after the fomentation putting thereupon a cover of lead, made like unto a hat, as they are here described, with manie holes in the top, whereat both the milk, and also the sanious matter that commeth from the ulcers may go out; for lead it self will cure ulcers.

The figure of leaden Nipples to bee put upon the Nipple or Teat of the Nurs,
when it is ulcerated.



Children may bee caused to cease their crying four manner of waies, that is to say, by giving them the teat, by rocking them in a cradle, by finging unto them, and by changinge the clothes and swathes wherein they are wrapped. They must not bee rocked too violently in the cradle, lest that the milk that is sucked should bee corrupted by the too violent motion, by reason whereof they must not bee handled violently anie other way, and not altogether prohibited, or not suffered to crie. For by crying the breast and lungs are dilated, and made bigger and wider; the natural parts the stronger, and the brain, nostrils, the eyes and mouth are purged, by the tears and filth that com from the eyes and nostrils. But they must not bee permitted to crie long or fiercely; for fear of breaking the production of the *Peritonæum*, and thereby causing the falling down of the guts into the cod, which rupture is called of the Greeks *Enterocæle*; or of the caul, which the Greeks call *Epiplocæle*.

What moderate crying worketh in the infant.
What immoderate crying causeth.

CHAP. XXIV.

Of the weaning of Children.



Anie are weaned in the eighteenth month, som in the twentieth; but all, or the most part, in the second year: for then their teeth appear, by whose presence nature seemeth to require som harder meat then milk or pap, wherewith children are delighted, and will feed more earnestly thereon. But there is no certain time of weaning of children. For the teeth of som will appear sooner and som later; for they are prepared of nature for no other purpose then to chew the meat. If children bee weaned before their teeth appear, and bee fed with meat that is somewhat hard and solid, according to the judgment of *Avicen*, they are incident to manie diseases comming through cruditie; becaus the stomach is yet but weak, and wanteth that preparation of the meats which is made in the mouth by chewing; which men of ripe years cannot want without offence: when the childe is two years old, and the teeth appear, if the childe more vehemently desire harder meats, and doth feed on them with pleasure and good success, hee may bee safely weaned; for it cannot bee supposed that hee hath this appetite of hard meats in vain, by the instinct of nature. Yet hee may not bee weaned without such an appetite, if all other things bee correspondent, that is to say, his teeth and age; for those things are eaten without an appetite, cannot profit. But if the childe bee weak, sicklie, or feeble, hee ought not to bee weaned. And when the meet time of weaning commeth, the Nurs must now and then use him to the teat, whereby hee may leav it by little and little, and then let the teat bee annointed or rubbed with bitter things, as with Aloes, water of the infusion of *Colocynthus*, or Wormwood, or with Mustard, or Soot steeped in water, or such like. Children that are scabbie in their heads, and over all their bodies, and which void much phlegm at their mouth and nostrils, and manie excrements downwards, are like to bee strong and sound of bodie; for so they are purged of excremental humors: contrariwise, those that are clean and fair of bodie, gather the matter of manie diseases in their bodies, which in process of time will break forth and appear. Certainly, by the sudden falling of such matters into the back-bone, may become crook-backt.

When children must bee weaned.
Why children must not bee weaned before their teeth appear.
How children must bee weaned.

What children are strong and sound of bodie.
An often cause of sudden crookedness.

CHAP. XXV.

By what signs it may be known whether the childe in the womb be dead or alive.

A most certain sign of the childe dead in the womb.



When the childe is dead in the womb hee is more heavie then hee was before being alive.

That which is alive will not suffer that which is dead.

Why the bellie of a woman will be more big when the childe is dead within her then it was before when shee was alive.

F neither the Chirurgians hand, nor the mother can perceiv the infant to moov, if the waters bee flowed out, and the secundine com forth, you may certainly affirm that the infant is dead in the womb, for this is the most infal- lible sign of all others: for becaus the childe in the womb doth breath but by the arterie of the navel, and the breath is received by the Cotyledon of the arte- ries of the womb, it must of necessitie com to pass that when the secundine is separated from the infant, no air nor breath can com unto it. Wherefore so often as the secundine is excluded before the childe, you may take it for a certain token of the death thereof: when the childe is dead, it will bee more heavie to the mother then it was before when it was alive, becaus it is now no more sustained by the spirits and faculties where- with before it was governed and ruled, for so wee see dead men to bee heavier then those that are alive, and men that are weak though hunger and famin to bee heavier then when they are well refreshed, and also when the mother encline's her bodie anie way, the infant falleth that way also even as it were a stone. The mother is also vexed with sharp pain from the privities even to the navel, with a perpetual desire of making water, and going to stool, becaus that nature is wholly buied in the expulsion or avoidance of that which is dead: for that which is alive will expel the dead so far as it can from it self, becaus the one is altogether different from the other; but likeness, if anie thing, conjoin's and unite's things together: the genitals are cold in touching, and the mother complaineth that shee feeleth a coldness in her womb, by reason that the heat of the infant is extinguished, where- with before her heat was doubled: manie filthie excrements com from her; and also the mother's breath sinketh, shee swoundeth often, all which for the most part happen with- in three daies after the death of the childe: for the infant's bodie will sooner corrupt in the mother's womb then it would in the open air, becaus that, according to the judgment of Galen, all hot and moist things, being in like manner enclosed in a hot and moist place, especially if by reason of the thickness or straitness of the place they cannot receiv the air, will speedily corrupt. Now by the rising up of such vapors from the dead unto the brain and heart, such accidents may loon follow, her face will bee clean altered, seeming livid and ghastly, her dugs fall and hang loof and lank, and her bellie will bee more hard and swollen then it was before. In all bodies so putrefying, the natural heat vanisheth away, and in place thereof succeedeth a preternatural, by the working whereof the putrefied and dis- solved humors are stirred up into vapors, and converted into winde, and those vapors, becaus they possess and fill more space and room (for naturalists say that of one part of water ten parts of air are made) do so puff up the putrefied bodie into a greater bigness. You may note the same thing in bodies that are gangrenate, for they cast forth manie sharp vapors, yet nevertheless they are swollen and puffed up.

Now so loon as the Chirurgian shall know that the childe is dead by all these fore-named signs, hee shall with all diligence endeavor to save the mother so speedily as hee can, and if the Physicians cannot prevail with potions, baths, fumigations, sterminatories, vomits, and liniments appointed to expel the infant, let him prepare himself to the work following; but first let him consider the strength of the woman, for if hee perceiv that shee bee weak and fee- ble by the smallness of her pull, by her small, seldom and cold breathing, and by the altered and death-like color in her face, by her cold sweats, and by the coldness of the extremitie parts, let him abstain from the work, and onely affirm that shee will die shortly; contrariwise, if her strength bee yet good, let him with all confidence and industrie deliver her on this wise from the danger of death.

CHA XXVI.

Of the Chirurgial extractions of the childe from the womb either dead or alive.

After what sort the woman in travail must be placed when the childe being dead in her womb, must be drawn out. How shee must be bound.

Therefore first of all the air of the chamber must bee made temperate, and reduced unto a certain mediocritie, so that it may neither bee too hot, nor too cold. Then shee must bee aptly placed, that is to say, overthwart the bed-side, with her but- tocks somewhat high, haveing a hard stuffed pillow or bouslter under them, so that shee may bee in a mean figure of situation, neither sitting altogether upright, nor altogether lying along on her back; for so shee may rest quietly, and draw her breath with eas, neither shall the ligaments of the womb bee extended so as they would if shee lay upright on her back, her heels must bee drawn up close to her buttocks, and there bound with broad and soft linnen rowlers. The rowler must first com about her neck, and then cross-wise over her shoulders, and so to the feet, and there it must cross again, and so bee rowled about the legs thighs, and then it must bee brought up to the neck again, and there made fast, so that shee may

may not bee able to moov her self, even as one should be tied when he is to bee cut of the stone: But that shee may not bee wearied, or lest that her bodie should yeeld or sink down as the Chirurgian draweth the bodie of the infant from her, and so hinder the work, let him cause her feet to bee set against the side of the bed, and then let som of the strong standers by hold her fast by the legs and shoulders. Then that the air may not enter into the womb, and that the work may bee don with the more decencie, her privie parts and thighs must bee covered with a warm double linnen cloth. Then must the Chirurgian, haveing his nails closely pared, and his rings (if hee wear anie) drawn off his fingers, and his arms naked, bare, and well anointed with oil, gently draw the flaps of the neck of the womb asunder, and then let him put his hand gently into the mouth of the womb, haveing first made it gentle and slipperie with much oil; and when his hand is in, let him finde out the form and situation of the childe, whether it bee one or two, or whether it bee a Mole or not. And when hee findeth that hee commeth naturally, with his head toward the mouth or orifice of the womb, hee must lift him up gently, and so turn him that his feet may com forwards, and when hee hath brought his feet forwards, hee must draw one of them gently out at the neck of the womb, and then hee must binde it with som broad and soft or silken band a little above the heel with an indifferent slick knot, and when hee hath so bound it, hee must put it up again into the womb, then hee must put his hand in again, and finde out the other foot, and draw it also out of the womb, and when it is out of the womb, let him draw out the other again whereunto hee had before tied the one end of the band, and when hee hath them both out, let him join them both close together, and so by by little and little let him draw all the whole bodie from the womb. Also other women or Midwives may help the endeavor of the Chirurgian, by pressing the patient's bellie with their hands downwards as the infant goeth out: and the woman herself by holding her breath, and closeing her mouth and nostrils, and by driveing her breath downwards with great violence, may verie much help the expulsion. I wish him to put back the foot into the womb again after hee hath tied it, becaus if that hee should permit it to remain in the neck of the womb, it would hinder the entrance of his hand when hee putteth it in to draw out the other. But if there bee two children in the womb at once, let the Chirurgian take heed lest that hee take not of either of them a leg, for by drawing them so, hee shall profit nothing at all, and yet exceedingly hurt the woman. Therefore that hee may not bee so deceived, when hee hath drawn out one foot and tied it, and put it up again, let him with his hand follow the band wherewithall the foot is tied, and so go unto the foot, and then to the groin of the childe and then from thence hee may soon finde out the other foot of the same childe: for if it should happen otherwise, hee might draw the legs and the thighs out: but it would com no further, neither is it meet that hee should com out with his arms along by his sides, or bee drawn out on that sort, but one of his arms must bee stretched out above his head, and the other down by his side, for otherwise the orifice of the womb when it were delivered of such a gros trunk, as it would bee when his bodie should bee drawn out with his arms along by his sides, would so shrink and draw it self when the bodie should com unto the neck, onely by the accord of nature requiring union, that it would strangle and kill the infant, so that it cannot bee drawn there-hence unless it bee with a hook put under, or fastned under his chin, in his mouth, or in the hollownes of his eie. But if the infant lieth as if hee would com with his hands forwards, or if his hands bee forth alreadie, so that it may seem hee may bee drawn forth easily that way, yet it must not bee so don; for so his head would double backwards over his shoulders, to the great danger of his mother. Once I was called unto the birth of an infant, whom the midwives had assaied to draw out by the arm, so that the arm had been so long forth that it was gangrenate, whereby the childe died; I told them presently that his arm must bee put in again, and hee must bee turned otherwise. But when it could not bee put back by reason of the great swelling thereof, and also of the mother's genitals, I determined to cut it off with an incision knife, cutting the muscles as near as I could to the shoulder, yet drawing the flesh upwards, that when I had taken off the bone with a pair of cutting pincers, it might com down again to cover the shivered end of the bone, lest otherwise when it were thrust in again into the womb, it might hurt the mother. Which beeing don, I turned him with his feet forwards, and drew him out as is before said. But if the tumor either naturally or by som accident, that is to say, by putrefaction, which may perchance com, bee so great that hee cannot bee turned according to the Surgeon's intention, nor bee drawn out according as hee lieth, the tumor must bee diminished, and then hee must bee drawn out as is afore-said, and that must bee don at once. As for example, if the dead infant appear at the orifice of the womb, which our midwives call the Garland, when it gapeth, is open and dilated, but yet his head beeing more great and puffed up with winde so that it cannot com forth, as caused to bee so through that disease which the Greeks call *Mucrophisocephalos*, the Surgeon must fasten a hook under his chin, or in his mouth, or elf in the hole of his eie, or elf, which is better and more expedient, in the hinder part of his head. For when the scull is so opened, there will bee a passage wherewith the winde may pass out, and so when the tumor falleth

How the Chirurgian ought to prepare himself and his patient to the drawing out of the childe from the womb.

How the infant that is dead in the womb must bee turned, bound and drawn out.

A caution to avoid strangling of the infant in drawing out the bodie.

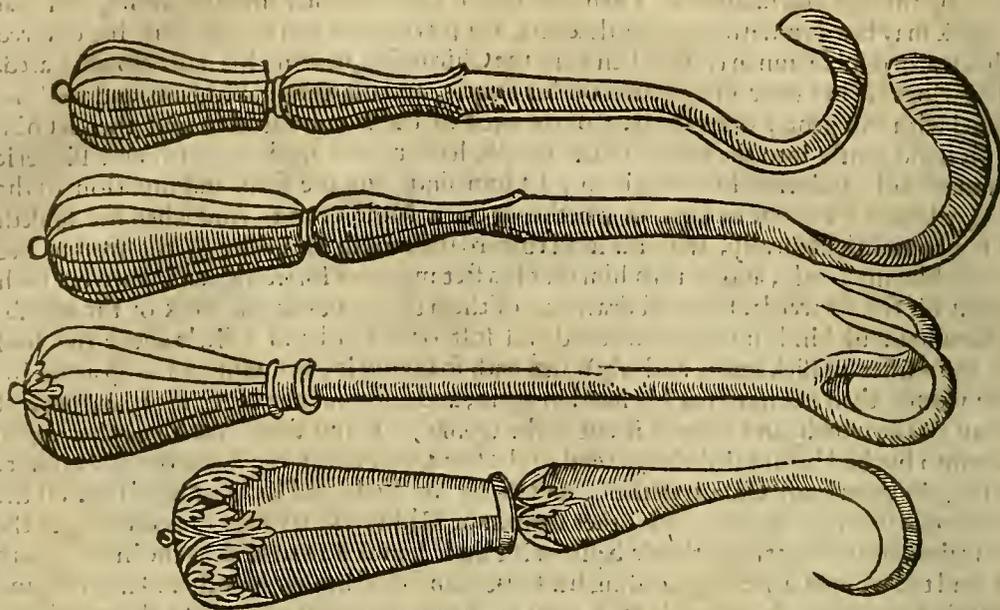
Why the childe must not bee drawn out with his hands forwards. An historic.

To diminish the winde wherewith the infant beeing dead in the womb, swellecth and is puffed up that hee cannot bee gotten out of the womb.

and

and decreaseth, let him draw the infant out by little and little; but not rashly; lest hee should break that whereon hee hath taken hold: the figure of those hooks is thus.

The form of Hooks for drawing out the infant that is dead in the womb.

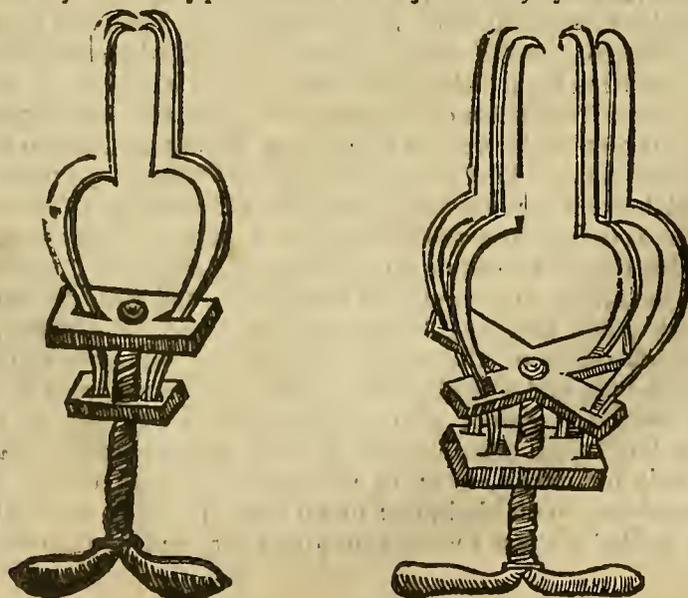


But if the breast bee troubled with the like fault, the hooks must bee fastned about the chanel-bone: if there bee a Dropsie or a Tympanie in the bellie, the hooks must bee fastned either in the short ribs, that is to say, in the muscles that are between the ribs, or especially, if the diseaf do also descend into the feet, about the bones that are above the groin; or elf putting the crooked knife here pictured into the womb with his left hand, let him make incision in the childe's bellie, and so get out all his entrals by the incision: for when hee is so bowelled, all the water that caussed the Dropsie will out: But the Surgeon must do none of all these things but when the childe is dead, and the woman that travelleth in such danger that shee cannot handsomly bee holpen.

How the head of the infant, if it remain in the womb separated from the bodie, may be drawn out.

But if by any means it happeneth, that all the infant's members bee cut away by little and little, and that the head onely remaineth behinde in the womb, which I have somtimes against my will, and with great sorrow seen; then the left hand, beeing annointed with oil of Lillies, or fresh Butter, must bee put into the womb, wherewith the Surgeon must finde out the mouth, putting his finger into it; then with his right hand hee must put up the hook (according to the direction of the left hand) gently, and by little and little, and so fasten it in the mouth, eie, or under the chin; and when hee hath firmly fixed or fastened it, hee must therewith draw out the head by little and little, for fear of loosning or breaking the part whereon hee hath hold. In stead of this Hook, you may use the Instruments that are here described, which therefore I have taken out of the Surgerie of *Francis Dalechamps*; for they are so made, that they may easily take hold of a spherical and round bodie with the branches, as with fingers.

Gryphon's Talons, that is to say, Instruments made to draw out the head of a dead infant that is separated in the womb from the rest of the bodie.



But it is not verie easie to take hold on the head when it remaineth alone in the womb, by reason of the roundness thereof, for it will slip and slide up and down, unless the bellie be pressed down, and on both sides, thereby to hold it unto the instrument, that it may with more facilitie take hold thereon.

Why the head being alone in the womb, is more difficult to be out.

CHAP. XXVII.

What must bee don unto the woman in travail presently after her deliverance.



Here is nothing so great an enemy to a woman in travail, especially to her whose childe is drawn away by violence, as cold: wherefore with all care and diligence shee must bee kept and defended from cold. For after the birth, her bodie being void and emptie, doth easily receive the air that will enter into everie thing that is emptie, and hence shee waxeth cold, her womb is distended and puffed up, and the orifices of the vessels thereof are shut and closed, whereof commeth suppression of the after-birth, or other after-purgations. And thereof commeth manie grievous accidents, as hysterical suffocation, painful fretting of the guts, fevers, and other mortal diseases.

Cold an enemy to women in travail.

What accidents follow the taking of cold in a woman that is delivered of childe.

What woman soever will avoid that discommoditie, let her hold her legs or thighs across, for in so doing, those parts that were separated will bee joined and close together again. Let her bellie bee also bound or rowled with a ligature of an indifferent breadth and length, which may keep the cold air from the womb, and also press the blood out that is contained in all the substance thereof. Then give her som Capon-broth or Caudle, with Saffron, or with the powder called *Pulvis ducis*, or elf bread toasted and dipped in wine wherein spice is brewed, for to restore her strength, and to keep away the fretting of the guts. When the secundine is drawn out, and is yet hot from the womb, it must bee laid warm unto the region of the womb, especially in the Winter, but in the Summer, the hot skin of a weather newlie killed must bee laid unto the whole bellie, and unto the region of the loins. But then the curtains of the bed must bee kept dawn, and all the windows and doors of the chamber must bee kept shut with all diligence, that no cold air may com unto the woman that travaileth, but that shee may lie and take her rest quietly. The Weather's skin must bee taken away after that it hath lien five or six hours, and then all the region of her bellie must bee annointed with the ointment following.

Secundines must bee laid to the region of the womb whilst they bee warm.

Rx. spermatis Ceti, ℥ii. olei amygdal. dulcium & hypericon. an. ℥i℥ss. sevi hircini, ℥i. olei myrtillor. ℥i. cerae novae quantum sufficit; make thereof an ointment, wherewith let her bee annointed twice in the daie: let a plaster of *Galbanum* bee applied to the navel, in the mid'st whereof put som few grains of Civet or Musk, so that the smel of the plaster may not strike up into her nostrils. Then let this medicine following bee applied, commonly called *Tela Gualterin*. *Rx. cerae novae, ℥iv. spermatis Ceti, ℥i℥ss. terebinth. venetae in aqua rosacea lota, ℥ii. olei amygdal. dulcium & hypericonis an. ℥i. olei mastich. & myrtini, an. ℥℥ss. axungiae cervi, ℥i℥ss.* melt them altogether, and when they are melted, take it from the fire, and then dip a linnen cloth therein, as big as may serv to fit the region of the bellie, whereunto it is to bee applied. These remedies will keep the external region of the bellie from wrinkling.

Unguents for the woman in travail that the region of the bellie may not bee wrinkled. The medicine called *Tela Gualterina*.

But of all other, the medicine following excelleth. *Rx. limacum rub. ℥bi. florum anthos. quart. iiiii.* let them bee cut all in small peeces, and put into an earthen pot well nealed with lead, and close stopped, then let it bee set in the dung of horses for the space of fortie daies, and then bee pressed or strained, and let the liquor that is strained out bee kept in a glasse well covered, and set in the Sun for the space of three or four daies, and therewith annoint the bellie of the woman that lieth in childe-bed. If shee bee greatly tormented with throws, let the powder following bee given unto her. *Rx. anisi conditi ℥ii. nucis moschat. cornu cervi ust. an. ℥i℥ss. nucleorum dactyllor. ℥iiii. ligni aloës & cinnamoni, an. ℥ii.* make thereof a most subtil powder, let her take ℥i. thereof at once with white wine warm. Or, *Rx. rad. consolidae major. ℥i℥ss. nucleorum persicorum, nucis moschat. an. ℥ii. carab. ℥℥ss. ambrae graeca gra. iv.* make thereof a powder, let her take one dram thereof at a time with white wine, or if shee have a fever, with the broth of a Capon. Let there bee hot bags applied to the genitals, bellie and reins; these bags must bee made of millet and oats fried in a frying-pan with a little white wine.

A powder for the fretting of the guts.

But if through the violence of the extraction the genital parts bee torn, as ancient writers affirm it hath com to pass, so that the two holes, as the two holes of the privie-parts and of the fundament have been torn into one, then that which is rent must bee stitched up, and the wound cured according to art. Which is a most unfortunate chance for the mother afterwards, for when shee shall travail again, shee cannot have her genital parts to extend and draw themselves in again by reason of the scar. So that then it will bee needful that the Chirurgian shall again open the place that was cicatrized, for otherwise shee shall never bee delivered, although shee strive and contend never so much. I have don the like cure in two women that dwelt in Paris.

What must bee don when the groin is torn in childe-birth

CHAP. XXVIII.

What cure must bee used to the Dugs and Teats of those that are brought to bed.

To drive the milk downward.



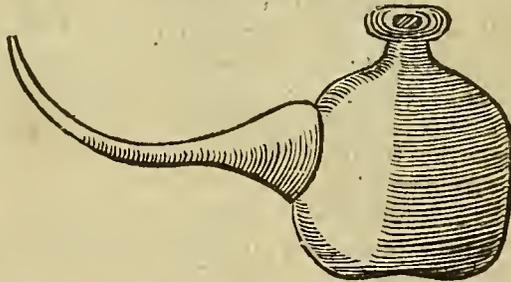
IF great store and abundance of milk bee in the breast, and the woman be not willing to nurse her own childe, they must bee annointed with the unguent following, to repel the milk, and caus it to bee expelled through the womb. *Rx. olei ros. myrtini an. ℥iii. aceti rosat. ℥i.* incorporate them together, and therewith annointing besprinkle them with the powder of Myrtils, and then apply the plaster following. *Rx. pulv. mastichini nucis moschat. an. ℥ii. nucis cupressi ℥iii. balaust myrtil. an. ℥i℥. Ireos, florent. ℥℥. olei myrtini ℥iii. terebinth. veneta ℥ii. cera nova quantum sufficit,* make thereof a soft plaster.

The leavs of brook-lime, cresses and box boiled together in urine and vineger, are thought a present remedie for this purpose, that is to say, to draw the milk from the breasts. And others take the clay that falleth down into the bottom of the trough wherein the grindstone, whereon swords are grownd, turneth, and mix it with oil of roses, and apply it warm unto the dugs, which in short space, as it is thought, will asswage the pain, stay the inflammation, and drive the milk out of the dugs. The decoction of ground-Ivie, Peruwinkle, Sage, red Roses, and roach Alum being prepared in oxycrate, and used in the form of a fomentation, is thought to perform the like effect: the like virtue have the lees of red wine, applied to the dugs with vineger, or the distilled water of unripe Pine-apples applied to the breasts with linnen cloaths wet therein, or hemlock beaten and applied with the young and tender leavs of a gourd.

By what reason, and which way cupping-glasses being fast'ned on the groin or above the navel, do draw milk out of the breasts.

This medicine following is approved by use: Take the leavs of Sage, Smallage, Rue, and Chervil, and cut or chop them verie small, and incorporate them in vineger and oil of Roses, and so apply it warm to the breast, and renew it thrice a day. In the mean time let Cupping-glasses bee applied to the inner side of the thigh and groin, and also above the navel. For this is verie effectual to draw the milk out of the breasts into the womb by the veins whereby the womb communicateth with the breasts. Moreover, they may let children or little whelps suck their breasts, whereby they may draw out the milk that is fixed fast in their dugs, in steed whereof wee have invented this instrument of glasse, wherewith, when the broader orifice is fast'ned or placed on the breast or dug, and the pipe turned upwards towards her mouth, shee may suck her own breasts her self.

The form of a little glasse, which being put on the nipple, the woman may suck her own breasts.



Instead of this instrument, a viol of glasse being first made warm, and the mouth thereof applied to the nipple or teat, by reason of the heat and wideness thereof will draw the milk forth into the bottom thereof, as it were by a certain sucking. The after-purgations being first evacuated, which is don for the most part within twentie daies after the birth, if the woman bee not in danger of a fever, nor have anie other accident, let her enter into a bath, made of marjerom, mint, sage, rosemarie, mugwort, agrimonie, penniroyal, the flowers of camomil, melilote, dill, being boiled in most pure and clear running water. All the day following let another such like bath bee prepared, whereunto let these things following bee added. *Rx. farini fabarum & aven. an. ℔.iii. farin. orobi, lupinor. & gland. an. ℔.i. aluminis roch. ℥iv. salis com. ℔.ii. gallarum, nucum cupressi, an. ℥.iii. rosar. rub. m. vi. caryophyl. nucum moschat. an. ℥.iii.* boil them all in common water, then sew them all in a clean linnen cloth, as it were in a bag, and cast them therein into the bath wherein Iron red hath been extinguished, and let the woman that hath lately travailed sit down therein so long as shee pleaseth, and when shee commeth out let her bee laid warm in bed, and let her take som preserved Orange-pill, or bread toasted and dipped in Hippocras, or in wine brewed with spices, and then let her sweat, if the sweat will com forth of its own accord.

Astringent fomentations for the privie parts. On the next day let astringent fomentations bee applied to the genitals on this wise prepared. *Rx. gallar. nucum cupressi, corticum granat. an. ℥i rosar. rub. m. i. thymi, majoran. an. m. ℥. alu. minis rochæ, salis com. an. ℥.ii.* boil them all together in red wine, and make thereof a decoction for a fomentation, for the fore-named use. The distilled liquor following is verie excellent

excellent and effectual to confirm and to draw in the dugs, or anie other loof parts. Rx. cary-
 ophyl. nucis moschat. nucum cupressi an. ℥i℥. mastich. ℥ii. alumin. roch. ℥i℥. glandium & corticis quer-
 ni, an. ℥℥. rosar. rubr m. i. cort. granat. ℥iii. terra sigillat. ℥i. cornu cervi usti ℥℥. myrtillor. sanguinis
 dracon. an. ℥i. boli armini. ℥ii. ireos florent. ℥i. sumach. berber. Hippuris, an. m. ℥. conuassentur omnia,
 & macerentur spatio duorum dierum, in ℥℥. aque rosarum ℥ii. prunorum sive str. mespilorum, pom-
 orum quernorum, & ℥℥. aque fabrorum, aceti denique fortiss. ℥iv. afterward distil it over a gentle
 fire, and keep the distilled liquor for your use, wherewith let the parts bee fomented twice
 in a day. And after the fomentation, let wollen cloaths or stupes of linnen cloth bee dipped
 in the liquor, and then pressed out out and laid to the place. When all these things are don
 and past, the woman may again keep companie with her husband.

A distilled li-
 quor for to
 draw together
 the dugs that
 are loof and
 slack.

CHAP. XXIX.

What the causes of difficult and painful travail in childe-birth are.



He fault dependeth somtimes on the mother; and somtimes on the infant or
 childe within the womb. On the mother, if shee bee more fat, if shee bee given
 to gormandize or great eating, if shee bee too lean or young; as *Savanarola*
 thinketh her to bee, that is great with childe at nine yeares of age, or unexpert,
 or more old, or weaker then shee should bee either by nature or by som accident:
 as by diseases that shee hath had a little before the time of childe-birth, or with a great flux
 of blood. But those that fall in travail before the full and prefixed time, are verie difficult to
 deliver, becaus the fruit is yet unripe, and not readie or easie to bee delivered. If the neck or
 orifice of the womb bee narrow, either from the first conformation, or afterwards by som
 chance as by an ulcer cicatrized: or more hard and callous, by reason that it hath been torn
 before at the birth of som other childe; and so cicatrized again; so that if the cicatrized
 place bee not cut even in the moment of the deliverance; both the childe and the mother
 will bee in danger of death; also the rude handling of the midwife may hinder the free de-
 liverance of the childe. Oftentimes women are letted in travail by shamefacedness, by reason
 of the presence of som man, or hate to som woman there present.

The causes of
 the difficult
 childe-birth
 that are in the
 woman that
 travaileth.

If the secundine bee pulled away sooner then it is necessarie, it may caus a great flux of
 blood to fill the womb, so that then it cannot perform his exclusive facultie, no otherwise
 then the bladder when it is distended by reason of over-abundance of water that is therein,
 cannot cast it forth, so that there is a stoppage of the urine. But the womb is much rather
 hindered, or the facultie of childe-birth is stopped or delaied, if together with the stopping
 of the secundine, there bee either a Mole or som other bodie contrarie to nature in the
 womb. In the secundines of two women whom I delivered of two children that were dead
 in their bodies, I found a great quantitie of sand like unto that which is found about the
 the banks of rivers, so that the gravel or sand that was in each secundine was a full pound in
 weight.

The passions
 of the minde
 hinder the
 birth.

Also the infant may bee the occasion of difficult childe-birth, as, if too big; if it com o-
 verthwart, if it com with its face upwards, and its buttocks forwards, if it com with its
 feet and hands both forwards at once, if it bee dead and swoun by reason of corruption, if
 it bee monstrous, if it have two bodies or two heads, if it bee manifold or seven-fold, as *Al-
 bucrasis* affirmeth he hath seen, if there bee a mole annexed thereto, if it bee verie weak, if when
 the waters are flowd out, it doth not moov or stir, or offer its self to com forth. Yet not-
 withstanding, it happeneth somtimes that the fault is neither in the mother nor the childe,
 but in the air, which beeing cold, doth so binde, congeal and make stiff the genital parts,
 that they cannot bee relaxed: or, beeing contrariwise too hot, it weakeneth the woman that
 is in travail, by reason that it wasteth the spirits, wherein all the strength consisteth: or in
 the ignorant or unexpert midwife, who cannot artificially rule and govern the endeavors
 of the woman in travail.

The causes of
 difficult child-
 birth that are
 in the infant.

The external
 causes of diffi-
 cult childe-
 birth.

The birth is wont to bee easie, if it bee in the due and prefixed natural time, if the childe
 offer himself lustily to com forth with his head forwards, presently after the waters are com
 forth, and the mother in like manner lustie and strong: those which are wont to bee trou-
 bled with verie difficult childe-birth, ought a little before the time of the birth, to go into an
 half-tub filled with the decoction of mollifying roots and seeds, to have their genitals, womb
 and neck thereof to bee annointed, with much oil, and the intestines that are full and loa-
 ded must bee unburthened of the excrements, and then the expulsive facultie provoked with
 a sharp glyster, that the tumors and swelling of the birth concurring therewith, the more ea-
 sie exclusion may bee made. But I like it rather better, that the woman in travail should bee
 placed in a chair that hath the back thereof lean ing backwards, then in her bed, but the chair
 must have a hole in the bottom, whereby the bones that must bee dilated in the birth; may
 have more freedom to close themselves again.

Which is an
 easie birth.
 What causeth
 easiness of
 child-birth.

CHAP. XXX.

The caus of Abortion or untimely birth.

What Abortion is.



Abortion or untimely birth is one thing, and effluxion another. They call abortion the sudden exclusion of the childe already formed and alive, before the perfect maturitie thereof. But that is called effluxion, which is the falling down of seeds mixed together and coagulated but for the space of a few daies, onely in the forms of membranes or tunicles, congealed blood, and of an unshapen or de-

What Effluxion is.

formed piece of flesh; the Midwives of our cuntry call it a fall branch or bud. This effluxion is the caus of great pain and most bitter and cruel torment to the woman: leaving behinde it weaknes of bodie far greater then if the childe were born at the due time. The causes of abortion or untimely birth, whereof the childe is called an abortive, are manie, as a great scouring, a strangurie joined with heat and inflammation, sharp fretting of the guts, a great and continual cough, exceeding vomiting, vehement labor in running, leaping, and dauncing, and by a great fall from on high, carrying of a great burthen, riding on a trotting-hors, or in a Coach, by vehement, often and ardent copulation with men, or by a great blow or stroke on the bellie. For all these and such like vehement and inordinate motions dissolv the ligaments of the womb, and so caus abortion or untimely birth.

Women are in more pain by reason of the effluxion then at the true birth. The causes of Abortion.

Also whatsoever presseth or girdeth in the mothers bellie, and therewith also the womb that is within it, as are those Ivorie or Whale-bone buskes, which women wear on their bodies, thereby to keep down their bellies; by these and such like things the childe is letted or hindred from growing to his full strength, so that by expression, or as it were by compulsion, hee is often forced to com forth before the legitimate and lawful time. Thundering; the nois of the shooting of great Ordnance, the found, and vehement nois of the ringing of Bells constrain women to fall in travell before their time, especially women that are young, whose bodies are soft, slack and tenderer then those that bee of riper years. Long and great fasting, a great flux of blood, especially when the infant, is grown somewhat great: but if it bee but two moneths old, the danger is not so great, becaus then hee needeth not so great quantitie of nourishment, also a long diseaf of the mother, which consumeth the blood, causeth the childe to com forth beeing destitute of store of nourishment before the fit time. Moreover, fulness, by reason of the eating great store of meats, often maketh or causeth untimely birth; becaus it depraveth the strength, and presseth down the childe: as likewise the use of meats that are of an evil juice, which they lust or long for. But bath's, becaus they relax the ligaments of the womb, and hot houses, for that the fervent and choaking air is received into the bodie, provoke the infant to strive to go forth to take the cold air, and so caus abortion.

Girding of the bellie may caus untimely birth.

How bathes and hot houses caus untimely birth.

What women soever, being indifferently well in their bodies, travail in the second or third moneth without anie manifest caus, those have the Cötylidones of their womb full of filth and matter, and cannot hold up the infant, by reason of the weight thereof, but are broken: Moreover, sudden or continual perturbations of the minde, whether they bee through anger or fear, may caus women to travail before their time, and are accounted as the causes of abortions, for that they caus great and vehement trouble in the bodie. Those women that are like to travail before their time, their duggs will wax little: therefore when a woman is great with childe, if her duggs suddenly wax small or slender, it is a sign that she will travail before her time; the caus of such shrinking of the duggs is, that the matter of the milk is drawn back into the womb, by reason that the infant wanteth nourishment to nourish & succour it withall. Which scarcitie the infant not long abiding, striveth to go forth to seek that abroad which hee cannot have within, for among the causes which do make the infant to com out of the womb, those are most usually named with Hippocrates, the necessitie of a more large nutriment and air.

Hip. aph. 53. & 37. sect. 5. Hip. aph. 45. sect. 5.

Hip. aph. 38. sect. 5.

Therefore if a woman that is with childe have one of her duggs small, if shee have two children, shee is like to travail of one of them before the full and perfect time: so that if the right dug bee small, it is a man-childe, but if it bee the left dug it is a female. Women are in far more pain when they bring forth their children before the time, then if it were at the full and due time; becaus that whatsoever is contrarie to nature, is troublesome, painfull, and also oftentimes dangerous. If there bee anie error committed at the first time of the childe-birth, it is commonly seen that it happeneth alwaies after at each time of childe-birth. Therefore, to finde out the causes of that error, you must take the counsel of som Physician, and after his counsel indeavour to amend the same. Truly this plaster following beeing applied to the reins doth confirm the womb, and stay the infant therein. Rx. *ladani* ℥ii. *galang.* ℥i. *nucis moschat* *nucis cupressi, boli armeni, terra sigil. sanguin. dracon. balaust. an.* ℥ss. *acatie, psidiorum, bipocistid. an.* ℥i. *maslich. myrrhe, an.* ℥ ii. *gummi arabic.* ℥ i. *terebinth. venet.* ℥ii. *picis naval.* ℥i. *β. cere* quantum sufficit. fiat *emplast. secundum artem:* spread it for your use upon leather. If the part begin to itch, let the plaster bee taken awaie, & instead thereof use *unguent. rosat. or refrig. Galen.* or this that followeth. Rx. *olei myrtini. maslich. cydonior. an.* ℥ i. *hypo. boli armen. sang. dracon. acatie, an.* ℥ i. *sant. citrini.* ℥ss. *β. cere* quant. suf. make thereof an ointment according unto art. There are women that bear the childe

Women are in more pain at the untimely birth then at the due time of birth.

The error of the first child-birth continues afterwards.

A plaster staying the infant in the womb.

childe in their womb ten or eleven whole moneths, and such children have their conformation of much quantitie of seed: wherefore they will bee more big, great and strong, and therefore they require more time to com to their perfection and maturitie; for those fruits that are great will not bee so soon ripe as those that are small. But children that are small and little of bodie do often com to their perfection and maturitie in seven or nine moneths: if all other things are correspondent in greatness and bigness of bodie, it happeneth for the most part that the woman with childe is not delivered before the ninth moneth bee don, or at the leastwise in the same moneth. But a male childe will bee commonly born at the beginning, or a little before the beginning of the same moneth, by reason of his engrafted heat which causeth maturitie and ripeness. Furthermore, the infant is sooner com to maturitie and perfection in a hot woman than in a cold, for it is the propertie of heat to ripen.

What children are ten or eleven moneths in the womb.

A male will bee born sooner than a female.

CHAP. XXXI.

How to preserv the infant in the womb, when the mother is dead.



IF all the signs of death appear in the woman that lieth in travel, and cannot bee delivered, there must then bee a Surgeon readie and at hand, which may open her bodie so soon as shee is dead, whereby the infant may bee preserved in safetie; neither can it bee supposed sufficient if the mother's mouth and privie parts bee held open; for the infant being enclosed in his mother's womb, and compassed with the membranes, cannot take his breath, but by the contractions and dilatations of the arterie of the navel. But when the mother is dead, the lungs do not execute their office and function: therefore they cannot gather in the air that compasseth the bodie by the mouth or *aspera arteria* into their own substance, or into the arteries that are disperfed throughout the bodie thereof, by reason whereof it cannot send it unto the heart by the veinie arterie which is called *arteria venalis*: for if the heart want air, there cannot bee anie in the great arterie which is called *arteria aorta*, whose function it is to draw it from the heart; as also by reason thereof it is wanting in the arteries of the womb, which are as it were the little conduits of the great arterie, whereinto the air that is brought from the heart is derived, and floweth in unto these little ones of all the bodie, and likewise of the womb. Wherefore it must of necessitie follow that the air is wanting to the cotyledons of the secundines, to the arterie of the infants navel, the iliack arteries also, and therefore unto his heart, and so unto his bodie: for the air being drawn by the the mother's lungs, is accustomed to com to the infant by this continuation of passages. Therefore because death maketh all the motions of the mother's bodie to cease, it is far better to open her bodie so soon as shee is dead, beginning the incision at the cartilage, *Xiphoides*, or breast-blade, and making it in a form semicircular, cutting the skin, muscles and *peritonæum*, not touching the guts: then the womb being lifted up, must first bee cut, lest that otherwise the infant might perchance bee touched or hurt with the knife.

Why it is not sufficient to preserv life in the childe to hold open the mouth and privie parts of the mother so soon as shee is dead and the childe alive in her bodie.

How the bellie of the woman that dieth in travel must bee cut open to save the childe.

You shall oftentimes finde the child unmoveable, as though hee were dead; but not because hee is dead indeed, but by reason that hee, being destitute of the access of the spirits by the death of the mother, hath contracted a great weakness: yet you may know whether hee bee dead indeed or not, by handling the arterie of the navel, for it will beat and pant if hee bee alive, otherwise not; but if there bee anie life yet remaining in him, shortly after hee hath taken in the air, and is recreated with the access thereof, hee will move all his members, and also all his whole bodie. In so great a weakness or debilitie of the strength of the childe, by cutting the navel string, but it must rather bee laid close to the region of the bellie thereof, that thereby the heat (if there bee anie jot remaining) may bee stirred up again. But I cannot sufficiently marvel at the insolencie of those that affirm that they have seen women whose bellies and womb have been more then once cut, and the infant taken out, when it could no otherwise bee gotten forth, and yet notwithstanding alive; which thing there is no man can perswade mee can bee done, without the death of the mother, by reason of the necessarie greatness of the wound that must bee made in the muscles of the bellie, and substance of the womb, for the womb of a woman that is great with child, by reason that it swelleth, and is distended with much bloud, must needs yield a great flux of bloud, which of necessitie must bee mortal. And to conclude, when that the wound or incision of the womb is cicatrized, it will not permit or suffer the womb to bee dilated or extended to receive or bear a new birth. For these and such like other causes, this kinde of cure, as desperate and dangerous, is not (in mine opinion) to be used.

How it may bee known whether the infant bee alive or not.

CHAP. XXXII.

Of superfetation.

What superfetation is.



Superfetation is when a woman doth bear two or more children at one time in her womb, and they bee enclosed each in his severall secundine: but those that are included in the same secundine, are supposed to bee conceived at one and the same time of copulation, by reason of the great and copious abundance of seed, and these have no number of daies between their conception and birth, but all at once. For as presently after meat the stomach which is naturally of a good temper, is contracted or drawn together about the meat, to comprehend it on everie side, though small in quantitie, as it were by both hands, so that it cannot rowl neither unto this or that side; so the womb is drawn together unto the conception about both the seeds, as soon as they are brought into the capacitie thereof, and is so drawn in unto it on everie side, that it may com together into one bodie, not permitting anie portion thereof to go into anie other region or side, so that by one time of copulation the seed that is mixed together, cannot engender more children then one, which are divided by their secundines.

A woman's womb is not distinguished into divers cels.

The reason of superfetation.

And moreover, becaus there are no such cels in the wombs of women, as are supposed, or rather known to bee in the wombs of beasts, which therefore bring forth manie at one conception or birth. But now if anie part of the woman's womb doth not applie and adjoin it self closely to the conception of the seed already received, lest anie thing should bee given by nature for no purpose, it must of necessitie follow that it must bee filled with air, which will alter and corrupt the seeds. Therefore the generation of more then one infant at a time, haveing everie one his severall secundine, is on this wise. If a woman conceiv by copulation with a man as this day, and if that for a few daies after the conception, the orifice of the womb bee not exactly shut, but rather gape a little, and if shee do then use copulation again, so that at both these times of copulation there may bee an effusion or perfect mixture of the fertile seed in the womb, there will follow a new conception, or superfetation. For superfetation is no other then a certain second conception, when the woman already with childe, again useth copulation with a man, and so conceiveth again, according to the judgment of Hippocrates. But there may bee manie causes alledged why the womb which did join and close doth open and unloof it self again. For there bee som that suppose the womb to bee open at certain times after the conception, that there may bee an issue out for certain excremental matters that are contained therein; and therefore that the woman that hath so conceived already, and shall then use copulation with a man again, shall also conceive again.

Lib. de superfetationibus. Why the womb after the conception of the seed, doth many times afterwards open.

Others say that the womb of it self, and of its own nature is verie desirous of seed or copulation, or elf being heated or enflamed with the pleasant motion of the man mooving her thereto, doth at length unclose it self to receiv the man's seed: for likewise it happeneth manie times that the orifice of the stomach being shut after eating, is presently unloosed again, when other delicate meats are offered to bee eaten: even so may the womb unclose it self again at certain seasons, whereof com manifold issues, whose time of birth and also of conception are different. For as Plinie writeth, when there hath been a little space between two conceptions, they are both hastened, as it appeared in Hercules and his brother Iphicles; and in her which haveing two children at a birth, brought forth one like unto her husband, and another like unto the adulterer. And also in the Proconesian slave or bond-woman, who, by copulation on the same day, brought forth one like unto her master, and another like unto his steward: and in another who brought forth one at the due time of childe-birth, and another at five months end. And again in another, who bringing forth her burthen on the seventh month, brought forth two more in the months following. But this is a most manifest argument of superfetation, that as manie children as are in the womb (unless they bee twins of the same sex) so manie secundines are there, as I have often seen my self. And it is verie likely that if they were conceived in the same moment of time, that they should all bee included in one secundine. But when a woman hath more children then two at one burden, it seemeth to bee a monstrous thing, becaus that nature hath given her but two breasts: Although wee shall hereafter rehearf manie examples of more numerous births.

Lib. 7. cap. 11.

CHAP. XXXIII.

Of the tumor called Mola, or a Mole growing in the womb of Women.

The reason of the name.



Of the Greek word *Myle*, which signifieth a Mill-stone, this tumor called *Mola* hath its name: for it is like unto a Mill-stone both in the round or circular figure, and also in hard consistence, for the which self same reason the whirl-bone of the knee is called of the Latines *Mola*, and of the Greeks *Myle*. But the tumor called *Mola*, whereof wee here entreat, is nothing elf but a certain fals concepti- on of deformed flesh, round and hard, conceived in the womb as it were rude and unperfect, and

What a Mola is.

not distinguished into members, coming by corrupt, weak, and diseased seed, and of the immoderate flux of the termes, as it is defined by *Hippocrates*. This is inclosed in no secundine, but as it were in its own skin.

There are some that think the *Mola* to be ingendered of the concourse or mixture of the womans seed and mensrual blood, without the communication of the mans seed. But the opinion of *Galen* is, that never anie man saw a woman conceive either a *Mola*, or anie other such thing, without copulation of man, as a hen laieth eggs without a cock: for the onely cause and original of that motion is in the mans seed, and the mans seed doth onely minister matter for the generation thereof. Of the same opinion is *Avicen*, who thinketh the *Mola* to be made by the confluxion of the mans seed that is unfertile, with the womans; when as it, because unfruitful, onely puff's up or makes the womans seed to swell as leaven into a greater bigness, but not into anie perfect shape or form. Which is also of the opinion of *Fernelius*, by the decrees of *Hippocrates* and *Avicen*: for the immoderate fluxes of the courses are conducing to the generation of the *Mola*, which overwhelming the mans seed, being now unfruitful and weak, doth constrain it to desist from its interprise of conformation already begun, as vanquished or wholly overcome: for the generation of the *Mola* cometh not of a simple heat working upon a clammy and gross humor, as worms are generated; but of both the seeds, by the efficacy of a certain spirit, after a sort prolificall, as may be understood by the membranes wherein the *Mola* is inclosed, by the ligaments whereby manie times it is fastened or bound to the true conception or childe, engendered or begotten by superfecundation; and finally, by the increase, and great and sluggish weight. If all men were not persuaded that the conflux of a mans seed must of necessitie concur to the generation of the *Mola*, it would be no small cloak or cover to women to avoid the shame and reproach of their light behavior.

Lib. de steril.

Cap. 7. lib. 4. de usu part.

How the *mola* is engendered.

CHAP. XXXIV.

How to discern a true conception from a fals conception or Mola.

When the *Mola* is inclosed in the womb, the same things appear as in the true and lawful conception. But the more proper signes of the *Mola* are these: there is a certain pricking pain, which at the beginning troubleth the bellie as if it were the cholick, the belly will swell sooner then it would if it were the true issue, and will be distended with greater hardness, and is more difficult and troublesome to carrie, because it is contrarie to nature, and void of soul or life. Presently after the conception the dugs swell and puff up, but shortly they fall and become lank and lax; for nature sendeth milk thither in vain, because there is no issue in the womb that may spend the same. The *Mola* will move before the third month, although it be obscurely, but the true conception will not: but this motion of the *Mola* is not of the intellectual soul, but of the facultie of the womb, and of the spirit of the seed dispersed through the substance of the *Mola*; for it is nourished and increaseth after the manner of plants, but not by reason of a soul or spirit sent from above, as the infant doth. Moreover, that motion that the infant hath in its due and appointed time, differeth much from the motion of the *Mola*; for the childe is moved to the right side, to the left side, and to everie side gently, but the *Mola*, by reason of its heaviness, is fixed, and rowleth in manner of a stone, carried by the weight thereof unto what side soever the woman declineth her self. The woman that hath a *Mola* in her womb doth alie wax leaner and leaner in all her members, but especially in her leggs, although notwithstanding towards night they will swell, so that shee will be verie slow or heavie in going, the natural heat forsakeing the parts remote from the heart by little and little: and moreover, her bellie swells, by reason that the mensrual matter resteth about those places, and is not consumed in the nourishment of the *Mola*; shee is swollen as if shee had the dropsie, but that it is harder, and doth not rise again when it is pressed with the fingers. The navel doth not stand out as it will do when the true issue is contained in the womb, neither do the courses flow as they sometimes do in the true conception; but sometimes great fluxes happen, which ease the weight of the bellie. In manie when the *Mola* doth cleave not verie fast, it falleth awaie within three or four moneths, being not as yet come unto its just bigness; and manie times it cleaveth to the sides of the womb & Cotylidons verie firmly, so that some women carrie it in their wombs five or six yeers, and some as long as they live.

The signes of a *mola* inclosed in the womb.

By what facultie the womb moveth.

How the motion of the *mola* differeth from the motion of the infant in the womb.

The *mola* doth turn to each side of the womb, as the situation of the bodie is.

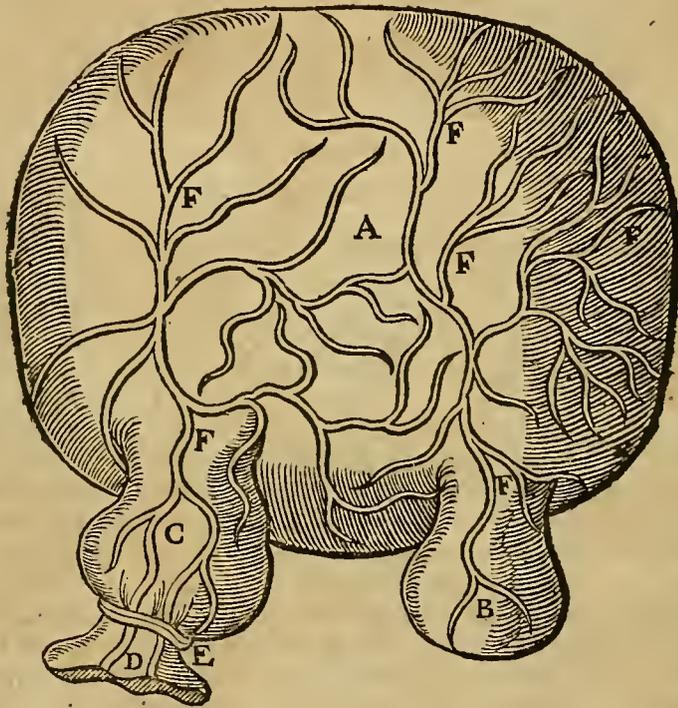
The wife of *Guiliam Roger Pewterer*, dwelling in *St. Victors street*, bore a *Mola* in her womb seventeen yeers, who being of the age of fiftie yeers, died; and I haveing opened her found the bodie of her womb to be almost loosed, and not tied or bound by its accustomed ligatures, but as it were hanging onely by the neck, and furthermore cleaving to the Kall adjoining to it, haveing but onely one testicle, and that on the right side, and that somewhat broader and looser then usual: the hornes were not to be seen except it were on that side, the vessels were on the neck onely, and there verie manifest and puffed up, it was as big as a mans head. When I had taken it out of her bodie, I brought it home unto my house, that at

A historie.

The description of a *Mola* carried seven-teen years in the womb.

my leasure I might finde out what was contained in it so long; therefore, on a certain day, calling together the chief Physicians of Paris, as *Massilæus, Alexis, Vigor, de S. Pont. Feure, Brovet, Violaïs, Grealmus, Ravin, Marescotius, Milotus, Hautin, Riolan, Luffon*; and Surgeons, as *Erun, Co-interel, Guillemeau*; all thes being present, I opened the womb, and I found it in all the bodie thereof, and in the proper tunicle, so schirrhous, and so hard, that I could hardly cut or make a knife to enter it: the bodie thereof was three fingers thick. In the midst of the capacitie thereof I found a lump of flesh as big as both my fists, like unto a Cow's udder, cleaving to the sides of the womb but in certain places, of a verie thick, unequal and cloddish substance, with manie bodies therein, even as are commonly found in wens and gristles, dispersed through it as if it were bones. The judgment of all that were present was, that this great tumor at the first was a *Mola*, which in proces of time degenerated into a schirrous bodie, together with the proper substance of the womb. Moreover, in the middle of the neck of the womb, wee found a tumor as big as a Turkie's egg, of substance hard, cartilaginous and bonic, filling all the whole neck, but especially the inward orifice of the womb, which the common people of France do call the *Garland*, so that by that passage nothing could go out, or enter into the womb: all that tumor weighed nine pounds and two ounces, which I, by reason of the noveltie of the thing, keep in my closer, and here I have described it.

The external form and description of the fore-named womb.



A. Sheweth the bodie of the womb.

B. The testicle.

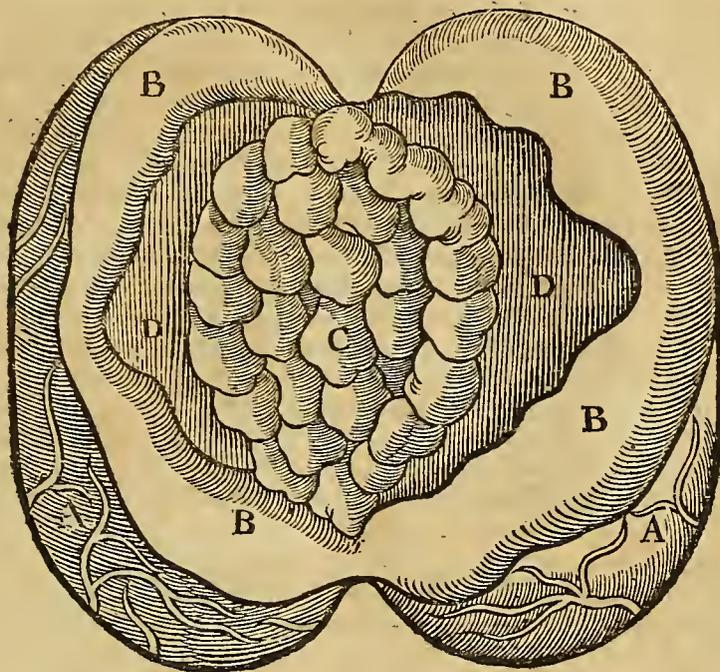
C. The neck of the womb, wherein that little tumor was contained.

D. Sheweth the end of the neck of the womb that was plucked in sunder, and also the vessels whereby it drew the nutriment unto it.

E. Sheweth the band.

FFF. The vessels dispersed thorow the womb.

The description of the womb being open, and shewing the Mola contained therein.



A.A. Shew the external and superficial part of the womb. B.B.B.B. Shew the thickness of the bodie, or proper substance of the womb. C. Sheweth the Mola. D.D. Shew that concavities wherein the Mola was contained, or inclosed in the womb.

As long as the woman carried this *Mola* in her womb, shee felt most sharp pain in her bellie, the region of her bellie was marvellous hard, distended and large, as if it were a woman that had manie children at once in her womb; so that manie Physicians, when the time of childe-birth was past, supposed that swelling of the bellie to com of the dropsie, and assaied to cure it as they would the dropsie; but for all the medicines they could use, the bellie became never the lesser. Oftentimes the urine was stopped for the space of three daies, and then the making of urine was verie painfull unto her, and manie times also her excrements were stopped for the space of a week, by reason that the guts were pressed by the weight of the *Mola*. At certain seasons, as everie third moneth, there came exceeding great fluxes, the matter thereof could not bee carried through the capacitie of the womb, as wee said before, becaus it was exactly shut and stopped, but through the vessels by which virgins, and also certain other women great with childe evacuate their menstrual matter. If the *Mola* bee expelled or cast out in the first or second moneth, as manie times it so happeneth, it is called of women an unprofitable or false conception. Somtimes there are found in one womb two or three moles separated one from another, and somtimes bound or tied to the found and perfect infant. As it happened in the wife of *Valleriola* the Physician, which was delivered of a *Mola* which shee had carried in her womb twelve moneths, annexed with a childe of four moneths old, which had deprived the infant both of its room and nutriment. For it is alwaies to bee certainly supposed, that the *Mola*, as a cruel beast, by its societic, and keeping it from its nutriment and place, kil's the infant that is joined unto it.

I remember once I opened the bodie of a dead woman, which had a *Mola* in her womb, as big as a Goose-egg, which when nature had assaied by manie vain endeavors to cast out, remained notwithstanding, and at length putrefied, and therewith infected the whole womb, whereof shee died. There bee som which judging themselvs great with childe, doe about the ninth or tenth moneth expell no other thing but sounding blasts of winde; whereby the womb suddenly falling down, and waxing more slender, they are said in a mockerie to have been delivered of a fart. To conclude, whatsoever resemble's being with childe, if it bee not excluded at the due and lawful time of childe-birth by its own accord, or by the strength of nature, then must it bee expelled by art.

A vain or unprofitable conception.

The *Mola* kill's the infant in the womb, when it is fastened unto it.

CHAP. XXXV.

What cure must bee used to the Mola.

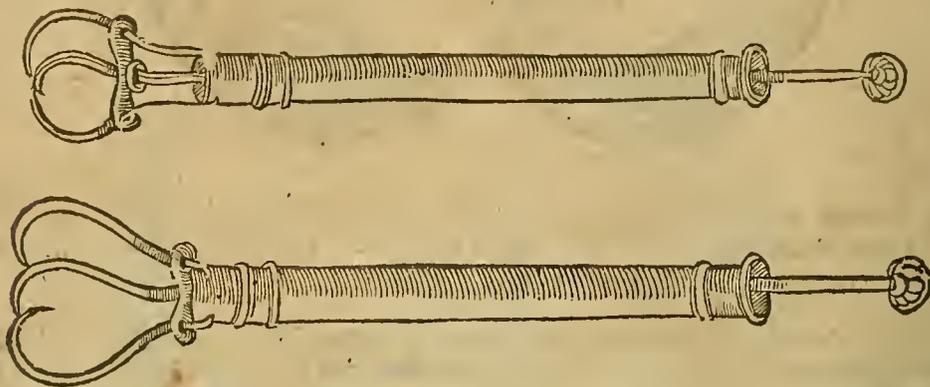
ALL things that provoke the flowers and secundines, and exclude the infant, being dead, are to bee prescribed, given inwardly, put up, and applied outwardly, as the trochisces of

Those things that provoke the flows forcibly, do also consume or waste the *mola*.

The Chirurgical extraction of the *mola*.

of *myrrha*, *hermodactyls*, and such like, first having fomentations that are relaxing and mollifying alwaies applied to the places. You must use these medicines and phlebotomie, diet and baths then and so long as it shall seem necessarie to the Physician that is present. But if it happen's that the *mola* is separated or loosed from the womb, and nature cannot expel it when it is so loosed, let the Chirurgical place the woman in that situation that wee said shee was to bee put in, when the childe was to bee drawn from her. Then opening her genital parts, let him take hold on it by putting an instrument into it, which by reason of the likenes thereof is called a Gryphon's Talon, for it cannot bee taken hold on otherwise, by reason of the roundness thereof, for it hath no place whereon it bee may taken hold of: therefore when one taketh hold on it with his hand, it cannot bee holden fast by reason of the slipperiness thereof, but will run aud slip back into the hollownes of the womb, like unto a bowl or great ball; but it may bee more easily taken hold on with the Gryphon's Talon, if the bellie bee pressed on both sides that it may remain still while the Gryphon's Talon take's hold on it, for when it hath taken good hold on it, it may bee easily drawn out. When the *mola* is drawn out, the same cure must bee used to the woman, as is used to a woman after that shee is delivered of childe.

The figure of an instrument called a Gryphon's Talon, to draw out the *Mola* when it is loof in the womb.



CHAP. XXXVI.

Of Tumors or swellings happening to the Pancreas or sweet-bread, and the whole Mesenterie.



He tumors of other places and parts in the bellie ought diligently to bee distinguished from the *mola*, and other tumors of the womb. For when the tumors arise in the glandula called *Pancreas*, and in all the whole *Mesenterium*, manie unskilful Chirurgicalians take them for *mola's* or scirrhus tumors of the womb, and so go erroneously about to cure them, as shall appear by these histories following.

An historie.

Isabel Rolant the wife of *John Bony* dwelling in Paris in the street *Moncey* near to *St. Gervise* his Church, being threescore years of age, departed this life in the year of our Lord 1578. on the twentieth second daie of October: and her bodie being opened in the presence of Doctor *Milot* the Physician, hee, when the *Mesenterie* was taken out of the bodie, caused it to bee carried home to his hous, that at his leasure hee might finde out the caus of this mortal disease, which was alwaies suspected to bee in the *Mesenterie*. Therefore on a time calling *Varadeus*, *Brove*, *Chappel*, *Marescotius*, *Arragonius*, *Baillutius*, *Reburtilus*, and *Riolan*, all Doctors of Physick, and mee and *Pineus* Chirurgicalians, to his hous to see the same. Where wee found all the *Mesenterie* and the *Pancreas* in the *Mesenterie* swoln and puffed up with a marvellous and almost incredible tumor, so that it weighed ten pound and a half, altogether scirrhus on the outside, cleaving on the hinder part onely to the *vertebres* of the loins: but on the fore-part to the *Peritoneum*, being also scirrhus and wholly cartilaginous. Moreover, there were infinite other abscesses in the same *Mesenterie*, everie one closed in his several cyst, som filled with a honie-like, som filled with a tallow-like, som with an albugineous, and som with a waterish liquor or humor, whereof som also were like unto pap; and to conclude, look how manie abscesses there were, so manie kindes or differences of matters there were. It was then eight years since that tumor began to grow by little and little without feeling and pain unto such a greatnes, because that the *Mesenterie* it self was without pain in a manner. For the woman her self could do all the faculties of nature almost as well as if shee had been sound and whole, except that two months before shee died, shee was constrained to keep her bed, because shee had a continual fever, which endured so long as shee lived, and also because that the *Mesenterie*, being as it were separated or torn from its roots or seat, did rowl up and down in the bellie, not without the feeling of grievous pain: for, as wee said before, it did stick but onely to the *vertebres* of the

Apostumes of divers kindes in the *Mesenterium*.

The accidents that com when the *Mesenterium* is separated from the bodies adjoining.

the loins and *Peritoneum*, and nothing at all to the guts and other parts whereunto it is as it were naturally knit or joined.

Therefore becauf the weight and heaviness thereof depressed the bladder, it caused a great difficultie in her making of water, and also becauf it rested on the guts, it made it verie painful for her to go to stool, so that the excrements would not com down except shee took a sharp glyster to cauf them: and as concerning glysters, they could not bee put up high enough by reason of the greatnes of the tumor which enclosed and shut the way; and suppositories did no good at all. It was also verie difficult for her to take breath, by reason that the midriff or *diaphragma* was compressed with the tumor. There were som that did suspect it to bee a *mola*, others thought that it came by reason of the dropsie. Assuredly this diseaf caused the dropsie to ensue; neither was the cauf thereof obscure, for the function of the Liver was frustrated by reason that the concoction or the alteration of the Chylus was intercepted by occasion of the tumor: and moreover, the Liver it self had a proper diseaf, for it was hard and scirrhus, and had manie abscesses both within and without it, and all over it. The milt was scarce free from putrefaction, the guts and Kall were somewhat blew and spotted, and to bee brief, there was nothing found in the lower bellie.

There is the like historie to bee read, written by *Philip Ingrassias*, in his book of tumors, of a certain Moor that was hanged for theft, for (saith hee) when his bodie was publickly dissected, in the *Mesenterium* were found seventie scrophulous tumors, and so manie abscesses were contained or enclosed in their severall cists or skins, and sticking to the external tunicle, especially of the greater guts: the matter contained in them was divers, for it was hard, knottie, clammy, glutinous, liquid and waterish; but the entrails, especially the Liver and the milt, were found free from all manner of tainture, becauf (as the same Author alledgeth) nature being strong, had sent all the evil juice, and the corruption of the entrails into the *Mesenterie*: and verily this Moor, so long as he lived, was in good & perfect health. Without doubt the corruption of superfluous humors for the most part is so great (as is noted by *Fernelius*) that it cannot bee received in the receptacles that nature hath appointed for it; therefore then no small portion thereof falleth into the parts adjoining, and especially into the *Mesenterie* and *Pancreas*, which are as it were the sink of the whole bodie. In those bodies which through continual and daillie gluttonie abound with choler, melancholie and phlegm, if it bee not purged in time, nature being strong and lustie, doth depel and drive it down into the *pancreas* and the *Mesenterie*, which are as places of no great repute, and that especially out of the Liver and Milt by those veins or branches of the *vena porta* which end or go not into the guts, but are terminated in the *Mesenterie* and *Pancreas*. In these places divers humors are heaped together, which in proces of time turn into a loof and soft tumor, and then if they grow bigger, into a stiff, hard and verie scirrhus tumor. Whereof *Fernelius* affirmeth that in those places hee hath found the causes of choler, melancholie, fluxes, dysenteries, cachexia's, atrophias, consumptions, tedious and uncerttain fevers, and lastly of manie hidden diseases, by the takeing whereof som have received their health, that have been thought past cure. Moreover *Ingrassias* affirmeth out of *Julius Pollux* that Scrophulæ's may bee engendred in the *Mesenterie*, which nothing differ's from the minde and opinion of *Galen*, who saith that Scrophulæ's are nothing elf but indurate and scirrhus kernels. But the *Mesenterium* with his glandules being great and manie, making the *Pancreas*, doth establish, strengthen and confirm the divisions of the vessels. Also the scirrhus of the proper substance of the womb is to bee distinguished from the *mola*: for in the bodies of som women that I have opened, I have found the womb annoied with a scirrhus tumor as big as a man's head, in the cureing whereof Physicians nothing prevailed, becauf they supposed it to bee a *mola* contained in the capacitie of the womb, and not a scirrhus tumor in the bodie thereof.

The dropsie coming of a tumor of the *Mesenterium*.

Tom. 1. tra. 2. cap. 1.

Lib. 6. part. mor. cap. 7.

The *Mesenterium* is the sink of the bodie.

The Scrophulæ's in the *Mesenterium*.

A scirrhus of the womb.

CHAP. XXXVII.

Of the caus of barrenness in men.

Here are manie causes of barrenness in men, that is to say, the too hot, cold, drie or moist distemper of the seed, the more liquid and flexible consistence thereof, so that it cannot stay in the womb, but will presently flow out again: for such is the seed of old men and striplings, and of such as use the act of generation too often and immoderately: for thereby the seed becommeth crude and waterish, becauf it doth not remain his due and lawful time in the testicles, wherein it should bee perfectly wrought and concocted, but is evacuated by wanton copulation. Furthermore, that the seed may bee fertile, it must of necessitie bee copious in quantitie, but in qualitie well concocted, moderately thick, clammy, & puffed with abundance of spirits; both these conditions are wanting in the seed of them that use copulation too often: and moreover, becauf the wives of those men never gather a just quantitie of seed laudable both in qualitie and consistence in their testicles, whereby it commeth to pass that they are the less provoked or delighted with venereous actions, and perform the act

How the seed is unfertile.

with

with less alacritie, so that they yeeld themselvs less prone to conception. Therefore let those that would bee parents of manie children use a mediocritie in the use of venerie.

How the cutting of the veins behinde the ears maketh men barren.

The woman may perceiv that the man's seed hath som distemperature in it, if when shee hath received it into her womb, shee feeleth it sharp, hot or cold, if the man bee more quick or slow in the act. Manie becom barren after they have been cut for the stone, and likewise when they have had a wound behinde the ears, whereby certain branches of the jugular veins and arteries have been cut, that are there, so that after those vessels have been cicatrized, there followed an interception of the feminal matter downwards, and also of the communitie which ought of necessitie to bee between the brain and the testicles, so that when the conduits or passages are stopped, the stones or testicles cannot anie more receive, neither matter nor lively spirits from the brain in so great quantitie as it was wont, whereof it must of necessitie follow, that the seed must bee lesser in quantitie, and weaker in qualitie.

Those that have their testicles cut off, or els compressed or contused by violence, cannot beget children, becaus that either they want that help the testicles should minister in the act of generation, or els becaus the passage of the feminal matter is intercepted or stopped with a Callus: by reason whereof they cannot yeeld forth seed, but a certain clammy humor contained in the glandules called *prostate* (yet with som feeling of delight).

The defaults of the yard.

Moreover the defects or imperfections of the yard may caul barrenness: as, if it bee too short, or if it bee so unreasonable great, that it renteth the privie parts of the woman, and so causeth a flux of blood, for then it is so painful to the woman, that shee cannot void her seed, for that cannot bee excluded without pleasure and delight, also if the shortness of the ligature ligament that is under the yard doth make it to bee crooked, and violate the stiff straightness thereof, so that it cannot bee put directly or straightly into the woman's privie parts. There bee som that have not the orifice of the conduit of the yard rightly in the end thereof, but a little higher, so that they cannot ejaculate or cast out their seed into the womb.

The sign of the palsie in the yard.

Also the particular palsie of the yard is numbred among the causes of barrenness; and you may proov whether the palsie bee in the yard by dipping the genitals in cold water; for except they do draw themselvs together or shrink up after it, it is a token of the palsie; for members that have the palsie, by the touching of cold water, do not shrink up, but remain in their accustomed laxitie and loofness: but in this case the genitals are endued with small sens; the seed commeth out without pleasure or stiffness of the yard; the stones in touching are cold; and to conclide, those that have their bodies daily waxing lean through a consumption, or that are vexed with an evil habit or disposition, or with the obstruction of som of the entrals, are barren and unfertile, and likewise those in whom som noble part necessarie to life and generation exceedeth the bounds of nature with som great distemperature, and lastly those who by anie means have their genital parts deformed.

Magick bands and enchanted knots.

Here I omit those that are withholden from the act of generation by inchantment, magick, witching and enchanted knots, bands and ligatures, for those causes belong not to Physick, neither may they bee taken away by the remedies of our Art. The Doctors of the Canon laws have made mention of those magick bands which may have power in them, in the particular title *De frigidis, maleficiatis, impotentibus & incantatis*; also St. August. hath made mention of them, *Tract. 7. in Joan.*

CHAP. XXXVIII.

Of the barrenness or unfruitfulness of Women,

The caus why the neck of the womb is narrow.



Woman may becom barren or unfruitful through the obstruction of the passage of the seed, or through straitness and narrowness of the neck of the womb comming either through the default of the formative facultie, or els afterwards by som mischance, as by an abscess, *scirrhus*, warts, chaps, or by an ulcer, which being cicatrized, doth make the way more narrow, so that the yard cannot have free passage thereinto: Moreover, the membrane calle *Hymen*, when it groweth in the mid't or in the bottom of the neck of the womb, hinder's the receiving of the man's seed. Also if the womb bee over-slipperie, or more loof, or over wide, it maketh the woman to bee barren; so doth the suppression of the menstrual fluxes, or the too immoderate flowing of the courses or whites: which commeth by the default of the womb, or som entral, or of the whole bodie, which consumeth the menstrual matter, & carrieth the seed away with it.

The membrane called *Hymen*.

The cold and moist distemperature of the womb, extinguishes and suffocates the man's seed, and maketh it that it will not stay or cleav unto the womb, and stay till it bee concocted: but the more hot and drie doth corrupt for want of nourishment, for the seeds that are sown either in a marish or sandie ground cannot prosper well: also a *mola* contained in the womb, the falling down of the womb, the leanness of the woman's bodie, ill humors bred by eating crude and raw fruits, or great, or overmuch, whereof obstructions and crudities follow which hinder her fruitfulness. Furthermore, by the use of stupefactive things, the feminal matter is congealed and restrained, and though it flow and bee cast out, yet it is deprived

The caus of the flux of women,

prived of the prolific power, and of the lively heat and spirits, the orifices or cotylidones of the veins and arteries are stopped, and so the passage for the menstrual matter into the womb, is stopped. When the Kall is so far that it girdeth in the womb narrowly, it hindereth the fruitfulness of the woman, because it will not permit the mans seed to enter into the womb. Moreover the fat and fleshy habit of the man or woman hinder generation. For it hindereth them that they cannot join their genital parts together: and by how much the more blood goeth into fat, by so much the less is remaining to be turned into seed & menstrual blood, which two are the originals and principals of generation. Those women that are speckled in the face, somewhat lean, and pale, because they have their genitals moistened with a saltish, sharp and tickling humor, are more given to venerie then those that are red and fat. Finally, Hippocrates sets down four causes onely why women are barren and unfruitful. The first is, because they cannot receive the mans seed, by reason of the fault of the neck of the womb; the second, because when it is received into the womb, they cannot conceive it; the third is, because they cannot nourish it; the fourth, because they are not able to carry or bear it untill the due and lawful time of birth. These things are necessarie to generation, the object, will, facultie, concours of the seeds, and the remaining or abiding thereof in the womb, untill the due and appointed natural time.

*Aph. 26. sect. 5.
Gal. lib. 14. de usu par. cap. 9.
Arist. in prob. sect. de ster. qua. 3. & 4.*

CHAP. XXXIX.

The signes of a distempered womb.

That woman is thought to have her womb too hot, whose courses com forth sparingly and with pain, and exulcerate by reason of their heat, the superfluous matter of the blood being dissolved or turned into winde by the power of the heat: whereupon that menstrual blood that floweth forth is more gross and black. For it is the propertie of heat, by digesting the thinner substance, to thicken the rest, and by adustion to make it more black. Furthermore, shee that hath her genitals itching with the desire of copulation, will soon exclude the seed in copulation, and shee shall feel it more sharp as it goeth through the passages. That woman hath too cold a womb whose flowers are either stopped, or flow sparingly, and those pale and not well colored.

The signes of a hot womb.

The signes of a cold womb.

Those that have less desire of copulation, have less delight therein, and their seed is more liquid and waterish, and not staining a linnen cloth by sticking thereunto, and it is sparingly and slowly cast forth. That womb is too moist that floweth continually with manie liquid excrements, which therefore will not hold the seed, but presently after copulation suffereth it to fall out; which will easily cause abortion. The signes of too drie a womb appear in the little quantitie of the courses, in the profusion of a small quantitie of seed, by the desire of copulation, whereby it may be made slipperie by the moisture of the seed, by the fissures in the neck thereof, by the chaps and itching, for all things for want of moisture will soon chap, even like unto the ground, which in the summer by reason of great drought or driness, will chap and chink this waie and that waie, and on the contrarie with moisture it will close and join together again as it were with glew.

The signes of a moist womb.

The signes of a drie womb.

A woman is thought to have all opportunities unto conception when her courses or flowers do cease, for then the womb is void of excremental filth, and because it is yet open, it will the more easily receive the mans seed, and when it hath received it, it will better retain it in the wrinkles of the cotylidones yet gaping as it were in rough and unequal places. Yet a woman will easily conceive a little before the time that the flowers ought to flow: because that the menstrual matter falling at first like dew into the womb, is verie meet and fit to nourish the seed, and not to drive it out again, or to suffocate it.

A meet time for conception.

Those which use copulation when their courses fall down abundantly, will verie hardly or seldom conceive, and if they do conceive, the childe will be vveak and diseased, and especially if the womans blood that flowv's out be unsound; but if the blood be good and laudable, the childe will be subject to all plethorick diseases. There are some women in whom presently after the flux of the termes, the orifice of the womb will be closed, so that they must of necessitie use copulation with a man when their menstrual flux floweth, if at least they would conceive at all. A woman may bear children from the age of fourteen untill fortie or fiftie; which time vvhosoever doth exceed, will bear untill threescore yeers, because the menstrual fluxes are kept, the prolific facultie is also preserved: therefore manie women have brought forth children at that age, but after that time no woman can bear, as Aristotle writeth.

Arist. l. 7. de hist. anim. c. 2. & c. 5.

Yet Plinie saith that Cornelia (who was of the house of the Scipios) being in the sixtie second yeer of her age, bear Volusius Saturnius, who was Consul; Valescus de Tarenta also affirmeth, that hee saw a woman that bear a childe on the sixtie second yeer of her age, having born before on the sixtieth and sixtie first yeer. Therefore it is to be supposed that by reason of the varietie of the air, region, diet and temperament, the menstrual flux and procreative facultie ceaseth in some sooner, in some later; which varietie taketh place also in men.

*Lib. 7. ca. 14.
Lib. 6. cap. 12.*

For

Lib. 7. de hist. e. nim. c. 1. & 6. For in them although the seed be genitable for the most part in the second seventh year, yet truly it is unfruitful untill the third seventh year. And whereas most men beget children untill they bee threescore yeers old, which time if they pass, they beget till seventie: yet there are som known that have begot children untill the eightieth year. Moreover, *Plinie* writeth that *Masiniſſa* the King begot a son when hee was fourscore and six yeers of age, and *Lib. 7. cap. 14.* also *Cato* the Cenſor after that hee was fourscore.

CHAP. XL.

Of the falling down, or perversion, or turning of the womb.

What is the falling down of the womb.

The causes.



He womb is said to fall down and bee perverted, when it is mooved out of its proper and natural place; as when the bands and ligatures thereof being loosed and relaxed, it falleth down unto one side or other, or into its own neck, or elf passeth further, so that it com's out at the neck, and a great portion thereof appear's without the privie parts. Therefore what things soever resolv, relax, or burst the ligaments or bands whereby the womb is tied, are supposed to bee the causes of this accident. It somtimes happen's by vehement labor or travail in childe-birth, when the womb with violence excluding the issue and the secundines, also follow's and fall's down, turning the inner-side thereof outward. And somtimes the foolish rashness of the Midwife, when shee draweth away the womb with the infant, or with the secundine cleaving fast thereunto, and so drawing it down and turning the inner-side outward. Furthermore, a heavie bearing of the womb, the bearing or the carriage of a great burthen, holding or stretching of the hands or bodie upwards in the time of greatness with childe, a fall, contusion, shakeing, or jogging by rideing, either in a Waggon or Coach; or on horse-back, or leaping or dancing, the falling down of a more large and abundant humor, great gripeing, a strong and continual cough, a *Tenesmus*, or often desire to go to stool, yet not voiding anie thing, neeing, a manifold and great birth, difficult bearing of the womb, an astmatical and orthopnoical difficultie of breathing, whatsoever doth weightilie press down the *Diaphragma* or Midriff, or the muscles of the *Epigastrium*, the takeing of cold air in the time of travail with childe, or in the flowing of the menstrual flux, sitting on a cold marble-stone, or anie other such like cold thing, are thought often times to bee the occasion of these accidents, becaus they may bring the womb out of its place.

Arist. lib. 7. de histor. anim. cap. 2.

The signes.

It fall's down in manie (saith *Aristotle*) by reason of the desire of copulation that they have, either by reason of the lustiness of their youth, or elf becaus they have obtained a long time from it.

The prognostications.

You may know that the womb is fallen down by the pain of those parts wherehence it is fallen, that is to say by the entrals, loines, *os sacrum*, and by a tractable tumor at the neck of the womb, and often with a visible hanging out, of a divers greatness, according to the quantitie that is fallen down. It is seen somtimes like unto a piece of red flesh, hanging out at the neck of the womb, of the bigness and form of a Goose-egg; if the woman stand upright, shee feeleth the weight to lie on her privie parts, but if shee sit or lie, then shee perceiveth it on her back, or go to the stool, the straight gut called *intestinum rectum* will bee pressed or loaden as if it were with a burthen, if shee lie on her bellie, then her urine will bee stopped, so that shee shall fear to use copulation with a man.

A historie.

When the womb is newly relaxed in a young woman, it may bee soon cured, but if it hath been long down in an old woman, it is not to bee helped. If the palsie of the ligaments thereof have occasioned the falling, it scarce admit's of cure, but if it fall's down by means of putrefaction, it cannot possibly bee cured. If a great quantitie thereof hang out between the thighs, it can hardly bee cured; but it is corrupted by takeing the air, and by the falling down of the urine and filth, and by the motions of the thighs in going it is ulcerated, and so putrefie's.

I remember that once I cured a young vvoman vvho had her vvomb hanging out at her privie parts as big as an egg, and I did so vvell perform and perfect the cure thereof, that afterwards shee conceived, and bare children manie times, and her vvomb never fell down.

CHAP. XLI.

The cure of the falling down of the womb.

Remedies for the ascension of the womb.

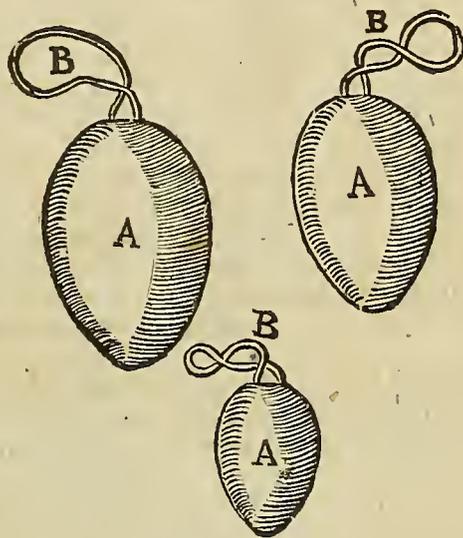


BY this vvord, falling down of the vvomb, vvve understand everie motion of the vvomb out of its place or seat: therefore if the womb ascend upwards, vvve must use the same medicines as in strangulation of the womb. If it bee turned towards either side, it must bee restored and dravvn back to its right place, by applying and using cupping-glasses. But if it descend and fall down into its ovvn neck, but yet not in great quantitie, the vvoman must bee placed so that her buttocks may bee verie high, and her legs across; then cupping-glasses must bee applied to her navel and *Hipogastrium*, and vvhen

the womb is so brought into its place, injections that binde and drie strongly must bee injected into the neck of the womb, stinking fumigations must bee used unto the privie parts, and sweet things used to the mouth and nose. But if the womb hang down in great quantitie between the thighs, it must be cured by placing the woman after another sort, and by using other kinde of medicines. First of all shee must bee so laied on her back, her buttocks and thighs so lifted up, and her legs so drawn back as when the childe or secundine are to bee taken or drawn from her; then the neck of the womb, and whatsoever hangeth out thereat, must be anointed with oil of lillies, fresh butter, capons greaf, and such like, then it must be thrust gently with the fingers up into its place, the sick or pained woman in the mean time helping or furthering the endeavour by drawing in of her breath as if she did sup, drawing up as it were that which is fallen down.

After that the womb is restored unto its place, whatsoever is filled with the ointment must bee wiped with a soft and clean cloth, lest that by the slipperiness thereof the womb should fall down again; the genitals must bee fomented with an astringent decoction, made with pomegranate pils, cypres nuts, gals, roach allom, hors-tail, sumach, berberies, boiled in the water wherein Smiths quench their irons; of these materials make a powder, wherewith let those places bee sprinkled: let a pessarie of a competent bigness bee put in at the neck of the womb, but let it bee eight or nine fingers in length, according to the proportion of the grieved patient's bodie. Let them bee made either with latin, or of cork covered with wax, of an oval form, having a thread at one end, whereby they may bee drawn back again as need require's.

The forms of oval pessaries.



A. sheweth the bodie of the Pessarie.

B. sheweth the thread wherewith it must be tied to the thigh.

When all this is don, let the sick woman keep her self quiet in her bed, with her buttocks lying verie high, and her legs across, for the space of eight or ten daies: in the mean while the application of cupping glasses will staie the womb in the right place and seat after it is restored thereunto: but if shee hath taken any hurt by cold air, let the privie parts bee fomented with a discuffing and heating fomentation, on this wise. *R. fol. alb. salv. lavend. ro-risnar. artemis. flor. chamæm. melilot. an. m. β. sem. anis. sænugr. an. ꝑ. i.* let them bee all well boiled in water and wine, and make thereof a decoction for your use. Give her also glysters, that when the guts are emptied of the excrements, the womb may the better bee received into the void and emptie capacitie of the bellie: for this reason the bladder is also to bee emptied, for otherwise it were dangerous lest that the womb lying between them both being full, should bee kept down and cannot bee put up into its own proper place by reason thereof. Also vomiting is supposed to bee a singular remedie to draw up the womb that is fallen down: furthermore also it purgeth out the phlegm which did moisten and relax the ligaments of the womb; for as the womb in the time of copulation at the beginning of the conception is moved downwards to meet the seed, so the stomack, even of its own accord, is lifted upwards when it is provoked by the injurie of anie thing that is contrarie unto it, to cast it out with greater violence, but when it is so raised up, it draw's up together therewith the *peritonæum*, the womb, and also the bodie or parts annexed unto it. If it cannot bee cured or restored unto its place by these prescribed remedies, and that it bee ulcerated and so putrefied that it cannot be restored unto his place again, we are commanded by the precepts of art to cut it away, and then to cure the womb according to art, but first it should be tied, and as much as is necessarie must bee cut off, and the rest seared with a cauterie. There are som women that have had almost all their womb cut off, without anie danger of their life, as *Paulus* testifieth.

A discuffing and heating fomentation.

How vomiting is profitable to the falling down of the womb.

The cutting away of the womb when it is putrefied. *Lib. 6.*

Epist. 39. lib. 2. Epist. med.

John Langius Physician to the Count *Palatine*, writeth that *Carpus* the Chirurgical took out

the womb of a woman of *Bononia*, hee beeing present, and yet the woman lived and was verie well after it. *Antonius Benivenius* Physician of *Florence*, writeth that hee was called by *Ugolius* the Physician to the cure of a woman whose womb was corrupted and fell away from her by pieces, and yet shee lived ten years after it.

An Historic.

There was a certain woman, beeing sound of bodie, of good repute, and about the age of thirtie years, in whom, shortly after shee had been married the second time, which was in *Anno 2571*. having no childe by her first husband, the lawful signs of a right conception did appear: yet in process of time there arose about the lower part of her privities the sent or feeling of a weight or heaviness, beeing so troublesom unto her by reason that it was painful, and also for that it stopped her urine, that shee was constrained to disclose her mischance to *Christopher Mombey* a Surgeon her neighbor dwelling in the Suburbs of *S. Germans*; who having seen the tumor or swelling in her groin, asswaged the pain with mollifying, and anodyne fomentations and cataplasms; but presently after hee had don this, hee found on the inner side of the lip of the orifice of the neck of the womb, an impostume rotten and running, as if it had been out of an abscess newly broken, with sanious matter, somewhat red, yellow, and pale, running a long time. Yet for all this the feeling of the heaviness or weight was nothing diminished, but did rather encrease daily, so that from the year of our Lord 1573. shee could not turn herself beeing in her bed on this or that side, unless shee laid her hand on her bellie to bear and ease herself of the weight, and also shee said when shee turned herself, shee seem to feel a thing like unto a bowle to rowle in her bodie unto the side whereunto shee turned her self, neither could shee go to stool, or avoid her excrements standing or sitting, unless shee lifted up that weight with her hands towards her stomach or midriff: when shee was about to go shee could scarce set forwards her feet, as if there had something hanged between her thighs, that did hinder her going. At certain seasons that rotten apostume would open or unclose of it self, and flow & run with it's wonted sanious matter, but then shee was grievously vexed with pain of the head, and all her members, swooning, loathing, vomiting, and almost choaking, so that by the perswasion of a foolish woman shee was induced and contented to take *Antimonium*; the working and strength thereof was so great and violent, that after manie vomits, with manie frettings of the guts and watric dejections or stools, shee thought her fundament fell down; but beeing certified by a woman that was a familiar friend of hers, unto whom shee shewed her self, that there was nothing fallen down at or from her fundament, but it was from her womb, shee called, in the year of our Lord 1575. Surgeons, as my self, *James Guillemeau*, and *Antonie Vieux*, that wee might helper in this extremitie.

Antimonium taken in a potion doth cause the womb to fall down.

The signs of the substance of the womb drawn out.

When wee had diligently and with good consideration weighed the whole estate of her disease, wee agree'd with one consent, that that which was fallen down should be cut away, becaus that by the black color, stinking, and other such signs, it gave a testimonie of a putrefied and corrupted thing. Therefore for two daies wee drew out the bodie by little and little, and piece-meal, which seemed unto the Physicians that wee had called, as *Alexius*, *Gaudinus*, *Feureus*, and *Violaneus*, and also to our selves, to be the bodie of the womb, which thing wee prooved to be so, becaus one of the testicles came out whole, and also a thick membrane or skin, beeing the relick of the *mola*, which beeing suppurated, and the abscess broken, came out by little and little in matter; after that all this bodie was so drawn away, the sick woman began to wax better and better, yet notwithstanding for the space of nine daies before it was taken away, shee voided nothing by siege, and her urine also was stopped for the space of four daies.

After this all things became as they were before, and shee lived in good health three months after, and then died of a *Pleurisie* that came on her verie suddenly, and I haveing opened her bodie, observing and marking everie thing verie diligently, could not finde the womb at all, but in stead thereof there was a certain hard and callous bodie, which Nature, who is never idle, had framed in stead thereof, to supplie the want thereof, or to fill the hollownes of the bellie.

CHAP. XL II.

Of the tunicle or membrane called Hymen.

Whether there be a membrane called Hymen.

IN som virgins or maidens in the orifice of the neck of the womb there is found a certain tunicle or membrane called of antient writers *Hymen*, which prohibeth the copulation of a man, and causeth a woman to be barren; this tunicle is supposed by manie, and they not of the common sort onely, but also learned Physicians, to be, as it were, the enclosure of the virginie or maiden-head. But I could never finde it in anie, seeking of all ages from three to twelv, of all that I had under my hands in the Hospital of *Paris*.

An Historic.

Yet once I saw it in a virgin of seventeen yeers, whom her mother had contracted to a man, and shee knew nevertheless there was something in her privie parts that hindered her from

from bearing of children, who desired mee to see her; and I found a verie thin nervous membrane a little beneath the *nympha*, neer unto the orifice of the neck of the womb; in the midst there was a verie little hole whereout the terms might flow: I seeing the thicknes thereof, cut it in sunder with my scissars, and told her mother what shee should do afterwards: and truly shee married shortly after and bore children. *Realdus Columbus* is of my opinion; and faith that this is seen verie seldom, for these are his words: under the *nympha* in manie, but not in all virgins, there is another membrane, which when it is present (which is but seldom) it stoppeth, so that the yard cannot bee put into the orifice of the vvomb; for it is verie thick aboov tovwards the bladder, it hath an hole by vvhich the courses flovv out. And hee also ad-deth, that hee observed it in tvvo young virgins, and in one elder maid.

Lib. 11. cap. 16.

Avicen writeth, that in virgins in the neck of the womb there are tunicles composed of veins and ligaments verie little, rising from each part of the neck whereof, which at the first time of copulation are wont to bee broken, and the blood to run out. *Almansor* writeth, that in virgins, the passage of the neck of the womb is verie wrinkled, or narrow and straight, and those wrinkles to be woven or staid together with manie little veins and arteries, which are broken at the first time of copulation.

Lib. 3. sent. 21. tract. 1. cap. 1.

These are the judgments of Physitians of this membrane: Midwives will certainly affirm that they know a virgin from one that is defloured, by the breach or soundness of that membrane. But by their report too credulous Judges are soon brought to commit an error. For that Midwives can speak nothing certainly of this membrane, may bee proved by this, becauf that one saith that the situation thereof is in the verie entrance of the privie parts, others saie it is in the midst of the neck of the womb, and others saie it is within at the inner orifice thereof, and som are of an opinion that they saie or suppose that it cannot be seen or perceived before the first birth. But truly of a thing so rare, and which is contrarie to nature, there cannot be anie thing spoken for certaintie. Therefore the blood that commeth out at the first time of copulation, come's not alwaies by the breaking of that membrane, but by the breaking and violating or renting of the little veins which are woven and bespread all over the superficial and inward parts of the womb and neck thereof, descending into the wrinkles, which in those that have not yet used the act of generation, are closed as if they were glewed together: although that those maids that are at their due time of marriage, feel no pain nor no flux of blood, especially if the man's yard be answerable to the neck of the womb; whereby it appear's evidently how greatly the inhabitants of *Fez*, the metropolitan citie of *Mauritania*, are deceived: for *Leo* the Affrican writeth, that it is the custom among them, that so soon as the married man and his spouse are returned home to their hous from the church where they have been married, they presently shut themselves into a chamber, and make fast the door, while the marriage dinner is preparing: in the mean while som old or grave matron standeth waiting before the chamber door, to receiv a bloodie linnen cloth the new married husband is to deliver her there, which when shee hath received, shee bring's it into the midst of all the companie of guests, as a fresh spoil and testimonie of the married wives virginities, and then for joie thereof they all fall to banquetting solemnly. But if through evil fortune it happeneth that in this time of copulation the spous bleedeth not in the privie parts, shee is restored again unto her parents, which is a verie great reproach unto them, and all the guests depart home sad, heavie, and without dinner.

The trifles of midwives about the membrane called Hymen.

What virgins at the first time of copulation do not bleed at their privie parts.

Lib. 3.

Moreover, there are som, that having learned the most filthie and infamous arts of bawderie, prostitute common harlots to make gain thereof, making men that are naughtily given to belev that they are pure virgins, making them to think that the act of generation is verie painful and grievous unto them, as if they had never used it before, although they are verie expert therein indeed; for they do cauf the neck of the womb to be so wrinkled and shrunk together, so that the sides thereof shall even almost close or meet together, then they put thereinto the bladders of fishes, or galls of beasts filled full of blood, and so deceiv the ignorant and young lecher, by the fraud and deceit of their evil arts, and in the time of copulation they mix sighs with groanes, and womanlike cryings, and the crocodiles tears, that they may seem to be virgins, and never to have dealt with man before..

The filthie deceit of bauds and harlots.

C H A P. XLIII.

A memorable historie of the membrane called Hymen.

DObn *Wierus* writeth that there was a maid at Camburge, who in the midst of the neck of the womb, had a thick and strong membrane growing overthwart, so that when the monethlie tearms should come out, it would not permit them, so that thereby the menstrual matter was stopped and flowed back again, which caused a great tumor and distension in the bellie, with great torment, as if shee had been in travell with childe: the midwives being called, and having seen and considered all that had been don, and did appear, did all with one voice affirm, that shee sustained the pains of childe-birth, although that the maid her self denied that shee ever dealt with man. Therefore then this foresaid Author was called,

Lib. de prest. demon. cap. 38.

who, when the midwives were void of help and counsel, might help this wretched maid having already had here urine stopped now three whole weeks, and perplexed with great watchings, loss of appetite, and loathing: and when hee had seen the grieved place, and marked the orifice of the neck of the womb, hee saw it stopped with a thick membrane; hee knew also that that sudden breaking out of blood into the womb and the vessels thereof, and the passage for those matters that was stopped, was the cause of her grievous and tormenting pain. And therefore hee called a Chyrurgian presently, and willed him to divide the membrane that was in the midst, that did stop the flux of blood, which being done, there came forth as much black congealed and putrefied blood as was weighed some eight pounds. In three daies after shee was well and void of all disease and pain. I have thought it good to set down this example here, because it is not worthie to be noted, and profitable to be imitated, as the like occasion shall happen.

CHAP. XLIII.

Of the strangulation of the womb.

What is the strangulation of the womb.



He strangulation of the womb, or that which commeth from the womb, is an interception or stopping of the libertie in breathing or taking wind, because that the womb, swollen or puffed up by reason of the access of gross vapors and humors that are contained therein, and also snatched as it were by a convulsive motion, by reason that the vessels and ligaments distended with fulness, are so carried upwards against the midriff and parts of the breast, that it maketh the breath to be short; and often as if a thing lay upon the breast and pressed it.

Why the womb swelleth.

Moreover, the womb swelleth, because there is contained or inclosed in it a certain substance, caused by the defluxion either of the seed or flowers, or of the womb or whites, or of some other humor, tumor, abscess, rotten apostume, or some ill juice, putrefying, or getting, or ingendering an ill quality, and resolved into gross vapors. These, as they affect sundry or divers places, infer divers and sundrie accidents, as rumbling and noise in the bellie, if it be in the guts, desire to vomit, after (with seldom vomiting) commeth weariness and loathing of meat, if it trouble the stomach. Choaking with strangulation, if it assail the breast and throat; swooning, if it vex the heart; madness, or else that which is contrarie thereto, sound sleep or drowsiness, if it grieveth the brain: all which oftentimes prove as malign as the biting of a mad dog, or equal the stinging or biting of venomous beasts.

The accidents that com of the strangling of the womb.

What the strangulation that commeth of the corruption of the seed is more dangerous then that that com's of the corruption of the blood. The cause of the divers turning of the womb into divers parts of the bodie.

It hath been observed, that more grievous symptoms have proceeded from the corruption of the seed, then of the menstrual blood. For by how much everie thing is more perfect and noble, while it is contained within the bounds of the integrity of its own nature, by so much it is the more grievous and perillous, when by corruption it hath once transgressed the laws thereof. But this kinde of accident doth verie seldom grieveth those women which have their menstrual flux well and orderly, and do use copulation familiarly; but verie often those women that have not their menstrual flux as they should, and do want, and are destitute of husbands, especially if they be great eaters, and lead a solitarie life. When the vessels and ligaments of the womb are swollen and distended as we said before, so much as is added to their latitude or breadth, so much is wanting in their length: and therefore it hapneth that the womb, being removed out of its seat, doth one while fall to the right side towards the liver, sometimes to the left towards the milt, sometimes upwards unto the midriff and stomach, sometimes downwards, and so forwards unto the bladder, whereof commeth an Ischurie and strangurie; or backwards, whereof commeth oppression of the straight gut, and suppression of the excrements, and the *Tenesmus*.

The womb is not so greatly moved by an accident, but by it self. Whereof com such divers accidents of strangulation of the womb.

But although wee acknowledge the womb to decline to those parts which wee named, yet it is not by accident onely, as when it is drawn by the proper and common ligaments and bands, when they are contracted or made shorter, being distended with fulness, but also of its self, as when it is forced or provoked through the grief of something contrarie to nature that is contained therein: it wandreth sometimes unto one side, and sometimes unto another part with a plain and evident natural motion, like unto the stomach which imbraceth anie thing that is gentle and milde, but avoideth anie thing that is offensive and hurtful; yet wee denie that so great accidents may be stirred up by the falling of it alone unto this or that side, for then it might happen, that women that are great with childe, whose wombs are so distended by reason that the childe is great, that it doth press the midriff, might be troubled with a strangulation like unto this; but much rather by a venomous humor breathing out a malign and gross vapor, not onely by the veins and arteries, but also by the pores that are invisible, which pollute's the faculties of the parts which it toucheth with its venomous malignitie and infection, and intercept's the functions thereof. Neither doth the variety of the parts receiving onely, but also of the matter received, cause varieties of accidents.

For some accidents com by suppression of the terms; others com by corruption of the seed,

seed, but if the matter bee cold, it bringeth a drowsiness, being lifted up unto the brain, whereby the woman sinketh down as if shee were astonished, and lieth without motion, and sense or feeling, and the beating of the arteries, and the breathing are so small, that sometimes it is thought they are not at all, but that the woman is altogether dead. If it be more gross, it inferreth a convulsion; if it participate of the nature of a gross melancholick humor, it bringeth such heaviness, fear, and sorrowfulness, that the party that is vexed therewith shall shall think that hee shall die presently, and cannot bee brought out of his minde by anie means or reason: if of a choleric humor, it causeth the madness called *furor uterinus*, and such a pratling, that they speak all things that are to bee concealed; and a giddiness of the head, by reason that the animal spirit is suddenly shaken by the admixtion of a putrefied vapour and hot spirit: but nothing is more admirable, then that this disease taketh the patient sometimes with laughing, and sometimes with weeping, for som at the first will weep and then laugh in the same disease and state thereof.

The cause of sleepiness in the strangulation of the womb.

The cause of a drowsie madness.

But it exceedeth all admiration which *Hollerius* writeth usually happened to two of the daughters of the Provost of Roven. For they were held with long laughter for an hour or two before the fit, which neither for fear, admonition, nor for any other means they could hold; and their parents chid them, and asked them wherefore they did so, they answered, that they were not able to stay their laughter. The ascension of the womb is diligently to bee distinguished from the strangulation thereof; for the accidents of the ascension and of the strangulation are not one, but the woman is onely oppressed with a certain pain of the heart, difficultie of breathing, or swooning, but yet without fear, without raveing or idle talking, or any other greater accident.

A historie.

The ascension of the womb is to bee distinguished from the strangulation.

Therefore oftentimes contrary causes infer the ascension: that is, overmuch driness of the womb, laboring through the defect of moisture, whereby it is forced after too violent and immoderate evacuations of the flowers, and in childe-bed, and such like, and laborious and painful travel in childe-bed, through which occasion it waxeth hot, contrary to nature, and withereth and turneth it self with a certain violence unto the parts adjoining, that is to say, unto the liver, stomach and midriff: if haply it may draw som moisture thence unto it. I omit that the womb may be brought unto its place upwards by often smelling to aromatick things, yet in the mean while it infer's not the strangulation that wee described before.

CHAP. XLV.

The signs of imminent strangulation of the womb.

BEfore that these fore-named accidents com, the woman think's that a certain painful thing ariseth from her womb unto the orifice of the stomach and heart; and shee thinketh her self to bee oppressed and choaked, shee complaineth her self to bee in great pain, and that a certain lump or heavie thing clime's up from the lower parts unto her throat, and stoppeth her winde, her heart burneth and panteth. And in manie the womb and vessels of the womb so swell, that they cannot stand upright on their legs, but are constrained to lie down flat on their bellies, that they may bee the less grieved with the pain, and to press that down strongly with their hands, that seemeth to arise upwards, although that not the womb it self, but the vapor ascendeth from the womb, as wee said before: but when the fitt is at hand, their faces are pale on a sudden, their understanding is darkned, they becom slow and weak in the legs, with unableness to stand. Hereof commeth sound sleep, foolish talking, interception of the senses, and breath as if they were dead, loss of speech, the contraction of their legs, and the like.

The womb it self doth not so well make the ascension as the vapor thereof.

CHAP. XLVI.

How to know whether the woman bee dead in the strangulation of the womb, or not.

Have thought it meet (because manie women, not onely in ancient times, but in our own and our fathers memorie have been so taken with this kinde of symptome, that they have been supposed and laid out for dead, although truly they were alive:) to set down the signs in such a case which do argue life and death. Therefore first of all it may be proved, whether shee bee alive or dead, by laying or holding a clear and smooth looking-glass before her mouth and nostrils. For, if shee breath, although it bee never so obscurely, the thin vapor that commeth out will stain or make the glass duskie. Also a fine downish feather taken from under the wing of any bird, or elf a fine flock being held before the mouth, will by the trembling or shaking motion thereof, shew that there is som breath, and therefore life remaining in the bodie. But you may prove most certainly whether there bee anie spark of life remaining in the bodie, by blowing som sneeing powders of pellitorie of Spain, and elebore into the nostrils. But though there no breath appear, yet

Women lived ing taken for dead.

How women that have the suffocation of the womb, live onely by transpiration without breathing.

How flies,
gnats and pis-
mires do live
all the winter
without
breathing.

must you not judg the woman for dead, for the small vital heat, by which, being drawn in to the heart, shee yet liveth, is contented with transpiration onely, and require's not much attraction, which is performed by the contraction and dilatation of the breast and lungs unto the preservation of it's self. For so flies, gnats, pismires and such like, because they are of a cold temperament, live unmoovably inclosed in the caves of the earth, no token of breathing appearing in them, because there is a little heat left in them, which may be conserved by the office of the arteries and heart, that is to say, by perspiration, without the motion of the breast, because the greatest use of respiration is, that the inward heat may be preserved by refrigeration and ventilation. Those that do not mark this, fall into that error which almost cost the life of him who in our time first gave life to anatomical administration, that was almost decayed and neglected.

A h Ro. ic.

For hee being called in Spain to open the bodie of a noble woman which was supposed dead through strangulation of the womb, behold, at the second impression of the incision knife, shee began suddenly to com to her self, and by the mooving of her members and bodie, which was supposed to be altogether dead, and with crying, to shew manifest signs that there was som life remaining in her. Which thing strook such an admiration and horror into the hearts of all her friends that were present, that they accounted the Physician, being before of a good fame and report, as infamous, odious and detestable, so that it wanted but little but that they would have scratched out his eyes presently: wherefore hee thought there was no better waie for him, if hee would live safe, then to forsake the countrie. But neither could hee so also avoid the horrible prick and inward wound of his conscience (from whose judgment no offender can be absolved) for his inconsiderate dealing, but within few daies after, being consumed with sorrow, hee died, to the great los of the Common-wealth, and the art of Physick.

CHAP. XLVII.

How to know whether the strangulation of the womb com's of the suppression of the flowers, or the corruption of the seed.

The signs of
suffocation of
the womb
comming of
corrupt seed.



Here are two chief causes especially, as most frequently happening of the strangulation of the womb: but when it proceedeth from the corruption of the seed, all the accidents are more grievous and violent: difficultie of breathing goes before, and shortly after com's deprivation thereof; the whole habit of the bodie seemeth more cold then a stone: the woman is a widow; or elf hath great store

The signs
when it com's
of the suppression
of the
flowers.

or abundance of seed, and hath been used to the companie of a man, by the absence whereof shee was before wont to be pained with heaviness of the head, to loath her meat, and to be troubled with sadness and fear, but chiefly with melancholie. Moreover when shee hath satisfied, and everie waie fulfilled her lust, and then presently on a sudden begin's to contain her self. It is verie likely that shee is suffocated by the suppression of the flowers, which formerly had them well and sufficiently, which formerly had been fed with hot, moist and manie-meats, and therefore engendring much blood, which sitteth much, which is grieved with som weight and swelling in the region of the bellie, with pain in the stomach, and a desire to vomit, and with such other accidents as com by the suppression of the flowers. Those who are free'd from the fit of the suffocation of the womb, either by nature or by art, in a short time their color commeth unto their faces by little and little, and the whole bodie beginneth to wax strong, and the teeth, that were set and closed fast together, begin (the jaws being loosed) to open and unclose again, and lastly, som moisture floweth from the secret parts with a certain tickling pleasure; but in som women, as in those especially in whom the neck of the womb is tickled with the Midwives finger, in stead of that moisture com's thick and gross seed, which moisture or seed when it is fallen, the womb being before as it were raging, is restored unto it's own proper nature and place, and by little and little all symptoms vanish away. Men by the suppression of their seed have not the like symptomes as women have, because mans seed is not so cold and moist, but far more perfect and better digested, and therefore more meet to resist putrefaction, and whiles it is brought or drawn together by little and little, it is dissipated by great and violent exercise.

The signs of
one recovering
of or from the
suffocation of
the womb.

Men by the suppression of their seed have not the like symptomes as women have, because mans seed is not so cold and moist, but far more perfect and better digested, and therefore more meet to resist putrefaction, and whiles it is brought or drawn together by little and little, it is dissipated by great and violent exercise.

Why the sup-
pression of the
seed is not pe-
rillous or dead-
ly to men.

CHAP. XLVIII.

Of the cure of the Strangulation of the womb.

The pulling
of the hairs of
the lower parts
are profitable
both for this
maladie and
for the caus of
the same.



Being that the strangulation of the womb is a sudden and sharp disease, it therefore requireth a present and speedie remedie, for if it be neglected it manie times causeth present death. Therefore, when this maladie commeth, the sick woman must presently be placed on her back, having her breast and stomach loof, and all her cloaths & garments slack & loof about her, whereby shee may take breath the more easly; and

shee

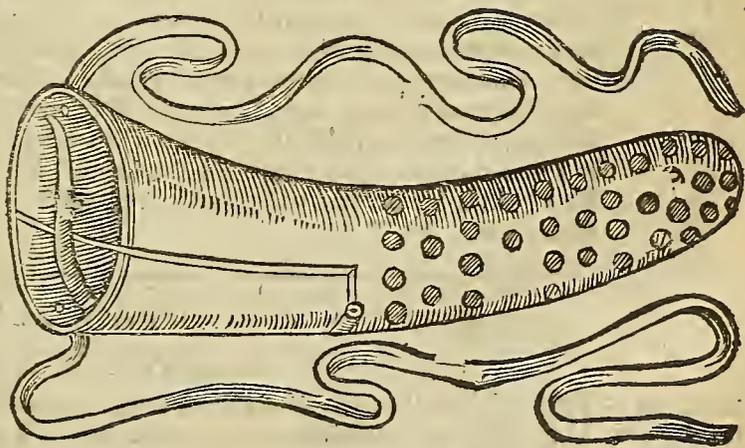
shee must be called on by her own name, with a loud voice in her ears, and pulled hard by the hairs of the temples and neck, but yet especially by the hairs of the secret parts, that by provokeing or causing pain in the lower parts, the patient may not onely bee brought to herself again, but also that the sharp and malign vapor ascending upwards, may bee drawn downwards: the legs and arms must bee bound and tied with painful ligatures, all the bodie must bee rubbed over with rough linnen clothes besprinkled with salt and vineger, until it bee verie sore and red, and let this pessarie following bee put into the womb. *R. succi mercurial. artemis. an. ℥ ii. in quibus dissolve pul. bened. ℥ iii. pul. radic. enule camp. galang. minor. an. ℥ i.* make thereof a pessarie. Then let the soles of her feet bee annoiuted with oil of baies, or with som such like oil, let a great cupping-glass with a great flame bee applied to the bellie below the navel, to the inner part of the thigh, and to the groin, whereby both the matter that climes upwards, and also the womb it self running the same waie, may bee brought downwards or drawn back. There may bee made a fumigation of spices to bee received up into the womb, which, that it may bee the easier don, the womb may bee held open by putting in this instrument here described into the neck thereof. Let it bee made of gold, silver or latin into the form of a pessarie; at the one end thereof, that is to say, that end which goeth up into the neck of the womb, let there bee made manie holes on each side, but at the lower end let it bee made with a spring, that it may open and shut as you will have it. Also it must have two laces or bands by which it must bee made fast unto a swathe or girdle tied about the patient's bellie.

A Pessarie.

The description of a vessel made with a funnel or pipe for to fumigate the womb.



The form of a Pessarie to bee put in the neck of the womb to hold it open.



The matter of
sweet fumiga-
tions.

By what power
sweet fumiga-
tions do restore
the womb unto
its own nature
and place.

Stinking smells
to be applied
to the nostrils.

Avicen's secret
for suffocation
of the womb.

Castoreum drun-
ken.
Expressions in-
to the womb.

The matter of
peffaries.

A glyster scat-
tering grofs
vapors.

A quick, certain
and a pleasant
remedie for
the suffocation
of the womb.
Tickling of
the neck of the
womb.

The matter and ingredients of sweet and aromatick fumigations, are cinnamom, callam. aromat. lig. aloes, ladanum, benzoin, thyme, pepper, cloves, lavender, calaminth, mugworth, penniroyal, *alepta moschat.* nutmegs, musk, amber, squinant, and such like, which for their sweet smell and sympathie, allure or entice the womb downwards, by their heat consume and digest the thick vapors, and putrefied ill juice. Contrariwise, let the nostrils bee perfumed with fetid and rank smells, and let these bee made with *gum. galbannum, sagapenum, ammoniacum, assa fetida, bitumen,* oil of Jeat, snuff of a tallow-candle when it is blown out, with the fume of bird's fethers, especially of Partridges and Woodcocks, of man's hair or goat's hair, of old lether, of hors hoofs, and such like things burned, whose noisom or offensive favor the womb avoiding, doth return unto its own place or seat again.

Moreover it shall bee verie necessarrie to procure vomit by thrusting a goof fether down into the throat, or elf the hairs of the patient's own head. Shortly after shee must use a potion of fifteen grains of black pepper bruised and dissolved in *hydromel,* or water and honie mixed together, or in som strong wine, which remedie *Avicen* holdeth for a secret.

Also in stead thereof three hours before meat ʒβ. of Treacle dissolved In ʒi. of the water of wormwood may bee given her : Also it is thought that one drop of the oil of Jeat dropped on the tongue, is a verie profitable remedie. There bee som that allow a potion of half a dram of *Castoreum* dissolved in white wine, or in the broth of a Capon ; also it is profitable not onely to give her Treacle to drink, but also to inject it into the womb, beeing first dissolved in *aqua vite,* and in the mean time to drop two drops of oil of Sage, or som such Chymical oil, into the ears. If shee bee drowsie or sleepe, thee must bee awaked or kept wakeing with sneezing powders, of white hellebore and pellitorie.

It is also requisite to inject glysters both into the fundameut and secret parts, which must bee made of the decoction of things that discufs winde, as of calaminth, mugwort, lavender, penniroyal, cammomil, melilot, and such like ; and let peffaries or suppositories bee made of ladanum, ginger, *gallia moschat.* treacle, mithridate, civet and musk, of the oil of cloves, anniseeds, sage, rosemarie, and such like, chymically drawn ; this following is a convenient description of a glyster. *R. radic. enule, camp. Ireos, ebuli, aristoloch. an. ʒi. fol. absynth. artemesie, maricar. puleg. origani, an. m. i. baccarum laurt, juniperi & sambuc. an p. i. sem. amios, cymini, rutæ, an. ʒii. florum stachados, rorismarin. salvia, centaur. minor. an. p. ii. fiat decoctio, cape colaturæ lb. i. in qua dissolve mellis anthosati, sacc. rubr. & bened. an. ʒ i. diacharth. ʒii. olei aneth. mard, an ʒiβ. make thereof a glyster, and apply this plaister following to the bellie. R. mas. empl. oxycrocci, & melilot. an. ʒiii. olei nard. as much as shall suffice to make it conveniently soft, make thereof a plaster, and spread it on leather, and apply it to the region of the bellie when the fit is ended : if shee bee married, let her forthwith use copulation, and bee strongly encountered by her husband, for there is no remedie more present then this.*

Let the midwfe annoint her fingers with *oleum nardinum* or *moschetalinum,* or of cloves, or elf of spike mixed with musk, ambergreef, civet, and other sweet powders, and with these let her rub or tickle the top of the neck of the womb which toucheth the inner orifice ; but her secret parts must first bee warned by the applying of warm linnen cloaths, for so at length the venomous matter contained in the womb, shall bee dissolved and flow out, and the malign, sharp and flatulent vapors, whereby the womb is driven as it were into a furie or rage, shall bee resolved and dissipated, and so when the conjunct matter of the diseaf is scattered and wasted, the womb, and also the woman shall bee restored unto themselves again. Som hold it for a secret to rub the navel with the juice of garlick boiled and mixed with aloës.

CHAP. XLIX.

Of women's monthly flux or courses.

The reason of
the names of
the monthlie
flux of women.



Usually they call the flux of bloud, that issueth from the secret parts of women, monthlie flowers or courses, becauf it happenth to them everie month so long as they are in health. There bee som which call them terms, becauf they return at their usual time. Manie of the French men call it *sepmains,* becauf in such as sit much, and are given to plentiful feeding, it endureth almost for the space of seven daies. Som call them purgations, becauf that by this flux all a woman's bodie is purged of superfluous humors. There bee som also that call those fluxes the flowers, becauf that as in plants the flower buddeth out before the fruits ; so in women kinde this flux goeth before the issue, or the conception thereof.

For the courses flow not before a woman bee able to conceiv ; for how should the seed beeing cast into the womb have his nourishment and increaf, and how should the childe have his nourishment when it is formed of the seed, if this necessarrie humor were wanting in the womb ? yet it may bee som women may conceiv without the flux of the courses : but that is in such as have so much of the humor gathered together, as is wont to remain in those which are purged, although it bee not so great a quantitie that it may flow out, as it is recorded by

What women
do conceiv, this
flux not appear-
ing at all.

by *Aristotle*. But as it is in som verie great, and in som verie litle, so it is in som seldom, and in som verie often.

There are som that are purged twice, and som thrice in a moneth; but it is altogether in those who have a great liver, large veins, and are filled and fed with many and greatly nourishing meats, which sit idly at home all day, which haveing slept all night, do notwithstanding lie in bed sleeping a great part of the day also, which live in a hot, moist, rainie and southerly air, which use warm baths of sweet waters and gentle frictions, which use and are greatly delighted with carnal copulation: in these and such like women the courses flow more frequently and abundantly.

What women have this flux of- strual flux often, abundantly, and for a longer space then others.

But contrariwise, in those that have small and obscure veins, in those that have their bodies more furnished and big either with flesh or with fat, are more seldom purged, and also more sparingly, because that the superfluous quantitie of blood useth to go into the habit of the bodie. Also tender, delicate and fair women are less purged than those that are brown and endued with a more compact flesh, because that by the raritie of their bodies, they suffer a greater wasting or dissipation of their substance by transpiration. Moreover, they are not so greatly purged with this kinde of purgation, which som other solemn or accustommed evacuation in anie other place of their bodie, as by the nose or hemorrhoids.

What women have this flux more seldom, less, and a far more short time then others.

And as concerning their age, old women are purged when the Moon is old, and young women when the Moon is new, as it is thought. I think the cause thereof is; for that the Moon ruleth moist bodies, for by the variable motion thereof the Sea floweth and ebbeth, and bones, marrow and plants abound with their genital humor.

Why young women are purged in the new of the Moon.

Therefore young people which have much blood, and more fluxible, and their bodies more fluxible, are soon moved unto a flux, although it bee even in the first quarter of the Moon's rising or increasing: but the humors of old women, because they wax stiff as it were with cold, and are not so abundant, and have more dens bodies and straighter vessels, are not so apt to a flux, nor do they so easily flow, except it bee in the full of the Moon, or elf in the decreas; that is to say, because the blood that is gathered in the full of the Moon falls from the body even of its own weight, for that by reason of the decreasing or wane of the Moon this time of the moneth is more cold and moist.

Why old women are purged in the wane of the Moon.

CHAP. L.

The causes of the monethly flux or courses.

Because a woman is more cold, and therefore hath the digestive facultie more weak, it cometh to pass, that shee requireth and desireth more meat or food than shee can digest or concoct: And because that superfluous humor that remaineth is not digested by exercise, nor by the efficacie of strong and lively heat, therefore by the providence or benefit of nature it floweth out by the veins of the womb, by the power of the expulsive faculty, at its own certain and prefixed season or time. But then especially it beginneth to flow, and a certain crude portion of blood to bee expelled, being hurtfull and malign otherwise in no qualitie, when nature hath laid her principal foundations of the increas of the bodie, so that in greatness of the bodie, shee hath com as it were in a manner to the highest top, that is to say, from the thirtieth to the fiftieth year of our age.

The material cause of the monethlie flux.

Moreover, the childe cannot bee formed in the womb, nor have his nutriment or encreas without this flux: therefore this is another finall cause of the monethly flux. Manie are perswaded that women do far more abound with blood than men, considering how great an abundance of blood they cast forth of their secret parts everie moneth, from the thirteenth to the fiftieth year of their age: how much women great with childe, of whom also manie are menstrually, yeeld unto the nutriment and encreas of the childe in their wombs, and how much Physicians take from women that are with childe by opening of a vein, which otherwise would bee delivered before their naturall and prefixed time; how great a quantitie thereof they avoid in the birth of their children, and for ten or twelv daies after, and how great a quantitie of milk they spend for the nourishment of the childe when they give suck, which milk is none other thing than blood made white by the power of the kernels that are in the dugs, which doth suffice to nourish the childe, bee hee great or litle; yet notwithstanding manie nurses in the mean while are menstrual: and as that may be true, so certainly this is true, that one dram (that I may so speak) of a mans blood, is of more efficacie to nourish and encreas, than two pounds of woman's blood, because it is far more perfect, more concocted, wrought, and better replenished with abundance of spirits: whereby it commeth to pass that a man endued with a more strong heat, doth more easily convert what meat so ever he eateth unto the nourishment and substance of his bodie; and if that anie superfluitie remain's, he doth easily digest and scatter it by insensible transpiration. But a woman being more cold than a man, because shee taketh more than shee can concoct, doth gather together more humors, which because shee cannot dispers, by reason of the

When the monethly flux begin's to flow.

The final cause. A woman exceed's a man in quantitie of blood.

A man exceedeth a woman in the qualitie of his blood.

A man is more hot than a woman, and therefore not menstrual.

unperfect-

unperfectness and weaknes of her heat, it is necessarie that shee should suffer, and have her monethly purgation, especially when shee groweth unto som bigness; but there is no such need in a man.

C H A P. LI.

The causes of the suppression of the courses or menstruall flux.



The courses are suppressed or stopped by manie causes, as by sharp, vehement, and long diseases, by tear, sorrow, hunger, immoderate labors, watchings, fluxes of the bellie, great bleeding, hæmorrhoids, fluxes of blood at the mouth; and evacuations in anie other part of the bodie whatsoever, often opening of a vein, great sweats, ulcers flowing much and long, scabbiness of the whole skin, immoderate grossness and clamminess of the blood, and by eating of raw fruits, and drinking of cold water, by sluggishness and thickness of the vessels, and also the obstruction of them by the defaults and diseases of the womb, by distemperature, an abscess, an ulcer, by the obstruction of the inner orifice thereof, by the growing of a Callus, caruncle, cicatrize of a wound or ulcer, or membrane growing there, by injecting of astringent things into the neck of the womb, which place manie women endeavor foolishly to make narrow: I speak nothing of age, greatness with childe, and nursing of children, becaus these causes are not besides nature, neither do they require the help of the Physitian.

The foolish endeavor of making the orifice of the womb narrow, is rewarded with the discommoditie of stopping of the flowers. What women are called *Viragines*. Lib. 6. epidem. sect 7. The women that are called *viragines* are barren.

Manie women, when their flowers or tearms be stopped, degenerate after a manner into a certain manly nature; whence they are called *Viragines*, that is to say, stout, or manly women; therefore their voice is more loud and big, like unto a mans, and they become bearded.

In the citie *Abdera* (saith *Hippocrates*). *Phaethusa* the wife of *Pytheas* at the first did bear children and was fruitful, but when her husband was exiled, her flowers were stopped for a long time: but when these things happened, her bodie became manlike and rough, and had a beard, and her voice was great and shrill. The verie same thing happened to *Namysia* the wife of *Gorgippus* in *Thasus*. Those virgins that from the beginning have not their monethly flux, and yet nevertheless enjoy their perfect health, they must necessarily be hot and drie, or rather of a manly heat and driness, that they may so dispers and dissipate by transpiration, as men do, the excrements that are gathered, but verily all such are barren.

C H A P. LII.

What accidents follow the suppression or stopping of the monethly flux or flowers.



When the flowers or monethly flux are stopped, diseases affect the womb, and from thence pass into all the whole bodie. For thereof commeth suffocation of the womb, headach, swooning, beating of the heart, and swelling of the breasts and secret parts, inflammation of the womb, an abscess, ulcer, cancer, a fever, nauousefulness, vomitings, difficult and slow concoction, the dropsie, strangurie, the full womb pressing upon the orifice of the bladder, black and bloodie urine, by reason that portion of the blood sweateth out into the bladder. In manie women the stopped matter of the monethly flux is excluded by vomiting, urine, and the hæmorrhoids, in som it groweth into *varices*. In my wife, when shee was a maid, the menstruall matter was excluded and purged by the nostrils. The wife of *Petr Feure* of *Casteaudun*, was purged of her menstruall matter by the dugs everie moneth, and in such abundance, that scarce three or four cloaths were able to drie it and suck it up.

Why the strangurie, or bloodiness of the urine followeth the suppression of the flowers. Histories of such as were purged of their menstruall flux by the nose and dugs.

In those that have not the flux monethly to evacuate this plenitude by som part or place of the bodie, there often follow's difficultie of breathing, melancholie, madness, the gout, an ill disposition of the whole bodie, dissolution of the strength of the whole bodie, want of appetite, a consumption, the falling sickness, an apoplexie.

Those whose blood is laudable, yet not so abundant, do receive no other discommoditie by the suppression of the flowers, unless it be that the womb burn's or itcheth with the desire of copulation, by reason that the womb is distended with hot and itching blood, especially if they lead a sedentary life. Those women that have been accustomed to bear children, are not so grieved and evil at ease when their flowers are stopped by anie chance contrarie to nature, as those women which did never conceive, becaus they have been used to be filled, and the vessels by reason of their customarie repletion and distention, are more large and capacious: when the courses flow, the appetite is partly dejected, for that nature, being then wholly applied to expulsion, cannot thoroughly concoct or digest, the face waxeth pale, and without its lively color, becaus that the heat with the spirits, go from without inwards, so to help and aid the expulsive facultie.

To what women the suppression of the months is most grievous.

CHAP. LIII.

Of provoking the flowers or courses.

He suppression of the flowers is a plethorick disease, and therefore must be cured by evacuation, which must be done by opening the vein called *Saphena*, which is at the ankle, but first let the basilike vein of the arm be opened, especially if the bodie be plethorick, lest that there should a greater attraction be made into the womb, and by such attraction or flowing in, there should come a greater obstruction. When the veins of the womb are distended with so great a swelling that they may be seen, it will be verie profitable to applie horse-leeches to the neck thereof: pessaries for women may be used; but fumigations of aromattick things are more meet for maids, because they are bashfull and shamefac'd. Unguents, liniments, emplaisters, cataplasms, that serv for that matter, are to be prescribed and applied to the secret parts, ligatures and frictions of the thighs and legs are not to be omitted, fomentations and sternutatories are to be used, and cupping glasses are to be applied to the groins, walking, dancing, rideing, often and wanton copulation with her husband, and such like exercises, provoke the flowers. Of plants, the flowers of St. John's-Wurt, the roots of fennel, and asparagus, bruscus or butcher's-broom, of parslie, brook-lime, basil, balm, betonie, garlick, onions, crista marina, costmarie, the rinde or bark of cassia fistula, calamint, origanum, penniroyall, mugwort, thyme, hyssop, sage, marjoram, rosemarie, horehound, rue, favin, spurge, saffron, agarick, the flowers of elder, baie-berries, the berries of Ivie, scammonie, *Camtharides*, *pyrethrum* or pellitorie of Spain, *euphorbium*. The aromattick things are *anomonum*, cinnamon, squinanth, nutmegs, *calamus aromaticus*, *cyperus*, ginger, cloves, galingal, pepper, cubibes, amber, musk, spiknard, and such like; of all which let fomentations, fumigations, baths, broaths, boles, potions, pills, syrups, apozemes, and opiates be made as the Physicians shall think good.

The apozeme that followeth is proved to be verie effectuell. *Rc. fol. & flor. dictam. an. p. ii. pimpernel. m. β. omnium capillar. an. p. i. artemis. thymi, marjor. origan. an. m. β. rad. rub. major. petroselin. fenicul. an. ʒ i β. rad. peon. bisfort. an. ʒ β. cicerum rub. sem. peon. fenicul. an. ʒ β.* make thereof a decoction in a sufficient quantitie of water, adding thereto cinnamon ʒ iii. in one pint of the decoction dissolve (after it is strained) of the syrup of mugwort, and of hyssop, *an. ʒ ii. diarrhod. abbat. ʒ i.* let it be strained through a bag, with ʒ ii. of the kernels of Dates, and let her take ʒ iii. in the morning.

Let pessaries be made with *galbanum*, *ammoniacum*, and such like mollifying things, beaten into a mass in a mortar with a hot pestel, and made into the form of a pessarie, and then let them be mixed with oil of Jasmine, *euphorbium*, an ox-gall, the juice of mugwort, and other such like, wherein there is power to provoke the flowers, as with scammonie in powder: let them be as big as ones thumb, six fingers long, and rowled in lawn, or som such like thin linnen cloth; of the same things nodula's may be made. Also pessaries may be prepared with honie boiled, adding thereto convenient powders, as of scammonie, pellitorie, and such like. Neither ought these to staie long in the neck of the womb, lest they should exulcerate, and they must be pulled back by a thread that must be put through them, and then the orifice of the womb must be fomented with white wine of the decoction of penniroyall or mother-wort.

But it is to be noted, that if the suppression of the flowers happeneth through the default of the stopped orifice of the womb, or by inflammation, these maladies must first be cured before we come unto those things that of their proper strength and virtue provoke the flowers: as for example, if such things be made and given when the womb is inflamed, the blood being drawn into the grieved place, and the humors sharpened, and the bodie of the womb heated, the inflammation will be increased. So if there be anie superfluous flesh, if there be anie Callus of a wound or ulcer, or if there be anie membrane shutting the orifice of the womb, and so stopping the flux of the flowers, they must first be consumed and taken away before anie of those things be administered. But the opportunitie of taking and applying of things, must be taken from the time wherein the sick woman was wont to be purged before the stopping, or if shee never had the flowers, in the decreas of the Moon; for so wee shall have custom, nature, and the external efficient cause to help art. When these medicines are used, the women are not to be put into baths or hot houses, as manie do, except the maladie proceed from the densitie of the vessels, and the grossness and clamminess of the blood. For sweats hinder the menstrual flux, by diverting and turning the matter another waie.

Why the vein called *basilica* in the arm must be opened before the vein *saphena* in the foot. Horse-leeches to be applied to the neck of the womb.

Plants that provoke the flowers.

Sweet things.

An apozeme to provoke the flowers.

What causes of the stopping of the flowers must be cured before the disease it self.

The fittest time to provoke the flowers. Why hot houses do hurt those in whom the flowers are to be provoked.

CHAP. LIIII.

The signs of the approaching of the menstrual flux.

When the monthlie flux first approacheth, the dugs itch and become more swollen and hard then they were wont, the woman is more desirous of copulation, by reason of the

What women do love and what women do loath the act of generation when the months are stopped. With what accidents those that are marriageable and are not married, are troubled. The cause of so manie accidents.

the ebullition of the provoked blood, and the acrimonie of the blood that remaineth, her voice becommeth bigger, her secret parts itchi, burn, swell, and wax red. If they staie long, shee hath pain in her loins and head, naufeousnes and vomiting troubleth the stomach: notwithstanding, if those matters which flow together in the womb, either of their own nature, or by corruption, bee cold, they loath the act of generation, by reason that the womb waxeth feeble through sluggishnes and waterie humors filling the same, and it floweth by the secret parts verie softly: Those maids that are marriageable, although they have the menstrual flux verie well, yet they are troubled with headach, naufeousnes, and often vomiting, want of appetite, longing, an ill habite of bodie, difficultie of breathing, trembling of the heart, swooning, melancholie, fearfull dreams, watching, with sadness and heaviness, becaus that the genital parts burning and itching, they imagine the act of generation, whereby it commeth to pass that the feminal matter, either remaining in the testicles in great abundance, or els powred into the hollownes of the womb, by the tickling of the genitals, is corrupted, and acquireth a venemous qualitie, and causseth such like accidents as happen's in the suffocation of the womb.

Aph. 36. sect. 5.

Lib. 2. de subt.

The efficient cause of the milk is to be noted.

Maids that live in the countrie are not so troubled with those diseases, becaus there is no such lying in wait for their maiden-heads, and also they live sparingly and hardly, and spend their time in continual labor. You may see manie maids so full of juice, that it runneth in great abundance, as if they were not menstrual, into their dugs, and is there converted into milk, which they have in as great quantitie as nurses, as we read it recorded by *Hippocrates*. If a woman which is neither great with childe, nor hath born children, hath milk, shee wants the menstrual fluxes; whereby you may understand that that conclusion is not good which affirmeth that a woman which hath milk in her breasts, either to be delivered of childe, or to be great with childe: for *Cardanus* writeth that hee knew one *Antonie Buzius* at *Genua*, who beeing thirtie years of age, had so much milk in his breasts as was sufficient to nurs a childe; for the breeding and efficient cause of milk proceed's not onely from the engrafted facultie of the glandulous substance, but much rather from the action of the man's seed; for proof whereof you may see manie men that have verie much milk in their breasts, and manie women that almost have no milk, unless they receiv man's seed. Also women that are strong and lustie like unto men, which the Latines call *Viragines*, that is to say, whose seed commeth unto a manly nature, when the flowers are stopped, concoct the blood, and therefore when it wanteth passage forth, by the likenes of the substance it is drawn into the dugs, and becommeth perfect milk: those that have the flowers plentifully and continually for the space of four or five daies, are better purged and with more happie success then those that have them for a longer time.

CHAP. LV.

What accidents follow immoderate fluxes of the flowers or courses.



F the menstrual flux floweth immoderately, there also follow's manie accidents; for the concoction is frustrated, the appetite overthrow'n, then follow's coldness throughout all the bodie, exolution of all the faculties, an ill habit of all the bodie, leanness, the dropsie, an hectick fever, convulsion, swooning, and often sudden death: if a woman have them too exceeding immoderately, the blood is sharp and burning, and also stinking, the sick woman is also troubled with a continual fever, and her tongue will bee drie, ulcers arise in the gums and all the whole mouth. In women the flowers do flow by the veins and arteries which rise out of the spermatick vessels, and ended in the bottom and sides of the womb, but in virgins and in women great with childe, whose children are found and healthful, by the branches of the hypogastrick vein and arterie, which are spread and dispersed over the neck of the womb. The cause of this immoderate flux is in the quantitie or qualitie of the blood, in both the fault is unreasonable copulation, especially with a man that hath a yard of a monstrous greatnes, and the dissolution of the retentive facultie of the vessels: oftentimes also the flowers flow immoderately by reason of a painful and a difficult birth of the childe or the after-birth, beeing pulled by violence from the cotyledons of the womb, or by reason that the veins and arteries of the neck of the womb are torn by the coming forth of the infant with great travel, and manie times by the use of sharp medicines, and exulcerating pessaries. Oft-times also nature avoids all the juice of the whole bodie critically by the womb after a great disease, which flux is not rashly or suddenly to be stopped. That menstrual blood that floweth from the womb is more gross, black, and clottie, but that which commeth from the neck of the womb is more clear, liquid and red.

By what pores the flowers do flow in a woman and in a maid.

The causes of an unreasonable flux of blood.

The critical flux of the flowers.

The signs of blood flowing from the womb or neck of the womb.

CHAP. LVI.

Of stopping the immoderate flowing of the flowers or courses.

You must make choice of such meats and drinks as have power to increasate the blood; for as the flowers are provoked with meats that are hot, and of subtil parts, so they are stopped by such meats as are cooling, thickning, astringent, and stipectick, as are barlie-waters, sodden rice, the extreme parts of beasts, as of oxen, calvs, sheep, either fried or sodden with sorrel, purslain, plantain, shepher's-purs, sumach, the buds of brambles, berberries, and such like. It is supposed that a Hart's-horn burned, washed, and taken in astringent water, will stop all immoderate fluxes; likewise *sanguis draconis*, *terra sigillata*, *bolus armenus*, *lapis hæmatites*, coral beaten into most subtil powder, and drunk in steeled water; also pap made with milk, wherein steel hath oftentimes been quenched, and the flour of wheat, barlie, beans, or rice, is verie effectual for the same. Quinces, cervices, medlars, cornelian-berries, or cherries may likewise bee eaten at the second course, Julips are to bee used of steeled waters, with the syrup of drie roses, pomegranats, sorrel, myrtles, quinces, or old *conservs* of red roses, but wine isto bee avoided: but if the strength bee so extenuated, that they require it, you must chuse gross and astringent wine tempered with steeled water; exercises are to bee shunned, especially venereous exercises, anger is to bee avoided, a cold air is to bee chosen, which (if it bee not so naturally) must bee made so by sprinkling cold things on the ground, especially if the summer or heat bee then in his full strength; sound sleeping staie's all evacuations, except sweating. The opening of a vein in the arm, cupping-glasses fastened on the breasts, bands, and painful frictions of the upper parts are greatly commended in this maladie.

The instituti-
on or order of
life.

But if you perceiv that the caus of this accident lieth in a cholerick ill juice mixed with the blood, the bodie must bee purged with medicines that purge choler and water, as Rubarb, Myrobalanes, Tamarinds, Sebestens, and the purging syrup of Roses.

Purging.

CHAP. LVII.

Of local medicines to bee used against the immoderate flowing of the Courses.

Also unguents are made to stay the immoderate flux of the terms, and likewise injections and pessaries. This or such like may bee the form of an unguent.

An unguent.

R. el mastich. & myrt. an. ʒii. nucum cupres. olibani, myrtil. an. ʒii. succi rosar. rubr. ʒi. pulv. mastichin. ʒii. boli armen. terræ sigillat. an. ʒʒ. ceræ quantum sufficit, fiat unguentum. An injection may bee thus made.

R. aq. plantag. rosar. rubr. bursæ pastor. centinodii, an. ʒʒ. corticis querni, nucum cupressi, gallar. non maturar. an. ʒii. berberis, sumach. balaust. a-

An astringent
injection.

lumin. roch. an. ʒi. make thereof a decoction, and inject it in a syringe blunt-pointed into the womb, lest if it should bee sharp, it might hurt the sides of the neck of the womb; also Snails beaten with their shells; and applied to the navel, are verie profitable. Quinces roasted under the coles, and incorporated with the powder of Myrtles, and *Bole-Armenick*, and put into the neck of the womb, are marvellous effectual for this matter. The form of a pessarie may bee thus. R. gallar. immaturar. combust. & in aceto extindtar. ʒii. ammo. ʒʒ. sang. dracon. pulv. rad. symphyt. sumach mastich. succi acaciæ, cornu cerust. colophon, myrrha, scorix ferri, an. ʒi. capbur. ʒii. mix them, and incorporate them all together with the juice of knot-grass, syngreen, night-shade, hen-bane, water-lillies, plantain, of each as much as is sufficient, and make thereof a pessarie.

Astringent
pessaries.

Cooling things, as Oxycrate, *unguentum rosatum*, and such like, are with great profit used to the region of the loins, thighs, and genital parts: but if this immoderate flux do com by erosion, so that the matter thereof continually exulcerateth the neck of the womb; let the place bee annointed with the milk of a shee-Afs, with barlie-water, or bindeing and astringent mucelages, as of *Psilium*, Quinces, Gum Tragacanth, Arabick, and such like.

CHAP. LVIII.

Of Women's Fluxes, or the Whites.

Besides the fore-named Flux, which by the law of nature happeneth to women monthly, there is also another called a *Woman's Flux*, becaus it is onely proper and peculiar to them: this somtimes wearie the woman with a long and continual distillation from the womb, or through the womb, comming from the whole bodie without pain, no otherwise then when the whole superfluous filth of the bodie is purged by the reins or urine; somtimes it returneth at uncertain seasons, and somtimes with pain and exulcerateing the places of the womb: it differeth from the menstrual Flux, becaus that this for the space of a few daies, as it shall seem convenient to nature, casteth forth laudable blood; but this *Woman's Flux* yeeldeth impure ill juice,

The reason of
the name.

The differ-
ences.

What women are apt to this flux.

Women's flux commeth verie seldom of blood.

By what signs an ulcer in the womb may be known from the white flowers.

sometimes sanious, sometimes serous and livid, otherwhiles white and thick, like unto barlie-cream, proceeding from flegmatick blood: this last kinde thereof is most frequent. Therefore wee see women that are flegmatick, and of a soft and loof habit of bodie, to be often troubled with this diseaf; and therefore they will say among themselvs that they have the whites. And as the matter is divers, so it will stain their smocks with a different color. Truly, if it bee perfectly red and sanguine, it is to bee thought it commeth by erosion, or the exsolution of the substance of the vessels of the womb, or of the neck thereof: therefore it commeth verie seldom of blood, and not at all except the woman bee either great with childe, or ceas to bee menstrual for som other caus; for then in stead of the monethly flux there floweth a certain whayish excrement, which staineth her cloaths with the color of water wherein flesh is washed.

Also it verie seldom proceed's of a melancholick humor, and then for the most part it causeth a cancer in the womb. But often-times the purulent and bloodie matter of an ulcer lying hidden in the womb, deceiveth the unskilful Chirurgian or Physician: but it is not so hard to know these diseases one from the other; for the matter that floweth from an ulcer, becauf (as it is said) it is purulent, it is also lesser, grosser, stinking, and more white. But those that have ulcers in those places, especially in the neck of the womb, cannot have copulation with a man without pain.

CHAP. LIX.

Of the causes of the Whites.



Sometimes the caus of the Whites consisteth in the proper weakness of the womb, or elf in the uncleanness thereof; and sometimes by the default of the principal parts. For if the brain or the stomach bee cooled, or the liver stopped or schirrous, manie crudities are engendered, which if they run, or fall down into the womb that is weak by nature, they caus the Flux of the womb, or Whites: but

How a woman's flux is wholesom. How it causeth diseases.

How it letteth the conception.

Why it is hard to be cured.

An historic.

if this Flux bee moderate, and not sharp, it keepeth the bodie from malign diseases; otherwise it useth to infer a consumption, leanness, paleness, and an oedematous swelling of the legs, the falling down of the womb, the dejection of the appetite and all the faculties, and continual sadness and sorrowfulness; from which it is verie hard to perswade the sick woman, becauf that her minde and heart will bee almost broken, by reason of the shame that shee taketh, becauf such filth floweth continually; it hindereth conception, becauf it either corrupteth, or driveth out the seed when it is conceived. Often-times, if it stoppeth for a few months, the matter that staith there causeth an abscess about the womb in the bodie or neck thereof; and by the breaking of the abscess there followeth rotten and cancerous ulcers, sometimes in the womb, sometimes in the groin, and often in the hips.

This diseaf is hard to be cured, not onely by reason of it self, as becauf all the whole filth and superfluous excrements of a woman's bodie floweth down into the womb, as it were into a sink; becauf it is naturally weak, hath an inferior situation, manie vessels ending therein; and last of all, becauf the courses are wont to com through it; as also by reason of the sick woman, who often-times had rather die then to have that place seen, the diseaf known, or permit local medicines to be applied thereto: for so saith *Montanus*, that on a time hee was called to a noble woman of *Italie*, who was troubled with this diseaf, unto whom hee gave counsel to have cleansing decoctions injected into her womb, which when shee heard, shee fell into a swoond, and desired her husband never thereafter to use his counsel in anie thing.

CHAP. LX.

The cure of the Whites.

If the flux of a woman bee red, wherein it differeth from the menstrual flux.

A woman's flux is not suddenly to be stopped.

What baths are profitable.

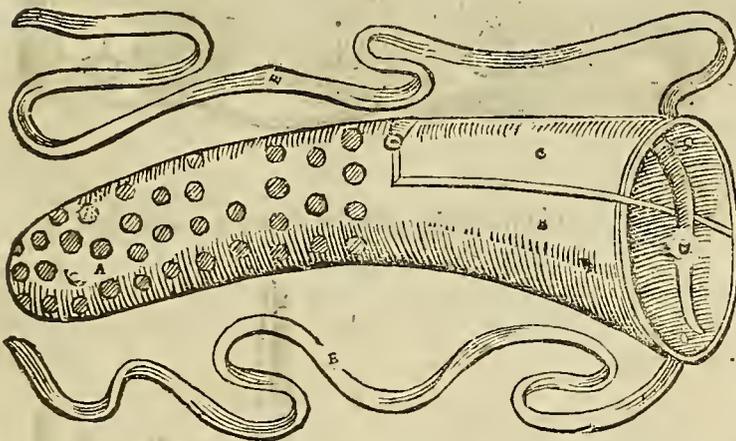


If the matter that floweth out in this diseaf bee of a red color, it differeth from the natural monthly flux in this onely, becauf it keep's no order or certain time in its returning. Therefore phlebotomie and other remedies which wee have spoken of, as requisite for the menstrual flux, when it floweth immoderately, is here necessarie to be used. But if it bee white, or doth testifie or argue the ill juice of this or that humor by anie other color, a purgation must bee prescribed of such things as are proper to the humors that offend's: for it is not good to stop such a flux suddenly; for it is necessarie, that so the bodie should bee purged of such filth or abundance of humors: for they that do hasten to stop it, caus the dropsie, by reason that this sink of humors is turned back into the liver; or elf a cancer in the womb, becauf it is staied there; or a fever, or other diseases, according to the condition of the part that receiveth it. Therefore wee must not com to local deterfives, desiccatives, restrictives, unless wee have first used universal remedies according to art. Alum-baths, baths of brimstone, and of bitumen, or iron, are convenient for

for the whites that com of a phlegmatick humor ; instead whereof baths may bee made of the decoction of herbs that are hot, drie, and indued with an aromatick power, with alom and pebbles, or flint-stones red hot thrown into the same. Let this bee the form of a cleansing decoction and injection. *R. fol. absynth. agrimon. centinod. burf-past. an. m β.* boil them together, and make thereof a decoction, in which dissolv *mellis-rosar. ʒ ii, aloës, myrrhæ, salis nitri, an. ʒi.* make thereof an injection, the woman beeing so placed on a pillow under her buttocks that the neck of the womb beeing more high, may bee wide open : when the injection is received, let the woman set her legs acrofs, and draw them up to her buttocks, and so shee may keep that which is injected. They that indeavor to drie and binde more strongly, add the juice of *acatia*, green gals, the rindes of pomegranates, rock-alome, romane vitriol, and they boil them in Smiths-water and red-wine ; pessaries may bee made of the like facultie.

If the matter that commeth forth bee of an ill color or smell, it is like that there is a rotten ulcer ; therefore wee ought to inject those things that have power to correct the putrefaction : among which *egyptiacum*, dissolved in lie or red-wine, excelleth. There are women which when they are troubled with a virulent *Gonorrhæa*, or an involuntarie flux of the seed, cloaking the fault with an honest name, do untruly say that they have the whites, becauf that in both these diseases a great abundance of filth is avoided. But the Chyrurgian may easily perceiv that maladie by the rottenness of the matter that floweth out, and hee shall perswade himself that it will not bee cured without salivation or fluxing at the mouth, and sweats. In the mean while let him put in an instrument made like unto a pessarie, and caus the sick woman to hold it there : this instrument must have manie holes in the upper end, through which the purulent matter may pass, which by staying or stopping might get a sharpness ; as also that so the womb may breath the more freely, and may bee kept more temperate and cool by receiving the air, by the benefit of a spring whereby this instrument, beeing made like unto a pessarie, is opened and shut.

The form of an Instrument made like unto a Pessarie, whereby the womb may bee ventilated.



A. Sheweth the end of the Instrument, which must have manie holes therein.

B. Sheweth the bodie of the Instrument.

C. Sheweth the plate whereby the mouth of the Instrument is opened and shut, as wide and as close as you will, for to receiv the air more freely.

D. Sheweth the spring.

EE. Shew the laces and bands to tie about the patient's bodie, that so the Instrument may bee staid and kept fast in his place.

CHAP. LXI.

Of the *Hæmorrhoides* and *Warts* of the neck of the womb.

Like as in the fundament, so in the neck of the womb, there are *Hæmorrhoides*, and as it were varicous veins, often-times flowing with much blood, or with a red and stinking whayish humor. Som of these, by reason of their redness and great inequality as it were of knobs, are like unripe Mulberries, and are called vulgarly *venæ morales*, that is to say, the veins or *hæmorrhoides* like unto Mulberries : others are like unto Grapes, and therefore are named *uvales* ; other som are like unto warts, and therefore are called *venæ verrucalæ* : som appear and shew themselves with a great tumor, others are little, and in the bottom of the neck of the womb ; others are in the side or edg thereof. *Acrochordon* is a kinde of wart with a callous bunch or knot, haveing a thin or slender root, and a greater head, like unto the knot of a rope, hanging by a small thred ; it is called of the Arabians, *verruca botoralis*.

There is also another kinde of wart, which becauf of his great roughness and inequality, is called *thymus*, as resembling the flower of Thyme. All such diseases are exasperated and made more grievous by anie exercise, especially by venereous acts ; manie times they

The differences of the *Hæmorrhoides* of the neck of the womb.

What an *Acrochordon* is.

What a *Thymus* is.

have a certain malignitie, and an hidden virulencie joined with them, by occasion whereof they are aggravated even by touching onely; becauf they have their matter of a raging humor: therefore to theſe we may not rightly uſe a true, but onely the palliative cure, as they term it: the Latines call them onely *figus*, but the French men name them with an adjunct, Saint *Fiacrius* figs.

S. *Fiacrius*
figs.

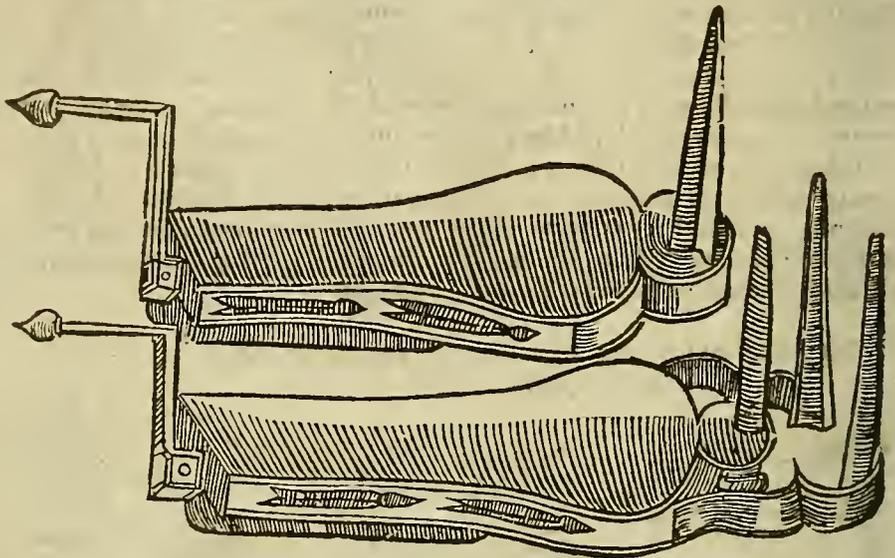
CHAP. LXII.

Of the cure of the Warts that are in the neck of the womb.

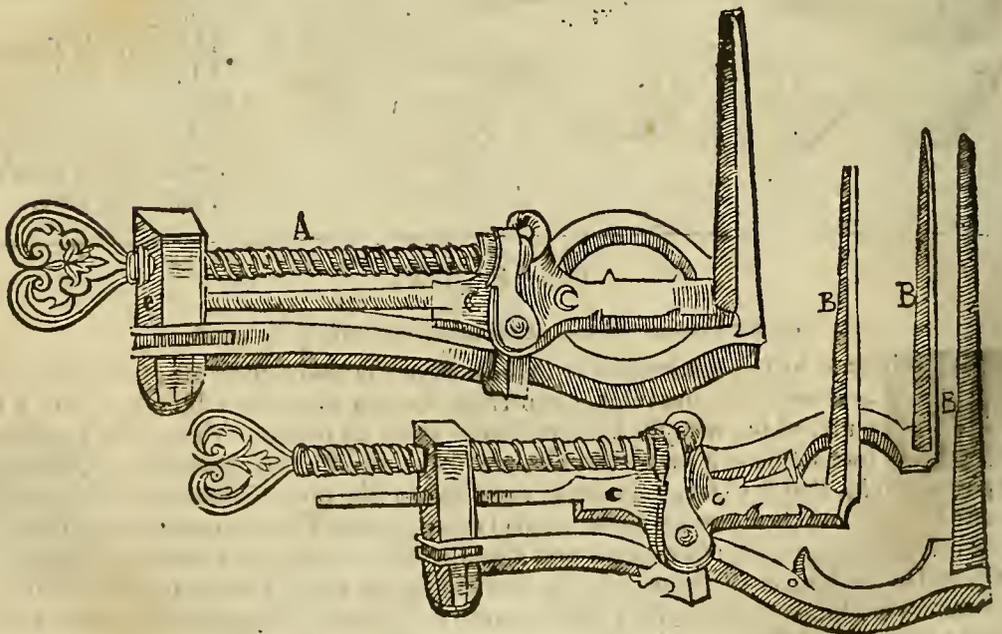
What warts
of the womb
muſt bee
bound, and ſo
cut off.

THe warts that grow in the neck of the womb, if they bee not malignant, are to bee tied with a thred, and ſo cut off. Thoſe that lie hid more deep in the womb, may bee ſeen and cured by opening the *matrix* with a Dilater made for the purpoſe.

Divers Specula matricis, or Dilaters for the inſpection of the Matrix.



Another form of a Dilater, or Speculum matricis, whereof the declaration followeth.



A. Sheweth the screw, which shutteth and openeth the Dilater of the Matrix.

BB. Shew the arms or branches of the Instrument, which ought to bee eight or nine fingers long.

But these Dilaters of the matrix ought to bee of a bigness, correspondent to the patient's bodie; let them bee put into the matrix, when the woman is placed as wee have said, when the childe is to bee drawn out of her bodie. That instrument is most meet to tie the warts, which wee have described in the relaxation of the palate or *Uvula*: let them bee tied harder and harder everie day until they fall away. Therefore for the cureing of warts there are three chief scopes, as bands, sections, cauteries; and lest they grow up again, let oil of vitriol bee dropped on the place, or *agua fortis*, or som of the lee whereof potential cauteries are made. This water following is most effectual to consume and waste warts. *R. aq. plantag. ℥vi. virid. aris, ℥il. alum. roch. ℥iiii. sal. com. ℥ss. vit. rom. & sublim. an. ℥ss.* beat them all together, and boil them; let one or two drops of this water bee dropped on the grieved place, not touching anie place elf; but if there bee an ulcer, it must bee cured as I have shewed before. A certain man, studious of physick, of late affirmed to mee, that Ox-dung tempered with the leavs or powder of Savine, would waste the warts of the womb, if it were applied thereto warm; which, whether it bee true or not, let Experience, the mistress of things, bee judg. Verily, *Cantharides* put into unguents will do it, and (as it is likely) more effectually; for they will consume the callousness which groweth between the toes or fingers. I have proved by experience, that the warts that grow on the hands, may bee cured by applying of Purslain beaten or stamp't in its own juice. The leavs and flowers of Marigolds do certainly perform the self-same thing.

Three scopes of the cure of warts in the womb.

An effectual watter to consume warts.

Unguents to consume warts.

CHAP. LXIII.

Of Chaps, and those wrinkled and hard excrescences, which the Greeks call Condylomata.



CHaps or Fissures, are cleft and verie long little Ulcers, with pain verie sharp and burning, by reason of the biting of an acrid, salt and drying humor, making so great a contraction, and often-times narrowness in the fundament and the neck of the womb, that scarcely the top of one's finger may bee put into the orifice thereof, like unto pieces of leather or parchment, which are wrinkled and parched by holding of them to the fire. They rise sometimes in the mouth, so that the patient can neither speak, eat, nor open his mouth, so that the Surgeon is constrained to cut it. In the cure thereof, all sharp things are to bee avoided, and those which mollifie are to bee used, and the grieved place or part is to bee moistened with fomentations, liniments, cataplasms, emplasters; and if the maladie bee in the womb, a dilater of the matrix or pessarie must bee put thereinto verie often, so to widen that which is over hard, and too much drawn together or narrow, and then the cleft little ulcers must bee cicatrized. *Condylomata* are certain wrinkled and hard bunches, and as it were excrescences of the flesh, rising especially in the wrinkled edges of the fundament and neck of the womb. Cooling and relaxing medicines ought to bee used against this disease, such as are oil of eggs, and oil of lin-seed, take of each of them two ounces, beat them together a long time in a leaden mortar, and therewith anoint the grieved part; but if there bee an inflammation, put thereto a little Camphir.

What Chaps are.

The cure.

What *Condylomata* are.

The cure.

CHAP. LXIV.

Of the itching of the womb.



IN women, especially such as are old, there often-times commeth an itching in the neck of the womb, which doth so trouble them with pain, and a desire to scratch, that it taketh away their sleep. Not long since a woman asked my counsel, that was so troubled with this kinde of maladie, that shee was constrained to extinguish or stay the itching burning of her secret parts by sprinkling cinders of fire, and rubbing them hard on the place. I counsell'd her to take *egypt.* dissolved in sea-water or lee, and inject it in her secret parts with a syringe, and to wet *stupes* of flax in the same medicine, and put them up into the womb, and so shee was cured. Manie times this itch commeth in the fundament or testicles of aged men, by reason of the gathering together or conflux of salt flegm, which when it falleth into the eies, it causeth the patient to have much ado to refrain scratching: when this matter hath dispersed into the whole habit of the bodie, it causeth a burning or itching scab, which must bee cured by a cooling and a moistning diet, by phlebotomie and purging of the salt humor, by baths and horns applied, with scarification and anointing of the whole bodie with the unction following. *R. axing. porcin. recent. ℥i. ss. sap. nig. vel gallici, salis nitri, assat. tartar. staphisag. an. ℥ss. sulph. viv. ℥i. argent. viv. ℥ii. acet. ros. quart. i.* incorporate them all together, and make thereof a liniment according to art, and use it as is said before: *unguentum enularum cum mercurio* is thought to have great force, not without desert, to assuage

What the itch of the womb

A historic.

The caus of the itch.

The virtue of unguent. enular.

the itch, and drie the scab. Som use this that followeth. *R. alum. spum. nitr. sulph. viv. an. ʒvi. staphis. ʒi.* let them all bee dissolved in vinegar of Roses, adding thereto *butyr. recent. q. s.* make thereof a liniment for the fore-named use.

CHAP. LXV.

Of the relaxation of the great Gut, or Intestine, which happeneth to women.

The caus.

The cure.

An effectual
remedic.The differen-
ces and signs.

An historie.



Anie women that have had great travel and strains in childe-birth, have the great Intestine (called of the Latines *crassum intestinum*) or Gut, relaxed and slipped down; which kinde of affect happeneth much to children, by reason of a phlegmatick humor moistening the *sphincter*-muscle of the fundament, and the two others called *Levatores*. For the cure thereof, first of all the Gut called *rectum intestinum*, or the straight Gut, is to bee fomented with a decoction of heating and resolving herbs, as of Sage, Rosemarie, Lavander, Thyme, and such like; and then of astringent things, as of Roses, Myrtills, the rindes of Pomegranats, Cypress-nuts, Galls, with a little Alum, then it must bee sprinkled with the powder of things that are astringent without biteing: and last of all, it is to bee restored, and gently put into its place. That is supposed to bee an effectual and singular remedie for this purpose, which is made of twelv red Snails put into a pot with ʒʒ. of Alum, and as much of Salt, and shaken up and down a long time, for so at length when they are dead there will remain an humor, which must bee put upon Cotton, and applied to the Gut that is faln down. By the same caus (that is to say, of painful childe-birth in som women) there ariseth a great swelling in the navel; for when the *peritoneum* is relaxed or broken, somtimes the Kall, and somtimes the Guts slip out: manie times flatulencies com thither: the caus, as I now shewed, is over great straining or stretching of the bellie, by a great burthen carried in the womb, and great travel in childe-birth: if the faln-down Guts make that tumor, pain joined together with that tumor doth vex the patient; and if it bee pressed, you may hear the nois of the Guts going back again: if it bee the Kall, then the tumor is soft, and almost without pain; neither can you hear anie nois by compression: if it bee winde, the tumor is loof and soft, yet it is such as will yeeld to the pressing of the finger with som sound, and will soon return again: if the tumor bee great, it cannot bee cured, unless the *peritoneum* bee cut, as it is said in the cure of of ruptures. In the Church-porches of *Paris*, I have seen Beggar-women, who by the falling down of the Guts, have had such tumors as big as a bowl, who notwithstanding could go, and do all other things as if they had been sound, and in perfect health: I think it was, becaus the *feces* or excrements, by reason of the greatnes of the tumor, and the bigness or wideness of the Inestines, had a free passage in and out.

CHAP. LXVI.

Of the relaxation of the navel in children.

An absces not
to bee opened.

An historie.



Often-times in children newly born, the navel swelleth as big as an egg, becaus it hath not been well cut or bound, or becaus the whayish humors are flowd thither, or becaus that part hath extended it self too much by crying, by reason of the pains of the fretting of the childe's guts, manie times the childe bringeth that tumor joined with an absces with him from his mother's womb: but let not the Chirurgian assay to open that absces, for if it bee opened, the guts com out through the incision, as I have seen in manie, and especially in a childe of my Lord *Martiques*; for when *Peter* of the Rock, the Chirurgian, opened an absces that was in it, the bowels ran out at the incision, and the infant died; and it wanted but little that the Gentlemen of my Lord's retinue that were there, had strangled the Chirurgian. Therefore when *John Gromontius* the Carver desired mee, and requested mee of late that I would do the like in his son, I refused to do it, becaus it was in danger of its life by it alreadie, and in three daies after the absces broke, and the bowels gushed out, and the childe died.

CHAP. IX.

Of the pain that children have in breeding of teeth.

The time of
breeding of
the teeth.

Children are greatly vexed with their teeth, which caus great pain when they begin to break, as it were, out of their shell or sheath, and begin to com forth, the gums beeing broken, which for the most part happeneth about the seventh month of the childe's age. This pain commeth with itching and scratching of the gums, an inflammation, flux of the bellie, whereof manie times commeth a fever, falling of the hair, a convulsion, at length death. The caus of the pain

pain is the solution of the continuitie of the gums by the comming forth of the teeth. The signes of that pain is an unaccustomed burning, or heat of the childe's mouth, which may bee perceived by the nurf that giveth it suck, a swelling of the gums and cheeks, and the childe's beeing more way-ward and crying then it was wont, and it will put its fingers to its mouth, and it will rub them on its gums as though it were about to scratch, and it flavereth much. That the Phyfician may remedie this, hee must cure the nurf as if shee had the fever, and shee must not suffer the childe to suck so often, but make him cool and moist when hee thirsteth by giving him at certain times *syrupus alexandrinus*, *syrup. de limonibus*, or the syrup of pomegranats with boiled water; yet the childe must not hold those things that are actually cold long in his mouth, for such by bindeing the gums, do in som sort stay the teeteeth that are newly comming forth; but things that lenifie and mollifie are rather to bee used, that is to say, such things as do by little and little relax the loof flesh of the gums, and also affwage the pain. Therefore the Nurf shall often-times rub the childe's gums with her fingers, annointed or besmeared with oil of sweet almonds, fresh-butter, honie, sugar, mucilage of the seeds of *psilium*, or of the seeds of marsh-mallows extracted in the water of pelletorie of the wall. Som think that the brain of a hare, or of a sucking pig roasted or sodden, through a secret propertie, are effectual for the same: and on the outside shall bee applied a cataplasm of barlie-meal, milk, oil of roses, and the yelks of eggs. Also a stick of liquorice shaven and bruised and annointed with honie, or anie of the forenamed syrups, and often rubbed in the mouth or on the gums, is likewise profitable: so is also anie toie for the childe to plaie withall, wherein a wolfe's tooth is set, for this by scratching doth affwage the painfull itching, and rarifie the gums, and in som weareth them that the teeth appear the sooner. But manie times it happeneth that all these and such like medicines profit nothing at all, by reason of the contumacie of the gums, by hardnes or the weaknes of the childe's nature: therefore in such a caus, before the fore-named mortal accidents com, I would perswade the Chirurgian to open the gums in such places as the teeth bunch out with a little swelling, with a knife or lancet, so breaking and opening a waie for them, notwithstanding that a little flux of blood will follow by the tension of the gums: of which kinde of remedie I have with prosperous and happie succes made trial in som of mine own children, in the presence of *Feureus*, *Altinus*, and *Cortinus*, Doctors of Physick, and *Guillemeau* the King's Chirurgian, which is much better and more safe then to do as som nurfes do, who taught onely by the instinct of nature, with their nails and scratching, break and tear, or rent the children's gums. The Duke of *Nevers* had a son of eight months old, which died of late, and when wee, with the Phyficians that were present, diligently sought for the caus of his death, wee could impute it unto nothing elf, then to the contumacious hardnes of the gums, which was greater then was convenient for a childe of that age; for therefore the teeth could not break forth, nor make a passage for themselves to com forth: of which our judgment this was the trial, that when wee cut his gums with a knife, wee found all his teeth appearing as it were in an arraie, readie to com forth, which if it had been don when hee lived, doubtless hee might have been preserved.

The caus of the pain in breeding teeth.

The signs.

The cure.

What power scratching of the gums hath to affwage the pain of them.

An historic.

The end of the twentie fourth Book.

Of Monsters and Prodigies.

The twentieth fifth Book.

THE PREFACE.

What a Monster is.

What a Prodigie is.

Lib. 4. gen. anim. cap. 4.

We call Monsters, what things soever are brought forth contrarie to the common decree and order of nature. So wee term that infant monstrous, which is born with one arm alone, or with two beads. But wee define Prodigies, those things which happen contrarie to the whole course of nature, that is, altogether differing and dissenting from nature: as if a woman should be delivered of a Snake, or a Dog. Of the first sort are thought all those, in which anie of those things, which ought, and are accustomed to be, according to nature, is wanting, or doth abound, is changed, worn, covered or defended, hurt, or not put in his right place: for sometimes some are born with more fingers then they should, other some but with one finger: some with those parts divided which should be joined, others with those parts joined which should be divided: some are born with the privities of both sexes, male and female. And Aristotle saw a Goat with a horn upon her knee. No living creature was ever born which wanted the Heart, but some have been seen wanting the Spleen, others with two Spleens, and some wanting one of the Reins. And none have bin known to have wanted the whole Liver, although some have been found that had it not perfect and whole: and there have been those which wanted the Gall, when by nature they should have had it: and besides it hath been seen that the Liver, contrarie to his natural site, hath lien on the left side, and the Spleen on the right. Some women also have had their privities closed, and not perforated, the membranous obstacle, which they call the Hymen, hindering. And men are sometimes born with their fundaments, ears, noses, and the rest of the passages shut, and are accounted monstrous, nature erring from its intended scope. But to conclude, those Monsters are thought to portend some ill, which are much differing from their nature.

CHAP. I.

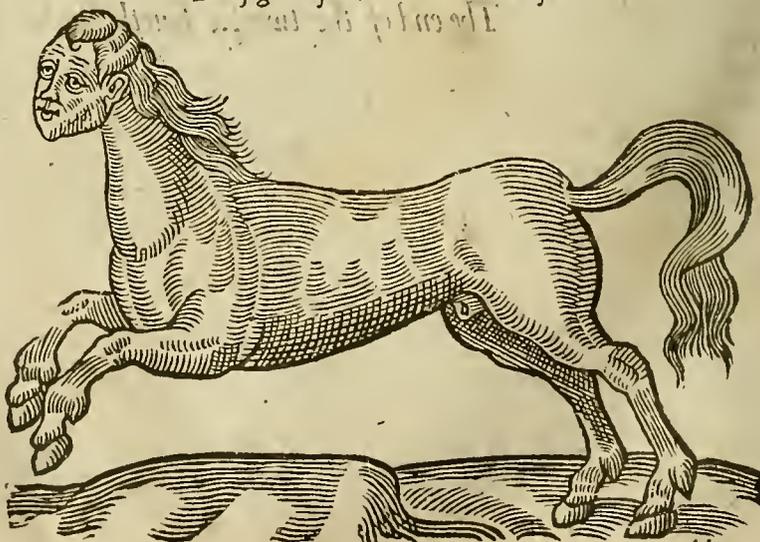
Of the cause of Monsters; and first of those Monsters which appear for the glorie of God, and the punishment of mens wickedness.

Here are reckoned up manie causes of Monsters; the first whereof is the glorie of God, that his immense power may be manifested to those which are ignorant of it, by the sending of those things which happen contrarie to nature: for thus our Saviour Christ answered the Disciples (asking whether hee or his parents had offended, who being born blinde, received his sight from him) that neither hee nor his parents had committed anie fault so great, but this to happened onely that the glorie and majestie of God should be divulged by that miracle, and such great works.

Another cause is, that God may either punish mens wickedness, or shew signs of punishment at hand, because parents sometimes lie and join themselves together without law and measure, or luxuriously and beastly, or at such times as they ought to forbear by the command of God and the Church, such monstrous, horrid and unnatural births do happen.

The figure of a Colt with a man's face.

At Verona Anno Dom. 1254. a mare foaled a colt with the perfect face of a man, but all the rest of the bodie likean horse: a little after that, the war between the Florentines and Pisans began, by which all Italie was in a combustion.



About

The figure of a winged Monster.



About the time that Pope *Julius* the second raised up all *Italie*, and the greatest part of *Christendom*, against *Lewis* the twelfth the King of *France*, in the year of our Lord 1512. (in which year, upon Easter daie, near *Ravenna* was fought that mortal battel, in which the Pope's forces were overthrown) a monster was born in *Ravenna*, haveing a horn upon the crown of his head, and besides, two wings, and one foot alone, most like to the feet of birds of prey, and in the knee thereof an eie, the privities of male and female, the rest of the bodie like a man, as you may see by this figure.

The third caus is, an abundance of seed and overflowing matter. The fourth, the same in too little quantitie, and deficient. The fift, the force and efficacie of imagination. The sixt, the straightnes of the womb. The seventh, the disorderly site of the partie with childe, and the position of the parts of the bodie. The eight, a fall, strain or stroak, especially upon the bellie of a woman with childe. The ninth, hereditarie diseases, or affects by anie other accident. The tenth, the confusion and mingling together of the seed. The eleventh, the craft and wickednes of the diuel. There are som others which are accounted for monsters, becaus their original or essence full of admiration, or do assume a certain prodigious form by the craft of som begging companions; therefore wee will speak briefly of them in their place in this our treatise of monsters.

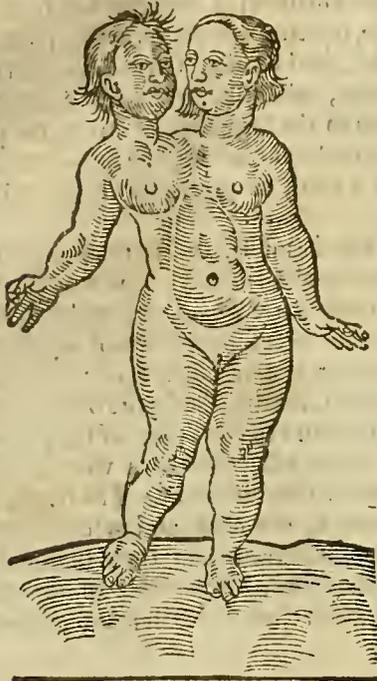
CHAP. II.

Of Monsters caused by too great abundance of seed.

Seeing wee have already handled the two former and truly final causes of monsters, wee must now com to those which are material, corporeal and efficient causes, taking our beginning from that wee call the too great abundance of the matter of seed. It is the opinion of those Philosophers which have written of monsters, that if at anie time a creature bearing one at once, as man, shall cast forth more seed in copulation then is necessarie to the generation of one bodie, it cannot bee that one ly one should bee begot of all that; therefore from thence either two or more must arise: whereby it cometh to pass, that these are rather judged wonders, becaus they happen seldom, and contrarie to common custome. Superfluous parts happen by the same caus, that twins and manie at one birth, contrarie to nature's course, do chance, that is, by a larger effusion of seed then is required for the frameing of that part, that so it exceed's either in number or elf in greatnes. So *Austin* tell's that in his time in the East an infant was born, haveing all the parts from the bellie upwards double, but from thence downwards single and simple: for it had two heads, four eies, two breasts, four hands, in all the rest like to another childe, and it lived a little while. *Calius Rhodiginus* saith hee saw two monsters in *Italie*, the one male, the other female, handsomly and neatly made through all their bodies, except their heads, which were double; the male died within a few daies after it was born; but the female (whose shape is here delineated) lived twenty-five years, which is contrarie to the common custome of monsters; for they for the most part are verie short-liv'd, becaus Monsters are seldom long-lived. they both live and are born, as it were, against nature's consent; to which may bee added, they do not love themselvs, by reason they are made a scorn to others, and by that means lead a hated life.

But it is most remarkable which *Lycosthenes* telleth of a * Woman-monster, for, excepting her two heads, shee was framed in the rest of her bodie to an exact perfection: her two heads had the like desire to eat and drink, to sleep, to speak, and to do everie thing; shee begged from door to door, everie one giving to her freely. Yet at length shee was banish't *Bavaria*, lest that by the frequent looking upon her, the imagination of women with childe, strongly mooved, should make the like impression in the infants they bare in their wombs.

The effigies of a * Maid with two heads. . . The effigies of two ^a Girls whose backs grew together.



In the year of our Lord 1475. at *Verona* in *Italie*, two ^a Girls were born with their backs sticking together from the lower part of the shoulders unto the verie buttocks. The noveltie and strangeness of the thing mooved their parents, beeing but poor, to carrie them through all the chief towns in *Italie* to get monie of all such as came to see them.

The figure of a man with another growing out of him.



In the year 1530. there was a man to be seen at *Paris*, out of whose bellie another, perfect in all his members except head, hang'd forth as if hee had been grafted there. The man was fortie years old, and hee carried the other implanted or growing out of him, in his arms, with such admiration to the beholders, that manie ran verie earnestly to see him.

The effigies of a horned or hooded monster.



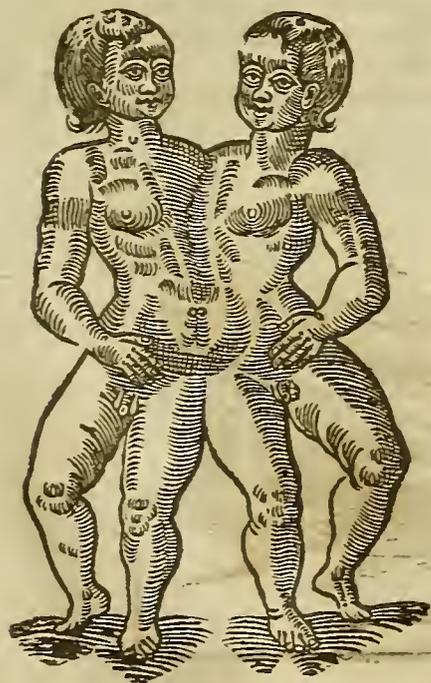
At *Quiers*, a small village som ten miles from *Turine* in *Savoy*, in the year 1578. upon the seventeenth daie of *Januarie*, about eight a clock at night, an honest matron brought forth a childe haveing five horns, lik to Ram's horns, set opposite to one another upon his head: hee had also a long peece of flesh, like in som sort to a Frenchhood which women used to wear, hanging down from his forehead by the nape of his neck almost the length of his back: two other peeces of flesh, like the collar of a shirt, were wrapped about his neck: the finger's ends of both his hands somewhat resembled a Hawk's talons, and his knees seemed to bee in his hands: the right leg and the right foot were of a verie red color; the rest of the bodie was of a tawnie color: it is said hee gave so terrible a scritch when hee was brought forth, that the Midwives, and the rest of the women that were at her labor, were so frightened that they presently left the hous and ran away. When the Duke of *Savoy* heard of this monster, hee commanded it should bee brought to him, which performed, one would hardly think what various censures the Courtiers gave of it.

The monster you see here delineated, was found in the middle and innermost part of an * Egg, with the face of a man, but hairs yeelding a horrid representation of Snakes; the chin had three other Snakes stretched forth like a beard. It was first seen at *Autun*, at the hous of one *Bancheron* a Lawyer, a maid breaking manie eggs to butter: the white of this egg given a Cat, presently killed her. Lastly this monster comming to the hands of the Baron *Senecy*, was brought to King *Charles* the ninth being then at *Metz*.

The shape of a monster found in an * Egg.



The effigies of a monstrous b Childe, haveing two heads, two arms and four legs.



In the year 1546. a woman at *Paris* in her sixt month of her account, brought forth a b Childe haveing two heads, two arms and four legs: I, dissecting the bodie of it, found but one heart, by which one may know it was but one infant. For you may know this from *Aristotle*,

whether the monstrous birth bee one or more joined together, by the principal part: for if the bodie have but one heart, it is but one; if two, it is double by the joining together in the conception.

In

In the year 1569. a certain woman of *Towers* was delivered of * Twins joined together with one head, and mutually embracing each other. *Renatus Cretus* the famous Chirurgian of those parts, sent mee their Skeleton.

The portraiture of * Twins joined together with one head.



The effigies of two e Girls being twins, joined together by their fore-heads.



Munster write's that in the village *Bristant*, not far from *Worms*, in the year 1495. hee saw two e Girls perfect and entire in everie part of their bodies, but they had their foreheads so joined together that they could not bee parted or severed by anie art: they lived together ten years; then the one dying, it was needful to separate the liveing from the dead: but shee did not long out-live her sister, by reason of the malignitie of. the wound made in parting them asunder.

In the year of our Lord 1570: the twentieth of *Julie*, at *Paris*, in the street *Gravilliers*, at the sign of the Bell, these two infants were born, differing in sex, with that shape of bodie that you see here expressed in the figure. They were baptized in the Church of *S. Nicolas* of the fields, and named *Ludovicus* and *Ludovica*, their father was a Mason, his name was *Peter Germane*, his surname *Petit Dieu* (i.) little-God, his mother's name was *Mathea Petronilla*.

The shape of the infants lately born at Paris.



In the year 1572 in *Pont de See*, near *Angers* a little town, were born upon the tenth daie of *Julie*, two girls, perfect in their limbs, but that they had but four fingers apiece on their left hands: they clave together in their fore parts, from their chin to their navel, which was but one, as their heart also but one; their liver was divided into four lobes: they lived half an hour, and were baptized.

The figure of two girls joined together in their breasts and bellie.



The figure of a childe with two heads, and the bodie as big as one of four moneths old.



Var. left. lib. 24.
cap. 8.

Cælius Rhodiginus tells, that in a town of his cuntry called *Sarzano*, *Italie* being troubled with civil Wars, there was born a monster of unusual bigness; for hee had two heads, having all his limbs answerable in greatness and tallness to a childe of four months old: between his two heads, which were both alike, at the setting on of the shoulder, it had a third hand put forth, which did not exceed the ears in length, for it was not all seen: it was born the 5. of the Ides of *March*, 1514.

The figure of one with four legs and as manie arms.



The figure of a man out of whose bellie another head shewed it self.



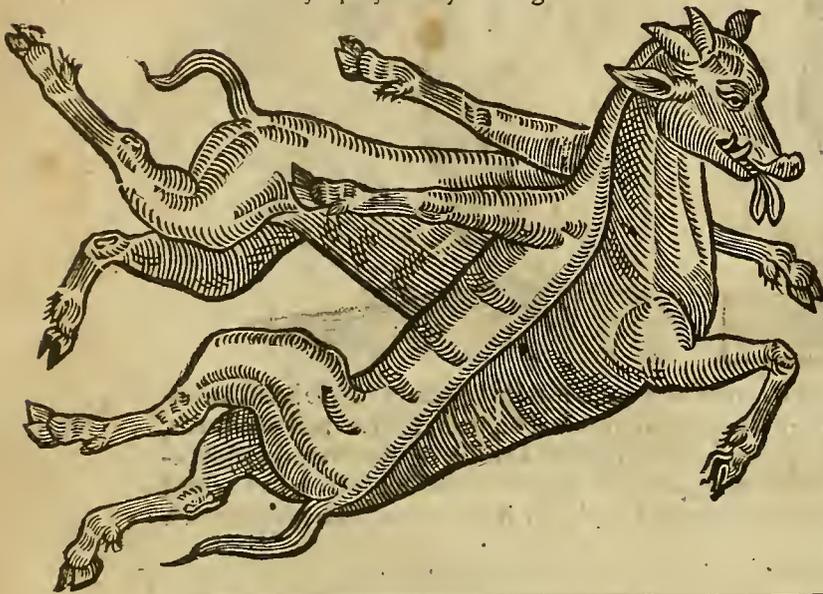
Jovianus Pontanus tells in the year 1529. the ninth daie of *Januarie*, there was a man childe born in *Germanie*, having four arms, and as many legs.

In the year that *Francis* the first King of *France* entered into league with the *Swisses*, there was born a monster in *Germanie*, out the midst of whose bellie there stood a great head; it came to man's age, and his lower, and as it were inserted head, was nourished as much as the true and upper head.

The shape of two monstrous Twins, beeing but of one onely Sex.



The shape of a monstrous Pig.



In the year 1572. the last daie of Februarie, in the parish of *Vinban*, in the waie as you go from *Carnuta* to *Paris*, in a small village called *Bordes* one called *Cypriana Giranda*, the wife of *James Merchant* a husbandman, brought forth this monster whose shape you see here delineated, which lived until the Sundaie following, beeing but of one onely sex, which was the female.

In the year 1572. on Easter Mundaie at *Metz* in *Lorain*, in the Inn whose sign is the *Holie Ghost*, a Sow pigged a pig, wch had eight legs, four ears, and the head of a dog; the hinder part from the bellie downward was parted in two as in twins, but the fore-parts grew into one; it had two tongues in the mouth, with four teeth in the upper jaw, and as manie in the lower. The sex was not to bee distinguished, whether it were a Bore or Sow pig, for there was one slit under the tail, and the hinder parts were all rent and open. The shape of this monster, as it is here set down, was sent mee by *Borgesius* the famous Physician of *Metz*.

CHAP. III.

Of women bringing manie Children at one birth.



Voman is a creature bringing usually but one at a birth: but there have been som who who have brought forth two, som three, som four, som five, six, or more at one birth. *Empedocles* thought that the abundance of seed was the caus of such numerous births: the *Stoicks* affirm the divers cells or partitions of the womb to bee the caus; for the seed beeing variously parted into these partitions, and the conception divided, there are more children brought forth; no otherw ise then in rivers, the water beating against the rocks, is turned into divers circles or rounds. But *Aristotle* saith there is no reason to think so, for in women that parting of the womb into cells, as in dogs and fows, taketh no place; for women's wombs have but one cavitie, parted into two recesses, the right and left, nothing comming between, except by chance distinguished by a certaine line; for often twins lie in the same side of the womb. *Aristotle's* opinion is, that a woman cannot bring forth more then five children at one birth. The maid of *Augustus Cesar* brought forth five at a birth, and, a short while after, shee and her children died. In the year 1554. at *Bearn* in *Switzerland*, the wife of *Dr. John Gelenger* brought forth five children at one birth, three boies and two girls. *Albucrasis*, affirm's a woman to have been the mother of seven children at one birth; and another, who by som external injurie did abort, brought forth fifteen perfectly shaped in all their parts. *Plinie* report's that it was extant in the writeings of Physicians, that twelv children were born at one birth; and that there was another in *Peloponnesus* which four severall times was delivered of five children at one birth; and that the greater part of those children lived. It is reported by *Dalechampius* that *Bonaventura* the slave of one *Savil*, a gentleman of *Senia*, at one time brought forth seven children, of which four were baptized. In our time, between *Sarte* and *Main*, in the parish of *Seaux*, not far from *Chambellay*, there is a familie and noble hous called *Maldemeure*; the wife of the Lord of *Maldemeure*, the first year shee was married brought forth twins, the second year shee had three children, the third year four, the fourth year five, the fifth year six, and of that birth shee died: of those six one is yct alive, and is Lord of *Maldemeure*. In the valley of *Beaufort*, in the countie of *Anjou*, a young woman the daughter of *Mace Channiere*, when at one perfect birth shee had brought forth one childe, the tenth daie following shee fell in labor of another, but could not bee delivered untill it was pulled from her by force, and was the death of the mother.

4. De gen. anim.
cap. 4.

Lib. 7. cap. 11.
Cap. 3.

The picture of Dorothee, great with childe
with manie children.



Martin Cromerus the autor of the Polish historie, writeth that one Margaret, a woman sprung from a noble and ancient familie near Cracovia, and wife to Count Virboflaus, brought forth at one birth thirtie five live children, upon the twentieth daie of Jan. in the year 1296. Franciscus Picus Mirandula writeth that one Dorothee an Italian had twentie children at two births; at the first nine, and at the second eleven, and that shee was so big, that shee was forced to bear up her bellie, which laie upon her knees, with a broad and large scarf tied about her neck, as you may see by this figure.

The ninth
Book of the
Polish Histo-
rie.

And they are to bee reprehended here again, who affirm the caus of numerous births to consist in the varietie of the cels of the womb, for they feign a woman's womb to have seven cels or partitions; three on the right side for males, three on the left side for females, and one in the mid'st for Hermophrodites or Scrats: and this untruth hath gon so far, that there have been som that affirmed everie of these seven cels to have been divided into ten partitions, into which the seed dispersed, doth bring forth a divers and numerous encrease, according to the varietie of cels furnished with the matter of seed; which, though it may seem to have been the opinion of Hippocrates, in his Book *De natura Pueri*, notwithstanding it is repugnant to reason, and to those things which are manifestly apparent to the eyes and senses.

The opinion of Aristotle is more probable, who saith twins and more at one birth, are begot and brought forth by the same caus that the sixth finger groweth on the hand, that is, by the abundant plentie of the seed, which is greater and more copious then can bee all taken up in the natural framing of one bodie; for if it all bee forced into one, it maketh one with the parts encreased more then is fit, either in greatness or number; but if it bee, as it were, cloven into divers parts, it causeth more then one at one birth.

Lib. 4. de gen.
anim. cap. 4.

CHAP. IV.

Of Hermophrodites, or Scrats.

And here also wee must speak of Hermophrodites, because they draw the caus of their generation and conformation from the abundance of seed, and are called so, because they are of both sexes, the woman yeelding as much seed as the man. For hereupon it commeth to pass that the forming facultie (which alwaies endeavor's to produce something like it self) doth labor both the matters almost with equal force, and is the caus that one bodie is of both sexes.

Yet som make four differences of Hermophrodites; the first of which is the male Hermophrodite, who is a perfect and absolute male, and hath onely a slit in the *Perinaum* not perforated, and from which neither urine nor seed doth flow. The second is the female, which besides her natural privitie, hath a fleshie and skinnie similitude of a man's yard, but unapt for erection and ejaculation of seed, and wanteth the cod and stones; the third difference is of those, which albeit they bear the expresse figures of members belonging to both sexes, commonly set the one against the other, yet are found unapt for generation, the one of them onely serving for making of water: the fourth difference is of those who are

able in both sexes, and throughly perform the part of both man and woman, becauf they have the genitals of both sexes complete and perfect, and also the right breast like a man, and the left like a woman: the laws command those to chuse the sex which they will use, and in which they will remain and live, judging them to death if they bee found to have departed from the sex they made choice of, for som are thought to have abused both, and promiscuously to have had their pleasure with men and women. There are signs by which the Physicians may discern whether the Hermophrodites are able in the male or female sex, or whether they are impotent in both: these signs are most apparent in the privities and face; for if the matrix bee exact in all it's demensions, and so perforated that it may admit a man's yard, if the courses flow that waie, if the hair of the head bee long, slender and soft, and to conclude, if to this tender habite of the bodie a timid and weak condition of the minde bee added, the female sex is predominant, and they are plainly to bee judged women. But if they have the *Perineum* and fundament full of hairs, (the which in women are commonly without anie) if they have a yard of a convenient largeness, if it stand well and readily, and yeeld seed, the male sex hath the preheminece, and they are to bee judged men. But if the conformation of both the genitals bee alike in figure, quantitie, and efficacie, it is thought to bee equally able in both sexes: although by the opinion of *Aristotle*, those who have double genitals, the one of the male, the other of the female, the one of them is alwaies perfect, the other imperfect.

Lib. 4 de gener.
anim. cap. 5.

The figure of Hermophrodite twins cleaving together with their backs.



Anno Dom. 1486. In the Palatinate, at the village *Robach*, neer *Heidelberg*, there were twins, both Hermophrodites, born with their backs sticking together.

The effigies of an Hermophrodite haveing four hands and feet.



The same day the *Venetians* and *Genoëses* entred into league, there was a monster born in *Italie* haveing four arms and feet, and but one head; it lived a little after it was baptized. *James Rues*, a *Helvetian* Chirurgian saith hee saw the like, but which besides had the privities of both sexes, whose figure I have therefore set forth, *Pag. 653.*

CHAP. V.

Of the changing of Sex.



Matus Lustanus report's that in the village *Esquina*, there was a maid named *Maria Paieca*, who at the appointed age for her courses to flow, had in stead of them a man's yard, laying before that time hid and covered, so that of a woman shee became a man; and therefore laying aside her woman's habite, was cloathed in man's, and changing her name, was called *Emanuel*; who, when hee had got much wealth by manie and great negotiations and commerce in *India*, returned into his cuntry, and married a wife: but *Lustanus* saith hee did not certainly know whether hee had anie children, but that hee was certain he remained alwaies beardless.

Anthonie Loqueneux, the King's keeper or receiver of his rents of *St. Quintain* at *Vermandois*, lately affirmed to mee that hee saw a man at *Reimes*, at the Inn haveing the sign of the Swan, in

in the year 1560. who was taken for a woman untill the fourteenth year of his age; for then it happened as he played somewhat wantonly with a maid which laie in the same bed with him, his members (hitherto lying hid) started forth and unfolded themselves: which when his parents knew (by help of the Ecclesiastick power) they changed his name from *Joan* to *John*, and put him in man's apparel.

Som years ago, beeing in the train of King *Charls* the Ninth, in the French Glass-hous, I was shewed a man called *Germane Garnierus*, but by som *Germane Maria* (because in former times when hee was a woman hee was called *Marie*) hee was of an indifferent stature, and well set bodie, with a thick and red beard; hee was taken for a girl until the fifteenth year of his age, because there was no sign of beeing a man seen in his bodie, and for that amongst women, hee in like attire did those things which pertain to women: in the fifteenth year of his age, whilest hee somewhat earnestly pursued hogs given into his charge to be kept, who running into the corn, hee leaped violently over a ditch, whereby it came to pass that the staies and foldings beeing broken, his hidden members suddenly broke forth, but not without pain; going home, hee weeping complained to his mother that his guts came forth: with which his mother amazed, calling Physicians and Surgeons to counsel, heard hee was turned into a man; therefore the whole business beeing brought to the Cardinal the Bishop of *Lenuncure*, an assemblie beeing called, hee received the name and habite of a man.

Plinie report's that the son of *Cassinus* of a girl became a boy, liveing with his parents; but by the command of the Sooth-saiers hee was carried into a desert Isle, because they thought such monsters did alwaies shew or portend som monstrous thing. Certainly women have so manie and like parts lying in their womb, as men have hanging forth; onely a strong and livelie heat seem's to be wanting, which may drive forth that which lie's hid within: therefore in process of time, the heat beeing increased and flourishing, and the humiditie (which is predominant in childe-hood) overcome, it is not impossible that the virile members, which hitherto sleggish by defect of heat, lay hid, may be put forth; especially if to that strength of the growing heat som vehement concussion or jactation of the bodie be joined. Therefore I think it manifest by these experiments and reasons, that it is not fabulous that som women have been changed into men: but you shall finde, in no historic men, that have degenerated into women; for nature alwaies intend's and goe's from the imperfect to the more perfect, but not basely from the more perfect to the imperfect.

CHAP. V I.

Of Monsters caused by the defect of Seed.

IF, on the contrarie, the seed be anie thing deficient in quantitie, for the conformation of the infant or infants, som one or more members will be wanting, or more short and decrepite. Hereupon it happen's that nature intending twins, a childe is born with two heads, and but one arm, or altogether lame in the rest of his limbs.

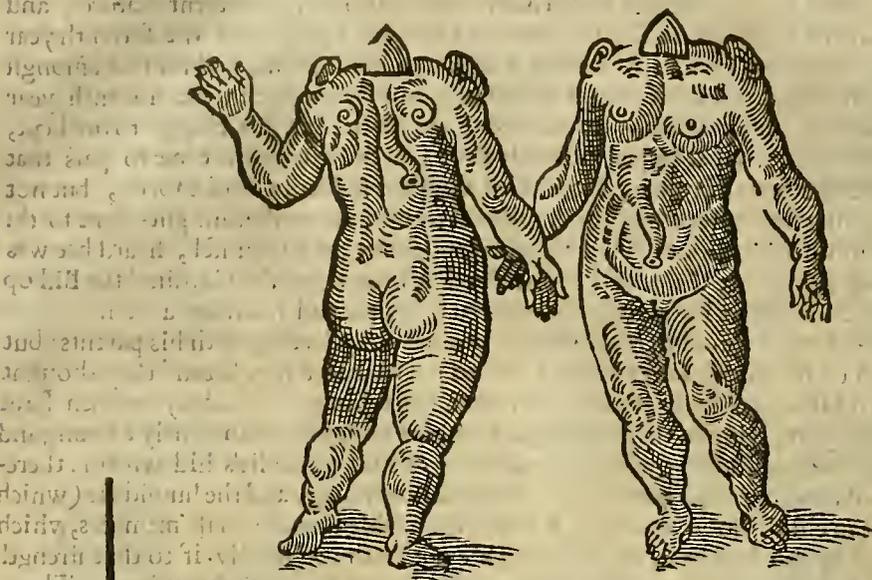
The effigies of a monstrous childe, by reason of the defect of the matter of seed.



Anno Dom. 1573. I saw at Saint Andrew's Church in Paris, a boy nine years old, born in the village *Parpavilla*, six miles from *Guise*; his father's name was *Peter Renard*, and his mother, *Marquete*: hee had but two fingers on his right hand, his arm was well proportioned from the top of his shoulder almost to his wrist, but from thence to his two finger's ends it was verie deformed, hee wanted his legs and thighs, although from the right buttock a certain unperfect figure, haveing onely four toes, seemed to put it self forth; from the midst of the left buttock two toes sprung out, the one of which was not much unlike a man's yard, as you may see by the figure.

In the year 1562 in the Calends of November, at *Villa franca* in *Gasconie*, this monster, a headless woman, whose figure thou here see'st, was born, which figure *Dr. John Altinus* the Physician gave to mee, when I went about this book of Monsters, hee having received it from *Fontanus* the Physician of *Angolestre*, who seriously affirmed hee saw it.

The figure of a monstrous woman without a head, before and behinde.



The effigies of a man without arms, doing all that is usually don with hands.



The effigies of a monster with two heads, two legs, and but one arm.



A few years ago there was a man of fortie years old to be seen at *Paris*, who although hee wanted his arms, notwithstanding did indifferently perform all those things which are usually don with the hands; for with the top of his shoulder, head and neck, hee would strike an Axe or Hatchet with as sure, and strong a blow into a post, as anie other man could do with his hand: and hee would lash a Coach-man's whip, that hee would make it give a great crack, by the strong refraction of the air; but hee ate, drank, play'd at cards, and such

such like, with his feet. But at last hee was taken for a thief and murderer, was hanged, and fastened to a wheel.

Also not long ago there was a woman at *Paris* without arms, which nevertheless did cut, sew, and do many other things, as if shee had her hands.

Wee read in *Hippocrates*, that *Antigenis* his wife brought forth a childe all of flesh without anie bone, and notwithstanding it had all the parts well formed.

CHAP. VII.

Of Monsters, which take their caus and shape by imagination.

THe Antients having diligently sought into all the secrets of nature, have marked and observed other causes of the generation of Monsters: for, understanding the force of imagination to bee so powerful in us, as for the most part, it may alter the bodie of them that imagine, they soon perswaded themselves that the facultie which formeth the infant may bee led and governed by the firm and strong cogitation of the Parents begetting them (often deluded by nocturnal and deceitful apparitions) or by the mother conceiving them; and so that which is strongly conceived in the minde, imprint's the force into the infant conceived in the womb: which thing manie think to bee confirmed by *Moses*, becaus hee tell's that *Jacob* encreased and bettered the part of the sheep granted to him by *Laban*, his wife's father, by putting rods, having the bark in part pulled off, finely streaked with white and green, in the places where they used to drink, especially at the time they engendred; that the representation apprehended in the conception, should bee presently impressed in the young; for the force of imagination hath so much power over the infant, that it set's upon it the notes or characters of the thing conceived.

The force of imagination upon the bodie and humors.

Gen. chap. 30.

Wee have read in *Heliodorus*, that *Persina* Queen of *Æthiopia*; by her husband *Hidufes*, being also an *Ethiophe*, had a daughter of a white complexion; becaus in the embraces of her husband, by which shee proved with childe, shee earnestly fixed her eie and minde upon the picture of the fair *Andromeda* standing opposite to her. *Damascene* report's, that hee saw a maid hairie like a Bear, which had that deformitie by no other caus or occasion then that her mother earnestly beheld, iu the verie instant of receiving and conceiving the seed, the image of *S. John* covered with a Camel's skin, hanging upon the posts of the bed.

They say, *Hippocrates* by this explication of the causes, free'd a certain noble woman from suspicion of adulterie, who being white her self, and her husband also white, brought forth a childe as black as an *Ethiopian*, becaus in copulation shee strongly and continually had in her minde the picture of the *Ethiophe*.

The effigies of a maid all hairie, and an infant that was black by the imagination of their Parents.



There

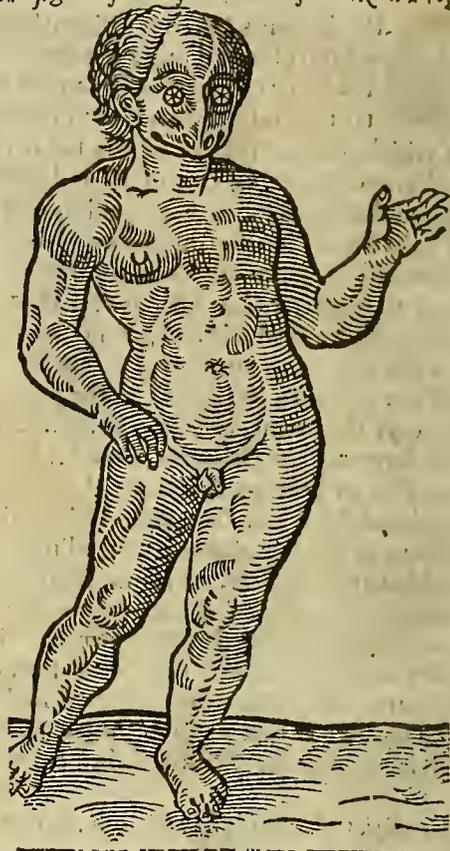
There are som who think the infant once formed in the womb, which is don at the utmost within two and fortie daies after the conception, is in no danger of the mother's imagination, neither of the seed of the father which is cast into the womb; becauf when it hath got a perfect figure, it cannot bee altered with anie external form of things; which whether it bee true, or no, is not here to bee inquired of: truly I think it best to keep the woman, all the time shee goeth with childe, from the sight of such shapés and figures.

In *Stecquer* a village of *Saxonie*, they say, a monster was born, with four feet, eies, mouth, and nose like a calf, with a round and red excrecence of flesh on the forehead, and also a piece of flesh like a hood hung from his neck upon his back, and it was deformed with its thighs torn and cut.

The effgies of a horrid Monster, haveing feet hands and oiber parts like a Calf.



The figure of an infant with a face like a Frog.



Anno Dom. 1517. in the parish Kings-wood, in the forrest *Biera*, in the waie to *Fontain-Bleau*, there was a monster born, with the face of a Frog, being seen by *John Bellanger*, Chirurgian to the King's Engineers, before the Justices of the town of *Harmoy*, principally *John Bribon* the King's procurator in that place. The father's name was *Amadeus the Little*, his mother's *Magdalene Sarbucata*, who troubled with a fever, by a woman's persuasion, held a quick frog in her hand until it died, shee came thus to bed with her husband and conceived; *Bellanger*, a man of an acute wit, thought this was the caus of the monstrous deformitie of the childe.

CHA VIII.

Of Monsters caused by the straitness of the womb.

That the straitness or littleness of the womb may bee the occasion of monsters



EE are constrained to confes by the event of things, that monsters are bred and caused by the straitness of the womb; for so apples growing upon the trees, if before they com to just ripeness, they bee put into strait vessels, their growth is hindered. So som whelps which women take delight in, are hindered from anie further growth by the littleness of the place in which they are kept. Who know's not that the plants growing in the earth, are hindered from a longer progress and propagation of their roots, by the opposition of a flint, or anie other solid bodie, and therefore in such places are crooked, slender and weak, but on the other part, where they have free nourishment, to bee strait and strong? for seeing that by the opinion of Naturalists, the place is the form of the thing placed; it is necessarie that those things that are shut up in straiter spaces, prohibited of free motion, should be lessened, deprived, and lamed.

Empedocles and *Diphilus* acknowledged three causes of monstrous births: The too great or small matter of the seed; the corruption of the seed; and depravation of growth by the straitness or figure of the womb: which they thought the chiefest of all; becauf they thought

thought the case was such in natural births, as in forming of metals and fusible things, of which statues being made, do less express the things they be made for, if the molds or forms into which the matter is poured, be rough, scabrous, too strait, or otherwise faultie.

CHAP. IX.

Of monsters caused by the ill placing of the mother, in sitting, lying down, or anie other site of the bodie in the time of her being with childe.

WEE often too negligently and carelesly corrupt the benefits and corporal endowments of nature in the comeliness and dignitie of conformation: it is a thing to be lamented and pitied in all, but especially in women with childe, becaus that fault doth not only hurt the mother, but deform's and pervert's the infant which is contained in her womb: for wee mooving anie manner of waie, must necessarily moov whatsoever is within us. Therefore they which sit idly at home all the time of their being with childe, or cros-legged, those which holding their heads down, do sew or work with the needle, or do any other labor, which press the bellie too hard with cloaths, breeches or swathes, do produce children wrie-necked, stooping, crooked, and disfigured in their feet, hands, and the rest of their joints, as you may see in the following figure.

The effgies of a childe, who from the first conception, by the site of the mother, had his hands and feet standing crooked.



CHAP. X.

Of monsters caused by a stroke, fall, or the like occasion.

HERE is no doubt but if anie injurie happen to a woman with childe, by reason of a stroke, fall from on high, or the like occasion, the hurt also may extend to the childe. Therefore by these occasions the tender bones may be broken, wrested, strained, or depraved after som other monstrous manner; and more, by the like violence of such things, a vein is often opened or broken, or a flux of blood, or great vomiting is caused by the vehement concussion of the whole bodie, by which means the childe want's nourishment, and therefore will be small and little, and altogether monstrous.

CHAP. XI.

Of Monsters which have their original by reason of hereditarie diseases.



Y the injurie of hereditarie diseases, infants grow monstrous, that is, monstrously deformed: for crook't-back't produce crook-back't, and often-times so crooked, that between the bunch behinde and before, the head lie's hid, as a Tortoise in her shell: so lame produce lame, flat-nos'd their like, dwarfs bring forth dwarfs, lean bring forth lean, and fat produce fat.

CHAP. XII.

Of Monsters by the confusion of seed of divers kindes.



Hat which followeth is a horrid thing to bee spoken; but the chaste minde of the Reader will give mee pardon, and conceive that, which not onely the Stoicks, but all Philosophers, who are busied about the search of the causes of things, must hold, That there is nothing obscene or filthy to bee spoken. Those things that are accounted obscene may bee spoken without blame, but they cannot bee acted or perpetrated without great wickedness, furie and madness; therefore that ill which in obscuritie consist's not in word, but wholly in the act. Therefore in times past there have been some, who nothing fearing the Deitie, neither the Law, nor themselvs, that is, their soul, have so abjected and prostrated themselvs, that they have thought themselvs nothing different from beafts: wherefore Atheists, Sodomites, Out-laws, forgetful of their own excellencie and divinitie, and transformed by filthy lust, have not doubted to have filthy and abominable copulation with beafts. This so great, so horrid a crime, for whose expiation all the fires in the world are not sufficient, though they too maliciously craftie, have concealed, and the conscions beafts could not utter, yet the generated mil-shapen issue hath abundantly spoken and declared, by the unspeakable power of God, the revenger and punisher of such impious and horrible actions. For of this various and promiscuous confusion of seeds of a different kinde, Monsters have been generated and born, who have been partly men, and partly beafts.

The like deformitie of issue is produced, if beafts of a different species do copulate together, nature alwaies affecting to generate something, which may bee like it self: for wheat grow's not but by sowing of wheat, nor an apricock but by the setting or grafting of an apricock; for nature is a most diligent preserver of the species of things.

The effigies of a Monster half man and half dog.

Anno Dom. 1493. there was generated of a woman and a dog, an issue, which from the navel upwards perfectly resembled the shape of the mother, but therehence downwards the sire, that is, the dog. This monster was sent to the Pope that then reigned; as *Volaterane* writeth: also *Cardane* mention's it; wherefore I have given you the figure thereof.

*Cardan. lib. 14.
de var. rerum
cap. 94.*

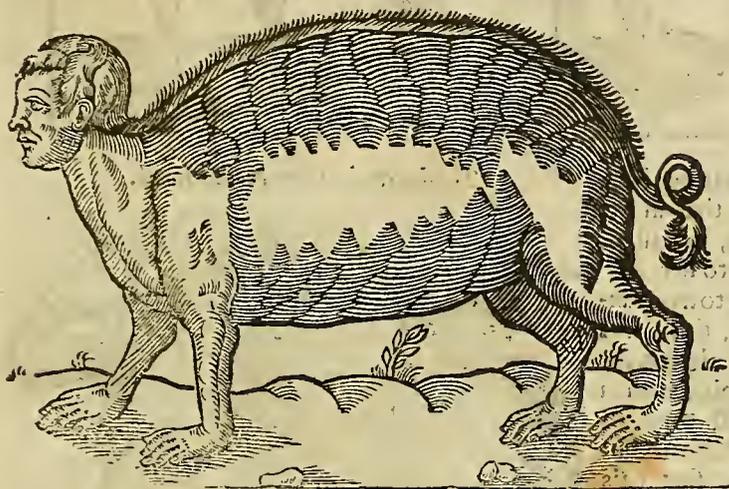


The figure of a Monster in face resembling a man,
but a Goat in his other members.



Celius Rhodoginus writes that at *Sibaris*, a herdsmen called *Chrathis* fell in love with a Goat, and accompanied with her, and of this detestable and brutish copulation an infant was born, which in legs resembled the dam, but the face was like the father's.

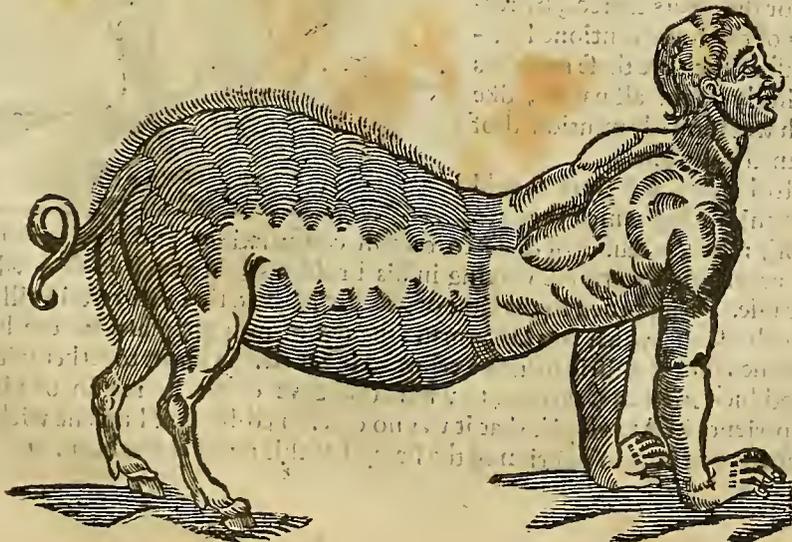
The figure of a pig, with the head, face, hands, and feet of a man.



Anno Dom. 1110. In a certain town of *Liege* (as saith *Lycosthenes*) a Sow farrowed a pig with the head, face, hands, and feet of a man, but in the rest of the bodie resembling a swine.

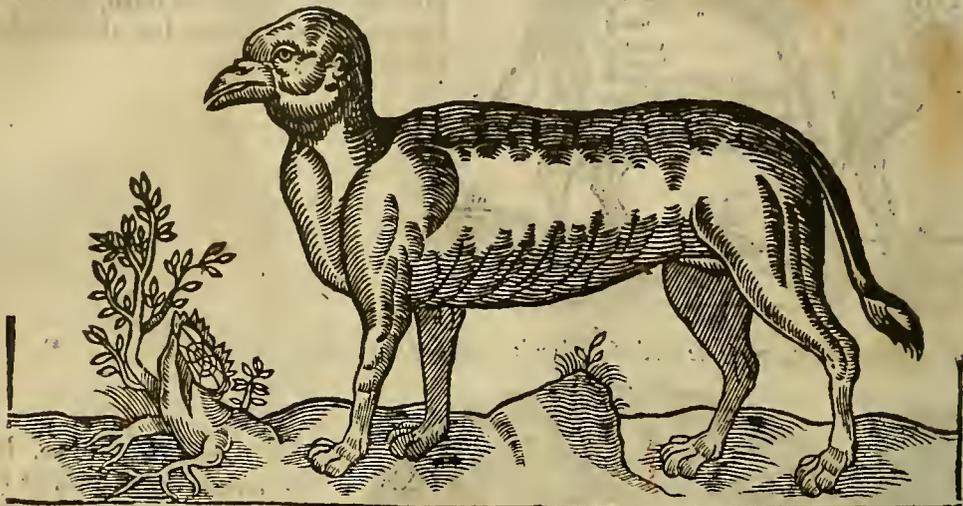
Anno Dom. 1564. at *Bruxels*, at the house of one *Joesf Ditzpeert*, in the street *Warmoesbroets*, a Sow farrowed six pigs, the first whereof was a monster representing a man in the head, face, fore-feet and shoulders, but in the rest of the bodie another pig, for it had the genitals of a sow-pig, and it sucked like other pigs. But the second daie after it was farrowed, it was killed of the people together with the sow, by reason of the monstrousness of the thing. Here followeth the figure thereof.

The effigies of a Monster half man and half swine.



Anno Dom. 1571. at Antwerp, the wife of one *Michaël* a Printer dwelling with one *John Molline* a Graver or Carver, at the sign of the Golden Foot, in the *Camistrate*, on *St. Thomas* his daie, at ten of the clock in the morning, brought forth a monster wholly like a dog, but that it had a shorter neck, and the head of a bird, but without anie fethers on it. This monster was not alive, for that the mother was delivered before her time; but shee giving a great scritch in the instant of her deliverance, the chimnie of the hous fell down, yet hurt no bodie, no not so much as anie one of four little children that sate by the fire-side.

The figure of a monster like a dog, but with a head like a bird.



Lewis Gellius writeth that hee hath read in an approved autor, that an Ew once brought forth a Lion, a beast of an unlike and advers nature to her.

Anno Dom. 1577. in the town *Blandise*, three miles from *Melon*, there was lamed a Lamb, haveing three heads, the middlemost of which was bigger then the rest, when one bleated they all bleated. *John Bellanger* the Chirurgical of *Melon* affirmed that hee saw this monster, and hee got it drawn, and sent the figure thereof to mee with that humane monster that had the head of a Frog, which wee have formerly described.

There are som monsters in whose generation by this there may seem to bee som divine caus, for that their beginnings cannot bee derived or drawn from the general caus of monsters, that is, nature, or the errors thereof, by reason of som of the fore-mentioned particular causes: such are these monsters that are wholly again all nature, like that which wee formerly mentioned, of a Lion yeaned by an Ew.

Yet Astrologers (lest there should seem to bee anie thing which they are ignorant of) refer the causes of these to certain constellations and aspects of the Planets and Stars, according to *Aristotle's* saying in his Problems; in confirmation whereof they tell us this tale. It happened in the time of *Albertus Magnus*, that in a certain village, a Cow brought forth a Calf, which was half a man: the townsmen apprehended the heardsmen, and condemned him as guiltie of such a crime, to bee presently burnt together with the Cow; but by good luck *Albertus* was there, to whom they gave credit by reason of his much and certain experience in Astrologie, that it was no occasioned by anie humane wickedness, but by the efficacy of a certain position of the stars, that this monster was born.

The figure of a three-headed Lamb.



CHAP. XIII.

Of monsters occasioned by the craft and subtiltie of the Devil.



IN treating of such monsters as are occasioned by the craft of the Devil, wee crave pardon of the courteous Reader, if peradventure going further from our purpose, wee may seem to speak more freely and largely of the existence, nature, & kindes of Devils. Therefore first it is manifest that there are Conjurers, Charmers, and Witches, which whatsoever they do, perform it by an agreement and compact with the Devil, to whom they have addicted themselves: for none can bee admitted into that societie of Witches, who hath not forsaken God the Creator, and his Saviour, and hath not transferred the worship due to him above, upon the Devil, to whom hee hath obliged himself. And assuredly, whosoever addicth's himself to these Magical vanities and witch-crafts, doth it, either becauf hee doubt's of God's power, promises, studie and great good will towards us: or elf for that hee is madded with an earnest desire of knowing things to com; or elf becauf disdaining povertie, hee affect's and desire's from a poor estate to becom rich on the sudden. It is the constant opinion of all, both antient and modern, as well Philosophers as Divines, that there are som such men; which when they have once addicted themselves to impious and divelish Arts, can by the wondrous craft of the Divel, do manie strange things, and change and corrupt bodies, and the health and life of them, and the condition of all mundane things. Also experience forceth us to confes the same, for punishments are ordained by the laws against the professors and practisers of such Arts; but there are no laws again those things which neither ever have been, nor never came into the knowledg of men: for such things are rightly judged and accounted for impossibilities, which have never been seen nor heard of.

Before the birth of Christ there have been manie such people, for you may finde in *Exodus* and *Leviticus* laws made against such persons by *Moses*, by whom God gave the Law to his people. The Lord gave the sentence of death to *Ochawas* by his Prophet, for that hee turned into these kinde of people. Wee are taught by the Scriptures that there are good and evil spirits, and that the former are termed Angels, but the later Devils; for the law is also said to bee given by the ministrie of Angels: and it is said that our bodies shall rise again at the sound of a trumpet, and the voice of an Arch-angel. Christ said that God would send his Angels to receiv the Elect into the heavens.

The historie of *Job* testifieth that the Devil sent fire from heaven, and killed his sheep and cattel, and raised windes that shook the four corners of the hous, and overwhelmed his children in the ruines thereof. The historie of *Achab* mentioneth a certain lying spirit in the mouth of the fals Prophets. *Sathan* entring into *Judas*, moved him to betraie Christ. Devils, who in a great number possessed the bodie of a man, were called and obtained of Christ that they might enter into Swine, whom they carried headlong into the Sea.

In the beginning God created a great number of Angels, that those divine and incorporeal spirits might inhabit heaven, and as messengers, signifie God's pleasure to men, and as ministers or servants, perform his commands, who might bee as over-seers & protectors of humane affairs. Yet of this great number there were som who were blinded by pride, and thereby also cast down from the presence, and heavenlie habitation of God, the Creator. These harmful and craftie spirits delude men's mindes by divers juggling tricks, and are alwaies contriving somthing to our harm, and would in a short space destroie mankinde, but that God restrain's their furie; for they can onely do so much as is permitted them: Expelled heaven, som of them inhabit the air; others, the bowels of the earth; there to remain until God shall com to judg the world: and as you see the clouds in the air somwhiles to resemble centaures, otherwhiles serpents, rocks, towers, men, birds, fishes, and other shapes: so these spirits turn themselves into all the shapes and wondrous forms of things; as oft-times into wilde-beasts, into serpents, toads, owls, lapwings, crows or ravens, goats, asses, dogs, cats, wolvs, buls, and the like. Moreover, they oft-times assume and enter humane bodies, as well dead as alive, whom they torment and punish, yea also they transform themselves into angels of light.

They feign themselves to bee shut up and forced by Magical rings, but that is onely their deceit and craft, they wish, fear, love, hate, and oft-times as by the appointment and decree of God they punish malefactors: for wee read that God sent evil angels into Egypt, there to destroie. They houl on the night, they murmur and rattle, as if they were bound in chains, they move benches, tables, counters, props, cupboards, children in the cradles, plaie at tables and ches, turn over books, tell monie, walk up and down rooms and are heard to laugh, to open windows and doores, cast sounding vessels, as brass and the like, upon the ground, break stone-pots & glasses, & make other the like noises. Yet none of all these things appear to us when as we arise in the morning, neither find we anie thing out of its place or broken.

Their titles
and names.

They are called by divers names, as Devils, evil Spirits, *Incubi*, *Succubi*, Hobgoblins, Fairies, Robin-good-fellows, evil-Angels, Sathan, Lucifer, the father of lies, Prince of darkness and of the world, Legion, and other names agreeable to their offices and natures.

CHAP. XIV.

Of the subterrene Devils, and such as haunt Mines.

What the De-
vils in Mines
do.



Lewis Lavater write's, that by the certain report of such as work in Mines, that in som Mines there are seen spirits, who in the shape and habit of men, work there, and running up and down seem to do much work, when as notwithstanding they do nothing indeed. But in the mean time they hurt none of the by-standers, unless they bee provoked thereto by words, or laughter. For then they will throw som heavie or hard thing upon him that hurt them, or injure them som other waie.

The same autor affirm's that there is a silver Mine in *Rhetia*, out of which *Peter Briot*, the Governor of the place, did in his time get much silver. In this Mine there was a Devil, who chiefly on Fridaie, when as the Miners put the Mineral they had digged into tubs, kept a great quarter, and made himself exceeding busie, and poured the Mineral as hee listed, out of one tub into another. It happened one daie that hee was more busie then it used to bee, so that one of the Miners reviled him, and bad him bee gone on a vengeance to the punishment appointed for him. The Devil offended with his imprecation and scoff, so wrested the Miner, takeing him by the head, twineing his neck about, hee set his face behinde him, yet was not the workman killed therewith, but lived, and was known by divers for manie years after.

CHAP. XV.

By what means the Devils may deceiv us.

Devils are spi-
rits, and from
eternitie.



*O*ur mindes involved in the earthie habitation of our bodies, may bee deluded by the Devils divers waies; for they excel in puritie and subtiltie of essence, and in the much use of things: besides, they challenge a great preheminance, as the Princes of this world, over all sublunarie bodies. Wherefore is is no marvel if they, the teachers and parents of lies, should cast clouds and mists before our eies from the beginning, and turn themselvs into a thousand shapes of things and bodies, that by these juglings and tricks they may shadow and darken men's mindes.

CHAP. XVI.

Of Sucubi and Incubi.

The reason of
the name.
*Lib. 15. de civit.
Dei, cap. 22.
c. 23.*



*P*owerful by these fore-mentioned arts and deceits, they have sundrie times accompanied with men in copulation, whereupon such as have had to do with men were called *Sucubi*, those which made use of women, *Incubi*. Verily *St. Augustine* seemeth not to bee altogether against it, but that they, takeing upon them the shape of man, may fill the genitals, as by the help of nature, to the end that by this means they may draw aside the unwarie, by the flames of lust, from virtue and chastitie.

An historie.

John Ruef in his book of the conception and generation of man, write's that in his time, a certain woman of monstrous lust, and wondrous impudencie, had to do by night with a Divel, that turned himself into a man, and that her bellie swelled up presently after the act; and when as shee thought shee was with childe, shee fell into so grievous a diseas, that shee voided all her entrails by stool, medicines nothing at all prevailing.

Another.

The like historie is told of the servant of a certain Butcher, who thinking too attentively on venereous matters, a Devil appeared to him in the shape of a woman, with whom (supposing it to bee a woman) when as hee had to do, his genitals so burned after the act, that becomming enflamed hee died with a great deal of torment.

An opinion
confuted.

Neither doth *Peter Paludanus*, and *Martin Arelatensis* think it absurd to affirm that Devils may beget children, if they shall ejaculate into the woman's womb seed taken from som man either dead or alive. Yet this opinion is most absurd and full of falsitie, man's seed consistig of a seminal or sanguineous matter, and much spirit: if it run otherwaies then into the womb from the testicles, and staie never so little a while, it loseth it strength and efficacy, the heat and spirits vanishing away; for even the too great length of a man's yard, is reckoned amongst the causes of barrenness, by reason that the seed is cooled by the length of the waie. If anie in copulation, after the ejaculation of the seed, presently draw themselvs from the woman's embraces, they are thought not to generate, by reason of the air entring into

into the yet open womb, which is thought to corrupt the seed. By which it appear's how *Averrois* his historie convict of falshood. his historie convict of falshood. *fals* that historie in *Averrois* is, of a certain woman that said shee conceived with childe by a man's seed shed in a bath, and so drawn into her womb, shee entring the bath presently after his departure forth. It is much less credible that Devils can copulate with women, for they are of an absolute spirituouse nature, but bloud and flesh are necessarie for the generation of man. What natural reason can allow that the incorporeal Devils can love corporeal women? And how can wee think that they can generate, who want the instruments of generation? How can they who neither eat nor drink bee said to swel with seed? Now where the propagation of the species is not necessarie to bee supplied by the succession of individuals, Nature hath given no desire of venerie, neither hath it imparted the use of generation; but the devils once created were made immortal by God's appointment: If the facultie of generation should bee granted to devils, long since all places had been full of them. Wherefore if at anie time women with childe by the familiaritie of the devil, seem to travel, we must think it happen's by those arts wee mentioned in the former chapter, to wit, they use to stuff up the bodies of living women with old clouts, bones, pieces of iron, thorns, twisted hairs, pieces of wood, serpents, and a world of such trumperie, wholly dissenting from a womans nature: who afterwards, the time, as it were, of their deliverie drawing nigh, through the womb of her that was falsly judged with childe, before the blinded, and, as it were, bound up eies of the by-standing women, they give vent to their impostures. The following historie, recorded in the writings of manie most credible authors, may give credit hereto.

There was at *Constance* a fair damosel called *Margaret*, who served a wealthie Citizen: shee gave it out everie where that shee was with childe by lying with the devil on a certain night. A historie. A historie. Wherefore the Magistrates thought it fit shee should bee kept in prison, that it might bee apparent both to them and others, what the end of this exploit would bee. The time of deliverance approaching, shee felt pains like those which women endure in travel; at length, after manie throws, by the midwife's help, in stead of a childe, shee brought forth iron nails, pieces of wood, of glasse, bones, stones, hairs, tow, and the like things, as much different from each other, as from the nature of her that brought them forth, and which were formerly thrust in by the devil to delude the too credulous minds of men.

The Church acknowledgeth that devils, by the permission and appointment of God punishing our wickedness, may abuse a certain shape, so to use copulation with mankind. But that an humane birth may thence arise, it not onely affirm's to bee fals, but detest's as impious, as which believ's that there was never anie man begot without the seed of man, our Saviour Christ excepted. Now what confusion and perturbation of creatures should possess this world (as *Cassianus* saith) if devils could conceiv by copulation with men? or if women should prov with childe by accompanying them, how manie monsters would the devils have brought forth from the beginning of the world? how manie prodigies by casting their seed into the wombs of wilde and bruit beasts? for by the opinion of Philosophers, as often as facultie and will concur, the effect must necessarily follow: now the devils never have wanted will to disturb mankind, and the order of this world: for the devil, as they say, is our enemie from the beginning; and as God is the autor of order, and beautie, so the devil, by pride, contrarie to God, is the causer of confusion and wickedness.

Wherefore if power should accrew equall to his evil minde and nature, and his infinite desire of mischief and envie, who can doubt but a great confusion of all things and species, and also great deformitie would invade the decent and comlie order of this univers, monsters ariseing on everie side: But seeing that devils are incorporeal, what reason can induce us to believ that they can bee delighted with venereous actions: and what will can there bee where as there is no delight, nor anie decaie of the species to bee feared? seeing that by God's appointment they are immortal, so to remain for ever in punishment: so what need they succession of individuals by generation? wherefore if they neither will nor can, it is a madness to think that they do commix with man.

CHAP. XVII.

Of Magick and supernatural diseases and remedies.

THat I may refresh the minde of the Reader, invited to these histories of monsters raised up by the art of the devil, witches, and conjurers, his servants, I have thought good to add the following historie of certain diseases, and remedies supernatural, and vvholly magical out of *Fernelius*. There are diseases, vvhich as they are sent amongst men by God beeing offended, so they cannot expect cure otherwise then from God, from vvhence they are thought supernaturally to have their essence and cure. Thus the air oft-times, yet chiefly in the time of King *David*, being defiled vwith the pestilence, killed sixtie odd thousand persons. Lib. 2. de abdit. caus. cap. 16.

Thus *Ezechias* was struck vwith a grievous disease: *Job* vvas defiled vwith filthie ulcers by Satan at God's command. And as the Devil, the cruel enemie of mankind, commonly

Witches hurt
by the devil's
assistance.

nseth by God's permission to afflict those, so wicked persons by the wondrous subtiltie of the devil, offer violence and do harm to manie. Som invöke I know not what spirits, and adjure them with herbs, exorcisms, imprecations, incantations, charms: others hang about their necks, or otherwise carrie certain writings, characters, rings, images, and other such impious stuff. Som use songs, sounds or numbers: somtimes potions, perfumes, and smells; somtimes gestures and juggling. There bee som that make the portraiture of the absent partie in wax, and boast that they can caus or bring a disease into what soever part thereof they prick, by the force of their words and stars, into the like part of the partie absent; and they have no few other tricks to bring diseases.

We know for certain that magicians, witches, and conjurers, have by charms so bound som, that they could not have to do with their wives; and have made others so impotent, as if they had been gelt or made eunuchs. Neither do wicked men onely send diseases into man's bodie, but also devils themselvs. These truely are soon distracted with a certain furie, but in this one thing they differ from simple madnes, for that they speak things of great difficultie, tell things past and hid, disclose the secrets of such as are present, and revile them manie waies, and are terrified, tremble and grow angrie by the power of divine words.

A historic.

One not very long agon, beeing by reason of heat exceeding drie in the night time, rising out of his sleep, and not findeing drink, took an apple that hee found by chance, and eating it, hee thought his jaws were shut and held fast as by ones hands, and that hee was almost strangled: and also, now possessed of a devil entring into him, hee seemed in the dark to bee devoured of a huge exceeding black dog, which hee, afterwards restored to his former health, orderly related to mee. There were divers, who by his puff, heat and the roughness of his tongue, thought him to bee in a fever, and by his watching, and the perturbation of his minde, thought him onely to rave.

A historic.

Another young Noble man, som few years since, was troubled at set times with a shaking of the bodie, and as it were, a convulsion, wherewith one while hee would moov onely his left arm, another while the right arm, and also som times but one finger onely, somwhiles but one leg, somtimes the other, and at other times the whole trunk of his bodie, with such force and agilitie, that lying in his bed, hee could scarce bee held by four men; his head laie without anie shakeing, his tongue and speech was free, his understanding sound, and all his senses perfect even in the height of his fit. Hee was taken at the least ten times a daie, well in the spaces between, but wearied with labor: it might have been judged a true Epilepsie, if the understanding and senses had failed.

The devil
shew's himself
by speaking of
greek.

The most judicious Physitians who were called to him, judged it a convulsion, cosengermane to the falling sickness, proceeding from a malign and venemous vapor impact in the spine of the back, whence a vapor dispersed it self over all the nervs, which pass from the spine every waie into the limbs, but not into the brain. To remoov this, which they judged the caus, frequent glysters are ordained, and strong purges of all sorts, cupping-glasses are applied to the beginnings of the nervs, fomentations, unctions, emplasters, first to discuss, then to strengthen and wear away the malign qualitie: These things doing little good, hee was sweated with bathes, stoves, and a decoction of *Guacum*, which did no more good then the former, for that wee were all far from the knowledg of the true cause of his disease: for in the third month, a certain devil was found to bee the autor of all this ill, bewraying himself by voice, and unaccustomed words and sentences, as well Latin as Greek (though the patient were ignorant of the Greek tongue): hee laied open manie secrets of the by-standers, and chiefly of the Physicians, derideing them for that hee had abused them to the patients great harm, becaus they had brought his bodie so low by needless purgations.

Devils wax
angrie, and are
terrified by di-
vine things.

When his father came to visit him, hee would crie out long before hee came at him, or saw him, drive away this visitant, and keep him from coming in here, or elf pluck his chain from about his neck: for on this (as it is the custom of the French order of Knights) there hangs the image of *St. Michael*. If holie and divine things were read before him, hee shook and trembled more violently. When his fit was over, hee remembered all that was don, and affirmed that hee did it against his will, and that hee was forrie for it. The devil, forced by ceremonies and exorcisms, denied that hee was damned for anie crime, and said that hee was a spirit: beeing asked who hee was, and by what means and power hee did these things, hee said that hee had manie habitations into which hee could betake himself, and in the time of his rest, hee could torment others: that hee was cast into this bodie by a certain person whom hee would not name, and that hee entred by his feet up to his neck, and that hee would go forth again the same waie, when as his appointed time was com. Hee spoke of fundrie other things, as others which are possessed use to do.

Now I speak not these things as new or strange, but that it may appear that devils somtimes entring into the bodie, do somwhiles torment it by divers and uncough waies; other whiles they do not enter in, but either agitate the good humors of the bodie, or draw the ill into the principal parts, or with them obstruct the veins or other passages, or chang the structure of the instruments, from which causes innumerable diseases, proceed: of these, de-
vils

vils are the authors, and wretched and forlorn persons the ministers: and the reason of these things is beyond the search of nature.

Plinie tel's that the Emperor *Nero* in his time, found magical arts most vain and false: but what need we alledg profane writers, when as those things that are recorded in Scripture of the pithoniss, of the woman speaking in her bellie, of King *Nebuchodonozor*, of the Magicians of *Pharaob*, and other such things not a few, prove that there both is, and hath been Magick. *Plinie* tel's of *Denarchus*, that hee tasteing of the entrails of a sacrificed childe, turned himself into a Wolf. Wee reade in *Homer* that *Circes*, in the long wandring of *Ulysses*, changed his companions into beasts, with an enchanted cup or potion: and in *Virgil*, that the growing corn may bee spoiled or carried away by enchantments: which things, unless they were approved and witnessed by manie men's credits, the wisdom of Magistrates and Lawyers, would not have made so manie Laws against Magicians, neither would there have been a mulst imposed upon their heads by the law of the twelv tables, who had enchanted other men's corn. But as in magical arts the devil doth not exhibit things themselves, as those which hee cannot make, but onely certain shews or appearances of things: so in these which are anie waies accomodated to the use of Physick, the cure is neither certain, nor safe, but deceitful, captious, and dangerous.

I have seen the Jaundis, over the whole bodie, cured in one night, by a written scroul hanged about the neck: also I have seen Agues chased away by words and such ceremonies, but in a short while after they returned again and became much worse. Now there are som vain things, and verily the fancies of old women, which becaus they have long possessed the mindes of men, weakned with too much superstition, we term them superstitious. These are such as wee cannot truly say of them, wherefore and whence they have the faculties ascribed to them: for they neither arise from the temperament, neither from the other manifest qualities, neither from the whole substance, neither from a divine or magical power, from which two last mentioned, all medicines beyond nature, and which are consequently to be used to diseases, whose essence are supernatural, must proceed. Such like old wive's medicines & superstitious remedies are written figures and characters, rings, where neither the assistance of God or Spirits is implored. Let me ask you, is it not a superstitious medicine to heal the falling sickness, to carrie in writing the names of the three Kings, *Gaspar*, *Melchior*, and *Balthasar*, who came to worship Christ? To help the tooth ache; if one whil'st *Mals* is in saying, touch his teeth, saying these words, *Os non comminuetis ex eo*? To staie vomiting with certain ceremonies and words, which they absent pronounce, thinking it sufficient if that they but onely know the patient's name.

It is but a deceitful cure that is performed by the devil.

Old wive's superstitious medicines against divers diseases

I saw a certain fellow that with murmuring a few words, and touching the part, would stanch blood out of what part soever it flowed: there bee som who to that purpose saie this, *De latere ejus exivit Sanguis & Aqua*. How manie praies or charms are carried about to cure agues? som taking hold of the patient's hand, saie, *Æque facilis tibi Febris hæc sit, atque Mariæ virgini Christi partus*. Another washeth his hands with the patient before the fit, saying to himself that solemn Psalm, *Exaltabo te Deus meus Rex*, &c. If one tell an *As* in his ear that hee is stung by a Scorpion, they saie that the danger is immediately over.

As there are manie superstitious words, so there are many superstitious writings also. To help sore eies, a paper wherein the two greek letters, *ρ* and *α*, are written must bee tied in a thread, and hanged about the neck. And for the tooth ache this ridiculous saying, *Strigiles, falcéque dentate, dentium dolorem persanate*. Also oft times there is no small superstition in things that are outwardly applied. Such is that of *Apollonius* in *Plinie*, to scarifie the gums in the tooth-ach, with the tooth of one that died a violent death: to make pills of the skul of one hanged, against the bitings of a mad dog: to cure the falling sickness by eating the flesh of a wilde beast, killed with the same iron wherewith a man was killed: that hee shall bee free'd from a quartain ague who shall drink the wine whereinto the sword that hath cut off a man's head, shall bee put; and hee, the parings of whose nails shall bee tied in a linnen cloth to the neck of a quick Eel, and the Eel let go into the water again. The pain of the Milt to bee affwaged; if a beast's Milt bee laid upon it, and the Physician saie that hee cure's or make's a medicine for the Milt. Anie one to bee free'd from the cough, who shall spit in the mouth of a Toad, letting her go away alive. The halter wherein one hath been hanged put about the temples, to help the head-ach. This word *Abracadabra*, written on a paper, after the manner described by *Serenus*, and hanged about the neck, to help agues or fevers, especially semitertians. What truth can bee in that which sundrie affirm, that a leaf of *Lathyrus*, which is a kinde of Spurge, if it bee plucked upwards, will caus vomit, but broken downwards, will moov to stool? You may also finde manie other superstitious fictions concerning herbs, such as *Galen* report's that *Andreas* and *Pamphilus* writ, as incantations, transformations, and herbs dedicated to conjurers and devils.

Lib. 6. de simp.

I had thought never in this place to have mentioned these and the like, but that there may bee every where found such wicked persons, who leaving the arts and means, which are appointed by God to preserv the health of man's bodie, flie to the superstitious and ridiculous remedies of sorcerers, or rather of devils, which notwithstanding the devil sometimes

make's to perform their with't for effects; that so hee may still keep them ensnared and addicted to his service. Neither is it to be approved which manie say, that it is good to be healed by anie art or means, for that healing is a good work. This saying is unworthy of a Christian, and favor's rather of him that trust's more to the devil then in God. Those Empericks are not of the societie of Sorcerers and Magicians, who heal simple wounds with drie lint, or lint dip't in water: this cure is neither magical nor miraculous; as many suppose, but wholly natural, proceeding from the healing fountains of nature, wounds and fractures, which the Surgeon may heal by onely takeing away the impediments, that is pain, defluxion, inflammation, an abscess and gangrene, which retard and hinder the cure of such diseases. The following examples will sufficiently make evident the devil's maliciousness, alwaies wickedly and craftily plotting against our safetie and life.

Lib. epist. 38. ep.

A certain woman of *Florence* (as *Langius* write's) having a malign ulcer, and being troubled with intolerable pain at the stomach, so that the Physicians could give her no ease: behold on a sudden shee vomited up long and crooked nails, and brass needles, wrapped up with wax and hairs, and at length a great gobbet of flesh, so big that a Giants jaws could scarce swallow it.

But that which happened in the year of our redemption 1539. in a certain town called *Fugenstal*, in the Bishoprick of *Eistet*, exceed's all credit, unless there were eye-witnesses of approved integritie yet living. In this town, one *Ulrich Neufesser* an husbandman, was tormented with grievous pain in the one side of his bellie, hee suddenly got hold of an iron key with his hand under the skin, which was not hurt, the which the Barbar-Surgeon of the place cut out with a razor; yet for all this the pain ceased not, but hee grew every daie worf then other: wherefore expecting no other remedie but death, hee got a knife and cut his throat. His dead bodie was opened, and in his stomach were found a round and loggish piece of wood, four steel knives, part sharp, and part toothed like a saw, and two sharp pieces of iron, each whereof exceeded the length of a span, there was also as it were a ball of hair. All these things were put in by the craft and deceit of of the devil. Thus far *Langius*.

CHAP. XVIII.

Of the Cozenages and crafty Tricks of Beggars.



Having treated of Monsters, it follow's that wee speak of those things which either of themselves, by reason of their nature full of admiration, have some kind of monstrousness in them; or elf from some other waies, as by the craft and cozenage of men. And becaus to the last mentioned craits of the Devil, the subtle devices of begging companions are somewhat alike, therefore I will handle them in the next place, that the Surgeon being admonished of them,

may be more cautious and cunning in discerning them when hee meet's with them.

An historie of a counterfeit arm.

Anno Dom. 1525. when I was at *Anjou*, there stood a craftie beggar begging at the Church door, who tying and hideing his own arm behinde his back, shewed in steed thereof, one cut from the bodie of one that was hanged, and this hee propped up and bound to his brest, and so laid it open to view, as if it had been all enflamed, so to moov such as passed by unto greater commiseration of him. The cozenage lay hid, every one giving him monie, until at length his counterfeit arm not being surely fastened, fell upon the ground, many seeing and observing it: hee being apprehended and laid in prison, by the appointment of the Magistrate, was whipped through the town, with his fals arm hanging before him, and so banished.

Another of a cancrus brest

I had a brother called *John Parey*, a Surgeon, who dwelt in *Vitre* in *Britanie*; hee once observed a young woman begging, who shewed her brest, as if it had a cancrus ulcer thereon, looking fearfully by reason of much sordid filth, wherewith it seemed to defile the cloth that lay under it. But when as hee had more diligently beheld the woman's face, and the fresh color thereof, as also of the places about the ulcer, and the good habite of the whole bodie agreeable to that color (for shee was somewhat fat, and of a very good habit of bodie) hee was easily hereby induced to suspect some roguery and deceit. Hee acquainted the Magistrate with this his suspision, and got leav that hee might carrie her home to his house, so to search her more narrowly. Where opening her brest, hee found under her arm-pit, a spong moistened with a commixture of bea's bloud and milk, and carried through an elder-pipe to the hidden holes of her counterfeit cancer. Therefore hee foment's her brest with warm water, and with the moisture thereof looseth the skins of black, green, and yellow frogs, laid upon it, and stuck together with glew, made of bole armenick, the white of an egg, and flower; and these being thus fetched off, hee found her brest perfectly sound.

The beggar being cast for this into prison, confessed that shee was taught this trick by a beggar that lay with her, who himself also, by putting about his leg an Oxes Milt, and perforating it in sundry places, that so the forementioned liquor might drop out, counterfeit-ed an ulcer of a monstrous bigness and malignitie, covering the edges of the Milt on every side

side with a filthie cloth. This beggar was diligently enquired after, but could not bee found; and so shee was whipped and banished.

Within lesse then a year after, there came into the same citie another notable craftie companion, who presently taking up the Church doors, laid open his wares; to wit, a Kercher with some small pieces of monie lying thereon, a wooden Barrel, and Cliquets, where with hee would ever now and then make a great noise: his face was spread over with great thick pustles, beeing of a blackish red color, and made with glue like those that have the Leprosie: this his ghastly look made him to bee pitied by all men, which was the cause that every one gave him monie. Then my brother came somewhat nearer him, and asked him how long hee had been troubled with this so cruell disease; hee answered with an obscure and hoarse voice, that hee was born a Leper from from his mother's womb, and that his parents both died of this wicked disease, so that their members fell away piece-meal. Now hee had a woollen swathe about his chaps, wherewith (having his left hand under his cloak) hee so strained his chaps, that much black blood rose into his face, and made him so hoarse that hee could scarce speak; yet hee could not contain himself, but that in speaking hee ever now and then slackned the swathe with his hand, the freelier to draw his breath: which when my brother had observed, suspecting some cozenage, hee obtained leave of the Magistrate to search and examine the man whether hee were truly leprous, or no. First therefore hee took away his swathe or rowler that was about his neck, then washed his face with warm water, so that the counterfeit glued pustles were dissolved, and his face (free from all tainture) shewed it self of a good and natural color and shape. Then hee laid bare his whole body, and diligently viewed each part, and found no sign of a Leprosie, one or other. Which when the Magistrate once heard, hee made him to bee put in prison, and to bee thrice whipped through the streets of the citie, with his barrel hanging before him, and his cliquets behinde him, adding thereto the punishment of perpetual banishment. It hapned that as hee was whipped the third market-day, the people cried out to the hang-man in jest, that hee should not fear to lash him soundly, for beeing leprous hee could not feel it: the executioner incited by this crie of the people, did so belabor him, that the wretch died of his whipping within a short while after, having a just reward for his wickedness. For these impostors, besides that they live like drones, feigning this or that disease, and so beeing idle, enjoy the fruits of others labors; they also divers times conspiring together, take away the lives and goods of honest and substantial citizens, and other people: for there are some of them, that in an evening, as men that have no habitation, desire lodging for a night, and it beeing granted them, they, when as the master of the house and his familie are asleep, open the doors to their comrades, men as wicked as themselves, and kill and carrie away all they can.

Certainly wee may justly affirm, that this craftie begging is the mother and school of all dishonestie: for how manie acts of bawdrie and poisoning everie where corrupt the wells and publick fountains? How manie places have been burnt under the shew of begging? Where can you get more fit spies? Where more fit undertakers and workers of all manner of villanie, then out of the crew of these beggars?

Som of them there are, who besmear their faces with soot laid in water, so to seem to have the Jaundis. But you may at the first sight finde out the deceit, by the native whiteness of the utter coat of the eye, called *Adnata*, which in such as truly have the Jaundis, useth to bee died and overcast with a yellowish color; also you may bee more certain thereof, if you wet a cloth in water or spittle, and so rub the face, for the adventitious yellowness will quickly vanish, and the true native color shew it self.

Som there bee, who not content to have mangled, and filthily exulcerated their limbs with caustick herbs, and other cauteries; or to have made their bodies more swoln, or else lean, with medicated drinks; or to have deformed themselves some other waie, but from good and honest Citizens, who have charitably relieved them, they have stoln children, have broken or dislocated their arms and legs, have cut out their tongues, have depressed the chest, or whole breast; that with these, as their own children, begging up and down the countrie, they may get the more relief, pitifully complaining that they came by this mischance by thunder, or lightning, or some other strange accident.

Lastly, they part the Kingdom amongst themselves as into Provinces, and communicate by letters one to another, what news or new quaint devises there are to conceal or advance their roguerie: to which purpose they have invented a new language onely known to themselves, so to discourse together and not to bee understood by others. [Wee here vulgarly term it *Canting*.]

Dr. *Flecelle*, a Physician of *Paris*, entreated mee to bear him companie to his countrie house at *Champigny*, four miles from *Paris*. Where as soon as wee arrived, and were walking in the Court, there came presently to us a good litle well flesh't manlie woman, begging alms for St. *Fiacre* sake, and taking up her coat and her smock, shee shewed a great gut hanging down some half a foot, which seemed as if it had hanged out of her fundament, whereout there dropped filth like unto pus, which had all stained her legs and smock, most beastly and filthie to look upon. *Flecelle* asked her how long shee had been troubled with this disease:

Of one feigning himself leprous.

* Cliquets are things made somewhat resembling a small wool-card, but have two or three little pieces of boards so fastened together with leathers, that they will make a great noise with them and these are used by the French beggars.

A multitude of beggars hurtful to the citie.

How to discover such a counterfeit the Jaundis.

Of one counterfeiting the falling of the fundament.

shee answered that it was four years since shee first had it. Hence hee easily gathered that shee plaicd the counterfeit: for it was not likelie that such abundance of purulent matter came forth of the bodie of so well flesh't and colored a woman; for shee would rather have been verie lean and in a consumption. Wherefore provoked with just anger, by reason of the wickedness of the deceit, hee run upon her and threw her down upon the ground, and trod her under his feet, and hit her divers blows upon the bellie, so that hee made the gut, which hung at her, to com away, and by threatning her with more grievous punishment, made her confess the cozenage, and that it was not her gut, but of an ox, which being filled with bloud and milk, and tied at both ends, shee put the one of them into her fundament, and let the filth flow forth at verie little holes.

Of one feigning the falling down of the womb.

Not verie long ago, a woman equally as shameless, offered her self to the overseers of the poor of *Paris*, entreating that shee might bee entred for one of their Pensioners, for that her womb was fallen down by a dangerous and difficult birth, wherefore shee was unable to work for her living. Then they commanded that shee should bee tried and examined, according to the custom, by the Surgeons which are therefore appointed. Who seeing how the whole business was carried, made report shee was a counterfeit; for shee had thrust an ox's bladder, half blown and besmeared with beastlie bloud by the neck, whereto shee had fastned a little sponge, into the neck of her womb, for the sponge beeing filled and swollen up by the accustomed moisture of the womb, so held up the ox's bladder that hanged thereat, that shee might safely go vwithout anie fear of the falling of it out, neither could it bee pulled forth but vvith good force. For this her device shee vvas put into prison, and beeing first vvhipped, vvvas after banished. Their cozenage is not much unlike this, vvho by fitly applying a sheep's paunch to their groin, counterfeit themselves to bee bursten.

Of a begger that feigned her self to have a snake in her bellie.

Anno Dom. 1561. there came to *Paris* a lustie, stout, and verie fat Norman vvoman, beeing about som thirtie years old, who begging from door to door, did cast to meet with rich women, and verie familiarly and pittifully would relate unto them her misfortune; saying, shee had a snake in her bellie, which crep't in at her mouth as shee slep't in an hemp-land: shee would let one feel her stir, by putting their hand unto her bellie, adding also that shee was troubled daie and night with it's uncessant gnawing of her guts. The noveltie of this sad chance, mooved all to pitie and admiration, wherefore as much as they could, they assisted her with means and counsel. Amongst the rest, there was a woman of great devotion and charltie, who sending for *Dr. Hollerius, Chevall*, and mee, asked us if this snake could by anie means be gotten forth. *Hollerius* gave her a strong purgation, hoping that by stirring up the expulsive facultie, the serpent might bee cast forth, together with the noxious humors. But this hope had no such success. Wherefore when as wee met again, wee thought it fit to put a *Speculum matricis* into the neck of her womb, so to see if wee could discern either her head or tail: but l makeing large dilatation of her womb, could see no such thing, onely wee observed a certain voluntarie motion, whereof shee her self was the author, by contracting and dilateing the muscles of the lower bellie. Which when as wee had observed, perceiving the deceit and imposture, wee thought good so to terrifie and her, and make her confess the deceit, to tell her that shee must take another, but that a more strong purgation; that what wee could not do by the former, as more gentle, wee might attain to by the later, as far stronger. Shee dissembing all fear, and conscious of her craft and dissimulation, after wee were gon in the evening, packing up her stuff, and a great deal more then her own, shee secretly stole away, not bidding her hostess farewel: and thus at length the fraud was apparent, to the los of the honest gentlewoman. I saw this baggage, six daies after, sitting lustily upon a Pack-hors, at the gate *Mont-martre*, and laughing heartily with such as brought Sea-fish to town; and shee was returning (as it was most likely) into her countrie, seeing her cozenage was discovered here.

The craft of such as feign themselves to have the falling sickness. Of such as feign themselves leproous.

Such as feign themselves dumb, draw back and double their tongues in their mouths. Such as falling down counterfeit the falling sickness, binde straitly both their wrests with plates of iron, tumble and rowl themselves in the mire, sprinkle and defile their heads and faces with beasts bloud, and shake their limbs and whole bodie. Lastly, by putting sope into their mouths, they foam at the mouth like those that have the falling sickness. Othersom with flour make a kinde of glue, wherewith they besmear their whole bodies, as if they had that Leprosie or Scab, that is vulgarly termed, *Malum sancti manis*. Neither must wee think this art of counterfeiting and cheating begging to bee new, and of late invention, for long ago it flourished in *Asia*, even in the time of *Hippocrates*, as may appear by his book *De Aere, Locis, & Aquis*. But by how much this diseaf hath taken more deep root, and grown more inveterate by process of time, by so much it must more diligently and carefully bee looked to and prevented, by cruelly punishing such counterfeits: for that by this feigned begging, as the nourisher of sloth, and shop of all dishonestie, that which is taken from the good is bestowed upon the ill, and one wicked and counterfeit begger hurt's all other wretched people.

C H A P. XIX.

Of strange or monstrous accidents in diseases.

That monstrousness soever was in the last mentioned parties, it was made up by the craft of beggars for filthy gain. But if there be any monstrousness in the following narrations, it is of nature, but working, as it were, miraculously, by some secret and occult means; for thus there are oft times monsters in diseases. Before the town of *St. John de Angeley*, a souldier called *Francis*, of the companie of Captain *Muret*, was wounded with a Harquebuz-shot on the bellie, between his navel and sides; the bullet was not taken out, because the Surgeons, who searched him diligently, could not finde it: wherefore hee was troubled with grievous and tormenting pains, until the ninth daie after hee received the wound, the bullet came forth at his fundament: wherefore within three weeks after hee was perfectly whole. Hee was healed by *Simon Crinay*, the Surgeon of the French companies.

James Pope, Lord of *St. Albans* in *Dauphine*, was wounded at the skirmish at *Chasenay*, having three harquebuz bullets entering into his bodie, one whereof pierced under his throat, where it bunceth out as with a knot, neer to the pipe of his longs, even to the beginning of the vertebrae of the neck, in which place the leaden bullet stuck, and as yet doth remain. Hereupon hee was afflicted with manie and fearful symptoms, as a fever, and a great swelling of his whole neck, so that for ten whole daies hee could swallow nothing but broaths and liquid things. Yet hee recovered, and remaineth well at this present, by the cure of *James Dalam* the Surgeon.

Alexander Benedictus make's mention of a certain country-man, who, shot into the back with a dart, drawing out the shaft, the head was left behinde, being in length about the bredth of two fingers, but hooked and sharp on the sides. When as the Surgeon had carefully and diligently sought for it, and could by no means finde it, hee healed up the wound, but two months after this crooked head came forth at his fundament.

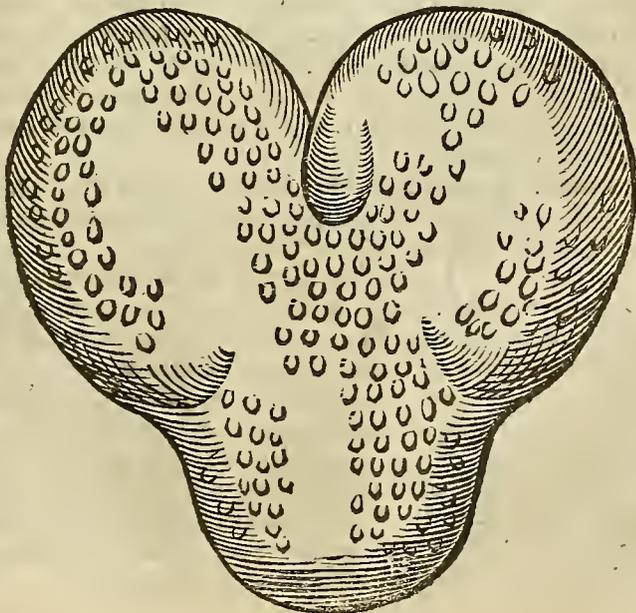
The same author telleth that at *Venice* a virgin swallowed a needle, which some two years after shee voided by urine, covered over with a stonie matter, gathered about viscons humors.

Catherine Perlan, the wife of *William Guerrier*, a Draper of *Paris*, dwelling in the Jewrie, as shee rode on horse-back into the countrie, a needle out of her pin-cushion, was got under her by accident, ran so deep into her right buttock, that it could not by any art or force be plucked forth. Four months after shee sent for mee to com to her, and shee told mee that as often as shee had to do with her husband, shee suffered extreme pricking pain in her right groin; putting my hand thereto, as I felt it, my fingers met with something sharp and hard: wherefore I used the matter so, that I drew forth the needle all rustie: this may be accounted a miracle, that steel, naturally heavie, should rise upwards, from the buttock to the groin, and pierce the muscles of the thigh, without causing an abscess.

Anno Dom. 1566. the two sons of *Lawrence Collo* (men excellent in cutting for the stone) took forth a stone of the bigness of a wall-nut, in the mid'st whereof was a needle, just like those that shoe-makers use: the patient's name was *Peter Cocquin*, dwelling in the street *Galand* at the place called *Maubert* at *Paris*, and I think hee is yet living. This stone was shewed to King *Charls* the ninth, for the monstrousness of the thing, I being then present, which being given me by the Surgeon, I preserv amongst my other rarities.

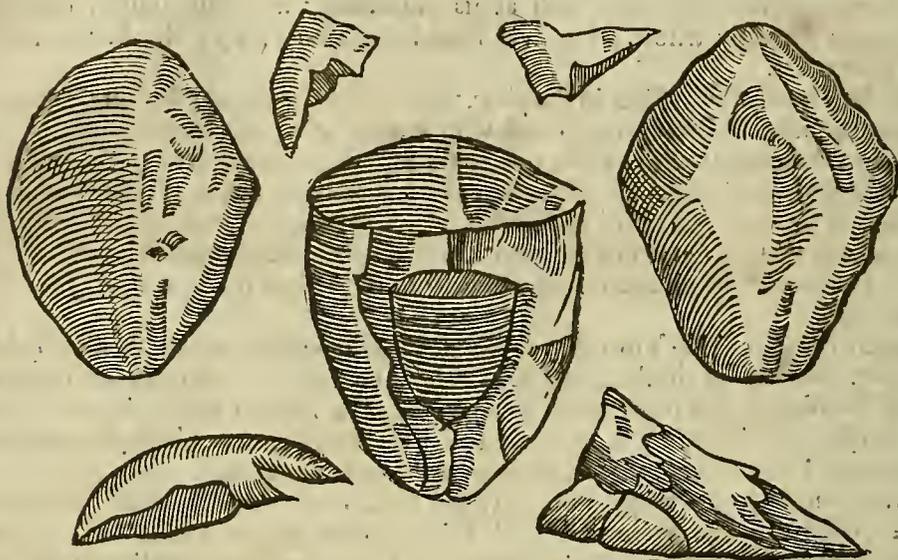
Anno Dom. 1570. the Dutches of *Ferrara* at *Paris*, sent for *John Collo*, to take a stone out of a Confectioner. This stone, though it weighed nine ounces, & was as thick as one's fist, yet was it happily taken out, the patient recovering, *Francis Roussel*, and *Joseph Javelle*, the Dutches Physicians, being present. Yet not long after this Confectioner died by the stoppage of his water, by reason of two other little stones, which about to descend from the kidneys to the bladder, staid in the mid-way of the Ureters. The figure of the extracted stone was this.

The figure of a stone taken forth of the bladder of a Confectioner.



Anno Dom. 1569. Laurence Collo the younger, took three stones out of the bladder of one dwelling at Marly, called commonly *Tire-vit*: because being troubled with the stone from the tenth year of his age, hee continually scratched his yard, each of the stones were as big as an hen's egg; of color white, they all together weighed twelv ounces. When they were presented to King Charles, then lying at Saint Maure des Faussez, hee made one of them to be broken with a hammer, and in the midst thereof there was found another, of a chesnut color, but otherwise much like a Peach stone: These three stones, bestowed on mee by the brethren, I have here represented to the life.

The effigies of the three forementioned stones, whereof one is broken.



I have in the dissecting of dead bodies, observed divers stones, of various forms and figures, as of pigs, whelps, and the like. *Dalechampius* telleth that hee saw a man, which by an abscess of his loins, which turned to a Fistula, voided manie stones out of his kidnies, and yet notwithstanding could endure to ride on horse-back, or in a coach. *John Magnus*, the King's most learned and skilful Physician, having in cure a woman, troubled with cruel torment and pains of the bellie and fundament, sent for mee, that by putting a *Speculum* into the fundament, hee might see if hee could perceiv anie discernable caus of so great and pertinacious pain: and when as hee could see nothing which might further him in the findeing out of the caus of her pain (following reason as a guid) by giving her often glysters and purgations, hee brought it so to pass, that shee at length voided a stone at her fundament of the bigness of a Tennis-ball: which once avoided, all her pains ceased.

A stone by the force of purging medicines voided by the fundament.
g. Epid.

A stone coming out of the neck of the womb.

Hippocrates tell's that the servant of *Dyseris* in *Larissa*, when shee was young, in using venerie was much pained, and yet sometimes without pain, yet shee never conceived. But when as shee was sixtie years old, shee was pained in the after-noon as if shee had been in labor. When as shee one daie before noon had eaten manie leeks, afterward shee was taken with a most violent pain, far exceeding all her former, and shee felt a certain rough thing rising up in the orifice of her womb. But shee falling into a swoon, another woman putting in her hand, got out a sharp stone of the bigness of a whirl, and then shee forthwith became well, and remained so.

Lib. 1. cap. de palp. cord.

In a certain woman, who, as *Hollerius* tell's, for the space of four months was troubled with an incredible pain in making water, two stones were found in her heart, with manie abscesses, her kidnies and bladder being whole.

Anno Dom. 1558. I opened in *John Bourlier* a Tailor, dwelling in the street of St. Honoré, a watric abscess in his knee, wherein I found a stone, white, hard, and smooth, of the thicknes of an Almond; which being taken out, hee recovered. Certainly there is no part of the bodie wherein stones may not breed and grow.

No part of the bodie wherein stones may not be found.

A needle swallowed, came forth at the navel some two years after.

Anthony Benevenius a Florentine Physician write's, that a certain woman swallowed a brass needle without anie pain, and continued a year after without feeling or complaining of it: but at the end thereof shee was molested with great pains in her bellie; for helping of which shee asked the advise of all the Physicians shee could, making, in the interim, no mention of the swallowed needle. Wherefore shee had no benefit by all the medicines shee took; and shee continued in pain for the space of two years, until at length the needle came forth at a little hole by her navel, and shee recovered her health.

A Scholar named *Chambelant*, a native of *Bourges*, a student in *Paris*, in the Colledge of *Presse*, swallowed a stalk of grafs, which came afterwards whole out between two of his ribs, with the great danger of the scholar's life. For it could com there nnlefs by passing or breaking through the lungs, the encompassing membrane, and the intercostal muscles, yet hee recovered, *Fernelius* and *Haguet* having him in cure.

Cabrolle Chirurgian to *Monsieur* the Marshal of *Anville*, told mee that *Francis Guillenet* the Chirurgian of *Sommiers*, a small village som eight miles from *Mompelier*, had in cure, and healed a certain Shepherd, who was forced by theevs to swallow a knife of the length of half a foot, with a horn handle of the thicknes of ones thumb: hee kept it the space of half a yéer, yet with great pain, and hee fell much away, but yet was not in a consumption, until at length an abscess tiseing in his groin, with great store of verie stinking quittance, the knife was there taken forth in the presence of the Justices, and left with *Joubert* the Physician of *Mompelier*.

Monsieur the Duke of *Roban* had a Fool called *Guido*, who swallowed the point of a sword of the length of three fingers, and hee voided it at his fundament on the twelfth daie following, yet with much adoo: there are yet living manie Gentlemen of *Britanie*, who were eie-witnesses thereof.

There have been fundrie women with childe, who have so cast forth piece-meal children that have died in their wombs, as that the bones have broke themselves a passage forth at the navel, but the flesh, dissolved as it were into quittance, flowed out by the neck of the womb and the fundament, the mothers remaining alive, as *Dalechampius* observ's out of *Albucrafts*.

Is it not verie strange that there have bin women, who troubled with a fit of the Mother, have lien three whole daies without motion, without breathing, or puls that were anie waie apparent, and so have been carried out for dead?

A certain young man, as *Fernelius* tell's, by somewhat too vehement exercise, was taken with such a cough, that it left him not for a moment of time, until hee therewith had cast forth a whole impostume of the bigness of a pigeon's egg, wherein, beeing opened, there was found quittance exquisitely white and equal. Hee spit blood two daies after, had a great fever, and was much distemperéd, yet notwithstanding hee recovered his health.

Anno Dom. 1578. *Stephana Chartier*, dwelling at *St. Maure des Fauissetz*, a widow of fortie years old, beeing sick of a tertian Fever, in the beginning of her fit vomited up a great quantitie of choler, and together therewith three hairie worms, in figure, color, and magnitude like the worms called Bear-worms, yet somewhat blacker; they lived eight whole daies after without anie food: the Chirurgian of this town brought them to *Dr. Milot*, who shewed them to *Feure*, *Le Gros*, *Marescot* and *Courtin* Physicians, and to mee also.

This following historie, taken out of the Chronicles of *Monstrele*, exceed's all admiration. A certain Franck-Archer of *Meudon*, four miles from *Paris*, was for roberrie condemned to bee hanged: in the mean time it was told the King by the Physicians, that manie in *Paris* at that time were troubled with the stone, and amongst the rest the Lord of *Boscage*, and that it would bee for the good of manie, if they might view and discern with their eies the parts themselves wherein so cruel a disease did breed, and that it might bee don much better in a living then in a dead bodie, and that they might make trial upon the bodie of the Franck-Archer, who had formerly been troubled with these pains. The King granted their request; wherefore opening his bodie they viewed the breathing parts, and satisfied themselves as much as they desired, and having diligently and exactly restored each part to its proper place, the bodie, by the King's command, was sewed up again, and dressed and cured with great care. It came so to pass, that this Franck-Archer recoverd in a few daies, and getting his pardon, got good store of monie besides.

Alexander Benedictus tell's that hee saw a woman called *Victoria*, vwho having lost all her teeth, and beeing bald, yet had others came up in their places, vwhen as shee vvas fourscore years old.

Stephen Tessiter a Chirurgian of *Orleance*, told mee that not long ago hee cured one *Charls Verignel*, a Serjeant of *Orleance*, of a vvwound received in his ham, vwhereby the tvo tendons bending the ham, were quite cut in sunder. Hee took this order in the cure; hee caussed the patient to bend his leg, then hee seved together the ends of the cut-tendons, then placed the member in that site, and handled vvith that art, that at length hee healed the vvwound, the patient not halting at all. Truly this is a memorable thing, and carefully and heedfully to bee imitated by the young Chirurgian.

Hovv manie have I seen, vwho vvounded and thrust through the bodie vvith svvords, arrows, pikes, bullets, have had portion of the brain cut off by a vvwound of the head, an arm or leg taken avvaie by a cannon-bullet, yet have recovered? and hovv manie on the contrarie, have died of light and small vvwounds, not vvorth the speaking of.

A certain man was shot in near to his groin vvith an arrowv, vvhom vvee have seen, saith *Hippocrates*, and hee recovered beyond all men's expectation; The arrowv's-head vvas not taken forth, for it vvas verie deep in, neither did the vvwound bleed verie much, neither did hee halt: but vvee found the head, and took it forth six yeers after hee vvas hurt.

Novv

A sprig of gras swallowed came forth whole again between the ribs.

A knife swallowed, came forth at an abscess in the groin.

The point of a sword swallowed came forth at the fundament, Wonderful excretions of infants out of the womb.

Women troubled with the Mother laid out for dead. An impostume spit out, of the bigness of a Pigeon's egg.

Worms cast up in the fit of an Age,

This narration exceed's not onely all admiration, but also belief.

Pract. lib. 64. cap. 1.

5. Epidem.

Now *Hippocrates* give's no reason of it's so long staie, but that hee saith it might bee suspected it laie hid between the nervs, and that no vein nor arterie was cut thereby.

C H A P. XX.

Of the wonderful original, or breeding of som creatures.

Boist. in histor. prodig.

It is a common thing for a serpent to breed of the dead corp's of a man.

A live serpent in a solid Marble.

The caus of such wonderful generations.



WE have read in *Boistey*, that a certain work-man of *Avignon*, when as hee lived in that cittie, opened a leaden coffin, wherein a dead bodie laie, that was so closely saudered, that the air could not get in; and as hee opened it, hee was bitten by a serpent that laie therein, with so venomous and deadlie a bite, that it had neer to have cost him his life. Yet the original of this creature is not so prodigious as hee supposeth, for it is an usual thing for a Serpent to breed of anie putrefied carcass, but chiefly of man's.

Baptista Leo write's, that in the time of Pope *Martin* the fifth, there was a live-Serpent found enclosed in a vaste, but solid Marble, no chink appearing in such dens soliditie, where-by this living creature might breathe.

Whilest in my vine-yard, that is at *Meudon*, I caussed certain huge stones to bee broken to pieces, a Toad was found in the mid'st of one of them. When as I much admired thereat, becauf there was no space wherein this creature could bee generated, increas, or live; the Stone-cutter wished mee not to marvel thereat, for it wsa a common thing, and that hee saw it almost everie daie. Certainly it may com to pass, that from the more moist portion of stiones, contained in places moist and under ground, and the celestial heat mixing and diffusing it self over the whole mass of the world, the matter may bee animated for the generation of these creatures.

C H A P. XXI.

Of the wondrous nature of som marine things, and other living creatures.



HE last mentioned creatures were wonderful in their original, or rather in their growth: but these which follow, though they bee not wonderful of themselves, as those that consist of their own proper nature, and that working well and after an ordinarie manner; yet they are wondrous to us, or rather monstrous, for that they are not verie familiar to us. For the raritie and vastness of bodies, is in som sort monstrous. Of this sort there are manie, especially in the Sea, whose secret corners and receptacles are not pervious to men: as *Tritons*, which from the middle upwards are reported to have the shape of men. And the *Strenes*, *Nerèides* or *Mere-maids*, who (according to *Plinie*) have the faces of women, and scalie bodies; yea, where as they have the shape of man: neither yet can the forementioned confusion and conjunction of seeds take anie place here, for as wee lately said, they consist of their own proper nature.

Lib. 9. cap.

When *Mena* was President of *Egypt*, and walked on the banks of *Nilus*, hee saw a Sea-monster in the shape of a man, comming forth of the waters: his shape was just like to a man even to the middle, with his countenance composed to gravitie, his hair yellow, yet intermixed with som graie, his stomach bonie, his arms orderly made and jointed, his other parts ended in a fish. Three daies after in the morning, there was seen another Sea-monster, but with shape or countenance of a woman, as appeared by her face, her long hair, and swoln breasts: both these monsters continued so long above water, that anie one might view them verie well

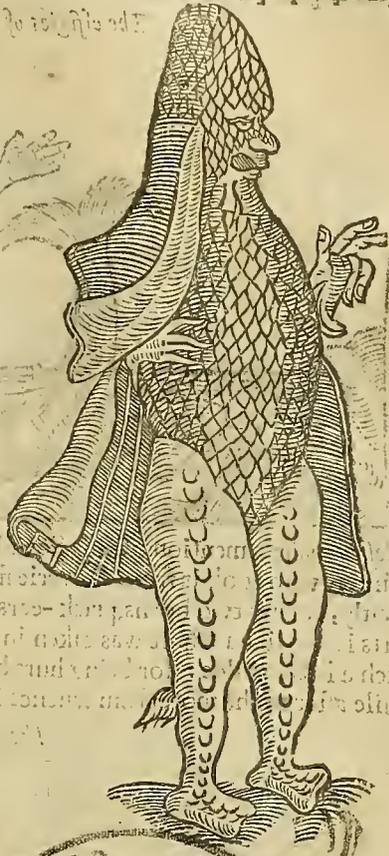
The effigies of the Triton and Siren of Nilus.



In our times, saith *Rondeletius* in *Norway* was a monster taken in a tempestuous sea, the which as manie as saw it, presently termed a *Monk*, by reason of the shape which you may see here set forth.

The figure of a fish in the habit, or shape, of a *Bishop*.

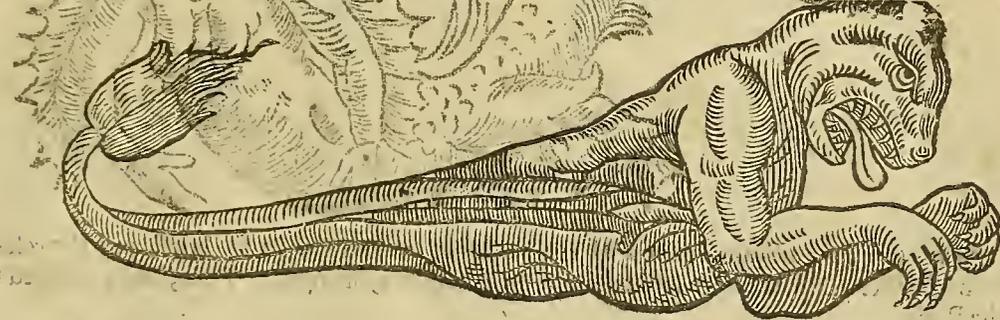
The figure of a fish resembling a *Monk*.



Anno Dom. 1531. there was seen a sea-monster in the habit of a *Bishop*, covered over with scails: *Rondeletius* and *Gesner* have described it.

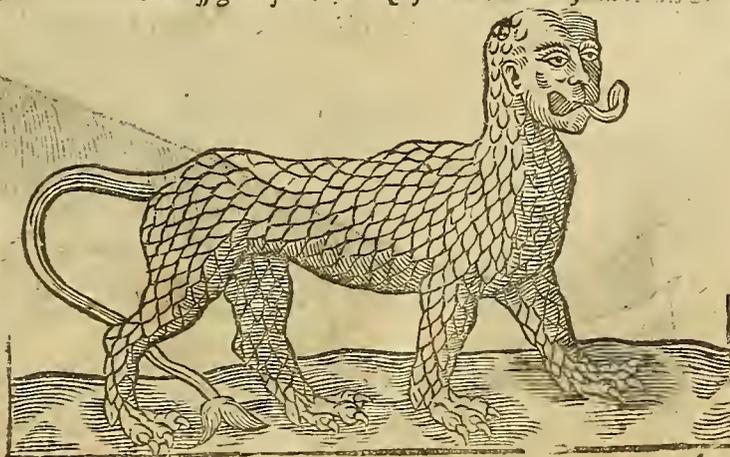
Gesner professeth that hee received from *Jerom Cardane* this monster, having the head of a *Bear*, the feet and hands of an *Ape*.

The effigies of a *Sea-monster* headed like a *Bear*.



The effigies of a *Lion-like scalie Sea-monster*.

Not long before the death of *Pope Paul* the third, in the mid't of the *Tyrrhene* sea, a monster was taken, & presented to the successor of of this *Paul*: it was in shape & bigness like to a *Lion*, but all scalie; and the voice was like a man's voice. It was brought to *Rome* to the great admiration of all men, but it lived not long there, beeing destitute of it's own natural place and nourishment, as it is reported by *Philip Forrest*.



Lib. 5. Chron.

Anno Dom. 1523. the third daie of November, there was seen at Rome this sea-monster, of the bigness of a childe of five years old, like to a man even to the navel, except the ears; in the other parts it resembled a fish.

The effigies of a Sea-monster with a man's face.



Gesner make's mention of this Sea-Monster, and saith that hee had the figure thereof from a Painter, who took it from the verie fish, which hee saw at Antwerp. The head look's verie ghastly, having two horns, prick-ears, and arms not much unlike a man, but in the other parts it was like a fish. It was taken in the Illyrian Sea, as it came a thore out of the water to catch a little childe: for being hurt by stones cast by fisher-men that saw it, it returned a while after to the shore from whence it fled, and there died.

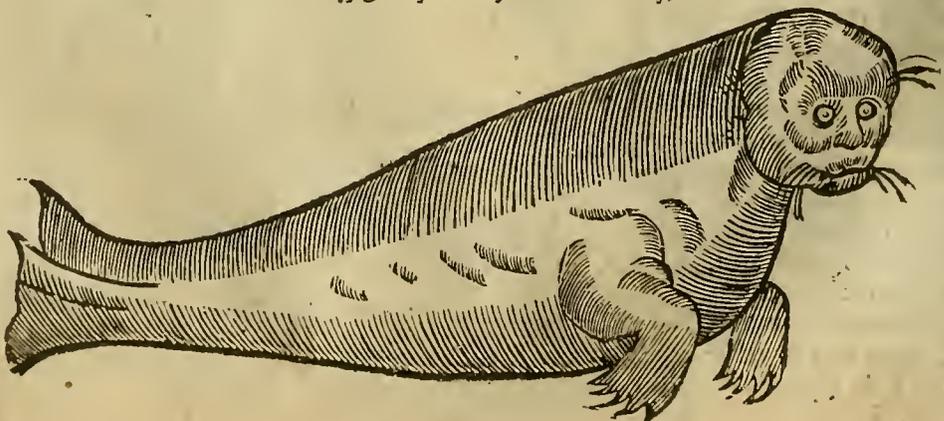
The effigies of a Sea-Devil.



Gesner tel's that a Sea-monster with the head, mane, and breast of a horse, and the rest of his bodie like a fish, was seen and taken in the ocean-Sea, brought to Rome, and presented to the Pope.

Olaus Magnus tel's that a Sea-monster taken at Bergen, with the head and shape of a Calf, was given him by a certain English Gentleman. The like of which was presented lately to King Charls the ninth, and was long kept living in the waters at Fountain-Bleau, and it went oft-times a shore. This is much different from the common Sea-calf or Seal.

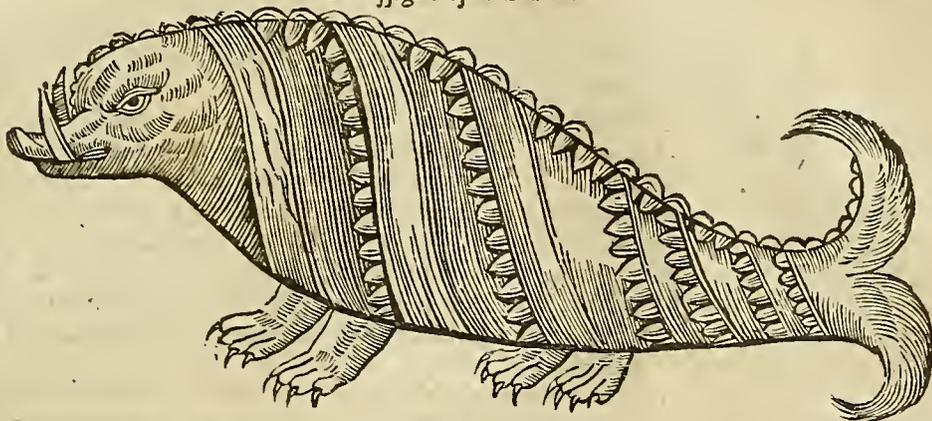
The effigies of a monstrous * Sea-calf,



* This here figured is the sea Morf, taken commonly by our men in their greenland voiajes: and I judg the sea-Bore and Elephant to bee the same, but that the Painter hath shewed his skill too much in the one: and the other is an old Morf, as this here figured is a young one.

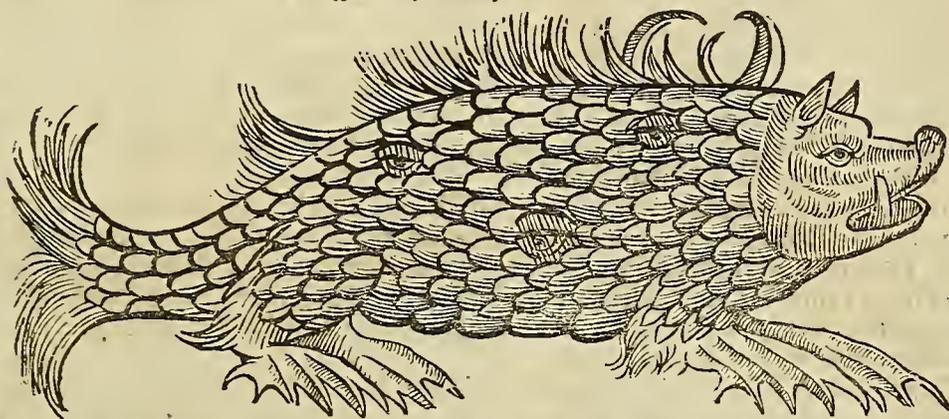
This great monster was seen in the Ocean-sea, with the head of a Bore, but longer tusks, sharp and cutting, with scails set in a wonderful order, as you may see by this figure.

The effigies of a Sea-bore.



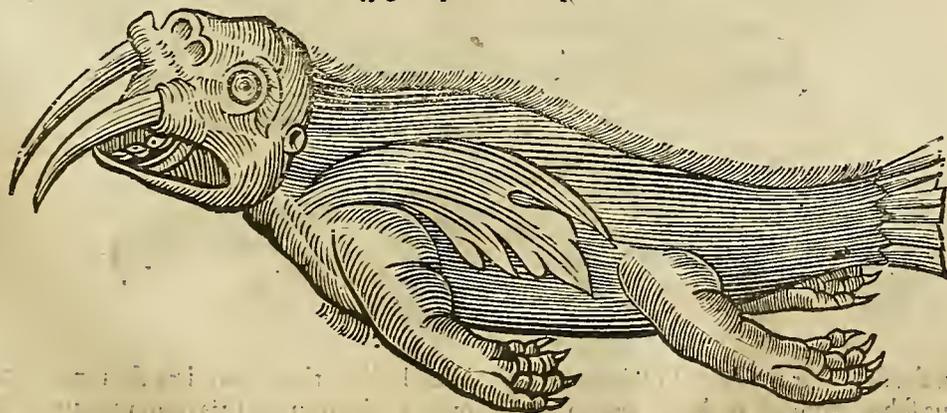
Olaus Magnus writes that this monster was taken at Thyle an Island of the North, Anno Dom. 1538. it was of a bigness almost incredible, as that which was seventie two foot long, and fourteen high, and seven foot between the eies: now the liver was so large that there with they filled five hogheads, the head resembled a swine, having as it were a half-Moon on the back, and three eies in the mid't of his sides, his whole bodie was scalie.

The effigies of a monstrous Sea-Swine.



The Sea-Elephant, as Heñtor Boëtius write's in his description of Scotland; it is a creature that live's both in the water and ashore, having two teeth like to Elephants, with which as oft as hee desire's to sleep, hee hang's himself upon a rock, and then hee sleep's so foundly, that Mariners seeing him at sea, have time to com ashore and to binde him, by casting strong ropes about him. But when as hee is not awaken'd by this means, they throw stones at him, and makes a great noif; with which awakned, hee endeavour's to leap back into the sea with his accustomed violence, but findeing himself fast, hee grow's so gentle, that they may deal with him as they pleas. Wherefore they then kill him, take out his fat and divide or cut his skin into thongs, which becauf they are strong and do not rot, are much esteemed of.

The effigies of a Sea-Elephant.



The Arabians of Mount Mazovan, which run's along't the Red Sea, chiefly feed on a fish called Orobone, which is verie terrible and much feared by other fish, beeing nine or ten foot long, and of the breadth agreeable thereto, and it is covered with scales like a Crocodile

A Crocodile is a vast creature, comming somtimes to bee fifteen cubites long, and seeing it is a creature that doth not bring forth young, but eggs, it useth at the most to laie som fixtie eggs, no bigger then Goose eggs, riseng to such bigness from so small beginnings (for the hatched young one is proportionable to the egg) shee is verie long-lived.

It hath so small and useles a tongue, that it may seem to have none at all. Wherefore seeing it live's both on land and water; as it live's on land it is to bee taken for a tongue, but as it live's part of the life in the water it hath no use of a tongue, and therefore is not to bee re-

The Crocodile onely moov's the upper jaw.puted one. For fishes either wholly want tongues, or elf have them so impedit and bound, that they serv for little use. The Crocodile onely of all other things moov's the upper jaw, the lower remaining unmovable: for her feet, they are neither good to take nor hold anie thing; shee hath eies not unlike those of swine, long teeth standing forth of the mouth, most sharp claws, a scailie skin, so hard that no weapon can pierce it. Of the land-Crocodile (resembling this both land and water one) is made the medicine *Crocodilea*, most singular for sore eies, beeing annointed with the juice of leeks, it is good against suffusions or dimness of the sight; it take's away freckles, pustles, and spots; the Gall annointed on the eies help's Cataracts, but the bloud clear's the sight.

Expende diligenter Plinii locum lib. 28. c. 8

Cosmograph. 200. 1. l. 2. c. 8.

How they take Crocodiles.

Thevet saith they live in the fountains of the river *Nilus*, or rather in a lake flowing from the same fountains, and that hee saw som that were six paces long, and a yard cross the back, so that their verie looks were formidable. They catch them thus; when as the water of *Nilus* fal's, the Egyptians let down a line, having thereto fastened an iron hook of som three pound waight, made verie large and strong, upon this hook they put a piece of flesh of a Camel or som other beast; which when as hee see's, hee presently fal's upon it, and devour's it hook and all, wherewith when hee finde's himself to bee cruelly pulled and pinched, it would delight you to see how hee fret's and leap's aloft; then they draw him thus hooked, by little and little to the shore, and fasten the rope surely to the next tree, lest hee should fall upon them that are about him; then with prongs, and such things they so belabor his bellie, whereas his skin is soft and thin, that at length they kill him, and uncaseing him, they make readie his flesh, and eat it for delicious food. *John Lereus*, in his historie of *Brasil*, write's, that the Salvages of that countrie willingly feed upon Crocodiles, and that hee saw som who brought into their houses young ones, wherewith their children gathering about it, would plaie without receiving anie harm thereby.

Cap. 10.

Lib. 9. cap. 2.

True (saith *Plinie*) is that common opinion, Whatsoever is brought forth in anie part of Nature, that also is in the sea, and manie other things over and above, that are in no other place. You may perceiv that there are not onely the resemblances of liveing creatures, but also of other things; if you look upon the sword, saw, cucumber, like in smel and color to that of the earth, that you may less wonder at the Sea-feather and grape, whose figures I have here given you out of *Rondeletius*.

The sea-feather is like those feathers of birds, which are worn in hats for ornament, after they are trimmed and drest for that purpose. The fishermen call them sea-pricks, for that one end of them resembleth the end of a man's yard, when the prepuce is drawn off it. As long as it is alive it swel's, and becom's somtimes bigger and somtimes lesser; but dead, it becom's verie flaccid and lank: it shine's bright on the night like a star.

You may by this gather, that this which wee here exprefs is the Grape whereof *Plinie* mak's mention, becauf in the surface and upper part the reof it much resemble's a fair bunch of Grapes; it is somewhat longish, like a mis-shapen club, and hang's upon a long stalk. the inner parts are nothing but confusion, somtimes distinguished with little glandules, like that wee have here figured alone by it self.

The figures of the Sea-Feather and Grape.



In the Sea near the Island *Hispantola* in the West Indies, there may bee seen manie monstrous fishes, amongst which *Thevet* in his *Cosmographie* thought this most rare and observable, which in the vulgar language of the natives is termed *Aoes*. For it is just like a goof, with a long and straight neck, with the head ending sharp, or in a Cone, not much unlike a sugar-

sugar-

sugar-pear, it is no bigger than a goof, it wanteth scails, it hath foure fins under the bellie for swimming, when it is above water you would saie that it were a goof.

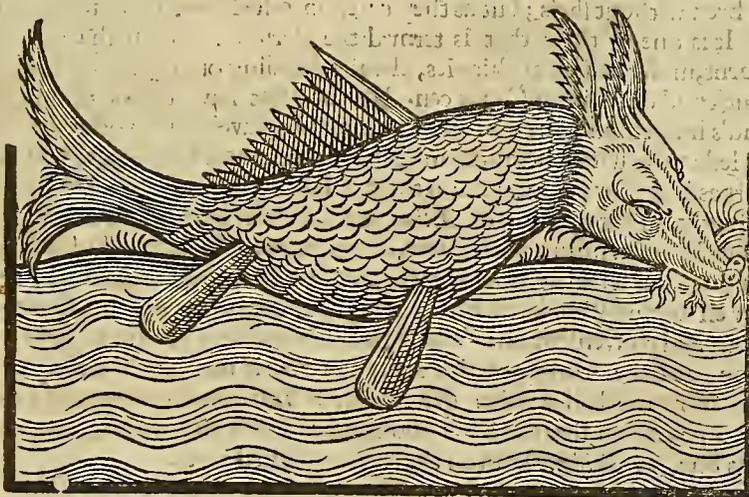
The Sarmatian, or Eastern Germane Ocean contain's fishes unknown to hot countries, and verie monstrous. Such is that which resembling a snail, equal's a barrell in magnitude of bodie, and a stag in the largeness and branches of her horns: the ends of her horns are rounded as it were into little balls, shineing like unto pearls, the neck is thick, the eies shineing like unto little candles, with a roundish nose set with hairs like to a cat's, the mouth wide, whereunder hang's a piece of flesh verie ugly to behold. It goe's on foure legs, with so manie broad and crooked feet, the which with a long tail, and variegated like a Tiger, serv's her for fins to swim withal. This creature is so timerous, that though it be an *Amphibium*, that is, which live's both in the water and ashore, yet usually it keep's it self in the sea, neither doth it com ashore to feed, unless in a verie clear season. The flesh thereof is verie good and grateful meat, and the blood medicinable for such as have their livers ill affected, or their lungs ulcerated, as the blood of great Tortoises is good for the Leprosie. *Thevet* in his *Cosmographie* affirmeth that hee saw this in *Denmark*.

The blood of
great Tortoises
good for the
leprosie.

Tom. 2. lib. 20.

In a deep lake of fresh water, upon which stand's the great cittie or town of *Themistitan*, in the Kingdom of *Mexico*, which is built upon piles, like as *Venice* is, there is found a fish of the bigness of a calf, called by the Southern Salvages, *Andura*, but by those of the place, and the Spaniards the conquerers of that place, *Hoga*. It is headed and eared almost like a swine; from the chaps hang five long bearded appendices, or the length of som half a foot, like the beard of a Barbel. It hath flesh verie grateful and good to eat. It bringeth forth live young like as the Whale. As it swim's in waters, it seem's green, yellow, red, and of manie colors, like a Chameleon: it is most frequently conversant about the shore-sides of the lake, and there it feed's upon the leavs of the tree called *Hoga*, whence also the fish hath its name. It is fearfully toothed and fierce fish, killing and devouring such as it meeteth withal, though they bee bigger then her self: which is the reason why the Fishermen chiefly desire to kill her, as *Thevet* affirmeth in his *Cosmographie*.

The monstrous fish Hoga.

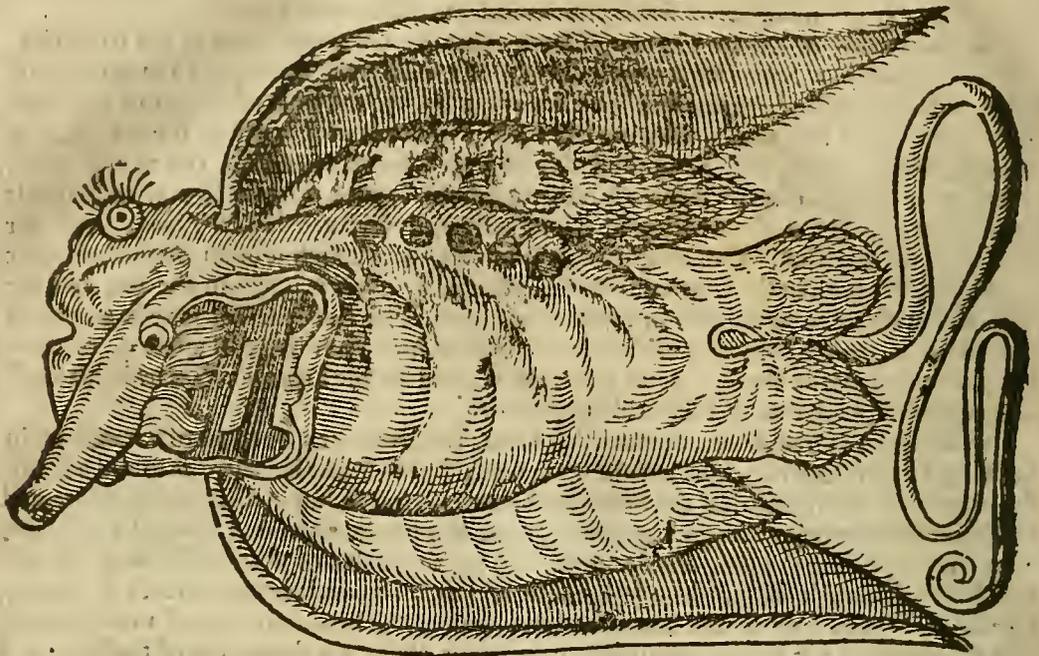


Andrew Thevet in his *Cosmographie* write's that as hee sailed to *America*, hee saw infinite store of flying fishes, called by the salvages *Bulampech*, who rising out of the water, flie som fiftie paces, escaping by that means from other greater fish that think to devour them.

This kinde of flying fish exceed's not the bigness of a *Mackrel*, is round headed, with a blewish back, two wings which equal the length of almost all their bodie. They oft-times flie in such a multitude, that they fall foul upon the sails of ships, whilest they hinder one another's flight, and by this means they fall upon the decks, and become a préie to the sailers: which same thing wee have read confirmed by *John Lereus* in his historie of *Bresil*.

In the Venetian gulf, between *Venice* and *Ravenna*, two miles above *Quioza*, Anno Dom. 1550. there was taken a flying fish, verie horrible and monstrous, beeing four foot long, it had a verie great head, with two eies standing in a line, and not one against another, with two ears, and a double mouth, a snout verie fleshy and green, two wings, five holes in her throat, like those of a *Lampreie*, a tail an ell long, at the setting on whereof there were two little wings. This monster was brought alive to *Quioza*, and presented to the chief of the cittie, as a thing whereof the like had not been formerly seen.

The figure of a monstrous flying Fish.



4. de hist. anim.
cap. 4.

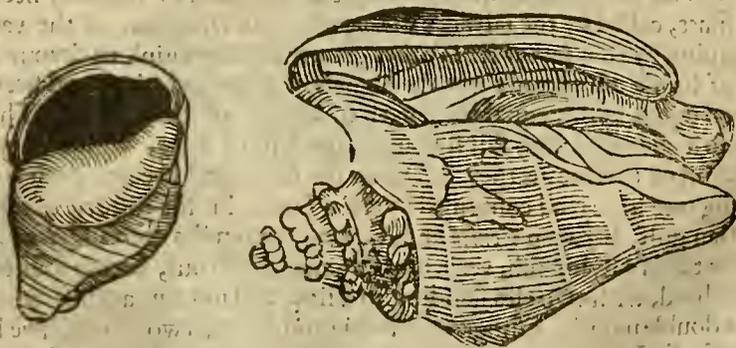
* By crufted is
meant Crabs,
Lobsters,
Shrimps, and
fuch like.

The description
of the Her-
mite cray-fish.

Lib. 7. cap. 31.

They change
their habitati-
on for two
caufes.

There are so manie and different sorts of shels to bee found in the Sea, that it may bee truly said, that Nature, the hand-maid of the Almighty, difport's it self in the framing of them. In so great diverfitie I have chiefly made choice of three to treat of here, as those that are worthie of the greatest admiration. In these lie hid certain little fishes, as snails in their shels, which Aristotle call's *Cancelli*, and hee affirmeth them to bee the common companions of the * crufted and shell fishes, as those which in their *species* or kinde are like to Lobsters, and use to bee bred without shels; but as they creep into shels, and there inhabit, they are like to shell fishes. It is one of these that is termed the *Hermite*. Hee hath two somewhat long and slender horns, under which are his eyes, alwaies standing out of his head, as those which hee cannot pluck and draw in, as Crabs can. His fore-feet have claws upon them, wherewith hee defend's himself, and carri'e's meat to his mouth, having two other on each side, and a third being lesser, the which hee useth in going. The female laie's eggs, which hang forth at her back part as if they were put upon a thread, being 'joined together by certain little membranes. Lastly, in the opinion of *Ælian*, the *Cancellus* or small Craie-fish is born naked and without a shell, but within a while after, shee of manie which shee finde's empty, make's choice of a fit one, and when as grown bigger, shee cannot bee contained or dwell anie longer therein, or elf being stimulated with a natural desire of copulation, shee remoov's into a more capacious and convenient one. These little Craie-fishes oft-times fight together for their habitation, and the stronger carri'e's away the empty shell, or elf make's the weaker to quit possession. Now the shell is either of a *Nerita*, or *Turbo*, and oft-times of a small Purple; and entring into possession, shee carri'e's it about, there feed's and grow's, and then seek's a more capacious one, as Aristotle saith in the formerly-cited place.

The effigies of the empty shels whereinto the *Cancelli* use to creep to dwell.

What the *Pin-*
moter, or dwarf-
crab is.

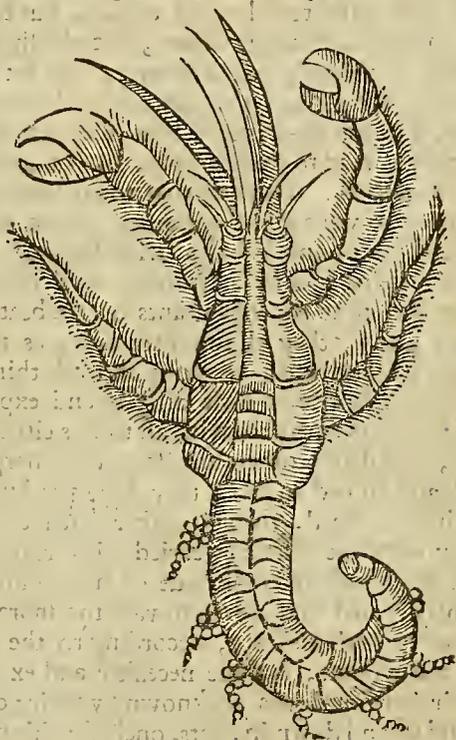
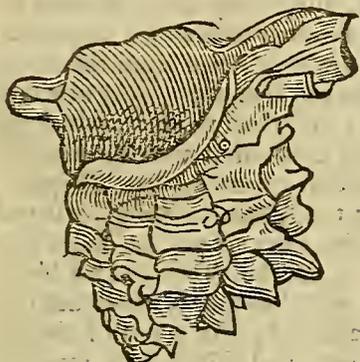
Som think that this Bernard the Hermit is that kinde of *Cancellus* which is by *Plinie* termed *Pinmoter*; but in truth the *Pinmoter* is not a kinde of *Cancellus*, or Cray-fish, but of a little Crab. Now in *Aristotle* there is much difference between *Cancellus* and *Cancer parvus*, though *Plinie* may seem to confound them; for hee is bred naked, having his crust onely, but without a shell: wherefore seeing that by nature hee want's it, hee diligently searche's for it, and dwell's in it, when as hee hath found it: But the *Pinmoter* is not bred by it self alone, but in *Pinnæ* and som others, and hee changeth not his habitation, becaus (as *Aristotle* think's

think's) being of the kinde of dwarf-Crabs, it never grow's big, neither dwell's it in emptie shells. Now the *Pinna*, or Pin is a kinde of shell-fish, it breed's in muddie places, and is alwaies open, neither is it at anie time without a companion, which they therefore call the *Pinnoter*, or *Pinnophylax*, (i.e.) the Pin-keeper, as *Plinie* saith. Verily that these things are thus, you may plainly perceiv by these words of *Athenens*. *Chrysippus Solensis* 5. de *Honest. & Volupt.* saith the *Pinna* and *Pinnoter* assist and further each other, neither can they live asunder. The *Pinna* may bee referred to the kindes of oysters, but the *Pinnoter* is a dwarf-crab: the *Pinna* open's her shell for the little fishes to enter thereinto; the *Pinnoter* stand's by, observing if anie com in, which if they do, hee give's the Pin notice thereof by biteing, who presently thereupon shut's her shell, and so they feed together upon that they catch by this means. Thus *Athenens*. Shee is also for this her craft mentioned by *Plutarch* in his writings. The *Pinnoter* is somtimes called by *Plinie*, *Cancer dapis affectator*.

But that which by these authors is attributed to the dwarf-Crab, the same by *Cicero* is ascribed to the little shrimp: Now the *Pinna* (saith hee) opening her two large shells, enter's into confederacie with the little shrimp for getting of food, wherefore when little fishes swim into her gapeing shell, then the *Pinna*, admonished by the shrimp's biteing her, shut's her shell; thus two unlike creatures get their livings together. But *Plutarch* seem's to make the *Pinna* to bee the Pearl-oyster, in that work of his, whereas hee inquireth whether the craft of Water or Land-beasts bee the greater.

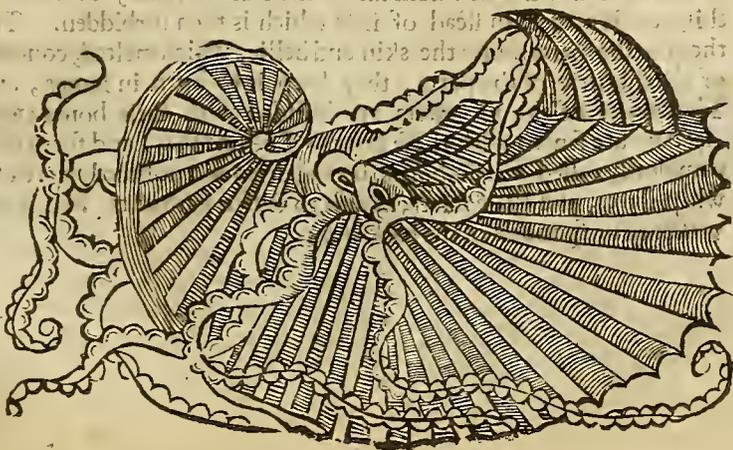
The figure of him out of his Cell.

The effigies of Bernard the Hermite housed in his shell.

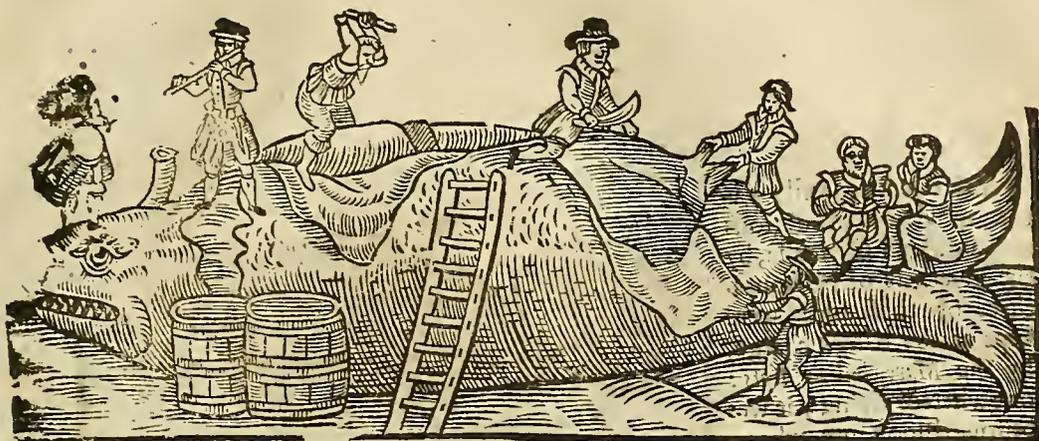


But amongst the most miraculous fishes may fittly bee placed the *Nautilus*, or Sailer, of some called *Pompylos* (it is thought to bee a kinde of *Polypus*) it com's with the face upwards to the top of the Sea, raising it self by little and little, that casting forth all the water by a pipe, as if it had a Pump, it easily float's; then putting back the two first tendrils or arms, it extend's between them a membrane of wondrous fineness or thinness, which gathering air like as a sail, and shee rowing with the rest of her arms, shee guid's her self with her tail in the mid'st, as a Rudder. Thus shee sail's along in imitation of Pinnaces, and if anie thing affright her, shee presently take's in water, and sink's her self.

The shape of Nautilus, or Sailer-fish



The manner of cutting up the Whale.



In the river *Scalde*, ten miles from *Antwerp*, Anno Dom. 1477. the second daie of *Julie*, there was a Whale taken, of a blackish blue color, shee had a spout hole in the top of her head, out of which shee cast great store of water: shee was fiftie eight foot long, and sixteen foot high: her tail was fourteen foot broad; from the eie to the end of her nose was som sixteen foot. Her lower jaw was six foot on each side, shee had twentie five teeth, which shee could hide in her upper jaw, there beeing holes for them, it beeing whollie toothles; for which one thing this Whale may bee judged monstrous, for that nature hath denied them teeth, and and for that in creatures that are not horned, it is so ordained by nature, that when they have teeth in their lower jaw, they should have others also in the upper to answer to them, so to chew their meat. The longest of these teeth exceed not six inches.

There is (as *Plinie* report's) a verie small fish accustomed to live about rocks, it is called *Echeneis*, never exceeding the length of a foot; it is thought that ships go more slowly if this stick to them: wherefore the Latins have also given it a name of *Remora*, for that a ship beeing under sail with a good winde, may by the *Echeneis* seazing on her as if shee would devour her, bee staid against the Sailer's wills, and stand still as if shee were in a safe harbor. Wherefore shee is said in the *Actian* fight to have staid the ship of *Marcus Antonius*, hastening to go about and encourage his souldiers, so that hee was forced to enter into another ship, and thereupon *Cesar's* navie came upon them too hastily, and before they were provided.

Shee also staid the ship of the Emperor *Caius*, comming from *Astura* to *Antes*; his ship of all the navie making no waie; neither did they long wonder at this staie, the caus beeing presently known; som forthwith leaping into the Sea to finde the caus thereof, there found her about the ship, even sticking to the Rudder, and they shewed her to *Caius*, beeing wroth that this so small a thing should stop him, and countermand the endeavour of fortie Rowers.

Therefore this little fish tame's and infringe's the violence and madnes of the world, and that with no labor, not without holding or anie other waie, but onely by sticking thereto. Certainly how ever it com's to pass, who from this example of holding of ships, can doubt of anie power or effect of nature, in medicines which grow naturally? Yea, and without this example, the *Torpedo* out of the sea also may bee sufficient, who a far off, and at distance, if it bee touched with a spear or rod, will benumb even the strongest arms, and retard the feet, how ever nimble to run away.

CHAP. XXII.

Of the admirable nature of Birds, and of som Beasts.

That there bee divers things not onely in the Sea, but also in the air and earth, which by the wonderful condition of their own nature may equal that of Monsters, the onely *Estrich* may serv for a witness. It is the biggest of Birds, though indeed it partly resemble's a bird, and partly a beast (and it is familiar to *Africa* and *Aethiopia*) as which contrarie to the nature of beasts hath feathers, and against the custom of birds cannot flie aloft; for it hath not feathers fit to flie, but like unto hairs, yet will it out-run a horse. The natural force of the stomach in concocting is miraculous, as to which nothing is untameable: shee laie's eggs of a wondrous largnes, so that they may be framed into cups: their feathers are most beautiful; as you may perceiv by this following figure.

The *Estrich* is between a bird and a beast.

The wondrous force of her stomach.

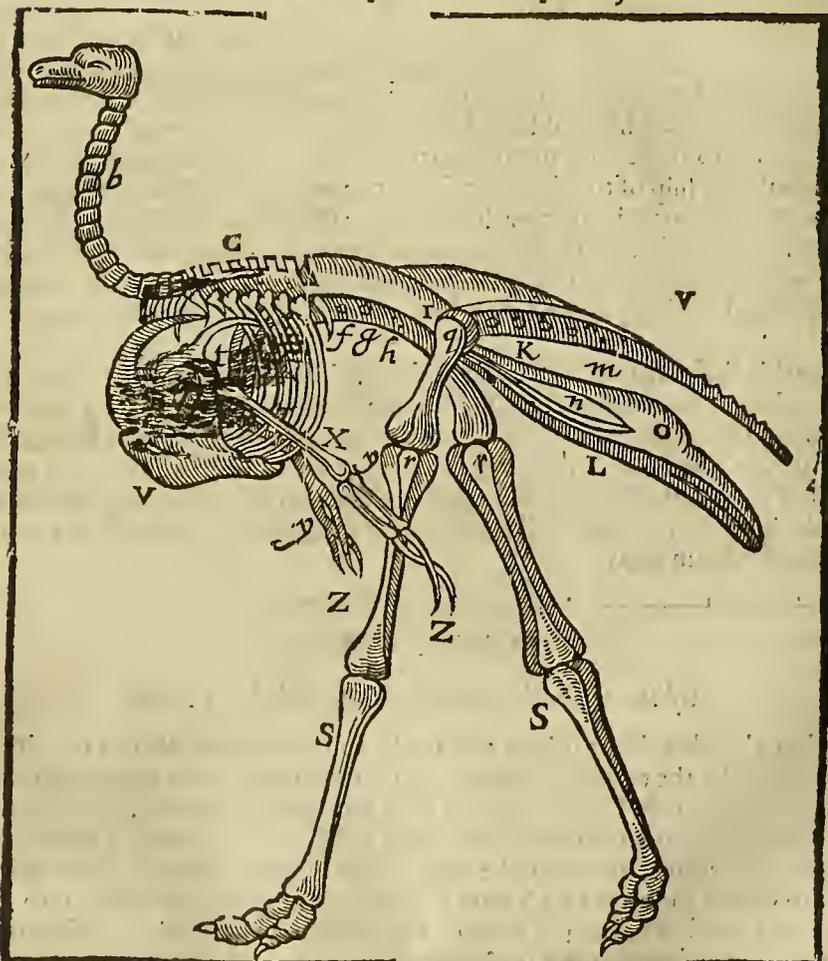
The

The figure of an Estrich.

Anie one may easily gather of what a prodigious magnitude an Estrich is, by the greatnes of his bones. three of these birds were kept at the King's charge, by the *Mareschal de Retz*: one whereof dying, it was bestowed upon mee, whereof I have with great diligence made a *Skeleton*.



The delineation of the Sceleton of an Estrich.



A Shew's the head, which was somewhat thicker then the head of a Crane, of the length of one's hand, plain from the crown even to the beak; the beak being divided to the middle region of the eye, beeing roundish at the end thereof.

B. The

B. The neck, a yard long, consisting of seventeen *vertebrae's*, each whereof on each side is furnished with a transvers process looking downwards, of som fingers length, excepting the two which are next the head, as which want these, and are joined together by *Ginglymos*.

C. The back is of a foot's length, consisting of seven *Vertebrae*.

D. The holie-bone of two foot long, in whose top there is a transvers process, under which there lie's a great hole.

E. Three more, but less.

F. G. H. After which there follow's the cavities or socket, whereinto the head of the thigh-bone is received and hid. This externally and on the side produceth a perforated bone, noted with the letter I. perforated I saie at the beginning, for it is presently united at the letter, K. then is it forked and divided into two other bones, whereof one is bigger then the other. The less is noted with the letter, L. then are they both united at the letter M. each of them is half a foot and four inches long. But from that part whereas they first begun to bee divided, to that whereas they are united, there is a hole som four fingers broad, but the length of one's hand, or more, and it is noted with the letter N. The residue of the bone is like to a pruning knife three inches broad, but six in length: at the end whereunder is the letter, O. it is joined by coalition.

P. The rump consisting of nine *vertebrae's*, like to a man's. The thigh-bones are two, whereof that which is noted with the letter Q. is of the length of a foot, and of thickness equal to a horse's thigh. The other next under (which peradventure you may call the leg-bone) noted with K. is a foot and half long: it hath joined thereto the *Fibula*, or lesser focol of the length, but which grow's smaller as it com's lower.

S. Is the leg, to which the foot adhere's, being one foot and a half long, divided at the end into two claws, the one bigger, the other less, whereof each consist's of three bones.

T. Eight ribs, which are inserted into the *Sternon*, the three middlemost of these have a bonie production like to a hook.

V. Is the *Sternon*, consisting of one bone of som foot's length, representing a buckler, to this there is joined another bone, which stretched over the three first ribs, is in stead of clavicles or collar-bones.

X. The first bone of the wing, which is one foot and half long.

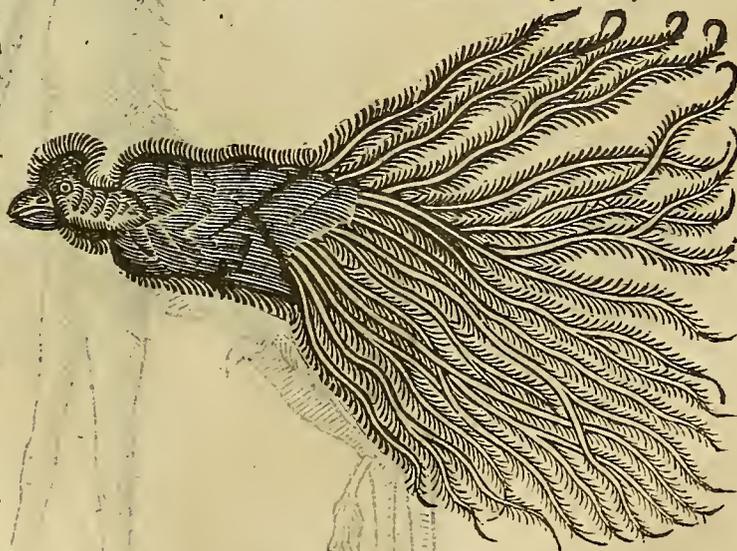
Y. Two bones under this, equivalent to the ell and wand, under which there are six other bones composing the point of the wing, noted with Z.

This whole *Skeleton* is seven foot long, and so manie foot or more high from the feet to the beak: there are manie other observable things in his composition, but I have thought fit to omitt them for brevities sake.

Jerom Cardane in his books *De subtilitate*, write's, that in the Ilands of the *Molucca's* you may somtimes finde lying upon the ground, or take up in the waters, a dead bird called a *Nanucodiata*, that is in Hebrew, the bird of God, it is never seen alive. It live's aloft in the ay, it is like a Swallow in bodie and beak, yet distinguished with divers colored feathers: for those on the top of the head are of a golden color, those of the neck like to a Mallard, but the tail and wings like Peacocks; * it want's feet:

Wherefore if it become wrie with flying, or desire sleep, it hang's up the boie by twineing the feathers about som bough of a tree. It passeth through their, wherein it must remain as long as it live's, with great celeritie, and live's by the air and dew onely. The cock hath a cavity deprest in the back, where the hen laie's and sit's upon her eggs. I saw one a *Paris* which was presented to King *Charls* the ninth.

The effigies of a *Manucodiata*, or bird of Paradise.



The description of the bird of Paradise.

* Whosoever desire's to know more of the truth of this bird, let him read *Clavus* in the *Auricularium* ad lib. 7 cap. 1. *exoticorum*.

We have read in *Thevet's Cosmographie*, that hee saw a bird in *America*, which in that country speech is called *Touca*, in this verie monstrous and deformed, for that the beak in length and thickness, exceed's the bigness of the rest of the bodie; it feed's on pepper, as the blackbirds and selfares with us do upon Ivie-berries, which are not less hot then pepper.

A certain Gentleman of *Provence* brought a bird of this kinde from that countrie, to present it to King *Charles* the ninth, but dying in the waie hee could not present it alive. Wherefore the King wished the *Mareschal de Retz* to give her to mee, that he might take forth her bowels and embalm her, that shee might bee kept amongst the King's rarities. I did what I could, yet not long after shee rotted: shee resembled a crow in bodie and feathers, but had a yellowish beak, clear, smooth, and toothed like a saw, and of such length and thickness as wee formerly mentioned. I keep it yet as a certain monstrous thing.

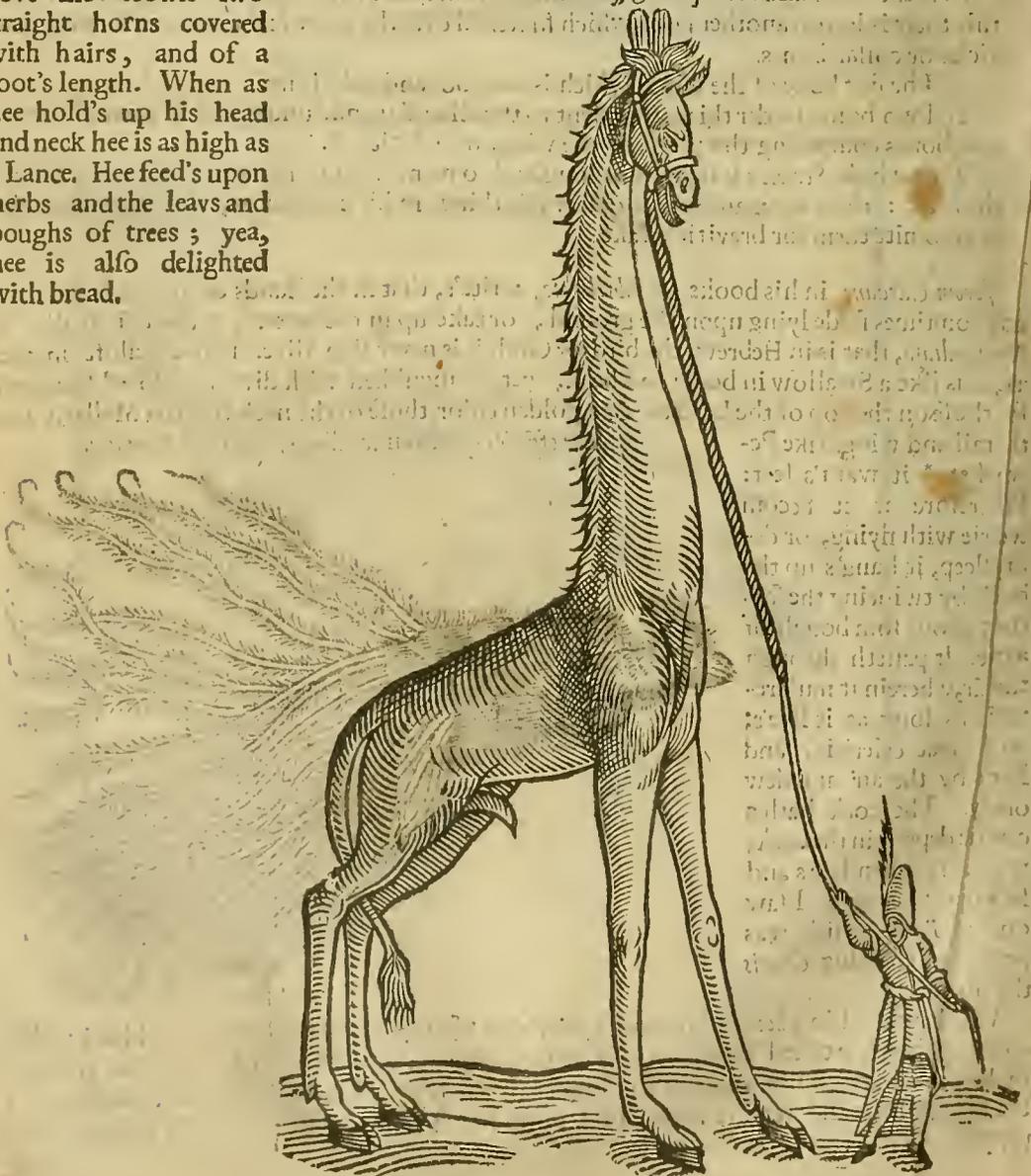
Tom. 1. cap. 11.
lib. 4.

Thevet write's, that in the Island *Zocotera* there is frequently found a certain wilde beast called *Hulpalis*, of the the bigness of an *Ethiopian* Monkie. It is a verie monstrous creature, but in nothing more, then that it is thought to live upon the air onely; the skin, as if it were died in grain, is of a scarlet color, yet it is in som places spotted and variegated: it hath a round-head like to a boul, with feet round, broad, and wanting hurtful nails. The *Moors* kill it and use to eat the flesh of it, being first bruised, that so it may bee the more tender.

Thevet tom 1.
lib. 11. cap. 13.

In the Realm of *Camota*, of *Abob*, of *Benga*, and other mountains of *Cangipa*, *Plimatiq* and *Catagan*, which are in the inner *India*, beyond the river of *Ganges*; som five degrees beyond the Tropick of *Cancer*, is found a beast, which the Western German's call *Giraff*. This beast in head, ears, and cloven feet, is not much unlike our *Do*; it hath a verie slender neck, but it is som six foot long, and there are few beasts that exceed him in the length of their legs: his tail is round, but reacheth no further then his hams; his skin is exceeding beautiful, yet somewhat rough, having hair thereon somewhat longer then a *Cow*, it is spotted and variegated in som places with spots of a middle color, between white and chefnut; so as *Leopards* are: for which caus by som Greek Historians it is called a *Camleopardalis*: it is so wilde before it bee taken, that with the good-will it will not so much as bee seen. Therefore it inhabite's and live's onely in desert and secret places, unknown to the rest of the beasts of that region. Hee presently flie's away at the sight of a man, yet is hee taken at length, for that hee is not verie speedie in running away; once taken, hee is as easily and speedily tamed as anie wilde beast whatsoever. Hee hath above his crown two straight horns covered with hairs, and of a foot's length. When as hee hold's up his head and neck hee is as high as a *Lance*. Hee feed's upon herbs and the leavs and boughs of trees; yea, hee is also delighted with bread.

The effigies of Giraffa.



Such as sail in the red sea along the coast of *Arabia*, meet with an Iland called by the *Arabians Cademota*; in that part thereof where the river *Plata* run's, is found a wilde beast, called by the barbarous inhabitants *Parassoupi*, being of the bigness of a Mule, headed not unlike one, yet rough and haired like to a Bear, but not of so dark a color, but inclining to yellow, with cloven feet like a Hart: shee hath two long horns on her head, but not branched, somewhat resembling those so much magnified horns of Unicorns. For the native's of the place, bitten by the venomous tooth of either beast or fish, are presently helped and recover by drinking the water wherein such horns have been infused for six or seven daies space, as *Thevet* in his *Cosmographie* report's.

In one of the Ilands of the *Molucca's* there is found a beast living both on land and water like as a Crocodile; it is called *Campburch*, it is of the bigness of an Hart, it hath one horn in the fore-head, moovable after the fashion of the nose of a Turkie-cock: it is som three foot and an half long, and never thicker then a man's arm; his neck is covered over with an ash color, hee hath two feet like to a goof's feet, wherewith hee swim's both in fresh and salt waters. His fore-feet are like to a stag's, hee live's upon fish. Manie have perswaded themselves that this beast is a kinde of Unicorn, and that therefore his horn should bee good against poisons. The King of the Iland love's to bee called by the name of this beast; and so also other Kings take to themselves the names of the wilde beasts, fishes, or fruits; that are most precious and observable in their dominions, as *Thevet* report's.

Mauritania and *Æthiopia*, and that part of *Africk* that is beyond the deserts and fyrtes, bring forth Elephants; but those of *India* are far larger. Now although in the largeness of their bodie they exceed all four-footed beasts, yet may they bee more speedily and easily tamed then other beasts. For they may bee taught to do manie things above the common nature of beasts. Their skin is somewhat like to a Buffles, with little hair upon it, but that which is, is ash colored, his head large, his neck short, his ears two handfuls broad, his nose or trunk verie long, and hanging down almost to the ground, hollow like as a trumpet, the which hee useth in stead of an hand, his mouth is not far from his breast, not much unlike a swine's, from the upper part whereof two large teeth thrust forth themselves, his legs are thick and strong, not consisting of one bone as manie formerly have falsely beleev'd (for they kneel to admit their Rider, or to bee laden, and then rise up again of themselves) his feet are round like a quoit som two or three hand's bredth, and divided into five clefts. Hee hath a tail like a Buffle, but not verie rough, som three hand's bredth long, wherefore they would bee much troubled with flies and wasps, but that nature hath recompenced the shortness of their tails by another waie; for when they finde themselves molested, they contract their skin so strongly, that they suffocate and kill these little creatures taken in the wrinkles thereof; they over-take a man running by going only, for his legs are proportionable to the rest of his bodie.

They feed upon the leavs and fruits of trees, neither is anie tree so strong or well rooted, which they cannot throw down and break. They grow to bee sixteen handfuls high, wherefore such as ride upon an Elephant are much troubled as if they went to sea. They are of so unbridled a nature, that they cannot endure anie head-stall or reins, therefore you must suffer them to take the courf and waie they pleas. Yet do they obey their cuntry-men without anie great trouble; for they seem after som sort to understand their speech, wherefore they are easily governed by their known voices and words. They throw down a man that anger's them, first taking him up with their trunk and lifting him aloft, and then letting him fall, they tread him under foot, and leav him not before hee bee dead. *Aristotle* write's that Elephants generate not before they bee twentie years old: they know not adulterie, neither touch they anie female but one, from which they also diligently abstain when they know shee hath once conceived. It cannot bee known how long they go with young, the reason is for that their copulation is not seen, for they never do it but in secret. The females bring forth resting upon their hinde legs, and with pain like women, they lick their young, and these presently see and go, and suck with their mouths, and not with their trunks. You may see Elephant's teeth of a monstrous and stupendious bigness, at *Venice*, *Rome*, *Naples*, and *Paris*; they term it *Ivoris*, and it is used for Cabinets, Harps, Combs, and other such like uses.

The Indian Elephants are bigger then the African.

How they keep flies from them.

Lib. 9. de hist. anim. cap. 28.

It is not known how long an Elephant go's with young.

The figure of an Elephant.



Wee have read in *Thevet*, that in *Florida* there are great Bulls, called in that countrie *Beautrol*, they have horns of a foot long, a bunch on their back like a Camel, their hair long and yellow, the tail of a Lion; there is scarce anie creature more fierce or wilde, for it can never bee tamed, unless it bee taken from the dam. The Salvages use their hides against the cold, and their horns as an Antidote against poison. Tom. 2. lib. 23. cap. 2.

The same author affirm's that whilest hee sailed in the red sea, hee saw a monster in the hands of certain Indian merchants, which in the bigness and shape of his limbs was not unlike a Tiger, yet had the face of a man, but a verie flat nose: besides, his fore feet were like a man's hands, but the hinde like the feet of a Tigre, hee had no tail, hee was of a dun color: to conclude, in head, ears, neck, and face it resembled a man, but in the blackish and curled hair, a Moor: for the other parts they were like a Tigre; they called it *Thanaeth*. Their horns good against poison. Tom. 1. lib. 2. cap. 10.

The figure of a beast called *Thanaeth*.

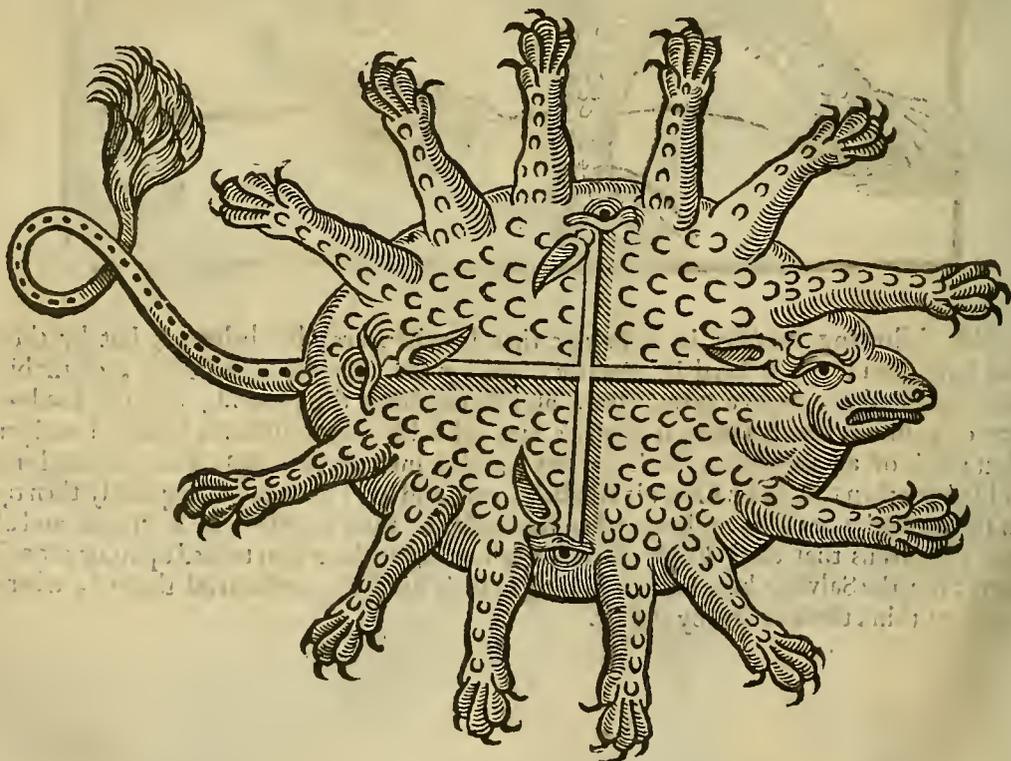


This following monster is so strange that it will scarce bee believed, but by those that have seen it: it is bred in *America*, and by the Salvages called *Hait*, of the bigness of a Monkie, with a great bellie, almost touching the ground, and the head and face of a childe: being taken, it mourn's and sigh's like to a man that is troubled and perplex; it is of an ash-color, hath the feet divided into three claws, four fingers long, and sharper then those of a Lion: it climbe's trees, and live's there more frequently then upon the ground, the tail is no longer then the bredth of three fingers. It is strange and almost monstrous that these kinde of creatures have never been seen to feed upon, or eat anie thing: for the Salvages have kept them long in their houses to make trial thereof, wherefore they think them to live by the air.

The figure of the beast called Haiit.



I have taken this following monster out of *Leo's African historie*; it is verie deformed, being round after the manner of a *Tortoif*, two yellow lines crossing each other at right angles, divide his back; at everie end of which hee hath one eie, and also one ear, so that such a creature may see on everie side with his four eies, as also hear by his so manie ears: yet hath hee but one mouth, and one bellie to contain his meat, but his round bodie is encompassed with manie feet, by whose help hee can go anie waie hee pleas without turning of his bodie, his tail is somthing long and verie hairie at the end The inhabitants affirm, that his blood is more effectuall in healing of wounds then anie balsom.



It is strange that the *Rhinoceros* should bee a bornemie to the *Elephant*; wherefore hee wher's his horn, which grow's upon his nose, upon the rocks, and so prepare's himself for fight, wherein hee chiefly assails the bellie, as that which hee know's to bee the softest: hee is as long as an *Elephant*, but his legs are much shorter, hee is of the color of box, yet somewhat spotted. *Pompie* was the first, that shewed one at *Rome*.

Plin. l. 8. c. 29.



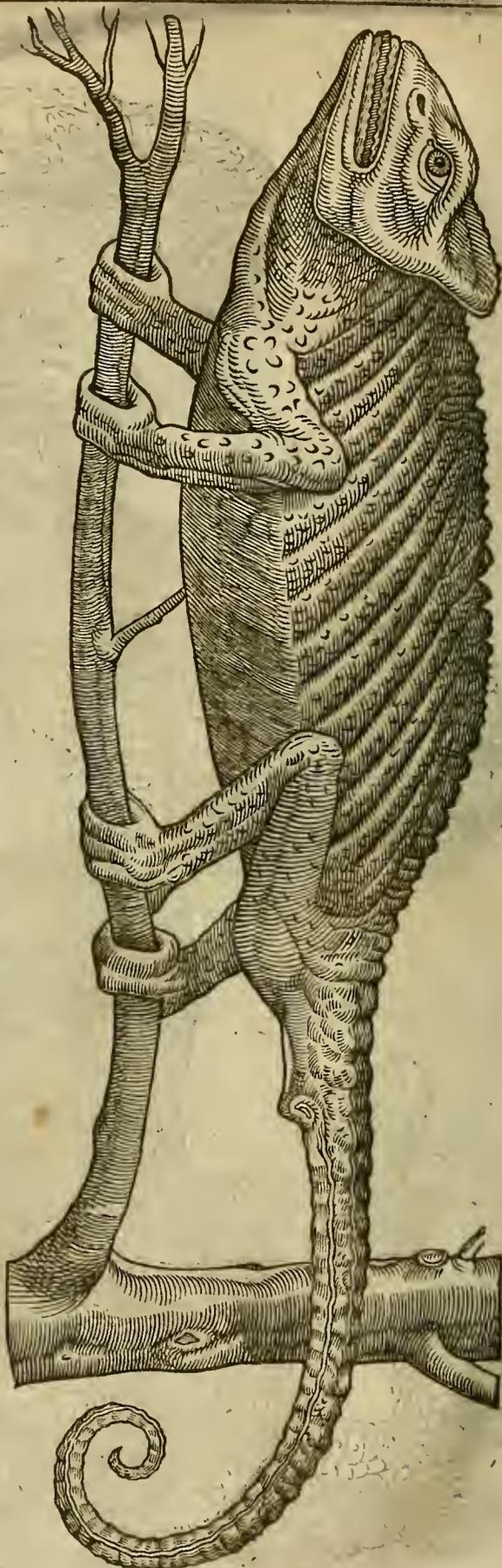
The figure of the Chameleon.

Plin lib. 8. c. 33.

Arist. lib. 2. hist. anim. cap. 12.

The strange nature of the color of the Chameleon.

Africa produceth the Chameleon, yet is it more frequent in India: hee is in shape and greatneis like a Lizard, but that his legs are straight and higher, his sides are joined to the bellie as in fish, and his back stand's up after the same manner, his nose stand's out not much unlike a swine's, his tail is long, and endeth sharp, and hee fould's it up in a round, like a serpent, his nails are crooked, his pace slow like as the Tortois, his bodie rough, hee never shut's his eies, neither doth hee look about by the mooving of the apple, but by the turning of the whole eie. The nature of his color is verie wonderful, for hee changeth it now and then in his eies and tail, and whole bodie beside; and hee alwaies assimilate's that which hee is next to, unless it bee red or white. His skin is verie thin, and his bodie clear; therefore the one of these two, either the color of the neighbouring things in so great subtiltie of his clear skin, easily shine's as in a glafs; or elf various humors diversly stirred up in him, according to the varietie of his affections, represent divers colors in his skin, as a Turkie-cock doth in those fleshie excrescences under his throat, and upon his head: hee is pale when hee is dead. *Mathiolus* write's that the right eie taken from a living Chameleon take's away the white spots which are about the thornie coat of the eie; his bodie being beaten, and mixed with Goat's milk, and rubbed upon anie part, fetcheth off hairs; his gall discusseth the Cataracts of the eie.



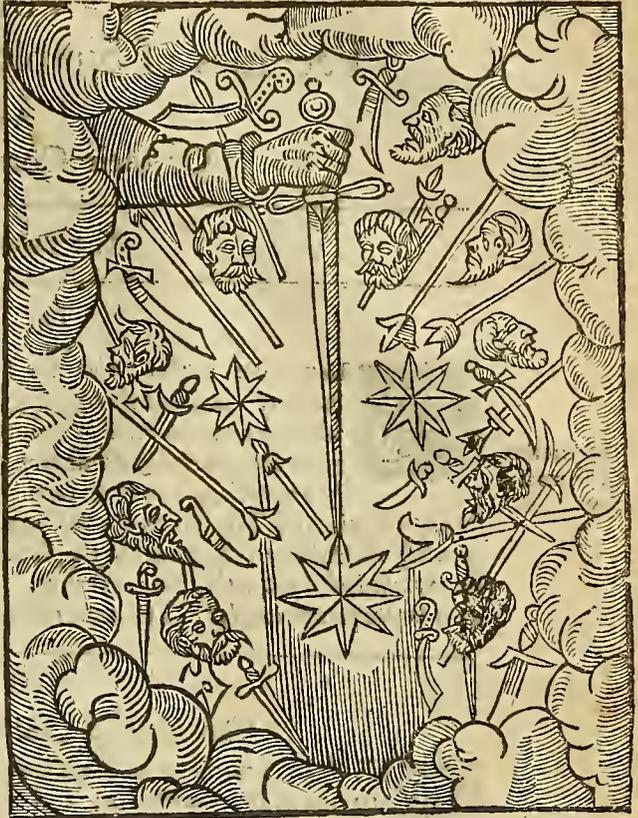
CHAP. XXIII.
Of Celestial Monsters.

PERADVENTURE it hath not been strange that monsters have been generated upon the earth and in the Sea: but for monsters to appear in heaven, and in the upper region of the air, exceed's all admiration. Yet have wee often read it written by the antients, that the face of heaven hath been deformed, by bearded, tailed, and haired Comets; by meteors representing burning torches, and lamps, pillars, darts, shields, troups of clouds, hostilely assailing each other; Dragons, two Moons, Suns, and the like monsters and prodigies.

An-

Antiquitie hath not seen anie thing more prodigious then that Comet which appeared with bloodie hair in *Uverstine*, upon the ninth daie of *October*, 1528. for it was so horrible and fearful a spectacle, that divers died with fear, and manie fell into grievous diseases; going from the East to the South, it endured no longer then one hour and a quarter: in the top whereof was seen a bending arm holding a great sword in a threatening hand; at the end thereof appeared three stars, but that over which the point of the sword directly hanged was more bright and clear then the rest: on each side of this Comet were seen manie spears, swords, and other kinds of weapons dield with blood, which were intermixt with men's heads, having long and terrible hair and beards, as you may see in this figure.

The figure of a fearful Comet.



Also there have been seen great and thick bars of Iron to have fallen from heaven, which have presently been turned into swords and rapiers. At *Sugolia* in the borders of *Hungaria*, a stone fell from heaven with a great noise, the seventh daie of *September*, Anno Dom. 1514. it weighed two hundred and fiftie pound: the Citizens hanged it up with a great iron-chain put through it, in the midst of the Church of their Cittie, and used to shew it, as a miracle, to travellers of better note that pass'd that waie. *Plinie* report's that clashing of armour, and the sound of a trumpet, were heard from heaven often, before and after the *Cimbrian* war. The same author write's that in the third Consulship of *Marius*, the *Ama-L. 2. 6. 57.* *rines* and *Tudortines* saw the heavenlie armies comming from East and West; and so joining, those being vanquished which came from the East. Which same thing was seen in *Lusalia*, at a town called *Jubea*; two hours after mid-night, A D om. 1535. But in A. Dom. 1550. upon the 19. daie of *Julie*, in *Saxonia*, not far from *Wittenburg*, there appeared in the air a great Stag, incompass'd with two armed hosts, making a great noise in their conflict, and at the same instant it rained blood in great abundance, the sun seemed to be cloven in two pieces, and the one of them to fall upon the earth. A little before the takeing of *Constantinople* from the Christians, there appeared a great armie in the air appointed to fight, attended on with a great companie of dogs and other wild beasts. *Julius Obsequius* report's that in A. Dom. 458. it rained flesh in *Italie*, in greater and lesser pieces, part of which were devoured by the birds before they fell upon the earth: that which fell upon the earth kept long unputrefied, and unchanged in color and smell. A. Dom. 989. *Otho* the third being Emperor, it rained corn in *Italie*. A. D. 180. it rained milk and oil in great abundance, and fruit-bearing trees brought forth corn. *Lycosthenes* tel's that in the time of *Charls* the fifth, whilst *Maidenberg* was besieged, three suns first appeared about 7. a clock in the morning, and then were seen for a whole daie whereof the middlemost was the brightest, the two others were reddish, and of a bloodie color; but in the night time there appeared three Moons. The same appeared in *Bavaria*, An. Dom. 1554.

But if so prodigious and strange things happen in the heavens besides the common order of nature, shall we think it incredible that the like may happen in the earth? An. Dom. 542. the whole earth quaked, mount *Aetna* cast forth flames and sparks of fire, with which manie houses of the neighbouring villages were burn'd. An. Dom. 1531. in *Portugal* there was an earthquake for eight daies, and it quaked seven or eight times each daie; so that in *Lisbone* alone it cast down a thousand and fiftie houses, and more then six hundred were spoiled. *Ferrara* lately was almost wholly demolish'd by a fearful earthquake. Above all which ever have been heard is that prodigie which happened in the time of *Plinie*, at the death of *Nero* the Emperor in the *Marucine* field, the whole Olive-field of *Vectius Marcellus* a *Romane* Knight going over the high waie, and the fields which were against it comming into the place thereof. Why should I mention the miracles of waters, from whose depth and streams, fires and great flames have oft broke forth? They tell out of *St. Augustine*, that the fire of the sacrifice, which for those severitie years of the *Babylonian* captivitie endured under the water, was extinguished, *Antiochus* selling the priest-hood to *Jason*. What miracle is this, that the fire should live in the water, above its force and natural efficacy, and that the water should forget the extinguishing facultie! Verily Philosophers truely affirm that the elements, which are understood to be contrarie, and to fight in varietie among themselves, are mutually joyned and tied together by a marvellous confederacie.

Prefiges of
the takeing of
Const. antinople.
Monstrous
rains.

Earth quakes

Lib. 2. cap. 73.

OF THE
 Faculties of Simple MEDICINES,
 AS ALSO
 Of their Composition and Use.

The Twentie sixth Book.

The PREFACE.

The excellen-
 cie of medi-
 cines.

mongst the causes which wee term healthful, and other remedies which pertain to the health of man, and the expelling of Diseases, Medicines easily challenge the prime place; which (as it is delivered by Solomon) God hath produced out of the earth, and they are not to bee abhorred by a wise man; for there is nothing in the world, which sooner, and as by a miracle, asswageth the horrid torments of diseases. Therefore Herophilus called them fittingly administered, The hands of the Gods. And hence it was that such Physicians as excelled in the knowledg of Medicines, have amongst the Antients acquired an opinion of Divinitie. It cannot by words bee expressed what power they have in healing. Wherefore the knowledg of them is verie necessarie not onely for the prevention, but also for the driving away of Diseases.

CHAP. I.

What a medicine is, and how it differeth from nourishment

EE define a medicine to bee, That which hath power to change the bodie according to one or more qualities; and that such as cannot bee changed into our nature: contrarie whereto wee term that nourishment which may bee converted into the substance of our bodies. But wee define them by the word *power*, becaus they have not an absolute nature, but as by relation and depending upon the condition of the bodies by whom they are taken. For that which is medicine to one, is meat to another, and that which is meat to this, is medicine to that. Thus for example, Hellebore is nourishment to the Quail, but a medicine to man: Hemlock is nourishment to a Sterling, but poison to a Goose: the *Ferula* is food to an Ass, but poison to other cattel. Now this diversitie is to bee attributed to the different natures of creatures.

It is recorded in historie, that the same by long use may happen in men. They report that a maid was presented to *Alexander the Great*, who nourished with *Napellus*, and other poisons, had by long use made them familiar to her, so that the verie breath shee breathed was deadlie to the by-standers. Therefore it ought to seem no marvail, if at anie time it happen, that medicines turn into the nature and nourishment of our bodies: for wee commonly may see birds and swine feed upon serpents and toads without anie harm: and lastly,

-----*Serpenti Ciconia pullos*
Nurit, & per devia rura lacerta:
Illi eadem sumptis querunt animalia pennis.

The Stork with Serpents and with Lizards caught,
 In waelefs places nourisheth her brood:
 And they the same pursue, when as they're taught
 To use their wing, to get their wish'd-for food.

CHAP. II.

The differences of Medicines in their matter and substance.

The earth the
 mother of ri-
 ches and medi-
 ciness

VEN as the concealed glorie of worldlie riches lieth hid in the bowels of the earth, and depths of the sea and waters, as gold, silver and all sorts of metals, gemms and precious stones, furnish'd with admirable virtues; so wee may behold the superficies of this earth clothed with almost an infinite varietie of trees, shrubs, and herbs: where wee may contemplate and wonder at the innumerable diversities of roots, leaves, flowers, fruits, gums, their smels, pleasant tastes and colors, but much more at their virtues. This same mother-earth, as with her breasts, nourisheth marvellous distinct kindes of living creatures, various in their springing, encreas and strength. Wherein the immens goodness of God, the great Architect and framer of all things, doth most clearly appear towards man, as who hath subjected to our government, as a patrimonie, so ample and plentiful provison of nature for our delight in nourishment and necessitie of healing. Therefore the ancient Physicians have right-

rightly delivered, that all sorts of medicines may be abundantly had from living creatures, plants, the earth, water and air.

Medicines are taken from living creatures either whole and entire, or else the parts and excrements of them. Wee oft-times use in Physick whole creatures, as foxes, whelps, hedge-hogs, frogs, snails, worms, crabs, and other living creatures. Wee also make use of some parts of them, as the liver of a Wolf or Goat, the lungs of the fox, the bone of the stags heart, *Cranium humanum*, fat, blood, flesh, marrow, the cods of the *Castor* or Beaver, which is therefore termed *Castoreum*, and such other particles that are useful in Physick. Wee know also that there are some medicines taken from excrements, as horns, nails, hairs, feathers, skin; as also from urine, dung, spittle, honie, eggs, wax, milk, wool, sweat, and others of this kinde, under which wee may comprehend musk, civet, pearl, *aspisus*, and sundrie others of this nature.

What medicines taken from living creatures.

Wee take medicines from plants, both whole, and also from their parts, whether trees, shrubs, or herbs. For we oft-times use succorie, marsh-mallows, mallows, plantain, and the like, whole: but otherwhiles onely the roots of plants, their pith, wood, bark, shoots, stalks, leavs, flowers, seeds, fruits, juices, gums, rosines, mosses, and the like.

What from plants.

Things taken from the earth for the use and matter of medicine, are either earths, stones, or Minerals. The sorts of earth are Bole-Armenick, *Terra sigillata*, fuller's-earth, chalk, potters cläie, and such like. Stones, are the pumice, Marchisite of gold, silver, brass, marble, the load-stone, plaister, chalk, *sulphur vivum*, *lapis specularis*, and others. Metals and Minerals are gold, silver, tin, lead, brass, iron, steel, antimonie, ceruse, brimstone, Cinnaber, litharge of gold and silver, tuttie, true *Pompholix*, verdigreece, alum, romane vitriol, copras white and green, salts of sundrie kinds, both of Arsenicks, and such like.

What from the earth.

The following medicines are from fresh water, rain-water, spring-water, river-water, and all things thence arising, as water-lentile, common flags, water-lilies, water-mints, and all the creatures that live therein. From the salt-water are taken salt, *Alcyonium*, all sorts of coral, shels of fish, as also cuttle-bones, sponges, and all creatures of the sea. From waters mixt of salt and fresh, the herb *Androsace* (which grow's in plentie in the marshes at *Fontignan* and *Cape de Sete*) *Asphaltum*, which is found in the dead sea.

What from the water.

From the air proceed's *Manna*, therefore called *mel-aërium* (i. e.) honie of the air, and also all other kinds of dew that are useful in Physick, by reason of the virtues they receive from the sun which raiseth them up; from the air, whereas they make some staie; as also from the plants, whereupon they fall and reside.

What from the air.

CHAP. III.

The differences of simples in their qualities and effects.

ALL the mentioned sorts of simples are indued with one or more of the four faculties, whereof I now purpose to treat.

The first facultie common to all the rest, and as it were their foundation, flow's from the four first qualities of the prime bodies or elements, that is heat, coldness, driness, and moisture, and this either simple or compound, as one or two of these prime qualities exceed in the temper of the medicine, as may appear by this following.

The simple qualitie is either to Heat, Cool, Humect, Drie.

The compound, arising from two joined qualities, either Heat's and drie's, Heat's and moisten's, Cool's and drie's, Cool's and moisten's.

Heat moderate, Heat's, Attenuat's, Rarifie's, Open's the passages, Digest's, Suppurate's. Immoderate, Inflame's and burn's, Bite's, whence follow's Violent attraction, Rubrification, Consumption, Colliquation, An eschar, Mortification.

Cold moderate, Cooleth, Condenseth, Obstructeth. Immoderate, Congeal's, Stupifie's, Mortifie's.

Moisture moderate. Humect's, Lubricate's, Levigate's and mitigate's, Glue's. Immoderate, Obstruct's, lift's up into a flatulent tumor, especially if it be a vaporous humiditie.

Driness moderate, Drie's, Rarifie's, Attenuate's. Immoderate, Binde's, Contract's or shrink's, Cauffeth chops and scails.

The effect of these qualities is distinguished, and as *Galen* observ's digested into these orders, which wee term Degrees, so that by a certain proportion and measure, they may serv to oppugn diseases, as the same *Galen* affirm's. For to a disease (for example) hot in the second degree, no other medicine must be used then that which is cold in the like degree: Wherefore all simple medicines are Hot, Cold, Moist, or Drie; in the beginning, middle, or extreme, of the first, second, third, or fourth degree.

s. simp. & i. de aliment.

The Heat, Coldness, Moisture, Driness, of the first, second, third, fourth degree; is either Obscure, Manifest, Vehement or Excessive.

Examples of
the degrees
of heat.

An example of heat distinguished thus by degrees, may be thus; Warm water is temperate; that which is a little hotter, is in the first degree of heat; if manifestly hot, it is in the second degree; but if it heat more vehemently, it may be thought to come to the third; but if it scald, then we know that it hath arrived to the fourth degree of heat. Such also is the distinction of coldness, moisture, and driness by degrees. Wherefore it will be worth our labor, to give you examples of certain medicines, distinguished in their order and degree, by which you may the more easily give conjecture of the rest.

Simple Medicines hot in the

First degree. *Absinthium. Alibæa. Amygdala dulcia. Beta. Brassica. Chamæmelum. Ladanum. Semen Lini. Saccharum. Ervum, sive Orobus. Vinum novum*: Forold is judged hot in the second or third degree, as it is more or less years old.

Second degree. *Ammoniacum. Artemisia. Anethum. Fœnugræcum. Mastiche. Salvia. Marrubium. Melissa. Apium. Chamæpitys. Crocus. Ficus. Thus. Myrrha. Mel. Nuxmoschata. Pix utraque tum arida corporibus particulisque solidioribus aptior, tum liquida delicatioribus. Scilla. Sarcocolla. Bryonia. Sal. Opopanax. Ammi.*

Third degree. *Abrotanum. Agnus castus. Anisum. Asarum. Aristolochia. Chamædrys. Sabina. Calamintha. Cinnamomum. Iris. Juniperus. Hyssopus. Origanum. Sagapenum. Chelidonium majus. Ruta saliva.*

Fourth degree. *Allium. Cæpa. Euphorbium. Nasturtium. Pyrethrum. Sinapi Tithymalli. Anacardi. Chelidonium minus, Galeno.* Yet ours, by reason of the gentleness of the air, and moisture of our soil, is not so acrid. *Ruta sylvestris.* This, as all wilde and not cultivated things, become's more strong and acrid then the Garden-Rue.

Simples cold in the

First degree. *Atriplex. Hordeum. Cydonia mala. Malva. Pyra. Pruna. Rosa. Viola.*

Second degree. *Acacia. Cucurbita. Cucumis. Mala granata acida, dulcia enim temperata sunt potius. Plantago. Polyganum. Solanum hortense; nam id quod somniferum dicitur, vi refrigerandi ad papaver accedit.*

Third degree. *Hyoscyamus. Solanum somniferum. Portulaca. Sempervivum. Mandragora.*

Fourth degree. *Cicuta. Papaveris genera omnia, exceptò Corniculato; huic enim incidendi & abstergendi vim attribuit Gal. Certè nitrosum & salsum gustu percipitur, quò fit ut calidæ & sicca sit natura.*

Simples moist in the

First degree. *Buglossum. Viola. Malva. Rapum. Spinacia.*

Second degree. *Ammoniacum. Lactuca. Cucurbita. Cucumis. Melones. Portulaca.*

Simples drie in the

First degree. *Thus. Chamæmelum. Brassica. Sarcocolla. Crocus. Faba. Fœnugræcum. Hordeum integrum.*

Second degree. *Artemisia. Pix arida. Orobus. Plantago. Balaustia. Nuxmoschata. Lens Mastiche. Mel. Sal. Anethum. Myrrha.*

Third degree. *Abrotonum ustum. Absinthium. Myrtus. Acetum. Aloe. Miliun. Cuminum. Sanguis draconis. Galla. Sabina.*

Fourth degree. *Piper. Allium. Nasturtium. Sinapi. Euphorbium.*

The effects of
the first quali-
ties by acci-
dent.

Those we have mentioned have of themselves and their own nature all such qualities; yet do they produce far other effects by accident, and besides their own nature in our bodies, by reason of which they are termed accidental causes. This shall be made manifest by the following examples.

External heat by accident refrigerate's the bodie within, becaus it open's the passages and pores, and call's for the internal heat, together with the spirits and humors by sweats: whence it follow's, that the digestion is wors, and the appetite is diminished. The same encompassing heat also humect's by accident, whilst it diffuse's the humors concrete with cold: for thus Venerie is thought to humect.

The like may be said of Cold, for that it heat's, not by it's proper and native, but by an adventitious force: whereof you may make trial in Winter, when as the ambient cold, by shutting the pores of the bodie, hinder's the breathing forth and dissipation of the native heat. Whence it is inwardly doubled, and the concoction better performed, and the appetite strengthned. This same Cold also drie's by accident, when as it by accident repercuss'es the humor that was readie to flow down into anie part, and whilst it concrete's that which is gathered in the part: for thus, by the immoderate use of repercussers, an œdematous tumor proceeding from gross and viscid phlegm, degenerate's into a *scirrhus*.

Driness and Moisture, becaus they are more passive qualities, shew their effects by not so manifest operations, as heat and cold do; but in comparison of them they are rather to be judged as matter, or a subject.

CHAP. IV.

Of the second faculties of Medicines.

WEE term those the second faculties of Medicines, which have dependance upon the first, which are formerly mentioned, as it is the part of Heat to Rarefie, Attract, Open, Attenuate,

Attenuate, Levigate, Cleanf. Of Cold, to Condens, Repercuss, Shut up, Incrassate, Exasperate, Constipate. Of Moisture, to Soften, Relax. Of Driness, to Harden, Stiffen.

Hence wee term that an attractive medicine, which hath an attractive facultie, as on the contrarie, that a repercussive, that repel's; a detergent, that which cleanses viscous matter. Wee call that an Emplastick medicine, which not onely shut's up the pores of the bodie, but reduce's the liquid bodies therein contained to a certain equalitie and substance. Thus also emollients, relaxers, and the rest, have their denominations from their effects, as wee shall declare hereafter.

C H A P. V.

Of the third faculties of Medicines.

THe third facultie of medicines depend's for the most part upon the first and second faculties, sometimes conjoined, otherwhiles separate. Also sometimes it follow's neither of these faculties, but a certain propertie and inexplicable qualitie, which is onely known by experience. Now the operations of this third facultie are to agglutinate, to fill with flesh, to cicatrize, to assuage pain, to moov or staie the urine, milk, seed, the courses, sweats, vomits, and perform such like operations in, or about the bodie.

Thus the generation of flesh is produced by the concurr of two faculties, that is, of drying and cleansing. But driness and astriction produce a glutinating and cicatrizing facultie. A hot and attenuating facultie cauffeth sweats, moov's urine, the courses, and the like in the bodie; but contrarie faculties retard and stop the same.

To mitigate pain, proceed's onely from the first facultie, to wit, from heat, or a moderately heating facultie; to procure rest, from cold onely, or coldness joined with som moisture. But to procure vomit, proceed's neither from the first nor second facultie, but from a certain occult and essential propertie, which is naturally implanted in Agarick, and other nauseous and vomitorie medicines.

C H A P. VI.

Of the fourth facultie of Medicines.

THe fourth facultie of medicines is not of the same condition with those that are formerly mentioned; for it depend's not upon them, or anie other manifest or elementarie qualitie, but on an occult propertie of the whole substance; by means whereof, it work's rather upon this then that part, upon this rather then that humor. Wherefore Physicians cannot by anie reason finde out this facultie, but onely by experience, as wee have said a little before of medicines procuring vomit. Hence it is, that names are given to those medicines from those parts that they chiefly respect: For they are termed Cephalicks, which respect the head; as, Betonie, Marjarom, Sage, Rosemarie, *Stechas*. Pneumonicks, which respect the Lungs: as, Liquorice, sweet Almonds, Orris, Elecampane. Cordials, that strengthen the heart: as, as Saffron, Cinnamom, Citrons; but chiefly their rindes, Bugloss, Coral, Ivorie. Stomatical, which respect the stomach, and the orifice thereof: as, Nutmegs, Mint, Anis, Maltick, Pepper, Ginger. Hepaticks, which respect the Liver: as, Wormwood, Agrimonie, Spiknard, Succorie, Sanders. Spleneticks, which have relation to the spleen: as, as Time, *Epithimum*, Broom flowers. Cetrach, Capers, the bark of their roots, the bark of Tamarisk. Diureticks, such as respect the kidneys and urinarie passages: as, the roots of Smallege, Asperagus, Fennel, Butcher's broom, the four greater cold seeds, Turpentine, Plantain, Saxifrage. Arthnicks, or such as strengthen the joints: as Cowslips, *Chamepytis*, Elecanipane, Calamint, Hermodactils, and the like.

The fourth facultie of medicines depend's onely upon an occult propertie.

To this rank may bee referred purging medicines, which, furnished with a specifick propertie, shew their efficacie on one humor more then another humor, and that impact more in one part then in another. For thus Agrick chiefly draw's phlegm from the head and joints, Rubarb draw's choller chiefly from the Liver, and hurt's the kidneys. But let us here forbear the consideration of such things, as not appertaining to Surgery. But som medicines of this kinde are furnished with one simple facultie, other som with more, and those contrarie, whereof you taste may give you sufficient notice: for Rubarb at the first touch of the tongue is found acrid and hot; but when you com to chew and throughly to taste it, you shall finde it to partake of an earthlie astriction. Therefore becauf tastes give notice of the faculties of medicines, therefore I have thought good to treat of them briefly.

C H A P. VII.

Of Tastes.

Lib. I. simpl.

Differences of tastes.



Aste, as Galen deliver's according to Aristotle and Theophrastus, is a certain concoction of moisture in driness, caused by means of heat, which wee know or discern by the tongue well tempered, and fittingly furnished with spittle and his nervs. There are nine differences of tastes; for there are three judged hot, to wit, the acrid, bitter, and salt: three cold; the acid, austere, and acerb: three temperate; the sweet, the oilie or fat, and the insipide. Now they are thought so manie, according to the different degrees of concoction; for it appear's greater in hot tastes, and as it were a certain assation, but less in cold, but indifferent, and as it were an elixation in things temperate: therefore Nature observ's this order in the concoction of sapid bodies, that at the first the acerb taste should take place, then the austere, and lastly, the acid: from these (as it were) rudiments of concoction, arise's an insipid, then an oilie, then a sweet perfectly concocted and temperate. This concoction exceeding the bounds of mediocritie, there arise's a salt taste, then a bitter, and then an acrid with the highest excess of almost a fierie heat. Yet I would bee thus understood, that all things that are by nature sapid, do not alwaies ascend to the height of sweetness by the degrees of acerbitie, austeritie, and aciditie, as though it were of absolute necessitie, that all things that are sweet, they should bee acerb, austere, and acid. For there are manie things found, especially in plants and their fruits, which when they shall arrive to their perfection and maturitie, are acid, bitter, or salt, but being yet unripe, and not com to full perfection, they have a certain sweetness, which afterwards, by a further digestion, or perfection and concoction, acquire a bitter, austere, or acid taste. For thus bitterness in Wormwood and Aloës, acrimonie in Pepper or Pellitorie, is a perfection of nature, a full ripeness and perfect concoction, and not an excess of heat in that species. Also acerbitie and austeritie is a perfection of nature, and not a rudiment in Services and Cornelians; aciditie or tartness is also in verjuice. But in verie manie things it so fall's out, that the sweet or fattie tastes becom so, and acquire their perfection by concoction, as in Grapes, Figs, Pears, Apples, and almost all other such fruits, as wee usually feed upon. Therefore I will now treat of each of them in order, first beginning with cold tastes.

The acerb taste.

The acerb taste is cold and terrestrial, and of a substance absolutely gross, being less humid than the austere, but much less than the acid. It notable cool's and drie's, it condensat's, binde's, repel's, especially from the superficies, and it also exasperate's; this taste reside's, and may bee found in Pomegranat pills, Galls, *Sumach*, and Cypriss nuts.

The austere.

The austere is nighest in temper and effects to the acerb, but somewhat moister; for the acerb absolutely consist's in a terrestrial and cold substance. Wherefore this, increased by a degree of concoction, acquire's more store either of heat alone, or elf of moisture alone, or elf of both together: moisture, I say, and that is either aièrie; or elf watrie. Therefore if these fruits, which before their maturitie are acerb, have an accession of heat, then do they becom sweet, as you perceiv by Chesnuts; but if there bee an accession of moisture onely, and that more gross, of acerb they becom austere: for both the tastes are in the like degree of cold, but the austere is the moisture. But if to the same frigiditie remaining in fruits, a certain subtle humiditie accrew, then is there caused an acid taste. But if they have an accession of a watrish moisture and heat, they will acquire a sweet taste, or elf oilie, if the humiditie accrewing with the heat bee aièrie.

I have judged it requisite to admonish you hereof, that you might know by what means sapid bodies mitigated becom sweet of acerb, as it were by these interposed degrees of austeritie, aciditie, and oiliness, as they acquire a various accession of heat and moisture separately, or conjunctly.

Now by all that wee have delivered, you may gather, that all acerb and austere things are cold and drie; and as they are cold, they repel and hinder defluxions: as they are drie and terrestrial, they condensate, incrassate, constipate, and straiten the passages; yea, and they also cicatrize: but acerb things perform this far more powerfully, as those which are absolutely terrene, cold, and drie, not partaking of moisture, or water. Now austere things consist (as it were) in a middle matter, that is, in a more dilute terrene bodie, as it is apparent in Services, unripe Grapes, Cornelians, Medlars, Crabs, wilde Pears, and all sort of unripe fruits, whence it is termed a crude taste.

The acid taste.

The acid taste is of a cold and watrish nature, but most subtle, by benefit whereof it penetrate's, and divide's almost as powerfully as the acrid. It incide's or divide's, attenuate's, bite's, cleanse's, open's obstructions, repel's and drie's. For by the means of the deep piercing cold, it repel's all defluxions; and by the drying facultie, which is strong even in it's watrie consistence, it staie's and stops all bleedings, the hæmorrhoides and dysenteries. The force thereof is chiefly manifest in Vineger, as also in the juice of Citrons, Sorrel, Cherries, Berberies, and the like. And this is the nature of cold tastes, now it is time wee speak of such as are temperate.

The

The insipid is improperly termed a taste, as that which is rather a privation of tastes, The insipid. it is in some sort cold, and of a verie watrish and gross nature, it inspissate's, constipate's, and stupifie's. This kinde of taste is chiefly manifest in Water, and next in Gourds, Citruls, and manie such like things.

The oilie taste is hot, humid, and aërie; therefore it humect's, relaxate's, mollifie's, lubricate's. The oilie. Of this kinde are oil, butter, fat which is not rauced by age, nor acrid by nature, as that of Lions and Foxes.

The sweet taste is made by a moderate and well concocting heat, consisting in a matter The sweet. more tenuious and hot then the insipid, but in somewhat more gross then the oilie, from which in the first qualities it doth not differ; therefore it is of a hot, aërie, and temperate nature. Therefore everie sweet thing detergeth, levigate's, concoct's, ripen's, relaxe's, and affwageth pain. Examples of this taste may bee had in Sugar, Honie, Manna, sweet Almonds, Milk, and other like. Now let us com to hot tastes.

The salt taste is hot and astringent, less earthie then the bitter, as that which reside's as it The salt. were in a middle matter. For it proceed's from an earthie driness, which is formerly torrifed and attenuated by the force of heat in a watrie humiditie. Wherefore that which is salt contract's the pores, cut's, cleanse's, digest's, or rather drie's up the humors by the driness thereof, without anie manifest sens of heat, whence it is, that it vindicate's from putrefaction. Under this kinde are contained all sorts of salt; as salt-peter, *niter*, *sal Ammoniacum*, *sal gemme*, common-salt, sea-water, and such other like.

The bitter taste is hot, earthie, and drying; for the matter thereof is gross and earthie, The bitter. which the abounding heat hath torrifed and dried up. Wherefore bitter things taken inwardly, purge and carrie away superfluous humors: and outwardly applied, they mundifie and deterge ulcers, they open the mouths and passages of the veins oft-times by their abstergent facultie; whence it is that they moov the courses and hæmorrhoides. The principal things indued with this taste are Aloës, Gall, Wormwood, Gentian, the lesser Centaurie, Coloquintida, Fumitorie, Soot, and such like.

The acrid taste is hot, of a subtil and siërie nature; for it is kindled of a hot, subtle, and The acrid. drie matter, neither can it consist in anie other. Therefore that which is acrid, heat's, prick's or bite's the mouth by the acrimonie, it heat's, and oft-times burn's, it peneate's, open's the passages, attenuate's, attract's and draw's forth gross humors, evacuate's and send's forth urine, the courses, and sweat: besides it oft-times is septick, blistering, and escharotick; and lastly, burning, and caustick. The septick and putrefactive things are sublimate, *Chamælen*, the juice of *Thapsia*. The vesicatories are Dittander, Cantharides, Crow-foot, Mustard, Pellitorie of Spain, *Euphorbium*. But the caustick and escharotick are Lime, Oke-ashes, and the like.

But wee know medicines not onely by the taste, but also by our other senses, as touch, sight, hearing, smell. And as by the taste, so also by these wee judg of and trie the goodnes of medicines, and distinguish the true legitimate from the adulterate. The touch judge's what are hot and cold, moist and drie, rough and gentle, or smooth, hard and soft, brittle or friable, glutinous and viscid, drie or slipperie. Wee approov of the goodnes of medicines by their color, brightness, or duskiness, whereof the eie is judg; for wee commend that Senna which is somewhat greenish, but dislike the whitish: as also wee like well of such Cassia as is black both within and without, shining and full, and not drie and shrunk up. Yet the judgment of the first qualities, by the color is deceitful, or noite at all; for such things as are white, or the color of Snow, are not therefore cold: for sundrie of them are hot, as Lime. Neither are red things to bee therefore judged hot; for Roses cool. Also medicines are chosen by the smell; for such as have a good, fresh, and natural smell, are commonly hot, and in their perfect vigor. On the contrarie, things that want smell are for the most part cold and evanid. By hearing wee distinguish things full from such as are emptie: thus wee chuse Cassia, which shaken, make's no nois with the grains or seeds rattling in it. Hitherto wee have explained the first, second, third, and fourth faculties of medicines in general, and have shewed how they may bee found out: now must wee more particularly treat of their second and third faculties, becauf by reason of these they chiefly com into use in Surgerie: Yet let mee first briefly shew by what means and arts they may bee prepared.

CHAP. VIII.

Of the preparation of Medicines.

TO prepare medicines, is nothing elf, then by Art to make them more commodious for use and composition, whereby they are either made

More gentle. By *bruising*; as when medicines are broken by striking and rubbing or grinding in a mortar, and that either of Brass, Iron, Lead, Glafs, Wood, Marble, and other like. Considering the thing which is to bee beaten. The strength or force wherewith it must bee performed. The time or space. The situation. The things to bee added. The consistence which the thing beaten must bee of.

More strong

By *searsing*; whereby wee separate the pure and finer from the more impure and gross, which is don by sifs and searles, made of Wood, Parchment, Horf-hair, Silk, Lawn. Wherein is to bee noted, that the same consideration is to bee had in searsing, as in beating; therefore such things as are to bee finely powdered, must bee searsed in a finer searf: such as are more gross, in a courser.

More pleasant

By *dissolving* or *mollifying*; Which is nothing elf but a dissolving of a simple or a compound medicine, of a thick or hard consistence, either into a mean consistence, or a little more liquid or soft, which is performed either by heat onely for by heat gums and horns are mollified: or by liquor, as by vineger, water, wine, juice of Limmons, &c.

More wholesom

By *desiccation* or *hardening*; which is nothing elf, but the consuming of the superfluous and hurtful moisture; and this is performed, either by the Sun, or by Fire. By *infusion*; which is nothing elf but the tempering or macerating of a medicine a little beaten or cut, in som liquor appropriate and fit for our purpose; as in Milk, Vineger, Water, oil, and the like, so long as the nature of the medicine require's. To Infusion, Nutrition may bee reduced, which is nothing elf, but as it were a certain accretion of the medicine, by beeing moistened, macerated, rubbed, or groun'd with som moisture, especially with heat. By *burning*; that is, by consuming the humiditie which is in them. And that, either that they may bee the better powdered, beeing otherwise too glutinous, or that they may laie aside their gross effence, and becom of a subtiler temper; or that they may put off, or partly lose som fierie qualitie, as acrimonie, *Gal. lib. 4. cap. 9. simplicium*. Or that they may acquire a new color. Now all things are burnt, either alone; as, such things as have a fattie moisture, as hairs, sweatie wool, horns: Or elf with som combustible matter; as sulphur, alum, salt, barlie, &c.

More fit for mixture

By *boiling* or *elioxation*; which is performed by a humid heat; as burning is by a drie, and that either that wee may increas the weak faculties of such medicines as are boiled, by boiling them with such as are stronger; or elf to weaken such as are too strong, or elf wholly to dissipate such as are contrarie: Or that one facultie may arise of sundrie things of different faculties beeing boiled together, or for the longer keeping them, or bringing them to a certain form or consistence: All which are don, by the Fire, or Sun. By *washing* or *cleansing*; whereby the impuritie of the medicine is wasted away or cleansed, and such things are either hard: as metals, itones, parts of living creatures, condensed juices, and otherlike: Or soft; as Rosins, Gums, Fats, Oils. And these ought first to bee finely beaten, that the water may penetrate in all their substance. Or to bee dissolved, and cast into a vessel filled with water, and so stirred, and then suffered to subside, so that the fat may swim aloft: And this must bee don so long that the water retain nothing thereof in color, smell, or taste.

C H A P. IX.

Of repelling, or repercussive Medicines.

Astringents are understood by the name of repellers.

The differences of repercussives.



Repelling or repercussive medicines are cold, and of gross and earthie parts; by which name also astringent medicines are understood, becauf they hinder the falling down of the humors upon the part. Repercussives are such, either of their nature, and of themselves, or elf by accident, beeing not such of their own nature. These which of themselves are such, are of two kindes; for som are watrish and moist, without anie astringitive facultie, which almost wholly proceed's from an earthie essence; wherefore that facultie of repelling which they possess, they have it wholly from coldness. Of this kinde are lettuce, purslain, sow-thistle, duck's-meat, kidnie-wurt, cucumbers, melons, gourds, hous-leek, mandrag-apples, night-shade, henbane, and the like, which cool powerfully, and unless they bee taken away before the part wax blackish, they extinguish the natural heat. Other som are of an earthie essence, and therefore astringitive; but yet som of these are hot, other som cold. Such things as are cold of temper, and of an earthie consistence, are properly and truly termed repellers. Of these, som are simple, other som compound: the simples are plaintain, vine-leavs, leavs of roses, okes, brambles, cypress, berberies, *sumach*, all unripe fruits, verjuice, vineger, red wine, the juice of fower pomegranats, *acacia*, the juice of barberries, and quinces, *hypocistis*, pomegranate-pills, oke-bark, the flowers of wilde pomegranats, the meal of barlie, beans, panick, oats, millet, *orobus* mixed with juices in form of a pultis, bole-armenick, *sanguis draconis*, cerus, litharge, *terra sigillata*, fuller's-earth, chalk, marl, the load-stone, lead, corals, all marchisites, antimonie, *spodium*, true *pomphylix*, all sorts of earth, and other things of the like nature.

Now compound things are *Oleum rosaceum*, *omphacinum*, *mirtillorum*, *papaveris*, *cidoniorum*, *nenupharis*, *unguentum rosatum*, *album rhasis*, *camphoratum*, *emplastrum diacalcitbeos*, dissolved in vineger and oil of roses, *desiccativum rubrum*, *populeon*, *emplastrum nigrum seu retrapharmacum* of Galen's description, *empl. contra rupturam*, *de cerusa*, *pro matrice*. All such cold repercussives

repercussives are more effectual if they bee associated with tenuitie of substance, either of themselves, or by mixture with som other things: for to this purpose wee often mix vinegar, camphire, and the like things of subtil parts, with repercussives of gross parts, that they may serv as *vehicles* to carrie in the repercussive's facultie. Repercussives of gross parts and hot, are wormwood, centorie, gentian, agrimonie, favin, coriander, mint, baileaves, cardamomes, *calamus aromaticus*, aloës, spiknard, saffron, nutmeg, cinnamom, amber, salt, alum, coporas, *sulphur*, *oleum absinthinum*, *mastichinum*, *nardinum*, *costinum*, *ceratum*, *Gal. stomachicum*, *santalinum*, *emplastrum diacalcitheos*. But such things as repel by accident, are bandages, compresses, linnen-cloths, and rowlers of all forts, cafes, cauteries, blood-letting, cupping, painful frictions in the opposite parts, and other such like things as are properly said to make revulsion. The use of repercussives is to force back the humor which flow's from anie other place into the part, and thus they mitigate the heat of such inflammation as that defluxion of humors hath caused, yea, oft-times to asswage and help pain, the fever, abscess, malign ulcers, and mortification. Such repercussives must alwaies bee so opposed to the disease, that respect may bee had to the temper, complexion, and particular nature of the part whereto they are applied; for all parts cannot equally bear the like force of repercussives, as nervous and other spermatick and cold parts. Furthermore, there are som parts whereto wee may by no means applie repercussives; as the groins, arm-pits, and those glandules or kernels which are behinde the ears and brain, lest the humor should retire back into som of the principal parts: the like reason is also of bodies; for the bodies of women, children, eunuchs, cannot endure so strong repercussives and the like excess of cold as the manlie and vigorous bodies may. Besides, everie disease require's not repercussives, for if the bodie bee repleat with ill humors; if it bee plethorick; the use of repercussives, unless after general purgation, cannot bee safe; as neither if the humor, which is in motion, shall bee venenate, gross, acrid, critical, or shall caus great pain in the part, for then on the contrarie wee must rather make use of attractives. But now if the disease bee great, weak repercussives will avail nothing against it; as lettuce against a great inflammation; and thou shalt do ill if thou set upon a small defluxion with powerful repellers; for by that means the skin is straitned, and the passages thereof stop't, whereby the inflammation is increased, or elf brought to a *scirrhus*. Wherefore let the Surgeon have a care that hee temper the force of his Repercussives according to the magnitude of the disease.

Why things of subtil parts are oft-times mixed with repercussives.

Repellers by accident.

When, and to what parts repercussives must bee applied.

CHAP. X.

Of attractive medicines.

AN attractive medicine is contrarie to the repeller; the Greeks call it *Helicticum*, it is of a hot and thin substance, whereby it draweth forth into the superficies of the bodie that which lieth hid in the center, although sometimes it doth it by an occult qualitie; other-whiles also by accident, as by the acrimonie. Those things which by a manifest qualitie do attract, are either simple or compound.

What an attractive medicine is.

The simple are *Bryonia*, *allium*, *cepa*, *porrum*, *arastolochia*, *hermodactyli*, *ciclamen*, *lilium*, *sigillum beate Mariæ*, *arum*, *asarum*, *asphodelus*, *gentiana*, *pyrethrum*, *ruta*, *sabina*, *calamentum*, *omnes tithymalorum species*, *viscum*, *abrotanum*, *anagallis*, *urtica*, *ranunculus*, *struthium*, and such like: *Ammoniacum*, *bdelium*, *gabbanum*, *sagapenum*, *euphorbium*, *asphaltum*, *cinis è fece vini vel aceti*, *calx viva*, *sulphur*, *sal ammoniacus*, *omnis salis species*, *auripigmentum*, *oleum vetus*, *adeps leonis*, *ursi*, *canis*, *anseris*, *viperæ*, *ranarum*, *axungia porci vetustate acris*, *aut attritu rotarum*. *Composita verò*, ut *oleum de spica*, *philosophorum*, *de terebinthina*, *de croco*, *de scorpionibus*, *rutaceum*, *vulpinum*, *laurinum*, *anethinum*, *de vitriolo*, *unguentum Agrippæ*, *aragon*, *feu auxiliare*, *martiatum*, *enulatum*, *theriaca*, *mithridatum*, *empl. de meliloto*, *diachylon magnum* & *parvum*, *oxycroceum*, *divinum*.

Attractives by a manifest qualitie.

Those things which draw by a secret propertie in nature, as are the load-stone, quicksilver, pyonie, amber, all antidotes and triacles that are remedies against the biteings of venomous beasts, and all purging medicines.

By an occult.

These which draw by accident, perform it otherwise then of their own nature, they have that qualitie out of putrefaction and corruption, as dove's dung, goat's dung, cow-dung, man's dung, and all kinde of dungs: also leven, old cheef, and such like.

By accident.

Cupping glasses, leeches, syringes, rougher and harder frictions, sucking, pain, straight ligations, cauteries do also draw, but after a different manner from them spoken of before.

Attractive medicaments must neither burn nor discufs, and beeing yerie strong and sharp, they should bee tempered and mixed with oil of roses, and other lenitives: but to weak ones should bee added oil of baies, *calx viva*, and such like to strengthen them. The use of attractives is to draw poison toward the skin, and to hasten forward critical abscesses;

Their use.

and they make those parts which are benumbed and consumed, to have life, they restore the refrigerated parts by drawing thither the spirits; they draw forth the viscous filth of malignant ulcers that lie hid in the nerves, and hollow passages of them; they also draw out scales of bones, splinters of wood, nails, thorns, arrows, and that matter which is impacted in hardened inflammations.

CHAP. XI.

Of resolving Medicines.

What a resolving medicine is.
The differences thereof.



That is called a resolving medicine, which by heat, and the tenuitie of his substance openeth the pores, attenuate's the humors, dissipate's and diseusseth by evaporating the unprofitable matter. There are two sorts of these kindes of medicines; the one is called *Arcoticum* or rarifying; the other is termed *Diaphoreticum*, or digesting.

The *Arcoticum* by a mean heat, and not drie, and indued with a tenuitie of substance, openeth and relaxeth the skin, and draweth forth the matter shut up under it, whereby it may ease pain, like as Anodynes, because it doth not much depart from a temperate heat.

But the *Diaphoreticum* being much hotter, whatsoever sticketh in the part being there impacted, it doth by thin vapor insensibly dissipate: therefore the acrid and hot things are in this case to be made use of rather than the attractives, because that cold and grossness is more difficulty to be digested, and the length and involution of the waies being to be considered. The *Arcotick*, which we may call weak resolvers, are either simple or compound.

The simples are these, *Bismalva tota*, *parietaria*, *adanthum*, *mercurialis*, *ebulus*, *valeriana*, *rosmarinus*, *salvia*, *thymus*, *chamemelum*, *melilotum*, *anethum*, *farina bordei*, *tritici*, *seminis lini*, *fenugraeci*, *nigella*, *furfur*, *adeps gallinae*, *anseris*, *anatis*, *cuniculi*, *vituli*; almost all metals unless such as are acrid. The compounds are *Oleum chamemolinum*, *aneibinum*, *liliaceum*, *catellorum*, *lumbricorum*, *Keirinum*, *de vitellis ovorum*, *de tritico*, *amygdalarum dulcium*, *Unguentum de althea*, *empl. diachylum*, *ireatum*. *Diaphoreticks* or *digestives*, are also both simple and compound: The simple are *Aristolochia*, *enula campana*, *iris*, *capa*, *scylla*, *figillum Salomonis*, *figillum beatæ Mariæ*, *bryonia*, *panis porcinus*, *dracunculus*, *asphodelus*, *origanum*, *mentha*, *pulegium*, *sabina*, *serpillum*, *calamentha*, *hyssopus*, *urtica*, *arthemisia*, *lavendula*, *chamepytis*, *anisum*, *feniculum*, *cuminum*, *piper*, *nux moschata*, *coriandrum*, *baccæ lauri* & *juniperi*, *farina*, *fabarum*, *lupinorum*, *orobi*, *mili*, *frumenti*, *furfur*, *mica panis*, *acetum tepidum*, *oxycratum*, *vinum vetus aut aromaticum*, *mel*, *aqua vite*, *muria*, *adeps tauri*, *equi*, *leonis*, *canis*, *hirci*, *medulla cervi*, *cruris bovis* & *arietis*, *ammoniacum*, *galbanum*, *opopanax*, *sagapenum*, *myrrha*, *bdelium*, *thus*, *terebinthina*, *pix nigra*, *ladanum*, *styrax*, *calamita*, *beziouinum*, *stercus caprinum*, *celumbinum*, *caninum*, *bubulum*, & *aliæ stercorum species*.

Compound *diaphoreticks* are *Oleum amygdalarum amararum*, *Juniperinum*, *laurinum*, *de scorpionibus*, *irinum*, *costinum*, *nardinum*, *de terebinthina*, *de croco*, *canabinum*, *raphaninum*, *de cucumere agresti*, *vulpinum*, *rutaceum*, *philosophorum de lateribus*, *de euphorbio*, *de tartaro*, *de petroleo*, *de kerva*, *sive ricininum*, *unguent. Agrippæ*, *aragon*, *martiatum*, *enulatum*, *empl. de Vigo*, without addition, and with addition, *oxycroceum*, *diacalctheos*, dissolved in a digesting oil to the form of a cerat.

Arcoticks are profitably used in the increase and state of superficial tumors.

The use of diaphoreticks.

But *Diaphoreticks* are not to be used in the increase of tumors, unless some astringent be added, lest by their more strong digestion, they should draw and increase the defluxion: but when the tumors decline, they are then onely to be used in the parts chiefly where the skin is dense and hard, and when the humor is cold and gross, and lying hid deep in the bodie, so that the virtue of medicaments can hardly come thereto: but consideration is to be had of the parts to which resolutives are to be applied; for you may not apply relaxers or diaphoreticks to the liver, spleen, stomach, or bowels, unless you add some astringents, of which a great part must be aromatics.

To the parts, where sense is more dull, may be applied the stronger diaphoreticks, but those parts which are indued with a more exquisite sense, as the eye and the nerves, to them we must apply weaker. When the matter is gross and cold, things cutting and attenuating, and then emollient are to be used, and so by degrees come to diaphoreticks; otherwise that onely is resolved which is the most subtil of unprofitable matter, the grosser becoming concrete and hardened. But if the part be afflicted with a continual defluxion, so that there may be danger of a gangrene or sphacel, it is not lawful then to make use of resolvers, but you must in the place where the humor flows, divide the skin by scarification, as it is most learnedly noted by *Hollerius* in that profitable book of his left to posteritie, whose title is, *De materia Chirurgica*.

C H A P. XII.

Of Suppuratives.



Suppurative medicine is said to bee that, which shutting the pores, and preventing transpiration by his emplastick consistence, increaseth the matter of native heat, and therefore turneth the matter cast out of the vessels into pus and sanies. It is of nature hot and moist, and proportionable to the native heat of the part to which it is applied, and of an emplastick consistence, that so it may hinder the native heat from being exhaled; in which respect it differeth from emollients and malasticks, of which wee shall speak hereafter. There be two kinds of suppuratives, for som do it of themselves, and by their proper qualitie; others by accident. Those things which by their own strength do bring to suppuration, are either simples or compounds.

Simples are *radix liliorum, cepa, allium, malvarum omnium folia & semina, buglossum, acanthus, senecio, viola, parietaria, crocus, caules, ficus, passula mundata, farina tritici, farina volatilis, farina hordei excorticati, lolii, seminis lini & senugræci, galbanum, ammoniacum, styrax pinguis, ladanum, viscum aucupatorium, ibus, pix, cera, resina, colla, adeps, suillus, vitulinus, vaccinus, caprinus, butyrum, vitellus ovi, æspus humida, stercus suillum, columbinum, caprinum, pueri.*

Compounds are *oleum liliorum, lumbricorum, de croco, unguent. basilicum, emplast. diachylon commune, magnum, de mucilagibus.*

Those things do suppurate by accident which work it onely by the means of an emplastick consistence: for so often-times astringents, becaus they are of earthie and thick parts, are found to suppurate; such are *unguentum de bolo nutritum*, and such like. Such also are those which by their coldness keep the heat in, and shut the pores. Hence it is that the qualities of sorrel are commended to generate pus: for whilst it keepeth the heat within, it increaseth his effects, to the thickning of the suppurable matter, and the overcoming other rebellious qualities. Wee use things ripening in great inflammations, whose growth wee cannot hinder with repellers, or increas with resolvers or discussers.

C H A P. XIII.

Of Mollifying things.



That is defined to bee a mollifying medicine, which by a stronger heat than that which is proper to suppuratives, without anie manifest qualitie of drying or moistning, again malaxeth or softeneth hardned bodies: wherefore this differ's from that which suppurate's, becaus that they bee hot in the first or second degree, according to the severall temper of the bodie, or part to which it is applied, working rather by the quantitie of heat, then the qualitie: contrariwise, that which mollifieth being indued with a greater heat, rather worketh by the qualitie of the heat, being otherwise in driness and moisture temperate.

Although as manie things agree together in som respects, though of a divers nature; so manie emollients are such as are hot in the first degree, and drie in the second and third, that so they may the better dispers and diffuse that which is congealed, by taking away a little of the humiditie, which is contained within the part affected: but not by exhausting it wholly by the violence of heat or driness: for hereon would follow a greater hardness.

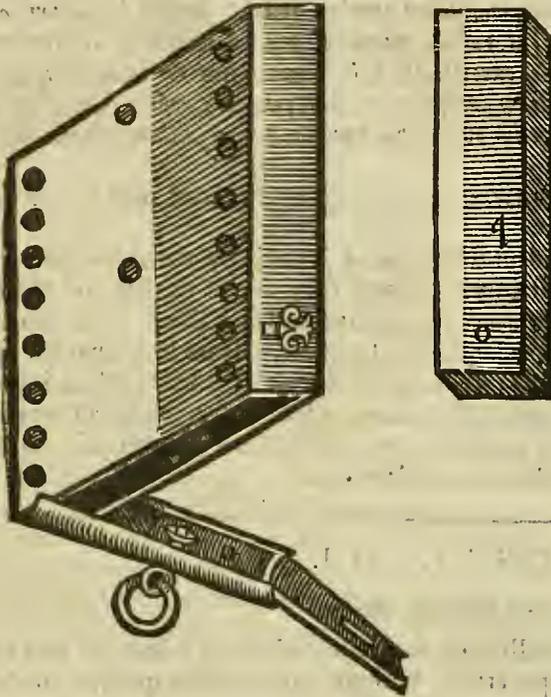
Things mollifying, are either simple or compound; and these again strong or weak. The weak are; *Radix liliorum alborum, cucumeris agrestis, althææ, folia malvæ, bismalvæ, liliorum, anetbi summitates, viola, branca ursina, semen malvæ, bismalvæ, lini, senugræci, carici pingues, passula mundata, pedum, capitum, intestinorum vervecinorum decoctum, adeps ex junioribus & castratis, domesticis; fæminis animalibus, adeps suillus, vitulinus, hædinus, caprinus, bubulus, vulpinus, gallinæus, anserinus, anatinus, olorinus, efficacis.* The weaker are things more gentle; as, *Butyrum, lana succida, cera pinguis, vitellus ovi, medulla ex ossibus, cervina, ovilla, caprina.* The compound are oil, wherein are boiled mollifying herbs; as, *Oleum liliorum, chamemelinum, amygdalarum dulcium.* Stronger emollients are, *Acetum, adeps taurinus, ursinus, cervinus, leoninus, pardalinus, apri, equi sebum, pinca, picea, abietina, terebenthina, ammoniacum, bdellium, styrax, galbanum, ladanum, propolis, opopanax, ung. de althæa, emp. diachylon commune & magnum, de mucilagibus, ceroneum, œocrocum, Joannis de vigo.*

Wee use emollients in scirrous tumors of the muscles, or in the lips of ulcers, in anie of the limbs, bellie, glandules, bowels; by reason of a gross, cold, and viscos matter; either phlegmatick, or melancholick. Yet those tumors which com of melancholie, commonly turn to cancers, which are exasperated by mollifying things. On the contrarie, such as proceed from a phlegmatick matter, are brought to an equalitie of consistence, by the use of emollients. Furthermore; there are three things observable in the use of emollients: the first is,

Things obser-
vable in the
use of emolli-
ents.

duly to consider how much the affected parts differ's from his proper and naturall temper and proportion, that so wee may applie an equivalent remedie. The second is, that wee distinguish the natures of the parts. The third is, that wee artificially gather after what manner this mollifying must bee performed; that is, whether wee should mingle with the emollients, deterfive or discussing medicines. For there are manie desperate scirrous tumors, that is, such as cannot bee overcom by anie emollient medicine, as those which are grown so hard, that they have lost their sens; and thereupon are becom smooth and without hairs. Here you must observ, that the part somtimes becom's cold in so great an excess, that the native heat plainly appear's to languish, so that it cannot actuate anie medicine. That this languishing heat may bee refuscitated, an iron-stove shall bee set neer to the part, where- in a good thick piece of iron heated red hot shall bee enclosed, for so the stove will keep hot a long time.

The figure of an iron stove.



A. The case of the stove.
B. The iron-Bat to bee heated.
C. The lid to shut the stove.

CHAP. XIV.

Of Deterfives, or Mundificatives.

ADeterfive is defined to be that which doth deterge or cleanse an ulcer, and purge forth a double kinde of excrement; of the which one is thicker, which is commonly called *sordes*, which is drawn forth from the bottom of the ulcer, by the edificatious qualitie of the medicine, the other is more thin and waterie, which the Greeks call *Ichor*, the Latins *Sanies*, which is taken away by the driness of the medicine; and therefore *Hippocrates* hath well advised, that everie ulcer must bee cleansed and dried.

Deterfives.

Of Deterfives, som are simple, som compound, som stronger, som weaker. The simple are either bitter, sweet, or sour: the bitter are *Gentiana*, *Aristolochia*, *iris*, *enula*, *scilla*, *serpentaria*, *centaurinum minus*, *absinthium*, *marrubium*, *perforata*, *abrotonon*, *apium*, *chelidonium*, *ruta*, *hyssopus*, *scabiosa*, *arthemisia*, *cupatorium*, *aloë*, *fumus terræ*, *hedera terrestris*, a *lixivium* made with the ashes of these things, *lupini*, *orobus*, *amygdala amara*, *faba*, *terebinthina*, *myrrha*, *mastiche*, *sagapenum*, *galbanum*, *ammoniacum*, the gals of beasts, *stercus caprinum*, *urina bene cocta*, *squamma æris*, *es ustum*, *ærugo*, *scorta æris*, *antimonium*, *calx*, *chalcitis*, *misy*, *sory*, *alumen*. The sweet are *Viola*, *rosa*, *mellilotum*, *ficus pingues*, *dactyli*, *uvæ passæ*, *glycyrrhiza*, *aqua hordci*, *aqua mulsa*, *vinum dulce*, *mel saccharum*, *serum*, *lactis*, *manna*, *thys*. The sharp are all kinde of: four things, *Capreoli vitium*, *acetum*, and other acid things. The compound are *Syrupus de absinthio*, *de fumaria*, *de marrubio*, *de eupatorio*, *de arthemisia*, *acetosus*, *lixivium*, *oleum de vitellis ovorum*, *de terebinthina*, *de tartaro*, *unguentum mundificativum de apio*, *apostolorum*, *pulvis mercurialis*. Wee use such things as deterge, that the superfluous matter beeing taken away, nature may the more conveniently regenerate flesh to fill up the cavities: But in the use of them, consideration is first to be had of the whole bodie, whether it be healthie, plethorick, or ill disposed, there is consideration to be had of the part, which is moister and drier, indued with a more exquisite or duller sens. But oftentimes accidents befall ulcers besides nature, as a *callus*, a *defluxion* of a hot or otherwise malign humor, and the like symptoms. Lastly, consideration is to be had, whether it be a

Their use.

new or inveterate ulcer ; for from hence, according to the indication, remedies are appointed different in quantitie and qualitie : so that oftentimes wee are constrained to appoint the bitter remedie in stead of the sweet. Neither truly with a painful and drie ulcer doth anie other then a liquid deterfive agree : neither to the moist anie other, then that of a drie consistence, as Powders.

CHAP. XV.

Of Sarcoticks.

That medicine is said to bee sarcotick ; which by its driness help's nature to regenerate flesh in an ulcer hollow, and diligently cleaned from all excrements. But this is properly don by blood indifferent in qualitie and quantitie. Wherefore, if wee must speak according to the truth of the thing, there is no medicine which can properly and truly be called sarcotick : For those which vulgarly go under that name, are onely accidentally such ; as those which without biting and erosion do drie up and deterge the excrements of an ulcer, which hinder the endeavour of nature in generating of flesh. For as by the law of nature, from that nourishment which flow's to the nourishing of the part, there is a remain, or a certain thin excrement, flowing from som other place, called by the Greeks *Ichor*, and by the Latines *Sanies* : Thus by the corruption of the part there concreet's another grosser excrement, termed *Rypos* by the Greeks, and *Sordes* by the Latines. That make's the ulcer more moist, this more filthie. Hence it is, that everie wound which require's restitution of the lost substance, must bee cured with two sorts of medicines, the one to drie up and waste the superfluous humiditie thereof, the other to fetch off the filth : and by how much the wound is the deeper, by so much it require's more liquid medicines, that so they may the more easily enter into everie part thereof.

But diversitie of things shall bee appointed according to the various temper of the part. For if the affected part shall bee moist by nature, such things shall bee chosen as shall bee less drie : if on the contrarie the part bee drie, then such things shall bee used as bee more drie ; but manie sorts of medicines shall bee associated with the sarcoticks, according to the manifold complication of the effects possessing the ulcer. Therefore nature onely is to bee accounted the workmaster, and the efficient caus in the regenerating of flesh, and laudable blood the material caus, and the medicine the helping or assisting caus, or rather the caus without which it cannot bee : as, that by cleansing and moderately drying without anie vehement heat, tak'es away all hinderances of incarnation and orders, and fit's the blood to receiv the form of flesh. This kinde of medicine according to *Galen*, ought to be drie onely in the first degree, lest, by too much driness, it might drink up the blood and matter of the future flesh, which notwithstanding is to bee understood of sarcoticks, which are to bee applied to a delicate and temperate bodie. For if the ulcer bee more moist, or the bodie more hard then is fit, wee may asscend to such things as are drie, even in the third degree. And hence it is that such drie medicines may first bee called deterfives, and then presently sarcoticks. A sarcotick medicine is either simple or compound, stronger or weaker. Simple sarcotick medicines are, *Aristolochia* utraque, *iris*, *acorus*, *dracunculus*, *asarum*, *symphyti omnia genera*, *betonica*, *sanicula*, *millefolium*, *lingua canis*, *verbena*, *scabiosa*, *pinpinella*, *hypericon*, *scordium*, *plantago*, *rubia major*, et minor eorumque succi. *Terebinthina lota & non lota*, *resina pini*, *gummi arabicum*, *sarcocolla*, *mastiche*, *colophonia*, *manna thuris*, *cortex ejusdem*, *aloë*, *olibanum*, *myrrha*, *mel*, *vinum*, *sanguis draconis*, *lybargyros auri*, *spodium*, *pompholix*, *tutia*, *plumbum ustum* *loium*, *scoria ferri*. The compound sarcoticks are, *Oleum hypericonis*, *ol. ovorum*, *mastichinum*, & cetera olea, quæ balsami nomine appellantur, *unguentum aureum*, *emp. de betonica*, *vigonis*, *de janua*, *Emp. gratia Dei*, *Emp. nigrum*. Wee use not sarcoticks before that the ulcer bee cleaned and free'd from pain, defluction, inflammation, hardness, and distemper. In using these things wee consider the temper of the bodie, and the affected part : For oft-times a part otherwise less drie by nature, require's a more powerful drying medicine, and stronger sarcotick, then another part which is more drie, and this for som other reason, which ought to com into our consideration: For example, the *glans* would bee more dried then the produce, although it bee of a temper less drie, becaus it is a passage of the urine. Wherefore wee must diligently observ the condition of the affected parts, and thence taking indication, make choice of more strong sarcoticks. For both that which is too little, and that which is too much sarcotick, make's a sordid ulcer : the first, becaus it drie's not sufficiently ; the later, for that by its acrimonia it causeth defluxion. Therefore diligent care must bee used in the examination hereof.

Simple sarcoticks.

Compound Sarcoticks.

CHAP. XVI.

Of Epuloticks, or skinning medicines.

AN Epulotick medicine is that which covereth the part with skin : it is said to bee such as by driness and affriction without biting desiccate's, binde's and condensate's the flesh into a certain callous substance, like to the skin, which wee commonly call a cicatrize or scar :

scar: yet this, as the generating of flesh, is the work of nature. A medicine therefore is said to be Epulotick, for that it assist's nature in substituting and generating a scar, in stead of the true skin, whilest it consume's the superfluous humidities, condensate's, incrasate's, and binde's the next adjacent flesh; therefore it ought to drie more powerfully then a sarco-tick. Epulotick medicines are of three kinds: the first is the true epulotick: which onely drie's and binde's. The second is an acrid and biting epulotick, which, for that it waste's the proud flesh, is called so; and this must be sparingly used, and that onely to hard and rustick bodies. The third is that which onely drie's without astrictio. The things whereof they consist are these: *Aristolochia utraque, gentiana, iris, centaurium majus, pentaphyllon, symphytum majus, chamædrys, betonica, cauda equina, eupatorium, verbenaca, plantaginis & symphiti folia, gallæ, baccæ myrti, glandes & earum calices, balauſtia, cupressi nuce, malicorium, cortex quercus, cortex tamaricis, cortex ligni aloës, acacia, colophonina, sarcocolla, sanguis draconis, ladanum, lithargyros, auri, argenti, cerusa, plumbum ustum, alumen ustum, rubia, squamma æris & ferri, & eorum scoria, ærugo, flos æris, æs ustum et lotum, sulphur vivum, chrysocolla, corali, bolus armenus, terra sigillata, cineres buccenarum, ostreorum, silicis, ossa usta et siccata, caries lignorum, ung. diapompholygos, ung. alb. rhasis, de siccativum rubrum, emp. de cerusa, de betonica, diacalcitheatos, emp. nigrum.*

Three sorts of Epuloticks.

Their use. Wee use Epuloticks when as the ulcer is almost filled up, and equal to the adjacent skin. In the use of these wee must alwaies have respect to the tenderness and hardness of the bodie; for such things as are corrosives to tender and delicate bodies, are epulotick to hard and rustick bodies. Also wee have much regard, whether the bodie be plethorick or replete with ill humors, for such do not easily admit cicatrization. Also it is most worthie of your observation, to mark whether the ulcer that is to be cicatrized, be fed or nourished by the present defect of anie part, as the liver, spleen, lungs, or a *varix* lying about it. For it cannot be cicatrized before these impediments (if anie such be) be taken away. Lastly, the callous lips of an ulcer, unless they be scarified or softened, hinder cicatrization. Therefore all such defaults must be taken away, and then such an Epulotick applied, as may not by the too much drieness leav the scar too hollow, or the too little, leav it too high.

CHAP. XVII.

Of Agglutinatives.



Glutinating, or agglutinative medicine is of a middle nature, between the Sarco-tick and Epulotick, more strong then the former, and weaker then the later, for it is drie to the second degree. It by the drying and astrictive facultie, void of all detersion, conjoin's parts that are distant, or rather lend's helping hands to nature the principal agent in this work. Glutinatives, whether they be strongly

or weakly such, do agglutinate either by their proper or accidental nature: Of this sort are *Plantaginis omnes species, consolida utraque, buglossa, millefolium, verbenca, pimpinella, pilosella, cauda equina, sempervivum, telephium, sanicula, atractilis, folia quercus et dracunculi, salix, ebulus, sambucus, pentaphyllon, veronica, cortex pini, ulmi, palmæ quercus, Aqua vitis, aq. è folliculis ulmi, succus calamithæ, vinum austerum, terebinthina, myrrha, sanguis draconis, bolus armenus, terra sigillata, omnia denique acerba.*

Agglutinative medicines.

Glutinatives by accident.

Glutinatives by accident are those that hinder desfluxion, and binde the part, as Sutures, Bandages, Rest, rowlers, and the like. Wee use glutinatives in green, and as yet bloodie wounds, whence the Greeks call a glutinative medicine *Enema*, although sometimes they are used to inveterate, malign, fistulous and sinuous ulcers; for they hinder the desfluxion from comming to the lips of ulcers. You must consider, when as you intend to applie them, whether the skin be whole or no: For ulcers knit together, or heal more difficultly, if the skin be rubbed off, or cut, or otherwise lost. Neither ought you to be unmindful of the fore-mentioned cautions and indications drawn from the sex, the tenderness or hardness of the affected bodie, the continuance and magnitude of the ulcer: for hence indication must be taken, what the quantitie and qualitie of the medicine ought to be.

CHAP. XVIII.

Of Pyroticks, or caustick Medicines.



That medicine is said to be Pyrotick or Caustick, which by its acrimonie and biting, commonly consisting in an earthie consistence, either superficially corrode's, or more deeply eat's and putrie's, or lastly, burn's and consume's the skin and flesh, so that it even pierce's into callous and hard bodies. Therefore there are three degrees of Pyroticks; for som are termed cathæretick or corroding, for that they waste the proud flesh of an ulcerated or anie other part, and these are judged the weaker sort of Pyroticks. Other som are termed Septick or putrefying, as those which destroie and dissolv the tender and new-sprung-up flesh, and rais blisters in the skin, and these are more powerful then the cathæreticks. Lastly, there are other som termed most powerful Escharoticks, which by their fierie and ter-

Three degrees of Causticks.

restrial

restrial qualitie caus' eschars or crusts; whereupon they are also termed *Ruptoria*, and potential Cauteries: Now all these differences are taken from that they are more or less powerful. For it oft-times happen's, that according to the different temper and consistence of the parts, according to the longer or shorter staie, a Cathæretick may penetrate as far as a Septick, and on the contrarie, an Escharotick may enter no farther then a Septick.

These are judged Cathæreticks, *Spongia usta, alumenustum & nonustum, vitriolumustum, calx* Cathæreticks, *mediocriter lota, arugo, chalcanthum, squamma æris, oleum de vitriolo, trochisci andronis, phasionis, aphodelorum, ung. Ægypticum, apostolorum, pulvis mercurii, arsenicum sublimatum.*

Septicks and Veficatories are, *Radix scillæ, bryoniæ, sigill. beatæ Mariæ, buglossa, radix ran-* Septicks and Veficatories. *nunculi, panis porcini, apium, risus, lac tithymalorum, lac fici, euphorbium, anacardus, sinapi, cantharides, arsenicum sublimatum:* For all these weaken the native temper and consistence of the part, and draw thereunto humors plainly contrarie to nature.

Escharoticks or Cauticks are *Calx viva, fex vini cremata, & præcipue aceti, ignis,* whereto Escharoticks. are referred all Cauteries, as well actual as potential, whereof wee shall treat hereafter.

Wee use Cathæreticks in tender bodies and diseases not verie contumacious; therefore Their use. by how much they are less acrid and painful, by so much oft-times they penetrate the deeper, for that they are less troublefom by delaië; but wee use Septicks, and sometimes Escharoticks in ulcers that are callous, putrid, and of unexhausted humiditie, but principally in cancers, carbuncles, and excessive hæmorrhagies. When as wee make use of these, the patient must have a convenient diet appointed, must obtain from wine: lastly, they must not be used but with great discretion; for otherwise they may caus' fevers, great inflammations, intolerable pains, swounings, gangreens, and sphacels. Cauteries heedfully used, strengthen and drie the part, amend an untameable distemper, dull the force of poison, bridle putrefaction and mortification, and bring sundrie other benefits.

C H A P. XIX.

Of Anodynes, or such as mitigate or assuage pain.



Before wee treat of Anodyne medicines, wee think it fit to speak of the nature of pain. Now pain is a sorrowful and troublefom sens, caused by som sudden What pain is. distemper, or solution of continuitie. There are three things necessarie to caus' pain; The efficient caus', that is, a sodain departure from a natural temper or union: the sensibleness of the bodie receiving the dolorifick caus': lastly, the apprehension of this induced change, caused either by distemper or union; for otherwise with how exquisite soever sens the bodie receiving the caus' is indued with, unless it apprehend and mark it, there is no pain present. Hence is that Aphorism of *Hypocrates, Quicumq; parte aliquâ corporis dolentes dolorem omnino non sentiunt, his mens ægrotat,* that is, Whosoever pained in anie part of their bodies do wholly feel no pain, their understanding is ill affected and depraved. Heat, cold, moisture and driness, induce a sodain change of temper; and heat and cold caus' sharp pain, driness moderate, but moisture scarce anie at all: for moisture caus' feth not pain so much by its qualitie, as it doth by the quantitie. Both the fore-mentioned qualities, especially associated with matter, as also certain external causes too violently affailing such as these that may caus' contusion, cut, prick, or too much extend. Wherefore pain is a symptom of the touch, accompanying almost all diseases; therefore oft-times leaving these, they turn the counsel of the Physician to mitigate them, which is performed either by mitigating the efficient causes of pain, or dulling the sens of the part. Hereupon they make three differences of Anodynes: For som serv to cure the disease, othersom to mitigate it, othersom stupifie, and are narcotick. We term such curative of the diseases, which resist, and are contrarie to the causes of diseases. Thus pain, caused by a hot distemper, is taken away by oil of Roses, Oxycrate, and other such like things, which amend and take away the caus' of pain, to wit the excess of heat. Pain caused by a cold distemper, is amended by *Oleum Laurinum, Nardinum, de Castoreo.* Pain occasioned by too much driness, is helped by *Hydræalum,* a bath of fresh and warm water. Lastly, by this word Anodyne, taken in the largest sens, we understand all purging medicines, Phlebotomie, Scarification, Cauteries, Cuppings, Glysters, and other such like things as evacuate anie store of the dolorifick matter. But such as are properly termed Anodynes, are of two sorts: for som are temperate, others hot and moist in the first degree, and consequently, near to those that are temperate; these preserv the native heat in the proper integritie, thus they amend all distemperatures; Of this kinde are accounted Sallad oil, oil of sweet Almonds, the yolks of eggs, and a few other such like things, these strengthen the native heat, that thus increased in substance, it may with the more facilitie overcome the caus' of pain: besides also, they rarifie, attenuate, digest, and consequently evacuate both gross and viscid humors, as also cloudie flatulencies hindered from passing forth: such are *flores chamæmeli, meliloti, crocus, oleum chamæmelinum, anethinum, oleum lini, oleum ex semine albæ, lunbricorum, ovorum, ex tritico, butyrum, lana succida, suillus adeps, vitulinus, gallinaceus, aserinus, humanus, ex anguilla, cunicula, & aliis. Lac muliebre, & vaccinum, mucago seminis lini, sænugraci, albæ, malvæ, vel ejusmodi seminum decoctum:* as also *Decoctum liliorum, violariæ, capitis, pedum, & inestimatorum arietis et hædi.* Nar-

Narcoticks
Improperly
termed ano-
dynes.

The use of
them.

Narcoticks, or stupefying medicines, improperly termed Anodynes, are cold in the fourth degree, therefore by their excess of cold, they intercept or hinder the passage of the animal spirit to the part, whence it is that they take away sense: of this sort are *hyoscyamus*, *cicuta*, *solanum manicum*, *mandragora*, *papaver*, *opium*, *arctissima vincula*.

You may make use of the first sort of Anodynes in all diseases, which are cured by the opposition of their contraries: but of the second, to expugn pains that are not verie contumacious, that by their application wee may resist defluxion, inflammation, the fever, and other symptoms. But whereas the bitterness of pain is so excessive-great that it will not stoop to other medicines, then at the length must wee com to the third sort of anodynes. Yet oftentimes the bitterness of pain is so great that verie narcoticks must bee applied in the first place, if wee would have the part and the whole man to bee in safetie. Yet the two frequent use of them, especially alone without the addition of saffron, myrrh, *castoreum*, or som such like thing, useth to bee verie dangerous: for they extinguish the native heat, and caus mortification, manifested by the blackness of the part. But intolerable pains, to wit, such as are occasioned by the excess of inflammation and gangrenes, may bee sooner mitigated by opening a vein, purging and scarifying the part affected, then either by properly-termed anodynes or narcoticks, to wit, that pain may bee the remedie of pain. By purgers wee here understand not onely such, as taken by the mouth, produce that effect; but also such as outwardly applied perform the same, as those whereof *Aëtius* make's mention, As,

Terrab. 1. sen. 3.
cap. 35.

Purgatives to
bee externally
applied.

The composi-
tion of a pur-
ging oil and
ointment.

Rx. *pulpæ seu medul. colocynth. semin. eruc. rut. sylvest. elaterii, gr. cindii, lathyrid. expurgatar. galban. nitri, cera, singulorum, ʒ iiiii. opopan. ʒ ii. terebinth. ʒ vi. terenda terito, et taurino felle paulatim irrigato, donec aptè imbibantur.* Then applie it about the navel even to the share, for thus it will purge by stool; if on the contrarie you applie it to the bottom of the stomach, it will caus vomit. Another; Rx. *elaterii, ʒ iiiii. colocynth. scammon. squammæ aris, radic. cucumer. agrest. lathyrid. an. ʒ i. aut pro lathyrid. tithymal. succum terito et cribrato, at cum oleo plurimum salis habente subigito; magnam inde pilam è lana confertam hoc medicamento illitam, umbilico aut lumbis applicato.* Or; Rx. *fellis taurin. ʒ i. gr. cindii virid. ʒ iv. succi lupinor. virid. ʒ ii. euphorb. ʒ i. pulp. colocynth. tantundem adip. vulpin. recent. ʒ vi. adip. viper. ʒ ii ʒ. stercor. muris, ʒ iv. succi pæon. castor. singulor. ʒ iv. ol. ligustrin. ʒ. vi. ol. antiq. ʒ i fiat unguentum vel oleum.* It purgeth without trouble, and besides the other commodities it also is good against distraction or madness. Two spoonfuls is the greatest quantitie to bee used at one time, for in som, one is sufficient: annoint therewith the navel and thereabouts, and a just purgation will ensue thereupon, which if it shall sie out beyond your expectation, you may foment the bellie with a sponge moistened in warm wine and pressed forth again, it will bee presently staid. Moreover *Fernelius lib. 7. methodi*, make's mention of a laxative ointment.

CHAP. XX.

Of the composition and use of Medicines.



hitherto wee have spoken of the faculties of simple medicines, now wee think good to saie somthing of the compounding of them: for so by the Architect are had and known everie thing apart, and then hee settle's the workmen to the building, the conceived form of which hath been in his minde ever since hee did enterprife it. Therefore the composition of divers medicaments with their qualities and effects, is a mingling appointed by the art of the Physician. Hence therefore *rheum*, *aloe*, *rosa*, *absinthium*, although they have divers substances and faculties, yet are notwithstanding called simple medicines, because they have that varietie from Nature, not from Art. But wee manie times call simple such things as are compounded by art, as *oxym. simpl. oxysacch. simplex*, as compared to greater compositions. And therefore oftentimes wee use compound medicines, because alwaies the simple medicine alone, hath not strength enough to oppugn the disease. For manie times the sick labor with manifold, and not simple effects, from which there beeing taken a various indication, wee gather contrarie simple medicines, to applie to everie affect, in one composition. But oftentimes the nature of the part of the patient, or of the bodie affected, requireth another kinde of medicament which may bee proper for the removing that disease; wherefore it is so made to oppugn the disease and not offend the bodie: and wee mingle manie other together, whose effects may temper one another. Moreover, the composition of medicines was necessarie, that because those things which have not a good taste, color, or smell, by art or composition, might bee made more grateful. Compound medicines of which we intend to speak, are Glysters, Suppositories, *Noduli*, Pessaries, Oils, Liniments, Ointments, Emplasters, Cerats, Pultisses, Cataplasms, Fomentations, Embrocations, Epithemates, Vesicatories, Cauteries, *Collyria*, *Errhina*, Sneefing-powders, Masticatories, Gargarisms, Dentifrices, Bags, Fumigations, Semicupiums, Baths. But first it is expedient that I saie somthing of weights and measures, with their notes, by which medicines commonly are measured and noted by Physicians.

Gal. 2. simp. 4.
de sanit. tuend.

The necessitie
of compound
medicines.

CHAP. XXI.

Of weights and measures, and the notes of both of them.

Everie weight arifeth from a beginning and foundation, as it were; for as our bodies do arife of the four first simple bodies or elements, into which they are often resolved: so all weights do arife from the grain, which is as it were the beginning and end of the rest. Now hereby is understood a barlie-corn or grain, and that such as is neither too drie, or overgrown with mouldinefs, or rancid, but well conditioned, and of an indifferent bignefs.

A grain the beginning of all weight.

What is meant by a grain.

Ten grains of these make an *Obolus*; two *Oboli*, or twentie grains make a scruple, three scruples, or sixtie grains make a dram, eight drams make one ounce, twelv ounces make one pound medicinal, which is for the most part the greatest weight used by Physicians, and which they seldom exceed; and it is resolved into ounces, drams, scruples, *oboli* and grains, which is the least weight. To express these weights we use certain notes, the pound is expressed by this note, lb. the ounce by this ℥, the dram thus ℥, the scruple thus ℥, the *obolus* with the beginning letter thus *obol.* the grain with his beginning letter thus, g. But sometimes we measure the quantitie of medicines by measures and not alwaies by weights; and therefore we express a handfull by this note, m. a pugil thus, p. number thus, n. and the half part of everie weight and measure is expressed by this note, β. put after everie note of the aforesaid weights and measures of the same sort, as the half pound, lb β. the half ounce, ℥β. and so of the rest. Moreover, in describing the same medicament we use the notes sometimes of weights, sometimes of measures; and therefore it is to be noted that herbs, green or drie, are signed with these notes, m. p. but those which are drie and be brought to powder, with these notes, ℥. ℥. p. Roots, by these notes, ℥. ℥. p. m. Barks, by these notes, ℥. ℥. Seeds, by these notes, ℥. ℥. Fruits, by these notes, an. p. ℥. ℥. ℥. Flowers, by these notes, p. m. ℥. ℥. Pulses, by these notes, p. ℥. ℥.

Obolus.

A scruple.

A dram.

An ounce.

A pound.

All other medicaments either drie or liquid, are described with these notes, lb. ℥. ℥. ℥. *obol.* g.

Having expounded these things, let us come to the description of compound medicines, beginning with glysters first, as the remedie which is most common and familiar, and almost chiefly necessarie of all others.

CHAP. XXII.

Of Glysters.

Glyster is an injection prepared first and properly for the gross intestines and fundament; for sometimes glysters are used and made for the stomach, spleen, reins, bladder, womb, mesenterie, and also for the head, from whence oftentimes by sharp glysters, the hurtfull matter is brought downwards, as we see in Apoplexies. Therefore there is no part of the bodie which receiv's not some benefit by glysters, but more or less according to the vicinitie they have with the bellie, and the strength of the glyster: for there are divers sorts of glysters, some emollients, other evacuating, some anodynes, some astringents, some cleansing, some sarcotick, and epulotick, and some may be said to nourish. They may be made of the parts of plants or beasts, with compound medicines either solutive, or altering, and others according to the advise of the Physician. The parts of plants which are used to this purpose, are roots, seeds, leaves, flowers, fruits, shouls, juices, mucilages. Parts of beasts are yolks of eggs and whites, honie, chickens, capons, old cocks well beaten, heads and feet of sheep, the intestines, whey, milk, sewet, axungia, and such like in decoctions, wherein we mingle and dissolve simple and compound medicines. We sometimes use without anie other medicament, to make a glyster with oil alone, as oil of nuts for the Collick, of whey alone, the decoction of the head and feet of the sheep alone, and of the decoction of Cicers and barlie do we prepare glysters.

What a glyster is.

Differences of glysters.

The materials of glysters.

The quantitie of a glyster is sometimes less according to the divers disposition of men and their diseases: for weak children the quantitie is less: for women with child, and in the colick, dysenterie, lyenterie, or when much hardened excrement, is within. But when we would abundantly moov the excrement, and there is nothing that may hinder, the dose of a glyster for the most part is half a pound, one pound, or three quarters of a pound. The glyster must be injected warm or hot, more or less, according to the nature or condition of the sick: for being cold it offend's the intestines, and the neighboring nervous parts, which are cold of themselves. It must be given by degrees, for being injected suddenly, the winde which is usually in the guts will beat it back again, whence com's intolerable pain. But this will be more clear by that we shall teach concerning the differences of glysters, whereof there shall be sufficient examples.

Their quantitie

Rx. *malv. violar. bismalv. acanth. an. m. i. radic. alb. lilior. an. ℥. i. passul. ficuum ping. ℥. β. fiat decoctio ap lb i. in qua dissolve cass. butyr. recent. an. ℥. i. ol. viol. ℥. iii. fiat Glyster.*

An emollient glyster.

Glysters, that do evacuate, are prepared by the counsel of the Physician, and of divers Simples, being boiled for several purposes. Therefore if the humors be cold which are to be

bee

A Glyster to evacuate a cold phlegmatick humor. bee evacuated, the Glyster shall bee after this manner. *R. Salvia, origani, abrotoni, chamem. melilot. an. m. β. seminum anisi, fœnic. cumini, an. ζ iii. semin. cartbar. ζii.* Make a decoction of them, wherein dissolv *Diaphon. Hier. Simpl. an. ζβ. ol. aneth. chamem. an. ζi. β. Mellis Antho. sacc. rub. an. ζ i. fiat Glyster.*

To evacuate Choleric matter, prepare a Glyster after this manner. *R. quat. remollient. paret. Cichor. endi. an. m. β. Semen. quat. frigid. Major. an. ζiii. bordei integri. p. i.* Make a decoction of them, and dissolv in it *Cass. ζ. i. Ol. viol. mellis viol. an. ζ ii. fiat Glyster.*

To evacuate melancholie, this Glyster following will bee useful. *R. Funniter. Centaur. minoris, Mercurialis, an. m. i. Polyp. Qu. folicul. semæ, an. ζ iii. seminis agni casti, Thymi, an. ζ ii.* Make a decoction and dissolv therein, *Confect. Hamech. ζ β. Cass. recens extracti. ζ iii. olei violati, lilior, an. ζβ. Sacc. rub. mellis viol. an. ζiβ. salis, ζi.* And those Glysters do not onely evacuate the humors that offend, but also correct the distemper of the bowels and inward parts. For the Glysters described against pituitous and melancholick matter, help the cold distemper; but that which is for cholera, the hot distemper. Purging medicines, which are dissolved in the decoction of Glysters, are verie strong, as, *Confect. Hamech. Benedicta, Diaprun. Solutivum, Diaphenicon,* beeing used from *ζ. vi. to ζi. at most*: but the weaker and more gentle are *Catholicon. Cassia, Hiera simplex,* from *ζvi. to ζii. at most.*

An Anodyne Glyster.

An Anodyne Glyster is usually made without such things as purge or evacuate: as, *R. Flor. Chamem. melil. Aneth. an. p. i. rad. Bismal. ζi.* boil them in Milk, and to the decoction add *Mucaginis seminis lini fœnugræci extracte in aqua Malvæ ζii. saccari albi, olei anethi, chamemeli, an. ζi. vitellos ovorum duos, fiat Glyster.* These Glysters should bee kept longer in the bodie, that so they may more easily mitigate pain. *The example of an astringent Glyster.*

An Astringent Glyster.

R. Equi seti plantag. poligami. an. m. i. boil them in lacte ustulato, to *ζxii.* to the decoction strained add *Bole armeni, sanguinis draconis, an. ζii, olei rosati, ζii. album. ovorum duorum, fiat Glyster.* Wee use these kinde of Glysters in Dysenteries, and in the immoderate flux of the Hæmorrhoid veins, having first evacuated the usual excrements. Glysters, which be farcotick, epulotick, and cleansers of the greater guts, and fit for the curing of ulcers, are to bee prepared of such medicines as are described before in their proper Chapters.

Nourishing Glysters.

Alimentarie Glysters are made of the decoction of Chickens, Capons, Cocks, beeing boiled to a gellie, and strongly prest forth. They are also prepared of Marrow, gellie, which are not altogether so strong as those which are commonly taken by the mouth, becaus the facultie of concoction in the guts, is much weaker then that of the stomach. Oftentimes also the matter of these kinde of Glysters are prepared in wine, where there is no pain of the head or fever, but more frequently in the decoction of Barlie, and in Milk, adding the yolks of Eggs, and som small quantitie of white sugar, lest by the cleansing facultie it move the guts to excretion. And therefore Sugar of Roses is thought better, which is conceived to somwhat binding. Here you may have example of such Glysters. *R. Decoctionis Capi perfectè cocti lb. i. β. saccari albi, ζβ. misce, fiat Glyster. R. Decocti Pulvi & Galatine, an. lb. β. vini opt. ζiv. fiat Glyster. R. Decocti bordei mundati, & in cremorem redacti lb. β. lactis boni lb. i. Vitellos ovorum duos, fiat Glyster.* We use these kinde of Glysters to strengthen children, old and weak men, and bodies which are in a Consumption. But in the use of these there are three things to bee observed: First, that the fœulent excrements may bee taken away, either by strength of nature, or by art, as by a suppositorie, or an emollient Glyster, lest the alimentarie matter beeing mingled with them, should so bee infected and corrupted. The other is, that there bee great quantitie given, that so som may ascend to the upper guts. The third is, that the sick sleep after the taking of it; for so it is more easily converted into nourishment, and the elementarie matter is better kept: for sleep hindereth evacuations. In Glysters of this kinde wee must beware of Salt, Honie, and oil; for the two first provoke excretion by their acrimonie, and the last by his humiditie doth relaxate and lubricate. They, who think no kinde of Glyster can nourish or sustain the bodie, relie upon this reason: That it is necessary whatsoever nourisheth, should have a triple commutation or concoction in the bodie: first, in the stomach; second in the liver: thirdly, in all the members. But this opinion is repugnant to reason and experience: to reason, for that a certain sens of such things as are defective, is implanted in all and everie of the natural parts of our bodie. Therefore seeing nutrition is a repletion of that which is empty, without doubt the empty and hungry parts will draw from anie place that nourishment that is fit and convenient for them, and in defect thereof, whatsoever they meet with, which by anie familiaritie may assuage and satisfie their desire. But the alimentarie Glysters, by us described, consist of things which agree verie well with the nature of our bodies, and such as are boiled and ordered with much art, so to applie the chylication to bee performed in the stomach. Therefore they may bee drawn in by the meseraick veins of the guts; which according to *Galen,* have a certain attractive facultie. And thence they may bee easily carried through the gate-vein, liver, and so over the whole bodie. And experience teacheth, that manie sick people, when they could take nothing by the mouth, have been sustained manie daies by the help of these kinde of Glysters. What is more to bee said? Wee have seen those who have taken a Suppositorie by the fundament, and vomited it at the mouth; by which it also appeareth, that som-

Their use.

Their Argument that deny Glysters to nourish. Confuted first by reason.

Secondly, by experience.

Something may flow without danger of the sick from the guts into the stomach.

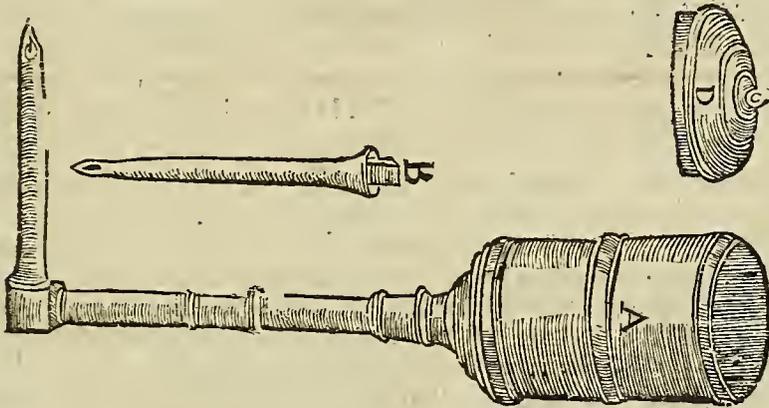
Commonly they give Glysters anie hour of the daie, without anie respect of time, but it should not bee don unless a great while after meals, otherwise the meat, being hindered from digestion, will bee drawn out of the stomach by the Glyster.

Glysters are used to help the weaker expulsive facultie of the guts, and by consequence also of the other parts, both that such as through want of age, and old people, and such as by reason of great imbecilitie by sickness cannot admit of a purging medicine, may by this means at least ease themselves of the trouble and burden of hurtful humors. Galen hath attributed to Storks the invention of Glysters, which with their bills, having drunk Sea-water; which from saltness hath a purging qualitie, wash themselves by that part, whereby they use to bring away the excrements of their meats, and of the bodie. But a Glyster is fitly taken after this manner: whilst the Syringe is expressed, let the patient hold open his mouth; for by this means all the muscles of the *Abdomen*, which help by compression the excretion of the guts, are relaxed, Let him wear nothing that may gird in his bellie, let him lie upon his right side, bending in a semicircular figure; and so the Glyster will the more easily pass to the upper guts, and (as it were) by an overflowing, wet and wash all the guts and excrements. It hap'neth otherwise to those who lie upon their left side; for the Glyster being so injected, is conceived to abide, and (as it were) to stop in the *Intestinum rectum*, or *Colon*, because in this site these two intestines are oppressed, and as it were shut up with the weight of the upper guts. A little while hee may lie upon his back after hee hath received the Glyster, and presently after hee may turn himself on either side. And if there bee pain in anie part, so long as hee is able hee may incline to that side. Moreover, because there are manie who cannot by anie reason bee perswaded to shew their buttocks to him that should administer the Glyster, a foolish shamefastness hindering them: therefore I thought good in this place to give the figure of an Instrument, with which one may give a Glyster to himself, by putting up the pipe into the fundament, lifting the buttocks a little up. The pipe is marked with this letter *A*. The bodie of the Syringe, whereinto the Glyster must bee put, with this Letter *B*.

The common use of glysters.

The sick having received the glyster, must turn to their side grieved.

The figure of a Glyster pipe and Syringe, by benefit whereof a man may give himself a Glyster.



CHAP. XXIII.

Of Suppositories, Nodules, and Pessaries.



Suppositorie is a certain medicament, formed like unto a tent, or gobbet of paste, such as is commonly used to fat Fowl. It is put into the fundament, that it might excite the sphincter-muscle to send forth those excrements which are knit in the guts. Antiently it had the form of an Acorn, whence it is called to this daie *Glans*. The Suppositories, wee now usually make, have the form of a Pessarie, that is round and longish, in the form of a wax-Candle. They are either weak, stronger, or sharp; the weak are made of the stalks or the roots of Beets, of Lard, boiled Honie with Salt, or of Castle-sope. The stronger of purging powders, as, *Hiera* with Salt and Honie. The sharp with Scamonie, *Euphorbium*, *Coloquintida*, and like things powdered, and with Honie, or the juices of sharp herbs, or mingled with the galls of beasts. It is commonly made thus: as, *Rx. Mellis ℥i. Salis aut pulveris alterius irritantis ℥i.*

Rx. Mellis cocti ℥i. pul. Colocynthidos ℥β, Salis gemme. ℥i. fiat Suppositorium. Wee use Suppositories, when the sick by his infirmitie is unwilling, or not able to bear or away with a Glyster, as in burning Fevers: or, when as one being injected, is slow, and resteth in the guts. And wee use the sharper Suppositories in sporiferous affects of the head; that they might provoke the dull facultie of the guts to expulsion. As also, when the condition of the dis-

The differences.

The form.

The use.

caf is fuch, that by the use of Glysters there is manifest hurt; as, in an *Enterocoele*, where the gut so swells, that over and above it bee filled by the glyster infused, it would the more press the *Peritoneum*, so that straight-waies by the relaxed or broken part it might easily bee devolved into the Cod.

Nodules have the same use with Suppositories, and are oftentimes substituted in stead of Glysters. They are made of gentle medicines, as the yolks of Eggs with a little Salt and Butter, or of Gall and Honie tied up in a cloth in the form of a Filbert, the string of it may hang forth, whereby the Nodule in the fundament may bee drawn forth. This description may bee an example of Nodules: *R. Vitellum unius ovi, cui adde salis modicum, fellis vervecis, mellis an. ʒβ. butyri ʒiii. misce, fiant Noduli filo appensi.*

The form of a Nodule.

Pessaries.

A Pessarie is grosser than a Suppositorie, and is appointed for the womb, being made with Cotton-wool or Silk steeped in som medicament, and then put into the neck of the womb.

Their use.

A pessarie is used either to ulcers of the neck of the womb, or for the procuring or stopping of the *Menstrua*, or against fordid and hurtful humors of the womb causing hysterical passions, and therefore to bee wasted away and evacuated. Therefore in the composition of pessaries are used gums, juices, seeds of herbs, roots, and manie other things; according to the advise of the Physician; they are also made of a solid consistence, the bigness of a finger, that they may enter into the neck of the womb; these being tied with a string, which must hang forth to pluck it out withal when evasions serv's. This following may bee an example of their description. *R. myrrb. aloes, an ʒ i. sabin. femin. nigel. arthemif. an. ʒ ii. radic. ellebor. nig. ʒ i. croci, ʒ i. cum succo mercurial. & melle fiat pessus;* let it bee tied to the thigh with a thred. Or thus, *R. mastich. thurii, an. ʒ iii. alum, ros. rub. nuc. cupres. an. ʒ ii. ladan. hypoci. sumach, myrtill. an. ʒ iii. fiant pessi cum succo arnoglos. & cotoniorum.* According to this example others may bee made for to mollifie, to binde, to cleanse, to incarnate, to cicatrize and cover the ulcers of the womb: they are to bee put up when the patient lieth in bed, and to bee kept all night.

Pessaries are also made of medicinable powders, not onely mixed with som juice, but also with those powders alone being put into a little bag of som thin matter, being stuffed with a little cotton that it might bee of a convenient stiffness, and this kind of pessaries may bee used profitably in the falling of the mother.

An example of one mentioned by Rondeletius in his book of inward Medicines, is as followeth.

Against the suffocation of the Mother.

R. Benioini, styracis, caryoph. an. ʒ i. gal. moschi, gr. vi. fiat pulvis; this being made up with cotton may bee put up into the bodie.

C H A P. X.III.

Of Oils.



Properly and commonly wee call oil that juice which is pressed forth of Olives; but the word is used more largely, for wee call everie juice of a fluxible, unctuous, and airie substance, Oil. There are three differences of these oleaginous juices: The first is of those things which yield oil by expression, as well fruits as seeds being bruised, that by beating the oilie juice may bee pressed forth; som are drawn without fire, as oil of sweet and bitter almonds, oil of nuts, of *palma Christi*. Others are made to run by the help of fire, by which means is gotten oil of baies, linseed-oil, rape-oil, oil of hemp, and such like: The manner of drawing oil from seeds is set down by *Mesue* in his third book.

The making of oils by infusion

The second sort of those oils which are made by the infusion of simple medicines in oil, wherein they leav their qualities: and this is don three several waies, the first is by boiling of roots, leavs, tops of flowers, fruits, seeds, gums, whole beasts, with wine, water, or som other juice, with common or anie other oil, until the wine, water, juice bee consumed, which you may perceiv to bee perfectly don, if you cast a drop of the oil into the fire, and it maketh no nois but burneth. It is to bee remembered that somtimes the seeds or fruits are for a certain time to bee macerated before they are set to the fire; but it must bee boiled in a double vessell, lest the oil partake of the fire.

After this manner is made *oleum costinum, rutaceum, de croco, cydoniorum, myrtillorum, mastichinum, de euphorbio, vulpinum, de scorpionibus*, and manie others. The second is by a certain time of maceration, som upon hot ashes, others in horse-dung, that by that moderate heat the oil might draw forth the effects of the infused medicines into it self. The third is by insolation that is, when these or these flowers, being infused in oil, are exposed to the sun, that by the heat thereof the oil may change, and draw into him self the facultie of the flowers which are infused: of this kinde are oil of roses, camomil, dill, lilies, of water-lilies, violets, and others, as you may see in *Mesue*.

The manner of oils by resolution

The third kinde is properly that of the *Chimists*, and is don by resolution made after divers manners, and of this sort there are divers admirable qualities of divers oleaginous juices, whether they bee made by the sun or fire, or putrefaction, as wee shall speak in his place hereafter.

Wee

Wee use oils when wee would have the virtue of the medicament to pierce deep, or the substance of the medicines mingled with the oil to bee soft and gentle. Moreover, when wee prepare oils that should bee of a cooling qualitie, the common oil of the unripe Olive is to bee used: of that should the oil of roses bee made.

Again, when wee would prepare oils of heating qualities, such as are *Oleum philosophorum*, or of Tiles, sweet and ripe oil is to bee chosen.

C H A P. XXV.

Of Liniments.

A Liniment is an external medicine of a mean consistence, between an oil and an ointment, for it is thicker then an oil; for besides oil it is compounded with butter, axungia and such like, which is the reason why a liniment is more efficacious in ripening and mitigating pain, then simple oil. The varieties of liniments are drawn from their effects, some cool, others heat, some humect, some ripen, others by composition are made for divers uses: The matter whereof they are usually made, is oil; axungia, suet, butter, all those things which have an oilie substance or consistence, as *styrax liquida*, turpentine, the mucilages of fenugreek, marsh-mallows, marrow, and other like. To these are sometimes added powders of roots, seeds, flowers, rindes, metals, but sparingly, that the liniment may bee of a liquid consistence.

What a liniment is.

An example of a liniment that is good to attenuate, heat, and digest, is this that followeth.

Rx. ol. amygd. amar. lilior. an. ℥i. axung. anat. gallin. an. ℥β. butyr. sal. expert. ℥i. mucag. sem. alb. fenugr. extract. in aq. hyssop. an. ℥β. pulver. croci, ireos, an. ℥i. fiat linimentum.

This may bee an example of a liniment to humect and mollifie.

Rx. ol. amygd. dulc. ℥ii. axung. human. ℥β. mucag. semin. malv. extract. in aq. parietar. ℥β. fiat linimentum: you may add a little saffron. There bee manie others like these which may bee made for divers affects. They are easily applied to everie part of the bodie, becauf they are not so liquid as oils: the reason is, they are more agreeable to anie of the parts. If they bee to enter into anie crooked narrow passage, such as the ear, they must bee more liquid, and have more oil: if they bee to stick on the part, they will admit of more axungia and suet.

They are deceived who think that the difference between liniments and ointments is, that there is no wax in liniments as there is in unguents; for there bee some unguents which admit not anie wax to bee added, as *egyptiacum*, and all such as are used in gangreens, and all sorts of putrid ulcers; becauf to these kinds of diseases all fattie things, as oils, fats, rosin, and wax, are enemies. Therefore wee substitute in the place of them in *egyptiacum*, hony and verdigreal; for of these it hath his consistence, and his qualitie of cleansing.

C H A P. XXVI.

Of Ointments.

Ointments are of a more solid consistence then Liniments, and are therefore of more force. Their differences ate partly taken from their effects; for some heat, others cool, some drie, and some humect, some cleanse, some corroborate, some waste dead flesh, and others cicatrize, partly from the varietie of colors, partly from the first inventors, as *Album rhabis*, *Desiccativum rubrum*: partly from the number of the simple medicaments whereof they bee made, as, *Tetrapharmacum*, *Tripharmacum*, or *Nutritum*: partly from that medicament which is principal in the composition, hence are they called, *Unguentum de Lythargyro*, *de Minio*, *Diapompholigos*, and such like. They are compounded of herbs, roots, seeds, fruits, metals, and part of Beasts; the juices and other liquid things beeing consumed away by boiling, as wee have said in the Chapter of compound Oils. Herbs, and the parts of them, if they bee drie, must bee powd'ed, and also metals; but beeing green, they are boiled and strained forth, and the juice so pressed is wasted by boiling. Gums and Rosins some are powdered, others beeing put to some convenient liquor are dissolved by fire: So wax is dissolved in the Oil. In the composition of unguents this proportion is usually observed, that for one ounce of powder, two ounces of Wax, and eight of oil is added: notwithstanding for that Wax serveth onely to the consistence of the ointment, it is better to leav the quantitie to the will of the Apothecarie; but hee may bee more sparing in adding Wax to the ointments in Summer then in winter, for the heat of Summer, drying them, addeth to the consistence; by examples propounded, these common precepts will more plainly appear.

Ointments and their differences.

Rx. Olei ros. iv. pil. lepor. bol. armen. terre sigil. an. ℥i. bal. Gallar. an. ℥β. tritis terendis, & simul mixtis, addiã cera quod sufficit, fiat unguentum. Here wee must observ, that there bee three waies of making ointments: The first is of those which are made onely by stirring or grindeing in the Mortar without anie fire, and so is made *Unguentum nutritum*. The second is, when wee dissolve Wax in Oil, Fat, or some such substance with fire: and beeing all dissolved, wee mingle the powders according to the proportion wee noted before. After which manner are made *Unguentum Aureum*, *Basilicon*, *Diapompholigos*, *Desiccativum rubrum*, *Unguentum m adstringens*, *Emulatum*.

Enulatum. The third sort is, when wee bruise herbs with a Pestell, and mingle them with Axungie, boiling them together, and then straining them, and the ointment is that which is strained. Therefore let us proceed to explain this by examples.

Unguentum nigrum. R. Lythar. auri triti & loti ℥ss olei ros. ℥i. acetii ros. ℥iv. fiat Unguentum. First, wee put the Lytharge into the Mortar, powring in a little Oil, and working it with a Pestil, that it may grow thick, then with the Oil wee put a little Vineger, continually working, until they mingle into one bodie, now and then between whiles adding somtimes a little Oil, somtimes a little Vineger, until the whole bee brought to the consistence of an ointment. If of an ointment of this kinde thou wouldest make a black plaster, by degrees consume all the Vineger, so shall the plaster shine and grow black.

Unguentum aurum. R. Cera cirr. ℥vi. olei boni ℥ii. tereb. ℥ii. resin. & coloph. an. ℥iss. olib. mastich. an. ℥i. croci, ℥i. fiat Unguentum. First, dissolv the Wax with a good part of Oil, then add the Rosin and Colophonie broken small. These beeing dissolved, take the composition from the fire, and then add the Turpentine; when the whole is somewhat cooled, add the Olibanum and Mastick beeing finely powdred, then the Saffron, which shall bee macerated in the rest of the Oil.

Ung. Tetrapharmacum, seu Basilicum. Tetrapharmacon is so called, becaus it is made of four simple medicines, Wax, Rosin, Pitch, Tallow; of each a like quantitie, and so equally mixed.

R. Resin. picis nigr. adip. vituli. & cera an ℥ii. β. Olei veteris olivarum maturarum, lb. i. β. or if you would have it harder, lb. i. that ointment is also called *Basilicon*, the Wax beeing cut small and dissolved in Oil, then add the rest of the things, which beeing dissolved, thou shalt have the desired ointment.

Ung. Diapempholygos. R. Olei ros. ℥ix. cer. alb. ℥iii. succi solani bortenensis, ℥iv. Cerus. lot. ℥i. Pompholygos, plumbi usti & loti, olib. puri, an. ℥ss. fiat unguentum. Dissolv the Wax in the Oil with a gentle fire, then you shall take it from the fire, and add to the rest of the ingredients, working them together in a stone-Mortar, powring on the juice by degrees, at least so much of it as will incorporate.

Ung. desiccativum rubrum. R. Lap. calam. ter. sig. an. ℥ii. Litharg. auri, cerus. an. ℥iss. Camphor. ℥ss. cera, ℥iiss. Olei rosat. viol. an. ℥iii. fiat Unguentum. Dissolv the Wax in the Oyl, then set it to cool, and work in the powders with a spatter, and at last add the Camphir dissolved in a little Oil of Roses, or Rosewater.

Ung. Enulatum. R. Rad. enul. campan. coct. cum aceto & contus. ut decet lb. β. Axung. porci, olei commu. an. ℥iss. argen. vivi exstincti, et tereb. lot. an. ℥i. sal. commu. pulverati, ℥ii. incorporate them according to art. The boiled roots must bee drawn through a Sieve, which beeing boiled by a gentle fire with the Axungia, must bee continually stirred, then put to the Salt with Oil and Wax: when you set it from the fire to cool, then add the Quicksilver, beeing killed with a little Axungia and Turpentine.

Ung. Album Rubris. R. Olei rosat. ℥ix. cerus. alb. ℥iii. cer. alb. ℥ii. make it thus: Let the Cerus bee finely powdred, and put into the Oil and Wax whil' it is hot, and so work the whole together, until they shall bee brought into a bodie.

De Albza. R. Rad. Alb. lb. i. semi. lini, fanugr. an. lb. β. Scilla ℥iii. Olei com. lb. ii. cer. lb. β. terebinth. gum. heder. galb. an. ℥i. coloph. et resin. ℥iii. The roots and seeds beeing bruised, are infused for three daies in five pints of water; boil them until three ounces bee consumed, and then draw forth the Mucilage, and boil it with the Oil; then add Wax cut small: these beeing taken from the fire, the Galbanum beeing dissolved with Vineger, and mingled with the Turpentine, must bee added together with the Gum Hederæ, Colophonie, and Rosin.

Ung. Populeum. R. Ocul. populi arb. lb. i. β. fol. papaveris nigr. Mandrag. hyostemi, lactuca, semper vivi parvi et magni, violæ nigræ, solani, umbilici veneris, seu cymbalar. bardanæ, an. ℥ss. (Cordus, Fernelius, et Nicolaus singulorum ℥iii. præscribunt) Adipis suilli recentis salis expertis, lb. ii. vini boni, lb. i. fiat Unguentum. The Poplar buds and Violet leavs must bee bruised and macerated in the Axungia for the space of two moneths, that is until the rest of the herbs bee readie; for they cannot bee gathered before the Summer time, but the Poplar buds and Violets may bee had in March. They must bee bruised and mingled verie well, and set in a warm place for eight daies; then add one pint of strong Vinegar, and boil them till it bee consumed, which may bee perceived by tasting a little of it into the fire, then strain it forth, & put up the Ointment.

Ung. Apostolorum. R. Tereb. cer. alb. res. an. ℥xiv. Opopanacis, floris, seu viridis æris (nam hic flos æris non proprie accipitur pro granulis, quæ semillarum instar ab ære exiliunt dum à fabricis ferrariis aqua tinguntur: sed pro viridi æris usurpatur, cujus contra maligna ulcèra notæ sunt vires, contra quæ omnino id Unguentum est comparatum) an. ℥ii. ammon. ℥xiv. aristol. lon. thuris masculi an. ℥vi. myrrhæ et galbani an. ℥iii. bdelli, ℥vi. Lytharg. ℥ix. olei lb. ii. fiat Unguentum. The Litharge is to bee mingled with two ounces of Oil for the space of five hours, and with a gentle fire to bee boiled until it com to the consistence of honie, and bee alwaies stirring, lest it burn: beeing taken from the fire and warm, the Wax and the Rosin, beeing dissolved, with the rest of the oil, must bee added: Then put to it, when it is cooling, the Gums dissolved in Vineger, boiled and incorporated with the Turpentine. Then the *Aristolochia*, Myrrh, and Frankincens are to bee mingled, and last of all the Verdigreaf, beeing in fine powder, and sprinkled in: and so the unguent is made.

Comissa. R. Cortic. median. castan. cortic. median. querc. cortic. median. gland. mirtil. eques. cortic. fabar. acinor.

acinor. uvar. sorbor. siccor. immatur. mespillor. immaturor. rad. chelidon. folior. prunor. sylvest. an. ʒiβ. *Aque plantaginis*, lb.viii. cer. nov. ʒviii β. olei myrtillor. lb. iiβ. Then these things which toll ow, beeing finely powdered, are to bee sprinkled in.

Rx. Pulveris corticis mediani castan. corticis mediani gland. cortic. median. arb. gland. id est, querc. gallar. an. ʒi. Cineris oss. cruris bovis, myrtill acinor. uvar. sorbor. siccor. an. ʒβ. Trochiscorum de carabe, ʒii. fiat Unguentum. First, make a decoction corticis mediani arboris quercus, acini uvar. rad. chelid. mespil. sorbor. equis. seminis myrtil. folior. pruni sylvestris. cort. fabar. cortic. mediani gland. cortic. castan. & gallar. in the Plantain water for the space of two hours, then strain it, and divide the liquor into nine parts, washing the Wax, dissolved with the oil of Myrtills seven times; the liquor beeing all spent, and the Wax and Oil beeing melted, then insperge the powders, Cruris bovis, assium, cortic. median. querc. median. cortic. gland. castan. gallar sorbor. mespil. seminum myrtil. acinor. uvar. and at the last the Trochisces carab. after this manner shall you make this Ointment.

Rx. Olei absinth, mastich. de spic. rosat. an ʒβ. pulver. absinth. ros. major. menth. an. ʒi. Caryoph. cinam. mastich. galang. an. ʒi. Powder those things which are to bee powdered, and with a sufficient quantitie of Wax make a soft ointment, wherewith let the stomach be annointed one hour before meals continually. Ung. pro stomacho.

Rx. Cer. alb. lb. ii. cerus. litharg. auri, an. lb. i. myrrh. medul. cervi, an. ʒii. thuris, ʒi. olei, lb. β. Boil the Litharge in the oil to a mean consistence, then add to the Wax and Cerus, and when it will not stick to the fingers, take it from the fire, and put in the Medulla, when it beginneth to cool, the Myrrha and Thus, beeing finely powdered, must bee cast in by little and little, and the ointment may bee put up for use. The chops of the fundament, and remollient Pessaries are likewise made of it, and it is verie good against the bitings of mad Dogs, and the punctures of nervs and tendons, keeping wounds so that they do not agglutinate. Ung. ad morsus rabiosos, ex li. Gal. de comp. sec. genera.

Rx. Picis pinguis, lb. i. Opopanacis in aceto forti, oleo liliorum, & veteri porci axungia cocti, ʒiii. ʒ. De comp. med. fiat Unguentum. Oleum ex sinapi is good against those bitings of mad beasts and punctured nervs: for it doth open wounds when they are cicatrized. Ointments are used to overcome the contumacie of a stubborn evil by their firm and close sticking to, especially if there shall need no medicine to go further into the bodie. sec. gen.

C H A P. XXVII.

Of Cerats and Emplasters.



Such affinitie there is in the composition of a Cerat and Emplaster, that oftentimes the one is taken for the other, as is usually done in Ointments and Liniments. A Cerat is a composition more solid and hard then an ointment, and softer then a plaster, having his name from Wax, which taking away the fluidities of the oil, bringeth him to his consistence. The differences of Cerats are taken from the parts by which they are called, as *Ceratum stomachicum*: som from the effects, as *Ceratum refrigerans Galeni*: Others from the simple medicaments which are the chief in the composition, as *Ceratum Santalinum*. The proper matter of Cerats is, new Wax and Oils, beeing appropriated to the grief of these, or those parts; so that Liniments and Ointments do scarce differ from Cerats, if they admit of Wax: for if ointment of Roses should have Wax added to it, it were no longer an Ointment but a Cerat.

Cerats, which are made with Rosins, Gums, and Metals, do rather deserv the names of Emplasters then Cerats. And therefore *Ceratum ad Hernias*, wee commonly call *Emplastrum contra Rupturam*. If that pain or inflammation do grievanie part, wee make Cerats of plaster, dissolved with Oil, lest that the more hard and heavie consistence of the Emplaster should bee troublesom to the part, and hinder perspiration: and therefore laying aside the composition of Cerats, let us speak of Emplasters.

An Emplaster is a composition which is made up of all kinde of medicines, especially of fat and drie things, agreeing in one gross, viscous, solid, and hard bodie sticking to the fingers. The differences of Emplasters are taken from those things, which the varietie of ointments are taken from. Of those things which go into the composition of an Emplaster, som are onely used for their qualitie and facultie, as Wine, Vinegar, Juices. Others to make the consistence, as Litharge (which, according to Galen, is the proper matter of Emplasters) Wax, Oil, and Rosin. Others bee useful for both, as Gums, Metals, parts of bealts, Rosin, Turpentine to digest, to cleans, and drie. Of Emplasters, som are made by boiling, som are brought into a form without boiling; those which bee made without fire, do suddenly drie, nor are they viscous: they are made with meal and powder, with som juice, or with som humid matter mingled with them. But plasters of this kinde may rather bee called hard ointments, or cataplasms: for plasters properly so called are boiled, som of them longer, som shorter, according to the nature of those things

What a Cerat is. The differences.

Emplasters.

which make up the composition of the Emplaster: Therefore it will be worth our labor to know what Emplastres do ask more, or which less boiling. For roots, woods, leavs, stalks, flowers, seeds, being dried, and brought into powder, are to be added last, when the plaster is boiled as it were, and taken from the fire, lest the virtue of these things be lost. But if green things are to be used in a composition, they are to be boiled in som liquor, and being pressed forth, that which is strained to be mingled with the rest of the composition; or if there be juice to be used, it is to be bruised and pressed forth, which is so to be boiled with the other things, that nothing for the qualitie is to remain with the mixture, as we use to do in *Empl. de Janua, seu Betonica, & Gratia Dei*. The same is to be don with Mucilages, but that by their clamminess they do more resist the fire. But there doth much of oil and honie remain in their plasters when they are made. Those juices which are hardened by concretion, as, *Aloës, Hypocistis, Acacia*, when they are used in the composition of a plaster, and be yet new, they must be macerated and dissolved in som proper liquor, and then they are to be boiled to the consumption of that liquor. Gums, as, *Opopanax, Galbanum, Sagapenum, Ammoniacum*, must be dissolved in Wine, Vinegar, or *Aqua vite*, then strained and boiled to the consumption of the liquor, and then mixed with the rest of the plaster. And that they may have the exact quantitie of Gums and Pitch, it is necessarie that first they be dissolved, strained, and boiled, becaus of the sticks and fordid matter which are mingled with them. You must have respect also to the liquor you use to dissolv them in; for Vinegar of the best Wine doth more powerfully penetrate, then that which is of weak and bad Wine.

Other Gums, which are drier, are to be powdred, and are to be mingled with plasters last of all. Metals, as, *Æs ustum, Cbalcitis, Magnes, Bolus Armenus, Sulphur, Auripigmentum*, and others, which may be brought to powder, must be mingled last, unless advise be given by long boiling to dull the fierce qualities of them. The like consideration is to be had of Rosin, Pitch, and Turpentine, which must be put in after the Wax, and may not be boiled but verie gently; but the fats are mingled whil'it the other things are boiling. The Litharge is to be boiled with the oil to a just consistence, if we would have the plaster drie without biting. Cerus may endure as long boiling, but then the plaster shall not be white, neither will the Litharge of silver make a plaster with so good a color as Litharge of gold. Moreover, this order must be observed in boiling up of plasters: the Litharge must be boiled to his consistence; juices or mucilages are to be boiled away, then add the fats, then the drie Rosin, Wax, Gums, Turpentine, and after them the powders: You shall know the plaster is boiled enough by his consistence, gross, hard, glutinous, and sticking to the fingers, being cooled in the air, water, or upon a stone. Also you shall know it by his exact mixtion, if that all the things becom one mass hard to be broken.

Signs of a plaster perfectly boiled.

The quantitie of things to be put into plasters.

The quantitie of things which are to be put into a plaster can hardly be described, but an artificial conjecture may be given, by considering the medicaments, which make the plaster stiff, and of a consistence, and the just hardness and softness they make being boiled. Wax is not put into such plasters wherein is *Labdanum*; for that is in stead of Wax. For if there shall be in the composition of a plaster som emplastick medicaments, the Wax shall be the less: Contrariwise, if they shall be almost all liquid things, the Wax shall be increased so much, as shall be necessarie for the consistence of the plaster. The quantitie of the Wax also must be altered according to the time, or the air; therefore it is fit to leav this to the art and judgment of the Apothecarie. Emplastres are sometimes made of ointments by the addition of wax, or drie rosin, or som other hard or solid matter. Som would that a handful of medicaments poudred, should be mingled with one ounce, or an ounce and an half of oil, or som such liquor, but for this thing nothing can certainly be determined: Onely in plasters described by the Antients there must be great care had, wherein be must be verie well versed, who will not err in the describing the dose of them; and therefore we will here give you the more common forms of plasters.

Empl. de Vigo with Mercurie.

R. ol. chamæm, aneth. de spica, liliacei, an. ʒ ii. ol. de croco, ʒ i. pingued. porci, ʒ i. pingued. vitul. ʒ β. euphorb. ʒ v. thuris, ʒ x. ol. lauri, ʒ i. β. ranas. viv. nu. vi. pingued. viper. vel ejus loco human. ʒ ii. β. lumbricor. lotor. in vino, ʒ iii. β. succi ebuli, enul. ana. ʒ ii. schœnanthi, stachados, matrix. an. m ii. vini oderiferi, ʒ ii. libarg auri, ʒ i. terebint. claræ, ʒ ii. styracis liquid. ʒ i. β. argenti vivi exstincti, so much as the present occasion shall require, and the sick shall be able to bear, and make up the plaster they do commonly add four ounces of quick-silver, yet for the most part they do increas the dose, as they desire the plaster should be stronger: the worms must be washed with fair water, and then with a litle wine to cleas them from their earthie filth, of which they are full, and so the frogs are to be wash't and macerated in wine, and so boiled together to the consumption of a third part; then the Squinanth must be bruised, the Feverfew and the Stachas cut small, and they being added, to be boiled to the consumption of one pint, and being boiled sufficiently, the decoction being cooled shall be strained and kept; and the Litharge is to be infused for twelve hours in the oil of Camomil, dill, Lilies, Saffron; and the axungia's above spoken of.

Then

Then boil them all with a gentle fire, by and by taking from it from the fire, and add one quart of the decoction above spoken of, then set it to the fire again that the decoction may be consumed, and then by degrees add to the rest of the decoction: the oil of spike shall be reserved unto the last, which may give the plaster a good smell. Then are added the juices of walwurt and enula, which must be boiled until they be wasted away. Afterwards it being taken from the fire, to the composition is added the frankincens and euphorbium, and white wax as much as shall suffice. When the whole mass shall cool, then at last is mingled the quick-silver extinct, turpentine, oil of bitter almonds, baies, spike, of line, styrax and axungia, being continually stirred, and it shall be made up upon a stone into rolls. Unless the quick-silver be well extinguished, it will run all into one place, and unless you carrie until the composition cool, it will vapor away in fume.

Rx. croci. ℥ii. bdelli, mastich. ammon. styrac. liquid. an ℥ β. ceræ alb. ℥ β. tereb. ℥ vi. medul. cruris *Ceratū cæsepī*
vaccæ, adipis anserini, an ℥i. æspi, vel si desit, axung. gallin. ℥ix. olei nard. quantum satis ad magda- *ex Philagrīo.*
leones formandos, expressiois scillæ, ℥i β. olibani, sevi vitul. ℥i. The æspus, sepum, adeps, medulla, cera, are to be dissolved together; when they cool, add the ammoniacum dissolved in the decoction of fenugreek and camomil, half an ounce, and so much juice of squills, then put to the styrax and turpentine, stirring them continually; then add the bdellium, olibanum, mastich, aloës, brought into fine powder, and when they are perfectly incorporated into a mass let them be made up with *oleum nardinum* into rolls.

Rx. terebinth. ℥ β. resin. ℥i. cer alb. ℥ iv. mastich. ℥i. fol. verben. betonic. pimpinel. an. mi. The *De gratiâ Dei.*
herbs being green, the tops are to be cut and bruised in a stone-mortar, and boiled in red wine to the consumption of one third part. To the strained liquor add wax cut into small pieces, and being dissolved by the fire; the liquor being consumed put to the rosin, when it shall cool add the Mastich powdred, working it with your hands, by which it may be incorporated with the rest of the things.

Rx. succi beton. plantag. apii, an. ℥i. ceræ, picis, resin. tereb. an. ℥ β. fiat empl. The juices are *De janua seu*
to be mingled with the wax being dissolved, and boiling them until three parts be con- *de Betonicâ.*
sumed, add the rosin and pitch, which being dissolved and hot, must be strained, and then add the turpentine, and make up the plaster.

Rx. croci, picis com. (or rather picis nivalis, becaus this emplaster is used to discuss and *Emplastrum*
draw forth the matter which causeth the pain in the joints) coloph. ceræ, an. ℥ ii. tereb. galb. *oxyceceus.*
ammon. thuris, myrrhæ, mastich. an. ℥ v β. The cera, pix, and colophonia are by little and little to be dissolved, to which add the gums dissolved according to art, and mingled with the terebinth; and taking it from the fire add the thur, myrrha, and at last the crocus in fine powder, and then make it up into rowls with oil of worms,

Rx. ol. com. ℥ ii. cerus. subtilis. ℥ i. boil them together with a gentle fire, stirring them up *De cerusâ.*
continually until they com to the bodie of an emplaster: if you would have the plaster whiter, take but ℥ ix. of the oil.

Rx. litharg. iriti, acet. fortif. an. ℥ β. ol. antiq. ℥ i. fiat emplastrum: let the oil be mingled *Tripbarmacum,*
with the litharge for the space of twelv hours; then boil them to a good consistence, putting *seu nigrum.*
in the vineger by little and little; but you shall not take it from the fire until the vineger be quite wasted away.

Rx. ol. vet. ℥ iii. axung. vet. sine sale, ℥ ii. litharg. trit. ℥ iii. vitriol. ℥ iv. let the oil be mingled *Diapalma, seu*
with the litharge for the space of twelv hours; and boil them to a good consistence, then add *diachalciteos.*
to the axungia, stirring them continually with a spatter made of the palm-tree, reed, or willow, and being sufficiently boiled, take it from the fire, and add the vitriol in fine powder.

Rx. picis naval. aloës, an. ℥ iii. litharg. ceræ, coloph. galban. ammoniac. an. ℥ ii. visci querni, ℥ vi. *Contra ruptu*
gypsi ust. utriusque aristoloch. ana, ℥ iv. myrrhæ, thuris, an ℥ vi. tereb. ℥ ii. pulveris vermium terrestri- *ram.*
un, gallar. utriusq. consolid. bol. arm. an. ℥ iv. sang humani, ℥ i. fiat emplast. If you would have it of a verie good consistence, you may add of the oil of myrtils or mastich, ℥ β. you shall make it thus: Take the skin of a Ram cut in pieces, and boil it in an hundred pintes of water and vineger until it com to a glue of stiff gellie, in which you shall dissolv the visc. quer. then add the pitch and wax broken into small pieces, and if you will you may add the oil with them, afterwards the galban. and ammoniac. dissolved in vineger, being mingled with the terebinth, may be added. Then add the litharge, gypsum, bol. aristoloch. consolid. vermes & sang. human. At last the myrrh, thur, colophon and aloë, stirring them continually; and that they may be the better mingled, work the plaster with a hot pestil in a mortar.

Rx. mucag. sem. lini, rad. alb. fæneg. median. corticis ulmi, an. ℥ iv. olei liliacei, cham. aneth. an. ℥i β. am- *De mucaginibus*
mon. opopanac. sagap. ana ℥ β. croci, ℥ ii. ceræ nov. ℥ β. tereb. ℥ β. fiat empl. Fernelius hath ℥ xx. of wax: the wax being cut small must be mingled with the oils and the mucilages, stirring them continually with a wooden spatter till the liquor be consumed. Then the gums dissolved and mingled with the terebinthina, must be added, and last of all the saffron finely powdered.

Rx. ol. ros. myrtil. ung. populeon. ana, ℥ iv. pinguedinis gallin. ℥ ii. sebi arietis castrati, sepi vaccini, an. *De minis.*
℥ vi. pingued. porci, ℥ x. litharg. auri, argenti, an. ℥ iii. cerus. ℥ iv. minii, ℥ iii. tereb. ℥ iv. ceræ. q. s. fiat *emplastrum vel ceratum molle.* The lithargiros, cerusa; and minium are to be brought into fine powder, severally being sprinkled with a little rose water, lest the finest of it should flie away; these

these being mingled with the oil of roses and myrtles, with a gentle fire may be boiled until they com to the consistence of honie; then add the axungia's, and boil them till the whole grow black, after add the *sebum*, and that being dissolved take it from the fire, and then add the *unguentum populeon*, and som wax if there be need, and so bring it to the form of a plaster.

Diachylon magnum.

Rx. litharg. puri pul. ℥xii. ol. irin. chamem. aneth. an. ℥viii. mucag. sem. lini, sænug. rad. alth. ficuum ping. uvar. passar. succi ireos, scille, æsopi, iethyocollæ, an. ℥vii β. tereb. ℥iii. res. pini, cera flavæ, an. ℥ii. fiat emplastrum. The litharge is to be mingled with the oil before it be set to the fire, then by a gentle fire it is to be boiled to a just consistence; after the mucilage by degrees must be put in, which being consumed the juices must be added and the iethyocolla, and they being wasted too, then put to the wax, rosin, then taking the whole from the fire, add the æsopus and terebinthina.

The use of plasters-

Wee use plasters when wee would have the remedie stick longer and firmer to the part, and would not have the strength of the medicament to flie away or exhale too suddenly.

CHAP. XXVIII.

Of Cataplasms and Pultisses.

The matter of cataplasms.

Cataplasms are not much unlike to emplasters less properly so called, for they may be spread upon linnen cloths and stoups like them, and so applied to the grieved parts.

They are composed of roots, leaves, fruits, flowers, seeds, herbs, juices, oils, fats, marrows, meals, rosins. Of these som must be boiled, others crude. The boiled are made of herbs boiled tender, and so drawn forth an hair-scarf, adding oils and axungia's thereto. The crude are made of herbs beaten, or their juices mixed with oil and flower, or other powders appropriate to the part or disease, as the Physician shall think fit. The quantitie of medicines entering these compositions can scarce be defined, for that they must be varied as wee would have the composition of a softer or harder bodie. Verily they ought to be more gross and dens when as wee desire to ripen anie thing, but more soft and liquid when wee endeavour to discuss. Wee use cataplasms to assuage pain, digest, discuss and resolv unnatural tumors and flatulencies. They ought to be moderately hot and of subtil parts, so to attract and draw forth; yet their use is suspected the bodie being not yet purged, for thus they draw down more matter into the affected part. Neither must wee use these when as the matter that is to be discussed is more gross and earthie, for thus the subtler parts will be onely discussed, and the gross remain impact in the part unless your cataplasme be made of an equal mixture of things, not only discussing, but also emollient, as it is largely handled by *Galen*.

Their use.

Lb. 2. ad glauc. ubi de scirrho.

An anodyne cataplasme.

A ripening cataplasme.

A discussing cataplasme.

How Pultisses differ from cataplasms.

A ripening cataplasme.

This shall be largely illustrated by examples. As, *Rx. medul. panis, lb β. decoquantur in lacte pingui, adde olei chamem. ℥β. axung. galin ℥i. fiat cataplasma.* Or, *Rx. rad. alth. ℥iii. fol. malv. senecionis, an. m i. sem. lini, sænug. au. ℥ii. ficus, ping. nu. vi. dequoquantur in aqua, & per setaccum transmittantur, addendo olei lilior. ℥i. far. bord. ℥ii. axung. porc. ℥i β. fiat cataplasma.* Or, *Rx. far. fab. & orob. an. ℥ii. pulv. chamem. & melil. an. ℥iii. ol. irin. & amygd. amar. an. ℥i. succi rut. ℥β. fiat cataplasma.* Pultisses differ not from cataplasms, but that they usually consist of meals boiled in oil, water, honie, or axungia. Pultisses for the ripening of tumors are made of the flour of barlie, wheat, and milk, especially in the affects of the entrals; or els to drie and binde, of the meal of rice, lentils, or *Orobis* with vineger; or to cleas, and they are made of honie, the flour of beans and lupines, adding thereto som old oil, or anie other oil of hot qualitie, and so make a discussing pultis. Also anodyne pultisses may be made with milk; as thus for example, *Rx. farin. triticeæ, ℥ii. micæ panis purissimi, ℥iii. decoquantur in lacte, & fiat pulticula.* *Rx. farin. hordei & fab. an. ℥ii. far. orob. ℥iii. decoquantur in hydromelite, addendo mellis quart. i. olei amygd. amar. ℥ii. fiat pulticula.* Wee use pultisses for the same purpose as wee do cataplasms, to the affects both of the internal and external parts. Wee somtimes use them for the killing of worms, and such as are made of the meal of Lupines boiled in vineger, with an ox's gall, or in a decoction of wormwood, and other such like bitter things.

CHAP. XXIX.

Of Fomentations.



Fotus or fomentation is an evaporation or hot lotion, chiefly used to mollifie, relax and assuage pain, consisting of medicines having these faculties. A fomentation commonly useth to be moist, being usually made of the same things as embrocations, to wit, of roots, seeds, flowers, boiled in water or wine. The roots here used are commonly of mallows, marsh-mallows, and lilies. The seeds are of mallows, marsh-mallows, parsly, smalage, line, fenugreek. Flowers are of camomil, melilot, figs, raisins; and the like: all which are to be boiled in wine, water, or lee, the consumption of the third part or the half: as,

Rx. Rad. alth. & lil. an. ℥ii. sem. lini, sænug. cumin. an. ℥iii. flo. cham. melil. & aneth. an. p. i. summit. orig. m. β. bulliant in aquis partibus, aque & vini, aut in duabus partibus aque, & unâ vini, aut in
Lixivio

Lixivio cineris sarmentorum, ad tertie partis consumptionem, fiat fofus. In imitation hereof you may eafily describe other fomentations, as occation and neceffitie fhall require.

Wee ufe fomentations before wee applie cataplafms, ointments or plafters to the part, that fo wee may open the breathing places or pores of the skin, relax the parts, attenuate the humor, that thus the waie may bee the more open to the following medicines. The bodie being firft purged, fomentations may bee ufed to what parts you pleas. They may bee applied with a female-fponge, for it is gentler and fofter then the male; with felt, woollen cloaths, or the like dipped in the warm decoction wrung out, and often renewed; otherwife, you may fill a Swine's bladder half full (efpecially in pains of the fides) of the decoction, or elf a ftone-bottle, fo to keep hot the longer; yet fo, that the bottle bee wrapped in cotton, wool, or the like foft thing, that fo it may not by the hardnefs and roughnefs offend the part; according to *Hippocrates*.

Their ufe.
2. De vifitu in acutis.

C H A P. XXX.

Of Embrocations.

Embroche, or Embrocation is a watering, when as from on high wee (as it were) showr down fom moiture upon anie part. This kinde of remedie is chiefly ufed in the parts of the head, and it is ufed to the coronal future, for that the skull is more thin in that part, fo that by the *spiracula* or breathing places of this future, more open then thofe of the other futures, the force of the medicine may more eafily penetrate unto the *Meninges*, or membranes of the brain. The matter of Embrocations is roots, leavs, flowers, feeds, fruits, and other things, according to the intention and will of the Phyfician. They are boiled in water and wine, to the half or third part. Embrocations may alfo bee made of Lie or Brine againft the cold and humid affects of the brain. Somtimes of oil and vineger, otherwhiles of oil onely. *Rx. fol. plantag. & solan. an. m. i. fem. portul. & cucurb. an. zii. myrtil. zi. flor. nymph. & ros. an. p. β. fiat decoct. ad fbi. cum aceti zii. fi altē subeundum fit, ex qua irrigetur pars inflammata.*

What an Embrocation is

In affects of the brain, when wee would repercuſs, wee often and with good ſucceſs uſe oil of Roſes with a fourth part of vineger.

Wee uſe Embrocations, that together with the air drawn into the bodie by the *Diastole* of the arteries, the ſubtiler part of the humor may penetrate, and fo cool the inflamed part: for the chief uſe of embrocations is in hot affects. Alſo wee uſe embrocations, when as for fear of an hæmorrhagie, or the flying aſunder of a broken or diſlocated member, wee dare not looſe the bandages wherewith the member is bound. For then wee drop down fom decoction or oil from high upon the bandages, that by theſe the force of the medicine may enter into the affected member.

Their uſe:]

C H A P. XXXI.

Of Epithemes.

Epithema, or an Epitheme, is a compoſition uſed in the diſeaſes of the parts of the lower and middle bellie, like to a fomentation, and not much unlike an embrocation. They are made of waters, juices, and powders, by means whereof they are uſed to the heart, cheſt, liver and other parts. Wine is added to them for the more or leſs penetration, as the condition of the hot or cold affect ſhall ſeem to require; for if you deſire to heat, more wine muſt bee added, as in ſwooning by the clotting of blood, by the corruption of the ſeed, by drinking fom cold poiſon: the contrarie is to bee don in a fainting by diſſipation of the ſpirits by feveriſh heats, alſo vineger may bee added. The matter of medicines proper to the entrails is formerly deſcribed, yet wee commonly uſe the *ſpecies* of electuaries, as the *ſpecies elect. iriſantali* the liver, being affected, and *Diamargariton* in affects of the heart. The proportion of the juices or liquors to the powders, uſe's to bee this, to everie pinte of them *zj.* or *zβ.* of theſe, of wine or elf of vineger *zj.* You may gather this by the following example.

What an Epitheme is.

Rx. aqu. ros. bugl. borag. an. ziii. succi ſcabioſ. zii. pul. elect. diamarg. frigid zii. cort. citri ſicci zi. coral. raf. ebor. an. ββ. ſem citri & card. ben. an. ziiβ. croci & moſchi an. gra. 5. addendo vini albi zii. fiat Epithema pro corde.

In the ſixth Chapter.

A cordial Epitheme.

Epithemes are profitably applied in hecſtick and burning fevers to the liver, heart, and cheſt, if ſo bee that they bee rather applied to the region of the lungs; then of the heart; for the heat of the lungs being by this means tempered, the drawn in air becom's leſs hot in peſtilent and drying fevers. They are prepared of humecting, refrigerateing, and cordiall things, fo to temper the heat, and recreate the vital facultie. Somtimes alſo wee uſe Epithemes to ſtrengthen the heart, and drive there-hence venenate exhalations, liſted or raiſed up from anie part which is gangrenate or ſphacelate. Som cotton, or the like, ſteeped or moiſtened with ſuch liquors and powders warmed, is now and then to bee applied to the affected entrail; this kinde of remedie, as alſo all other topick and particular medicines, ought not to bee uſed, unleſs you have firſt premiſed general things.

Their uſe.

C H A P. XXXII.

Of Potential Cauteries.

The use of
potential
cauteries.



That kinde of Pyrotick, which is termed a Potential Cauterie, burn's, and causeth an eschar. The use of these kinds of Cauteries is to make evacuation, derivation, revulsion, or attraction of the humors by those parts whereto they are applied. Wherefore they are often and with good success used in the punctures and bites of venomous beasts, in a venomous, as also in a pestilent *Bubo* and Carbuncle, unless the inflammation bee great: for the fire doth not only open the part, but also retund's the force of the poison, call's forth, and plentifully evacuate's the conjunct matter. Also they are good in phlegmatick and contumacious tumors; for by their heat they take away the force and endeavours of our weak heat. Also they are profitably applied to stanch bleeding, to eat or waste the superfluous flesh of ulcers and wens, to bring down the callous lips of ulcers, and other things too long here to insit upon.

The matter of
them.

The materials of these Cauteries are Oke-ashes, Pot-ashes, the ashes of Tartar, of Tithymals or spurges, the Fig-tree, the stalks of Colewurts and beans, cuttings of Vines, as also *sal ammoniacum*, *alkali*, *axungia vitri*, *sal nitrum*, Roman Vitriol, and the like; for of these things there is made a salt, which by it's heat is caustick and escharotick, like to an hot iron and burning coal: Therefore it violently loose's the continuities by eating into the skin, together with the flesh there-under. I have thought good here to give you divers forms of them.

The forms of
them.

Take of unquench't Lime extinguished in a bowl of Barber's Lee three pounds: When the Lee is settled, let it bee strained, and into the straining put of *Axungia vitri*, or Sandiver, calcined Argol, of each two pounds, of *Sal nitrum & ammoniacum*, of each four ounces, these things must bee beaten into a gross powder, then must they bee boiled over the fire, and after the boiling let them remain in the Lee for four and twentie hours space, being often stirred about, and then strained through a thick and double linnen-cloth, left anie of the earthlie dross get thorow together with the liquor. This strained liquor, which is as clear as water, they call *Capitellum*, and they put it in a brasen Basin, such as Barbers use, and so set it upon the fire, and as soon as it boil's, they keep it with continual stirring, lest the salt should adhere to the basin; the *Capitellum* being half boiled away, they put in two ounces of powdered vitriol, so to hasten the falling of the eschar, and so they keep the basin over the fire until all the liquor bee almost wasted away. Then they cut into pieces the salt or that earthie matter, which remain's after the boiling away of the *Capellum*, and with a knife or hot iron spatula, form them into cauteries of such figure and magnitude as they think fitting, and so they laie them up, or keep them for use in a viol or glass closely stopped, that the air get not in: Or,

Take a bundle or sufficient quantitie of Bean-stalks or husks, of Colewurt-stalks two little bundles, of cuttings of Vines four handfuls, burn them all to ashes, which put into a vessel of river-water, so let them infuse for a daie's space, being stirred ever now and then; to this adde two pounds of unquench't Lime, of *Axungia vitri* half a pound, of calcined Tartar two pounds, of *Salniter* four ounces, infuse all these, being made into powder, in the foresaid Lee for two or three daies space, often stirring it, then strain the *Capitellum* or liquor through a thick cloth until it becom clear. Put it into a bason, and set it over the fire, and when as the moisture is almost wholly spent, let two or three ounces of vitriol bee added, when the moisture is sufficiently evaporated, make cauteries of that which remain's, after the formerly mentioned manner.

The sign of
good *Capitel-
lum*.

Take of the ashes of sound, knottie, old Oke as much as you pleas, make thereof a Lee; powr this Lee again upon other fresh ashes of the same wood, let this bee don three or four times, then quench som Lime in this Lee, and of these two make a *Capitellum*, whereof you may make most approved cauteries. For such ashes are hot in the fourth degree; and in like sort the stones, whereof the lime by burning becom's fierie and hot to the fourth degree: Verily, I have made cauteries of Oke-ashes onely, which have wrought quickly and powerfully. The *Capitellum* or Lee is thought sufficiently strong, if that an egg will swim therein without sinking. Or,

Take of the ashes of bean-stalks three pounds, of unquench't lime, Argol, of the ashes of Oke-wood, being all well burnt, of each two pounds. Let them for two daies space bee infused into a vessel full of Lee made of the ashes of Oke-wood, and bee often stirred up and down. Let this Lee then bee put into another vessel, having manie holes in the bottom thereof, covered with strums or straw-pipes, that the *Capitellum* flowing through these strait passages may becom more clear. Let it bee put twice or thrice upon the ashes, that so it may the better extract the heat and caustick qualitie of the ashes. Then putting it into a Barber's basin, set it over the fire, and when it shall begin to grow thick, the fire must bee increased, and cauteries made of this concreting matter.

The facultie
of the silken
cauterie.

The following cauteries are the best that ever I made trial of, as those that applied to the arm in the bigness of a Peaf, in the space of half an hour without pain, especially if the part of it self bee painless and free from inflammation, eat into the skin and flesh even to the bone,

bone, and make an ulcer of the bigness of ones finger's end, and they leav an eschar to moist and humid, that within four or five daies space it will fall away of it self without anie scarification. I have thought good to call these cauteries Silken or Velvet ones, not only for The caus of that they are like Silk, gentle and without pain, but chiefly becaus I obtained the description the name. of them of a certain Chymist, who kept it as a great secret, for som Velvet and much entreatie: Their description is this,

Take of the ashes of Bean-stalks, of the ashes of Okè-wood well burnt, of each three pounds, let them bee infused in a prettie quantitie of river-water, and bee often stirred up and down, then add thereto of unquencht lime four pounds, which beeing quencht, stir it now and then together for two daie's space, that the *Capitellum* may become the stronger, then strain it through a thick and strong linnen-cloth, and thus strained, put it three or four times upon the ashes, that so it may draw more of the caustick faculties from them, then boil it in a Barber's basin, or elf an earthen one well leaded, upon a good Char-coal-fire, until it become thick. But a great part of the secret or art consist's in the manner and limit of this boiling; for this *Capitellum* becoming thick and concreting into salt, must not bee kept so long upon the fire, until all the moisture shall bee vanished and spent by the heat thereof: for thus also the force of the foresaid medicines, which also consist's in a spirituouse substance, will bee much dissipated and weakned; therefore before it bee com to extreme driness, it shall bee taken off from the fire, to wit, when as yet there shall som thick moisture remain, which may not hinder the cauteries from beeing made up into a form. The made-up cauteries shall bee put up into a glass most closely luted up or stopped, that the air may not dissolv them, and so they shall bee laid up and kept in a drie place. Now, becaus the powder of Mercurie is neer to cauteries in the effects and facultie thereof, which therefore is termed *Pulvis Angelicus* for the excellencie; therefore I have thought good to give you the description thereof, which is thus:

R. Auripigmenti citrini, floris æris, an. ℥ii. salis nitri, ℥i. alumin. roche, ℥ii. vitrioli rom. ℥iii. The description of Mercurie or Angelical powder.
Let them all bee powdred, and put into a Retort, having a large receiver well luted put thereto. Then set the Retort over a Fornace, and let the distillation bee made first with a gentle fire, then increased by little and little, so that the receiver may wax a little reddish.

R. Argenti vivi, ℥i. aquæ fortis, ℥i. ponantur in phiala, & fiat pulvis, ut sequitur.

Take a large earthen pot, whereinto put the viol or bolt-head wherein the *Argentum vivum* and *Aqua fortis* are contained, setting it in ashes up to the neck thereof, then set the pot over a fornace, or upon hot coals, so that it may boil and evaporate away the *Aqua fortis*: neither in the *interim* will the glass bee in anie danger of breaking, when all the water is vanished away, which you may know is don when as it leav's smoaking; suffer it to become cold, then take it forth of the ashes, and you shall finde calcined Mercurie in the bottom, of the color of red Lead, separated from the white, yellow or black excrement; for the white that concrete's in the top is called Sublimate, which if it should remain with the calcined Mercurie, you shall make it into powder, and put it in a brass-vessel upon som coals, stirring or turning it with a *spatula* for the space of an hour or two: for thus it will lose a great part of the acrimonie and biting, whence it will become less painful in the operation.

CHAP. XXXIII.

Of Vesicatories.

Vesicatorie and rubrifying ointments, cataplasms, or plasters are made of acrid medicines, which have power to draw forth to the superficies of the bodie such humors as lie deep, by exalcerating the skin and causing blisters. Their matter is the same with septicke medicines; as, *Sinapi, anacardus, cantharides, euphorb. radices scyllæ, bryon.* and the like, which with honie, turpentine, leaven, gum, or rosin, may bee made into cataplasms, ointments, or plasters; therefore the composition of vesicatories, or rather their consistence differ's not from that of hard or soft unguents. Therefore I will give you one example or description of them, which is thus.

R. cantharid. euphorbii, sinapi, an. ℥ss. mellis anacardini, ℥i. modico acetii, & fermenti quod sit satis excipiantur, & fiat vesicatorium. The description of a vesicatorie.
Som of the ancients think it better to make up these medicines on of a vesicatorie. with water rather than with vinegar, becaus experience teacheth that vinegar abate's the strength of mustard. Wee use this kinde of medicine in long diseases, when as wee cannot anie thing prevail with other remedies; especially in the head-ach, megrim, epilepsie, *sciatica*, gout, the bites and punctures of venemous creatures, pestilent carbuncles, and other inveterate and contumacious diseases. Their use.

Also wee use them when as wee would restore life and strength to a dead or decayed part, for thus they are drawn back together with the heat; for which purpose wee must make choise of more gentle vesicatories, as such which onely rubrifie, so that the part may onely become red, and not bee burnt: the part must first bee strongly rubbed, that the decayed and dull heat may bee rowzed and stirred up, the pores of the skin more opened, that the force of the medicine may enter the deeper into the bodie.

C H A P. XXXIV.

Of Collyria.

What a collyrium is.

The differences of them.

Their use.

Their matter.



A Collyrium is a medicine proper for the eyes, made of powder finely levigated and ground into the form of *Alcohol*, as the Arabians and our Alchymists term it: yet the word in a more general acception is used for any liquid medicine, made with liquors and powders, and applied or used to any part. Wherefore *collyria* are of three kinds, some are moist or liquid, which are properly called *collyria*; others drie, which are of the same consistence with *Trochiscs*; others have the consistence of honie, or a liniment. The liquid serv for the greater and lesser corners of the eyes; those of the consistence of honie are meet for the apple of the eye; but the drie are to be made into powder, and so blown into the eyes: also sometimes they are to be dissolved in some juice, or other convenient liquor, that so they may be made into a moist *collyria*.

Therefore *collyria* have divers uses, and are applied to several parts according to the intention and counsel of the Physician: for liquid *collyria* put into the corners of the eyes do more readily mitigate the heat of their inflammation; by reason they enter more easily by the tenuitie of their substance, such things as have a more firm consistence adhere more tenaciously, and work more certainly. Moist *collyria* are made of juices, mucilages, waters of herbs, flowers, seeds, metalline bodies, galls, and other such like medicines, which are repercussives, resolvers, detergents, anodynes, and the like, according to the nature of the present disease.

Sometimes they are made of juices and distilled waters onely, otherwhiles powders, or drie *collyria* made into powder, are mixed with them, together with the white of an egg. Powders are prescribed to ζii . and liquors to ζiv . or ζv . in medicines for the eyes; but for other parts, as when it is to be injected into the urinarie passage, they may be prescribed to the quantity of a pinte. Drie *collyria* are made of powders exceeding finely beaten or ground, and incorporated with some juice, whence it is that they differ little from *Trochiscs*. Wherefore the *collyrium album Rhasis* is now usually termed a *Trochisc*, and kept with them. Cathertick powders are not applied in the form of a moist *collyrium*, but in the form of a liniment, that is, incorporated with fat or oil. All these things shall be made more plainly by the following examples.

A repercussive collyrium.
An anodyne.
A detergent.

Rx. aq. plant. & rosar. an. ζii . album. ovi unum, bene agitatum, misce, fiat collyrium. Rx. aq. rosar. & viol. an. ζiii . trochis. alb. Rhaf. cum opio, ζii . fiat collyrium. Or, Rx. decoct. fœnug. ζiii . mucag. sem. lini, ζii . saccar. cand. ζi . croci, $\mathfrak{D}\text{i}$. fiat collyr. Rx. thuris, myrrh. $\mathfrak{D}\text{ii}$. rut. prepar. & antimon. lot. an. ζii . cum succo chelidon. fiat collyrium in umbrâ siccand. Rx. fellis perdic. ant lepor. $\mathfrak{z}\mathfrak{ss}$. succi fœnicul. ζi . saccar. cand. ζii . syrup. ros. excipientur, fiat collyrium.

We use *collyria* in wounds, ulcers, fistulas, suffusions, inflammations, and other diseases of the eyes.

C H A P. XXXV.

Of Errhines and Sternutatories.

What an errhine is.
Their differences.



Errhines are medicines appointed to be put into the nose to purge the brain of its excrementitious humors by the nostrils, or to deterge such excrements as are therein, by reason of an *ozena*, *polypus*, or the like disease. Errhines are either liquid or drie, or else hard, and of the consistence of an emplaster. Liquid errhines, which usually are to purge the head, are made of the juices of herbs; as beets, colewurts, marjoram, pimpernel, hyssop or balm, or of their decoctions taken alone, or mixed with wine, or syrup, as *oxymel scilliticum*, syrup of hyssop, roses, or *mel anthosatum*: sometimes powders are mixed with these liquors; as of pepper, *euphorbium*, pellitorie of Spain, hore-hound, *nigella romana*, *castoreum*, myrrh, white ellebore, sow-bread, and other like, in a small quantity, to wit, to ζi . little more or less according to the vehemencie of the disease. We will make this more plain by examples.

The form of one.

An errhine purging phlegm.

Rx. succi betæ, majoran, brassic. an. ζi . depurentur, & modicè bulliant cum vini albi, ζii . oxymelit. scillit. $\mathfrak{z}\mathfrak{ss}$. fiat errhinum. When as you desire to attract more powerfully from the brain, you may dissolve in errhines some purging medicines; as agarick, *diaphanicon*, *senna*, *carthamus*, and the like: hence doth arise the distinction of errhines into such as are meet to purge phlegm, choler, and melancholie. This following example is set down by *Rondeletius*. Rx. rad. pyreth. irid. an. ζi . puleg. calam. origon. an. m i . agar. trochisc. ζiii . flor. anthos & scæbad. an. p i . fiat decoctio in colatur. Ibi. dissolve mellis anthosati & scillit. an. ζiii . fiat caput purgium. But it is better to this purpose to make use of purging simples; as agarick, turbeth, coloquintida, and the like, then of compositions; as *diaphanicon*, for these make the decoction more thick, and less fit to enter the passages of the nostrils, and the sieve-like bones, but apt rather there to cause obstruction, and intercept the freedom of respiration.

An errhine with powders.

Rx. succi betæ, ζi . aq. salu. & beton. an. $\mathfrak{z}\mathfrak{ii}\mathfrak{ss}$. pul. castor. $\mathfrak{D}\mathfrak{ss}$. piper. & pyreth. an. $\mathfrak{D}\text{i}$. fiat caput purgium. Drie errhines that are termed sternutatories, for that they cause sneezing, are made of powders onely, to which purpose the last mentioned things are used; as also aromatick things

things in a small quantitie, as to $\mathfrak{z}\text{ii}$. at the most: as, *Rx. major. nigel, caryoph. zinzib, an. Di. acor.* A *ternutatoric.*
pyreth. & panis porcin. an. ℥ss. euphorb. Di. terantur, & in nares mittantur, aut insuffentur. Errhines of the consistence of Emplasters, by the Latins vulgarly called *Nasalia*, are made of the described powders or gums dissolved in the juice of som of the forementioned herbs, incorporated with turpentine and wax, that so they may the better bee made into a pyramidal form to bee put into the nostrils. As, *Rx. majoran. salv. nigel. ℥ii. pip. alb. caryoph. galang. an. Di. pyreth. euphorb. an. ℥ss.* The matter of solid errhines.
panis porcin. ellebor. alb. an. Di. terantur, & in pulverem redigantur. And then with turpentine and wax as much as shall bee sufficient, make them up into *Nasalia* of a pyramidal or taper-fashion. Wee use errhines in inveterate diseases of the brain; as the epilepsie, fear of blindness, an apoplexie, lethargie, convulsion, the lost sens of smelling: yet wee first use general remedies and evacuations, lest by sneezing and the like concussion of the brain for the exclusion of that which is offensive thereto, there should bee made a greater attraction of impuritie from the subjacent parts. Liquid things must bee drawn up into the nostrils warm out of the palm of the hand, to the quantitie of $\mathfrak{z}\mathfrak{ss}$. the mouth beeing in the interim filled with water, lest the attracted liquor should fall upon the palat, and so upon the lungs: drie errhines are to bee blown into the nose with a pipe or quill: solid ones must bee fastned to a thred, that they may bee drawn forth as need require's, when as they are put up into the nostrils. The morning (the bellie beeing emptie) is the fittest times for the use of errhines. If by their force the nose shall bee troubled with an itching, the pain thereof must bee mitigated by woman's milk, or oil of violets. The use of attractive errhines is hurtful to such as are troubled with diseases of the eyes, or ulcers in the nose, as it oft-times fall's out in the *Lues venerea*: wherefore in this case it will bee best to use Apophlegmatisms, which may divert the matter from the nose. Their use, The manner of using them, To whom they are hurtful.

C H A P. XXXVI.

Of Apophlegmatisms, or Masticatories.

A *Popblegmatismoi* in Greek, and *Masticatoria* in Latine, are medicines which kept or held in the mouth and somewhat chawed, do draw by the mouth forth of the brain excrementitious humors, especially phlegm: now they are chiefly made four manner of waies; the first is when as the medicines are received in honie or wax, and formed into pills, and so given to chaw upon. The second is, when as the same things are bound up in a fine linnen-cloth, so to bee held in the mouth. The third is when as a decoction of acrid medicines is kept in the mouth for a prettie space. The fourth is when as som acrid medicine, or otherwise drawing phlegm, as pellitorie of Spain, mastich, and the like, is taken of it self to the quantitie of a hasel-nut, and so chawed in the mouth for som space. The matter of masticatories is of the kinde of acrid medicines; as of pepper, mustard, hyssop, ginger, pellitorie of Spain, and the like; amongst which you must make choice chiefly of such as are not troublesom by anie ingrate taste, that so they may bee the longer kept in the mouth with the lesf offence and loathing. Yet masticatories are somtimes made of harsh or acerb medicines; as of berberies, the stones of prunes or cherries, which held for som space in the mouth, draw no lesf store of phlegm then acrid things; for the verie motion and rowling them up and down the mouth attract's, becaus it heat's, compress'es, and expresse's: the quantitie of the medicine ought to bee from $\mathfrak{z}\mathfrak{ss}$. to $\mathfrak{z}\mathfrak{i}\mathfrak{ss}$: as, *Rx. pyreth. staphisag. an. ℥i℥ss. mastich. ℥ss. pulverentur & involventur nodulis in masticatoria.* Or, *Rx. zinzib. sinap. an. ℥i. euphorb. ℥ii. piper. ℥ss. excipiantur melle, et fiant pastilli pro masticatoriis.* *Rx. hyssop. thym. origan. salv. an. p. i.* boil them in water to wash the mouth withall. Or, *Rx. zinzib. caryoph. an. ℥i. pyreth. pip. an. ℥ss. staphisagr. ℥ii. mastiches, ℥ss. excipiantur, fiant pastilli pro masticatoriis.* Wee use masticatories in old diseases of the brain, dimness of the sight, deafness, pustles of the head and face, and somtimes to divert the excrements which run to the nose beeing ulcerated. What an apophlegmatism is. The differences. The use of masticatories.

Masticatories are verie hurtful to such as have their mouths or throats ulcerated, as also to them whose longs are subject to inflammations, distillations and ulcers; for then errhines are more profitable to derive the matter of the disease by the nostrils. For though the humor drawn from the brain into the mouth by the means of the masticatorie, may bee thence cast forth by coughing and spitting, yet in the interim nature will bee so inured to that passage for the humor, so that it will run that waie when as wee sleep, and fall down upon the parts thereunder, weak either by nature, or by accident. To whom hurtful.

The time fittest for the use of Apophlegmatisms is the morning, the bodie beeing first purged; if anie ingrateful taste remain in the mouth, or adhere to the tongue by using of masticatories, you shall take it away by washing the mouth with warm water, or a decoction of liquorice and barlie.

C H A P. XXXVII.

Of Gargarisms.

A Gargle or gargarism is a liquid composition fit for to wash the mouth and all the parts thereof, to hinder desiccation and inflammation, to heal the ulcers which are in those parts, to assuage pain. Their composition is two-fold, the first is of a decoction of roots, leaves, flowers, What a gargle is. The differences thereof.

flowers, fruits, and seeds fit for the disease; now the decoction is to be made either in fair water alone, or with the admixture of white or red wine, or in the decoction of liquorice and barlic, or of pectoral things, as the intention of the Physician is to repel, cool, or hinder inflammation; as in the tooth-ach caused by matter which is yet in motion; to discuss, as in the tooth-ach already at the height; or to cleanse, as in the ulcers of the mouth; or to drie and binde, as when it is fit to heal the ulcers already cleansed.

Their matter.

The other waie of making of gargarisms is without decoction, which is, when as wee make them either of distilled waters onely, or by mixing them with syrups, mucilages, milk, the whey of Goat's-milk carefully strained. There are mixed sometimes, with a decoction, distilled waters and mucilages, *mel rosatum, oxymel simplex, diamoron, dianucum, biera, picra, oxysacchara, syrup. de rosis siccis, syrupus acetosus,* and other things, as the present case shall seem to require; as alum, *balauſtia, myrrh, olibanum,* ginger, pepper, cinnamon, drie roses, and manie such things; even so that oft-times there enter into gargles such niedicines as have force to draw from the brain; as pellitorie of Spain, carthamus, turbith, and such things as have no bitterneſs, which is the cauſe that neither agarick nor coloquintida ought to enter into gargarisms.

The quantitie of liquor for a gargarism is commonly from ℥β. to ℥i. mix therewith som ℥ii. of syrups, but put in powders sparingly; as som ℥iii. Alum may sometimes be put in to ℥vi. let mucilages be extracted out of ℥ii. of seeds: let these serue for som examples.

An astringent gargle.
An anodyne gargle.

Rx. *plant. polygon. oxalidis, an. m i. rosar. rub. p β. hordei, pi. fiat decoctio ad ℥viii. in qua dissolve syrupi myrtillorum, ℥vi. dianucum, ℥β. fiat gargarisma, Or, Rx. cham. melil. aneth. an. p i. ros. rub. p β. passul. mund. & ficuum, an. p iii. decoquantur in aquis partibus vini & aque, ad ℥vi. addendo mucag. sem. lini, & fœnuigr. an. ℥ii. fiat gargarisma.*

Or else, Rx. *aq. plantag. ligust. absinth. an ℥ii. mellis rosati colati, ℥vi. syrup. rosar. siccar. & de absinth. an. ℥vi. fiat gargarisma.*

A detersive.

Wee use gargles in the morning fasting after general purgations; they are sometimes taken or used cold, when as malign, acrid, and thin humor falls down, sometimes warm, but let these things be don according as the Physician shall advise.

CHAP. XXXVIII.

Of Dentifrices.

What a dentifrice is.
The differences.
The matter whereof they consist.

Dentifrices are medicines prepared and serving divers waies for to cleanse, whiten, and fasten the teeth; for from their use they take their name. Of these, som are drie, other som moist: of the drie, som have the form of opiats, others of powders grossly beaten, but the moist are commonly made by distillation: the matter or drie dentifrices is taken from detergent and drying things; such as are coral white and red, hart's-horn, scuttle-bones, alum, crystal, pumice, sal-nitre, myrrh, frankincense, *balauſtia*, acorns, all sorts of shells of fishes: all these are to be made into powder either by burning, or without it, for scuttle-bones burn't cast forth a stinking and unpleasant smell. To these for smell sake are added certain aromack things; as cinnamon, cloves, nutmegs, and the like: such powders if mixed with som syrup; as *oxymel scilliticum*, or with mucilage of gum arabick and tragacanth, will become opiats, to be made into a pyramidal form of som finger's length, round or square, and sharp pointed, that dried they may serue for dentifrices.

Sometimes emollient roots are boiled with salt or alum, that dried again they may be used for dentifrices: moist ones are made of drying herbs, distilled together with drying and astringent things.

A powder for a Dentifrice.

All the differences shall appear by the following examples. Rx. *lapidis spong. pumicis, & cornu cervi uſt. an. ℥ii. coral. rub. & crystal. an. ℥i. alum. & sal. uſt. an. ℥β. cinnamom. & caryoph. rosar. rub. puluer. an. ℥ii. fiat puluis pro dentifricio. Or, Rx. ossis sepiæ, ℥β. mastiches, coralli rubri uſti, an. ℥ii. cornu cervi uſti, ℥β. aluminis, carbonis, torismarini, an. ℥i. cinnamomi, ℥ii. fiat puluis pro dentifricio. Or, Rx. ossis sepiæ, alum. & salis uſti, an. ii. crystalli, glandium, myrrhæ, thuris, an. ℥ii. corticis grannatorum, macis, cinnamomi, an. ℥i. fiat puluis qui excipiat mucagine gummi tragacanth. & formentur pyramides longæ, siccand. pro dentifricio. Or, Rx. rad. malvæ junioris, & bismalvæ, an. ℥ii. coquantur in aquâ salsâ aut aluminosa, deinde siccentur in furno pro dentifricio. Rx. salis, ℥vi. alumin. ℥iii. thuris, mastiches, sanguis draconis, an. ℥β. aque ros. ℥vi. distillentur in alembico vitreo pro dentifricio.*

Their use.

Dentifrices are not onely good to polish, cleanse, and strengthen the teeth; but wee also oft-times use them for the tooth-ach, the diseases of the mouth, and ulcers of gums. You may use them in the morning, before and after meat.

The ancients, of lentisk-wood made themselves tooth-picks, and such devises to strengthen their loof teeth, which also at this daie is in use with thole of *Languedock*, with whom this wood is plentiful, so that it may be brought thence for the use of Noblemen and Gentlemen; myrrh may also serue for this same use, and anie other astringent wood.

Our people commonly use the stalks of fennel; yet have they no facultie to fasten the teeth, but their smell is grateful.

C H A P. XXXIX.

Of Bags or Quilts.

Physicians term a bag or *sacculus*, the composition or mixture of drie and powdred medicines put in a bag, therefore it is as it were a drie fomentation. Their differences are not drawn from anie other thing then from the varietie of the parts whereto they are applied: such as are for the head must bee made into the fashion of a cap, those which bee for the whole ventricle must bee made into the form of a cithern; those for the spleen, like to an ox's tongue: lastly, such as are for the liver, heart, and other parts, must bee made according to the figure of those parts. Their matter is usually taken from whole seeds fried in a frying-pan, or made into powder, there are sometimes added roots, flowers, fruits, rindes, cordial-powders, and other drie medicines, which may bee easily brought into powder, and conduce to the grieved parts; the quantitie is different according to the magnitude of the affected parts: In the books of practisers it is commonly found prescribed from $\text{ʒ} \text{iii}$. to $\text{ʒ} \text{vi}$ β sometimes flowers, and drie herbs are prescribed by handfuls and pugils: and here there is need of an artificial conjecture to conceiv and appoint a fit quantitie of powders: but let us give you som examples.

Rx. rosar. rub. p i. mastich. $\text{ʒ} \beta$. coralli rub. $\text{ʒ} \text{iii}$. sem. anisi, & fenic. an. $\text{ʒ} \text{ii}$. nucis moschat. $\text{ʒ} \text{i}$. summitat. *A quilt for the stomach.*
absinth. & mentib. an. m i. tritis omnibus, fiat sacculus consutus & compunctus pro ventriculo.

Rx. furfuris macri, p i. milii, $\text{ʒ} \text{i}$. salis, $\text{ʒ} \text{ii}$. rosar. rub. flor. rorismarini, stachados, caryoph. an. m ii. *A cap for a cold head.*
fol. beton. & salv. an. $\text{ʒ} \text{iii}$. tritis omnibus fiat cucupha, intersuta & calefacta fumo thuris, & sandarachæ exustorum, capiti apponatur.

Rx. flor. borag. buglos. & violar. an. p ii. cortic. citri sicci, macis, ligni aloës, rasuræ eboris, an. $\text{ʒ} \text{i}$. *A quilt for the heart.*
offis de corde cervi, croci, an. $\text{ʒ} \text{ii}$. fol. melif. m β . pulveris diambre. $\text{ʒ} \beta$. contritis omnibus fiat sacculus & serico pro corde, irrorandus aquâ scabiosæ.

Wee use bags for the strengthening of the noble parts; as the brain, heart, liver: as also for those less noble; as the stomach: lastly for discussing flatulencies in what part soever; as in the collick, and in a bastard pleurisie proceeding from flatulencies. The powders must bee strawed upon carded bombast, that they run not together, and then they must bee sewed up or quilted in a bag of linnen or taffatie.

Wee often-times moisten these bags in wine or distilled water, and sometimes not with the substance thereof, but by the vapor onely of such liquors put into a hot dish: thus oft-times the bags are heated by the vapor onely, and oft-times at the fire in a dish by often turning them. These, if intended for the heart, ought to bee of crimison or scarlet silk, becaus the scarlet-berrie, called by the Arabians *Kermes*, is said to refresh and recreate the heart. Certainly they must alwaies bee made of som fine thing, whether it bee linnen or silk.

C H A P. XL.

Of Fumigations.

A suffitus or fumigation is an evaporation of medicines having som viscous and fattie moisture: of fumigations som are drie, other som moist, the drie have the form of trochises or pills: their matter ought to bee fattie and viscous, so that it may send forth a smoke by beeing burnt: such are *ladanum*, myrrh, mastich, pitch, wax, rosin, turpentine, *castoreum*, *styrax*, frankincens, *olibanum*, and other gums, which may bee mixed with convenient powders: for they yeeld them a bodie and firm consistence; the fumigations that are made of powders onely, yeeld neither so strong nor long a fume.

The quantitie of the powders must bee from $\text{ʒ} \beta$. to $\text{ʒ} \text{vi}$ β . but the gums to $\text{ʒ} \text{ii}$. as, Rx. sandarachæ, *A cephalick fume.*
mastiches, rosar. an. $\text{ʒ} \text{i}$. benioini, galang. an. $\text{ʒ} \text{iii}$. terebinthina excipiantur, & fiant trochisci, quibus incensis suffumigentur tegumenta capitis. Rx. marchasitæ, $\text{ʒ} \text{ii}$. bdellii, myrrhe, styracis, an. $\text{ʒ} \text{vi}$ β . cereæ flavæ, & terebinth. quod sufficit, fiant formulæ pro suffumigio. Rx. cinnabaris, $\text{ʒ} \text{ii}$. styracis & benzoini, an. $\text{ʒ} \text{ii}$. cum terebinth. fiant trochisci pro suffumigio per embotum. *For the hardness of the sinews.*

Wee use fumigations in great obstructions of the brain, ulcers of the longs, the asthma, an old cough, pains of the sides, womb, and the diseases of som other parts; sometimes the whole bodie is fumigated, as in the cure of the *Lues venerea* to procure sweat: sometimes onely som one part whereto som relicks of the *Lues* adhere's; such fumigations are made of *cinnabaris*, wherein there is much *hydrargyrum*. The fume must bee received by a funnel, that so it may not bee disperfed, but may all bee carried unto the part affected, as is usually don in the affects of the womb and ears. *For the relicks of the Lues venerea.*

In fumigations for the brain and chest, the vapor would bee received with open mouth; which thence may pass by the weason into the chest, by the palat and nostrils into the brain: but in the interim let the head bee veiled, that none of the vapor may flie away. Moist fumigations are made somwhiles of the decoction of herbs, otherwhiles of som one simple medicine boiled in oil, sometimes a hot fire-stone is quencht in vineger, wine, *aqua vite*, or the like liquor, so to raise a humid vapor. Wee oft-times use this kinde of fumigation in overcoming scirrous affects, when as wee would cut, discuss, penetrate deep, and drie: take this as an example thereof. *The manner of using them.*

The manner
of a moist fu-
migation.

Rx. laterem unum satis crassum, aut marchasitam ponderis lbi. heat it red hot, and then let it be quencht in sharp vineger, powring thereon in the mean while a little aqua vite, make a fumigation for the grieved part.

Fumes of the decoction of herbs do verie little differ from fomentations properly so called; for they differ not in the manner of their composition, but onely in the application to the affected parts: therefore let this be an example of a humid fumigation.

A moist fume
for the ears.

Rx. absinth. salu. rut. organ. an. p. i. rad. bryon. & asar. an. ʒʒ. sem. sinap. & cumin. an. ʒii. decoquantur in duabus partibus aque, & una vini pro suffitu auris cum emboto: and oft-times such fumigations are made for the whole bodie, whereof wee shall treat hereafter.

CHAP. XLI.

Of a particular, or half-bath.

What an *inse-*
ssio is.



Semicupium or half-bath, is a bath for the one half of the bodie; that is, for the parts from the bellie downwards: it is called also an *inseffio*, because the patient sitteth to bathe in the decoction of herbs: in which form and respect a *semicupium* differ's from a fomentation; for it is composed of the same matter, to wit, a decoction of herbs, roots, seeds, fruits, but in this the quantitie of the decoction is the greater, as wee shall teach by the following example.

The matter.

A half-bath
for the stone
in the kidneys.

Rx. malv. bismalv. cum toto; an. m i ʒ. beton. saxifrag. pariet. an. m i. sem. melon. milii solis, alkekengi, an. ʒiii. cicer. rub. p. ii. rad. apii, graminis, faniculi, eryngii, an. ʒ i. decoquantur in sufficiente aque pro inseffu.

The use.

The manner of
using it.

Wee use these half-baths in affects of the kidneys, bladder, womb, fundament, and lower bellie, or otherwise when as the patient by reason of weakness and fear of dissipating the spirits, cannot suffer or away with a whole bath. The manner of using it is thus: Fill som bags with the boiled herbs, or other parts of plants, and caus the patient to sit upon them; yet in the interim keep the vapors from the head, lest they should offend it, by casting over it a linnen-cloth, or elf let him not enter therinto until the vapor be exhaled.

CHAP. XLII.

Of Baths.

The faculties
of Baths.

Their differ-
ences.

Natural Baths

Baths are nothing elf then as it were a fomentation of the whole bodie, both for preserving health, and the cure of diseases: this is a verie commodious form of medicine, and among other external medicines much celebrated by the Greek, Arabian, and Latine Physicians. For a bath, besides that it digest's the acrid humors, and sootie excrements lying under the skin, mitigate's pains and weariness, and correct's all excess of distemper: moreover, in the cure of fevers, and manie other contumacious and inveterate diseases it is the chief and last remedie, and as it were the refuge of health, stored with pleasing delight. Baths are of two sorts, som natural, others artificial: natural, are those which of their own accord, without the operation or help of art, prevail or excel in anie medicinal qualitie. For the water which of it self is devoid of all qualitie that is perceivable by the taste, if it chance to be strained through the veins of metals, it furnishe's and impregnate's it self with their qualities and effects: hence it is that all such water excel's in a drying facultie, sometimes with cooling and astringion, and otherwhiles with heat and a discussing qualitie. The baths whose waters beeing hot or warm, do boil up, take their heat from the cavities of the earth and mines filled with fire; which thing is of much admiration whence this fire should arise in subterrene places, what may kindle it, what feed or nourish it for so manie years, and keep it from beeing extinct. Som Philosophers would have it kindled by the beams of the sun, others by the force of lightning penetrating the bowels of the earth, others by the violence of the air vehemently or violently agitated, no otherwise then fire is struck by the collision of a flint and steel. Yet it is better to refer the caus of so great an effect unto God the maker of the Univerf, whose providence piercing everie waie into all parts of the World, enter's and govern's the secret parts and passages thereof. Notwithstanding they have seemed to have com nearest the truth, who refer the caus of heat in waters unto the store of brimstone contained in certain places of the earth, because among all minerals it hath most fire and matter fittest for the nourishing thereof. Therefore to it they attribute the flames of fire which the Sicilian mountain *Ætna* continually send's forth. Hence also it is that the most part of such waters smell of Sulphur, yet others smell of Alum, others of Nitre, others of Tar, and som of Coperas.

How to know
whence the
Baths have
their efficacy.

Now you may know from the admixture of what metalline bodies the waters acquire their faculties by their taste, sent, color, mud, which adhere's to the channels through which the water run's, as also by an artificial separation of the more terrestrial parts from the more subtil. For the earthie dross which subsides or remain's by the boiling of such waters, will retain the faculties and substance of brimstone, alum, and the like minerals: besides also, by the effects and the cure of these or these diseases, you may also gather of what nature they are. Wherefore wee will describe each of these kindes of waters by their effects, beginning first with the Sulphureous.

Sulphureous waters powerfully heat, drie, resolv, open, and draw from the center unto the surface

surface of the bodie; they cleanse the skin troubled with scabs and tetter; they cease the itching of ulcers, and digest and exhaust the causes of the gout, they help pains of the colick and hardened spleens. But they are not to be drunk, not only by reason of their ungrateful smell and taste, but also by reason of the malitiousness of their substance, offensive to the inner parts of the bodie, but chiefly to the liver.

The condition of natural sulphureous waters.

Aluminous waters taste verie astringently, therefore they drie powerfully, they have no such manifest heat, yet drunk, they loose the bellie: I beleev by reason of their heat and nitrous qualitie they cleanse and stae defluxions, and the courses flowing too immoderately; they also are good against the tooth-ach, eating ulcers, and the hidden abscesses of the other parts of the mouth.

Of aluminous waters.

Salt and nitrous waters shew themselves sufficiently by their heat: they heat, drie, binde, cleanse, discuss, attenuate, resist putrefaction, take away the blackness comming of bruises, heal scabbie and malign ulcers, and help all oedematous tumors.

Of salt and nitrous.

Bituminous waters heat, digest, and by long continuance soften the hard'ned sinews; they are different according to the various conditions of the bitumen that they wash, and partake of the qualities thereof.

Of bituminous.

Brazen waters, that is, such as retain the qualities of brasse; heat, drie, cleanse, digest, cut, binde, are good against eating ulcers, fistula's, the hardness of the eye-lids, and they waste and eat away the fleshlie excrescences of the nose and fundament.

Of brazen.

Iron waters, cool, drie, and binde powerfully, therefore they help abscesses, hardened milts, the weaknesses of the stomach and ventricle, the unvoluntarie shedding of the urine, and the too much flowing terms, as also the hot distemper of the liver and kidneys. Some such are in Lucan territorie in *Italie*.

Of iron.

Lead water's, refrigerate, drie, and perform such other operations as lead doth; the like may be said of those waters that flow by chalk, plaster, and other such minerals, as which all of them take and perform the qualities of the bodies by which they pass.

Of Lead.

Hot waters or baths help cold and moist diseases; as the palse, convulsion, the stiffness and attraction of the nerves, trembling, palpitations, cold distillations upon the joints, the inflations of the members by a dropsie, the jaundis by obstruction of a gross, tough, and cold humor, the pains of the sides, colick, and kidneys, barrenness in women, the suppression of their courses, the suffocation of the womb, causeless weariness: those diseases that spoil the skin; as tetter, the leprosie of both sorts, the scab, and other diseases arising from a gross, cold, and obstructing humor, for they provoke sweats.

Of hot baths

Yet such must shun them as are of a cholerick nature, and have a hot liver, for they would cause a *Cachexia* and dropsie by over-heating the liver. Cold waters or baths heal the hot distemper of the whole bodie and each of the parts thereof; and they are more frequently taken inwardly then applied outwardly; they help the laxness of the bowels, as the resolution of the retentive facultie of the stomach, entrals, kidneys, bladder, and they also add strength to them. Wherefore they both temper the heat of the liver, and also strengthen it, they stae the *Diarrhea*, *Dysenterie*, *Courses*, unvoluntarie shedding of urine, the *Gonorrhoea*, Sweats, and Bleedings. In this kinde are chiefly commendable the waters of the Spaw in the countrie of *Liege*, which inwardly and outwardly have almost the same facultie, and bring much benefit without anie inconvenience, as those that are commonly used in the drinks and broths of the inhabitants.

To whom hurtful. The faculties of cold-baths

The Spaw.

In imitation of natural baths, there may in want of them be made artificial ones, by the infusing and mixing the powders of the formerly described minerals; as, Brinestone, Alum, Nitre, *Bitumen*: also you may manie times quench in common or rain-water, iron, brasse, silver and gold heated red hot, and so give them to be drunk by the patient, for such waters do oft-times retaine the qualities and faculties of the metals quenched in them; as you may perceiv by the happie success of such as have used them against the *Dysenterie*.

Of artificial baths.

Besides these, there are also other baths made by art of simple water, sometimes without the admixture of anie other thing, but otherwhiles with medicinal things mixed therewith, and boiled therein. But after what manner soever these be made, they ought to be warm, for warm-water humect's, relaxe's, mollifie's the solid parts, if at anie time they be too drie, hard, and dens; by the ascitic heat it open's the pores of the skin, digest's attract's, and discusses fuliginous and acrid excrements remaining between the flesh and the skin. It is good against sun-burning and weariness, whereby the similar parts are dried more then is fit. To conclude, whether wee be too hot or cold, or to drie, or be nauseous, wee finde manifest profits by baths made of sweet or warm-water, as those that may supplie the defect of frictions and exercises: for they bring the bodie to a mediocritie of temper, they increas and strengthen the native color, and by procuring sweat discuss flatulencies: therefore they are verie useful in hettick fevers, and in the declension of all fevers, and against raving and talking idly, for the procure sleep. But because water alone cannot long adhere to the bodie, let oil be mixed or put upon them, which may hold in the water, and keep it longer to the skin.

The facultie of a bath of warm-water.

Why wee put oil into baths.

These baths are good against the inflammations of the lungs and sides, for they mitigate pain, and help forward that which is suppured to exclusion, when as general remedies according to art have preceded, for otherwise they will cause a greater defluxion on the afflicted parts:

for a bath (in *Galen's* opinion) is profitably used to diseases when as the morbifick matter is concocted. To this purpose is chosen rain-water, then river-water, so that it bee not muddie, and then fountain-water; the water of standing-lakes and fens is not approved of, for it is fit that the water which is made choif of for a bath of sweet water, should bee light and of subtil parts, for baths of waters which are more then immoderately hot or cold yeeld no such commoditie; but verily they hurt in this, that they shut up or close the pores of the bodie, and keep in the fuliginous excrements under the skin; other baths of sweet or fresh water consist of the same matter as fomentations do, whence it is that som of them relax, others mitigate pain, others cleanse, and other som procure the courses, that is compounded of a decoction of ingredients or plants having such operations. To these there is sometimes added wine, other whiles oil, sometimes fresh butter or milk, as when the urine is stopped, when nephiritick pains are violent, when the nervs are contracted, when the habit of the bodie waste's and wrinkles with a hectick driness, for this corrugation is amended by relaxing things, but it is wated, and as it were fattened by humecting things, which may penetrate and transfuse the oille or fatic humiditie into the bodie thus rarified and opened by the warmness of a bath.

Anodyne baths are made of a decoction of medicines of a middle nature, such as are temperate and relaxing things, with which wee may also sometimes mix resolving things; they are boiled in water and wine, especially in pains of the colick proceeding from vitreous phlegm, or gross and thick flatulencies contained or shut up in the bellie, kidnies, or womb. In such baths it is not fit to sweat, but onely to sit in them so long until the bitterness of the pain bee asswaged or mitigated, lest the powers, weakened by pain, should bee more resolved by the breaking forth of sweat: emollients are somtimemixed with gentle detergents, when as the skin is rough and cold, or when the scails or crust of scabs is more hard then usual, then in conclusion, wee must con to strong deterfives and driers; lastly to drying and somewhat astrictive medicines so to strengthen the skin, that it may not yeeld it self so easie and open to receiv defluxions. By giving you one example the whole manner of prescribing a bath may appear.

R. rad. lilior. abbor. bismalv. an. ℥ii. malv. pariet. violar. an. mss sem. lini, fanug. bismalv. an. ℥i. flor. cham. melil. aneth. an. p vi. fiat decoctio in sufficienti aque quantitate, cui permiscito olei liliorum & lini ana, ℥ii. fiat balneum in quo diutius natet æger.

Baths though noble remedies approved by use and reason, yet unless they bee fitly and discreetly used in time, plentie, and qualitie, they do much harm; for they caus shakings and chilness, pains, densitie of the skin, or too much rarefaction thereof, and oft-times a resolution of all the faculties. Wherefore a man must bee mindeful of these cautions before hee enter into a bath: First, that there bee no weaknesse of anie noble and principal bowel, for the weak parts easily receiv the humors which the bath hath diffused and rarified, the waies lying open which tend from the whole bodie to the principal parts. Neither must there bee anie plentie of crude humors in the first region, for so they should bee attracted and diffused over all the bodie: therefore it is not onely fit that general purgations should precede, but also particular by the bellie and urine: besides, the patient should bee strong, that can fasting endure a bath as long as it is needful. Lastly, the bath ought to bee in a warm and silent place, lest anie cold air by it's blowing, or the water by it's cold appuls, caus a shivering or shaking of the bodie whence a fever may ensue.

The morning is a fit time for bathing, the stomach beeing fasting and emptie, or six hours after meat, if it bee requisite that the patient should bathe twice a daie, otherwise the meat yet crude would bee snatched by the heat of the bath out of the stomach into the veins and habit or the bodie. Manie, of all the seasons of the year, make choif of the spring and end of summer and in these times they chuse a clear daie, neither troubled with stormie windes, nor too sharp an air. As long as the patient is in the bath, it is fit that hee take no meat, unless peradventure to comfort him hee take a little bread moistened in wine, or the juice of an orange, or som damask-prunes to quench his thirst: his strength will shew how long it is fit that hee should stae in, for hee must not stae there to the resolution of his powers, for in baths the humid and spirituous substance is much dissipated. Comming forth of the bath, they must presently get them to bed, and bee well covered, that by sweating, the excrements, drawn unto the skin by the heat of the bath, may break out: the sweat cleansed, let them use gentle frictions, or walking, then let him feed upon meat of good juice and easie digestion, by reason that the stoniach cannot but bee weakened in som som sort by the bath.

That quantitie of meat is judged moderate, the weight whereof shall not oppres the stomach: venerie after bathing must not bee used, becaul to the resolution of the spirit by the bath, it add's another new caul of further spending or dissipating them. Som wish those that use the bath by reason of som contraction, pain, or other affects of the nervs, presently after bathing, to dawb or besmear the affected nervous part with the claie or mud of the bath, that by making it up as it were in this paste, the virtue of the bath may work more effectually, and may more throughly enter into the affected part.

These cautions beeing diligently observed, there is no doubt but the profit by bathes will bee great and wonderful: the same things are to bee observed in the use of stoves or hot-houses, for the use and effect of baths and Hot-houses is almost the same, which the antients therefore used by turn, so that comming forth of the bath they entred a stove and called it also

Why wee must not continue in the bath till wee sweat.

A mollifying and anodyne bath.

Cautions to be observed in the use of baths.

The fittest time for bathing.

How to order the patient comming forth of the bath.

by the name of a bath, as you may gather from sundrie places of *Galen* in his *Methodus med.* wherefore I think it fit in the next to speak of them.

CHAP. XLIII.

Of Stoves or Hot-houses.

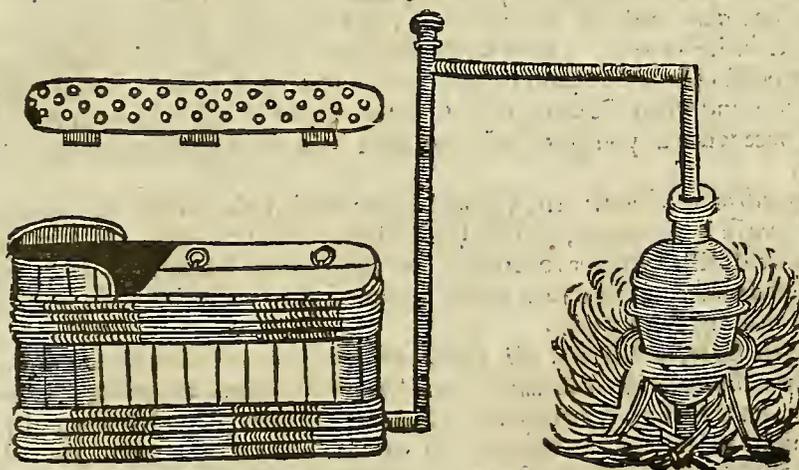
Stoves are either drie or moist: Drie, by raising a hot and drie aërie exhalation, so to imprint their faculties in the bodie, that it thereby waxeth hot, and the pores beeing opened, run down with sweat. There are divers waies to raise such an exhalation: at *Paris*, and wheresoever there are stoves or publick hot-houses, they are raised by a clear fire put under a vaulted fornace, whence it beeing presently diffused, heats the whole room; Yet everie one may make himself such a stove as hee shall judge best and fittest.

Also you may put red hot cogle-stones or bricks into a tub, having first laid the bottom thereof with bricks or iron-plates, and so set a seat in the mid'st thereof, wherein the patient sitting, well covered with a canopic drawn over him, may receive the exhalation arising from the stones that are about him, and so have the benefit of sweating: but in this case wee must oft look to and see the patient, for it sometimes happens that some, neglected by their keepers otherwise employed, becoming faint, and their sense failing them by the dissipation of their spirits by the force of the hot exhalation, have sunk down with all their bodies upon the stones lying under them, and so have been carried half dead and burn't into their beds. Some also take the benefit of sweating in a fornace or oven, as soon as bread is drawn out thereof. But I do not much approve of this kind of sweating, because the patient cannot as hee will, much less as hee pleaseth, lie or turn himself therein.

Humid stoves or sudatories are those wherein sweat is caused by a vapor or moist heat: this vapor must be raised from a decoction of roots, leavs, flowers, and seeds, which are thought fit for this purpose; the decoction is to be made in water or wine, or both together. Therefore let them all be put into a great vessel well luted, from the top of whose cover iron or tin-pipes may come into the bathing-tub standing near thereto, between the two bottoms thereof, by means whereof the hot vapor may enter thereinto, and diffuse it self therein. Now it is fit the bathing-tub should be furnished with a double bottom, the one below and whole, the other somewhat higher and perforated with manie holes, whereupon the patient sitting may receive a sudorifick vapor over all his bodie: now this vapor, if at anie time it become too hot, must be tempered by opening the hole, which must for the same purpose be made in the top of the pipe, that so it may be opened and shut at pleasure. In the interim the tub shall be

The delineation of a bathing Tub, having a double bottom, with a vessel near thereto, with pipes coming therefrom, and entering between the two bottoms of the Tub.

closely covered wherein the patient sits, hee putting forth onely his head, that so hee may draw in the cool air. In defect of such pipes, the herbs shall be boiled by themselves in a caldron or kettle, and this shall be set thus hot into the bathing-tub at the patient's feet, and so by casting into it heated stones, a great and sudorifick vapor shall be raised.



CHAP. XLIV.

Of Fuci, that is washes, and such things for the smoothing and beautifying of the skin.

This following discours is not intended for those women which addicted to filthy lust, seek to beautifie their faces, as baits and allurements to filthy pleasures: but it is intended for those onely, which the better to restrain the wandring lusts of their husbands, may endeavour by art to take away those spots and deformities which have happened to fall on their faces either by accident or age.

The color that appears in the face, either laudable or illaudable, abundantly shews the temper both of the bodie, as also of those humors that have the chief dominion therein: for everie humor dies the skin of the whole bodie, but chiefly of the face with the color thereof: for choler bearing swaie in the bodie, the face look's yellowish; phlegm ruling, it look's whitish or pale; if melancholie exceed, then blackish or swarth; but if blood have

As the color of the skin is such is the humor that is thereunder.

have the dominion, the color is fresh and red. Yet there is other things happening externally which change the native color of the face, as sun-burning, cold, pleasure, sorrow, fear, watching, fasting, pain, old diseases, the corruption of meats and drinks: for the flourishing color of the cheeks is not onely extinguished by the immoderate use of vineger, but by drinking of corrupt waters the face becom's swollen and pale.

On the contrarie, laudable meats and drinks make the bodie to bee well colored and comly, for that they yield good juice, and consequently a good habite. Therefore if the spots of the face proceed from the plenitude and ill disposition of humors, the bodie shall bee evacuated by blood-letting; if from the infirmitie of anie principal bowel, that must first of all bee strengthened; but the care of all these things belongs to the Physician: wee here onely seek after particular remedies which may smooth the face, and take away the spots, and other defects thereof, and give it a laudable color.

First the face shall bee washed with the water of lillie-flowrs, of bean-flowers, water-lillies, of distilled milk, or elf with the water wherein som barlie or starch hath been steeped. The dried face shall bee anointed with the ointments presently to bee described; for such washing cleanseth and prepareth the face to receiv the force of the ointments, no otherwise then an alumed lee prepar's the hairs to drink up and retain the color that wee desire. Therefore the face beeing thus cleansed and prepared, you may use the following medicines, as those that have a facultie to beautifie, extend, and smooth the skin: as,

Waters where-
with to wash
the face.

Compound
liquors where
with to wash
the face.
Virgin's milk.

Rx. gum. tragacanth. conquass. ℥ii. distemperentur in vase vitrio cum ℔ ii. aque communis, sic gummi dissolventur, inde albescet aqua. Or elf. Rx. lithargyri auri, ℥ii. cerus. & salis com. an. ℥ ℔. aceti aque plantag. an. ℥ ii. capbur. ℥ ℔. macerentur lithargyros & cerusa in aceto seorsim per tres aut quatuor horas, sal vero et camphora in aqua quam instituto tuo aptam delegeris: then filter them both severall, and mix them together beeing so filtered, when as you would use them.

Rx. lactis vaccini, ℔ ii. aranciorum et limon. an. nu. iv. sacchari albissimi, et alum, roch. an. ℥ i. distillentur omnia simul: let the limmons and oranges bee cut into slices, and then bee infused in milk, adding thereto the sugar and alum; then let the mall bee distilled together in balneo Marie; the water that com's thereof will make the face smooth and lovelie. Therefore about bed-time it will bee good to cover the face with linnen-clothes dipped therein. A water also distilled of snails gathered in a vine-yard, juice of limmons, the flowers of white mullain mixed together in equal proportion with a like quantitie of the liquor contained in the bladders of Elm-leaves, is verie good for the same purpose. Also this,

Rx. micae panis albi, ℔ iv. stor. fabar. rosar. alb. stor. nenuph. lilior. & in ireos, an. ℔ ii. lactis vaccini, ℔ vi. ova. nu. viii. aceti opt. ℔ i. distillentur omnia simul in alembico vitreo, & fiat aqua ad faciem et manuum lotionem. Or, Rx. olei de tartaro, ℥ iii. mucag. sem. psilii, ℥ i. cerus. in oleo ros. dissolut. ℥ i. borac. sal. gem. an. ℥ i. fiat linimentum pro facie. Or, Rx. caponem vivum, et caseum ex lacte caprino recentur confectum, limon. nu. iv. ovor. nu. iv. cerus lot. in aq. rosar. ℥ ii. boracis, ℥ i. ℔. campb. ℥ ii. aq. stor. fabar. ℔ iv. fiat omnium infusio per xxiv. horas, postea distillentur in alembico vitreo.

The marrow
of sheeps-
bones good
to smooth the
face.

There is a most excellent fucus made of the marrow of sheeps-bones, which smooth's the roughness of the skin, beautifie's the face; now it must bee thus extracted. Take the bones, severed from the flesh by boiling, beat them, and so boil them in water, when they are well boiled, take them from the fire, and when the water is cold, gather the fat that swim's upon it, and therewith anoint your face when as you go to bed, and wash it in the morning with the formerly prescribed water.

How to make
Salcerussa.

Rx. salis cerussæ ℥ ii. ung. citrin. vel spermat. ceti, ℥ i. malaxentur simul. et fiat linimentum, addendo olei ovor. ℥ ii. The Sal cerussæ is thus made, grinde Cerus's into verie fine powder, and infuse ℔ i. thereof in a pottle of distilled vineger for four or five daies, then filter it, then set that you have filtered in a glased earthen vessel over a gentle fire until it concrete into salt, just as you do the capitellum in making of cauteries.

Rx. excrementi lacert. ossis. sepiæ, tartari, vini albi, rasur. corn. cerv. farin. oriz. an. partes æquales, fiat pulvis, infundatur in aqua distillata amygdalarum dulcium, limacum vinialium, stor. nenuph. huic addito mellis albi par pondus: let them bee all incorporated in a marble mortar, and kept in a glass or silver vessel, and at night anoint the face herewith; it wonderfully prevails against the redness of the face, if after the anointing it you shall cover the face with a linnen cloth moistened in the former described water.

Rx. sublim. ℥ i. argent. viv. saliv. extrinct. ℥ ii. margarit. non perforat. ℥ i. capb. ℥ i. ℔. incorporentur simul in mortario marmoreo, cum pistillo ligneo, per tres horas ducantur et fricentur, reducanturque in tenuissimum pulverem, confectus pulvis abluatur aqua myrti. et desiccentur, serveturque ad usum, adde foliorum auri et argenti, nu. x. When as you would use this powder, put into the palm of your hand a little oil of mastic, or of sweet-almonds, then presently in that oil dissolv a little of the described powder, and so work it into an ointment, wherewith let the face bee anointed at bed-time: but it is fit first to wash the face with the formerly described waters, and again in the morning when you rise.

How to paint
the face.

When the face is freed from wrinkles and spots, then may you paint the cheeks with a rosie and flourishing color; for of the commixture of white and red ariseth a native and beautiful color: for this purpose take as much as you shall think fit of brasil, and alchunet; steep them in alum-water, and therewith touch the cheeks and lips, and so suffer it to drie in: there is

also spanish red made for this purpose; others rub the mentioned parts with a sheep's-skin di-ed red: moreover the friction that is made by the hand onely, cauffeth a pleasing redness in the face, by drawing thicher the blood and spirits.

CHAP. XLV.

Of the Gutta Rosacea, or a ferie face.

His treatise of *Fuci* put's mee in minde to saie something in this place of helping the preternatural redness which possesseth the nose and cheeks, and oft-times all the face besides, one while with a tumor, otherwhiles without, sometimes with pustles and scabs, by reason of the admixtion of a nitrous and adust humor. Practitioners have termed it *Gutta rosacea*. This shew's both more and more uglie in winter than in summer, becauf the cold closeth the pores of the skin, so that the matter contained thereunder is pent up for want of transpiration, whence it becom's acrid and biting, so that as it were boiling up, it lift's or raiseth the skin into pustles and scabs; it is a contumacious diseaf, and oft-times not to bee helped by medicine.

Why worst in winter then in summer.

For the general method of curing this diseaf, it is fit that the patient abstain from wine, and from all things in general that by their heat inflame the blood, and diffuse it by their vaporous substance: hee shall shun hot and verie cold places, and shall procure that his bellie may bee soluble, either by nature or art. Let blood first bee drawn out of the *basilica*, then from the *vena frontis*, and lastly from the veiu of the nose. Let leeches bee applied to sundrie places of the face, and cupping-glass'es with scarification to the shoulders.

Diet.

For particular or proper remedies, if the diseaf bee inveterate, the hardness shall first bee soft'ned with emollient things, then assaulted with the following ointments, which shall be used or changed by the Chirurgical as the Physician shall think fit.

Remedies.

Rx. succi citri, ℥iii. cerus. quantum sufficit ad eum inspissandum, argenti vivi cum saliva et sulphure vivo exstincti, ℥β. incorporentur simul, et fiat unguentum.

An approved ointment.

Rx. boracis, ℥ii. farin. cicer. et fabar. an. ℥i β. caph. ℥i. cum melle et succo cepæ fiant trochisci: when you would use them, dissolv them in rose and plantain-water and spread them upon linnen clothes, and so applie them on the night-time to the affected parts, and so let them oft times bee renewed.

Rx. unguenti citrini recenter dispensati, ℥ii. sulphuris vivi, ℥β. cum modico olei sem. cucurb. et succi limonum, fiat unguentum; with this let the face be anointed when you go to bed, in the morning let it bee washed away with rose-water, beeing white by reason of bran infused therein: moreover, sharp vineger boiled with bran and rose-water, and applied as before, powerfully take's away the redness of the face.

Rx. cerus. & litharg. auri, sulphuris vivi pulverisati, an, ℥β. ponantur. in phiala cum aceto & aqua rosarum: linnen cloths dipped herein shall bee applied to the face on the night, and it shall bee applied to the face on the night, and it shall bee washed in the morning with the water of the infusion of bran: this kind of medicine shall bee continued for a month.

Rx. sanguinis tauri, ℥i. butyri recentis, ℥β. fiat distillatio, utatur. The liquor which is distilled for the first daies is troubled and stinking, but these passed, it becometh clear and well smelling. Som boil bran in vineger and the water of water-lilies, and in this decoction they dissolv of sulphur and camphire a fit proportion to the quantitie of the decoction, and they applie cloths moistened in this medicine to the face in the evening.

Rx. album. ovor. nu. ii. aque ros. ℥i β. succi plantag. & lapath. acut. an. ℥i β. sublimati, ℥i. incorporentur in mortario marmoreo. Rx. axung. porci decies in aceto lotæ, ℥iv. argenti vivi, ℥i. aluminis, sulphuris vivi, an. ℥i. pistentur omnia diu in mortario plumbeo, & fiat unguentum; argentum vivum non debet nisi extremo loco affundi. Rx. rad. lapath. acut. & asphodel. an. ℥ii. coquantur in aceto scillitico, postea tundantur, et setaceo trajiciantur, addendo auripigmenti, ℥ii. sulphuris vivi, ℥x. let them bee incorporated and make an ointment to bee used to drie up the pustles.

Rx. rad. liliorum sub cineribus coctorum, ℥iv. pistillo tustis, et setaceo trajectis, adde butyri recentis, et axung. porci, lotæ in aceto, an. ℥i. sulphuris vivi, ℥iii. camphor. ℥iii. succi limonum quantum sufficit, malaxentur simul et fiat unguentum. Rx. lactis virginalis, ℥β. aluminis, ℥β. sulphuris vivi, ℥i. succi limonum, ℥iv. salis com. ℥β. let them all bee distilled in a glass alembick, and the water kept for the forementioned uses.

To drie up the pustles.

Rx. lapath. acut. plantagin. et asphodel. an. ℥i β. olei vitel. ovor. ℥i. terebinth. venet. ℥β. succi limonum, ℥iii. aluminis combust. ℥i. argenti vivi exstincti. ℥i. olei liliorum, ℥β. tundantur omnia in mortario plumbeo, addendo sub finem argent. viv. nō mortario adhærescat. The juice of onions beaten with salt, or the yolks of eggs are good for the same purpose.

For staying and killing of Ring-worms and Tettors, the leavs of hellebore beaten with vineger are good, the milk of the fig-tree is good of it self, as also that of the spurges, or mustard dissolved in strong vineger with a little sulphur. Or,

To kill tetters.

Rx. sulphuris, calcanthi, & aluminis, an. ℥i. macerentur in aceto forti, trajiciantur per lineum, applie the expressed juice. Others macerate an egg in sharp vineger, with coperas and sulphur vivum beaten into fine powder, then they strain or press it through a linnen cloth.

But seeing the forementioned medicines are acrid, and for the most part-eating and corroding,

ding, it cannot bee but that they must make the skin harsh and rough; therefore to smooth and levigate it again, you shall make use of the following ointment.

To smooth
the skin.

Rx. *tereb. ven. iam diu lotæ, ut acrimoniam nullam habeat, butyri salis expertis, an. ʒ i ʒ. olei vitel. ovor. ʒ i. axung. porci in aquâ rosarum lotæ, ʒ ʒ. ceræ parum, fiat linimentum ad usum.* To the same purpose you may also make use of some of the forementioned medicines.

CHAP. XLI.

To black the hair.

What things
are fit to die
the hair.

AT first the hairs, (to take the *fucus* or tincture, and to retain it) must bee prepared with Lie, wherein a little roch-Alum is dissolved. Thus the fattie scales may bee washed and taken away, which hinder, and (as it were) keep away the *fucus*, that it cannot adhere or penetrate into the bodie of the hair. Then must wee com to particular or proper and fitting medicines for this purpose. These ought to bee aromatick and cephalick, and somewhat stip-tick, that by their odoriferous & astringent power they may strengthen the animal facultie. Fur-thermore, they must be of subtil parts, that they may enter even into the inner roots of the hairs.

Rx. *Sulphuris, vitrioli, gallarum, calcis vivæ, lithargyri, an. ʒ ii. scoræ ferri, ʒ ʒ. in pollinem re-ducantur, et cum aq. communi incorporentur, ut inde fiat massa: with this at bed time let the hairs bee rubbed, and in the morning let them bee smoothed with the same.*

Rx. *calcis lotæ, ʒ i lithargyri utriusq; ʒ ʒ. cum decocto gallarum, corticum, nucum, fiat massa, addendo olei chamem. ʒ ii. Rx. litharg. auri, ʒ ii. ciner clavellat. ʒ i ʒ. calcis viv. ʒ i. dissolve omnia cum urina hominis donec acquirant consistentiam unguenti pro unctione capillorum. Rx. calcis lotæ, ʒ. ii. cum decoct. salv. et cort. granat. fiat pasta ad formam pultis satís liquidæ: let the hair at bed-time bee died here-with, and washed in the morning with wine and water.*

How to wash
lime.

Now the manner of washing lime is thus: Infuse in ten or twelv pints of fair water one pound of lime, then pour out the water by stooping the vessel, putting more in the stead there-of; the third time in stead of common water pour thereon the water of the decoction of sage and galls, let the lime lie therein for so manie hours, then in like manner pour it off by stoop-ing the vessel; and thus you shall have your lime well washed. There is also found a way how to die or black the hair by onely powring of som liquor thereon: as, Rx. *argenti purissimi, ʒ ii. reducantur in tenuissimas laminas, ponantur in ampulla vitrea cum ʒ ii. aquæ separationis auri et argenti, et aquæ rosar. ʒ vi.* The preparing of this water is thus, put into a viol the water of separation and the silver, and set it upon hot coals so to dissolv the silver, which beeing don then take it from the fire, and when it is cold; add thereto the rose-water But if you would black it more deeply, add more silver thereto, if less, then a smaller quantitie; to use it, you must steep the comb wherewith you comb your head in this water.

A water to
black the hair.

Rx. *plumbiusti, ʒ ii. gallarum non perforat. cortic. nucum, an. ʒ iii. terræ sigil ferret. hispan. an. ʒ ii. vi-triol. rom. ʒ vi. salis gem. ʒ i ʒ. caryoph. nucis mosch. an. ʒ i. salis ammon. aloes, an. ʒ ʒ. fiat pulvis sub-tilissimus: let this powder bee macerated in vinegar for three daies space, then distil it all in an alembick, the water that com's therefrom is good for the foresaid use. The following medi-cine is good to make the hairs of a flaxen color. Rx. *flor. genist. stæchad. et cardamom. an. ʒ i. lupi-nor. conquassat. rasur. buxi, corticis citri, rad. gentian. et berber. an. ʒ i ʒ. cum aqua nitri fiat lenta deco-ctio: herewith bathe and moisten the hairs for manie daies.**

To make the
hair of a flax-
en color.

CHAP. XLVII.

Of Psilothra, or Depilatories: and also of sweet-waters.

Medicines to fetch off hair, which by the Greeks are termed *Psilothra*, and *Depilatoria* in latine vulgarly, are made as you may learn by these following examples. Rx. *calcis vivæ, ʒ iii. auripigmenti, ʒ i.* let the lime bee quenched in fair water, and then the orpiment added with som aromatic thing: have a care that the medicine lie not too long upon the part, otherwise it will burn; and this medicine must bee made to the consistence of a pultis and applied warm, first fomenting the part with warm water; for then the hair will fall off by gentle rubbing or washing it with warm water: but if there happen anie excoriation thereupon, you may help it by the use of *unguentum rosatum*, or som other of the like facultie.

Another, Rx. *calcis viv. aurip. citrin. an. ʒ i. amyl. spumæ argent. an. ʒ ʒ, terantur et incorporentur cum aq. com. bulliant simul: you shall certainly know that it is sufficiently boiled, if putting thereinto a goo-fes quill, the feathers com presently of: som make into powder equal parts of unquench'd lime and orpiment, they tie them up in a cloth, with which beeing steeped in water they besmear the part, and within a while after by gently stroaking the head, the hairs fall's away of it self*

Sweet-waters.

Lavender-wa-
ter.

Clove-water.
Sweet-waters.

The following waters are verie fitting for to wash the hands, face, and whole bodie, as also linnen, becauf they yield a grateful smel: the first is lavender-water thus to bee made. Rx. *flor. la-vend. ʒ i. v. aq. rosar. & vini alb. an. ʒ ii. aq. vitæ, ʒ iv. misceantur omnia simul, & fiat distillatio in balneo Mariæ: the same water may also bee had without distillation, if you put som lavender-flowers in fair water, and so set them to sun in a glafs, or put them in balneo, adding a little oil of spike and musk. Clove-water is thus made. Rx. *caryoph. ʒ ii. aq. rosar. ʒ ii. macerentur spatio xxiv. horarum, et distillentur in balneo Mariæ. Sweet-water commonly so called, is made of divers odoriferous things put together; as thus, Rx. *menthæ majoranæ, hyssopi, salvie, rorismarini, lavendulæ, an. m ii. radicis ireos, ʒ ii. caryophyllorum, cinamoni, nucis moschatæ, ana, ʒ ʒ. limonum, nu. iv. macerentur omnia in aqua rosarum; spatio viginti quatuor horarum, distillentur in balneo Mariæ, addendo Moschi, ʒ ʒ.***

The end of the Twentie sixth Book.

fuel, the other above to contain the burning coals or fire. The bottom of this upper must either be an iron-grate, or else it must be perforated with many holes, that so the ashes may the more easily fall down into the bottom, which otherwise would extinguish the fire; yet some Furnaces have three partitions, as the Furnace for reverberation. In the first and lowest the ashes are received, in the second the coals are put, and in the third the matter which is calcined or else distilled. The third ought to have a semicircular cover, that so the heat or flame may be reflected upon the contained matter. The lower partition shall have one or more doors, by which the fallen-down ashes may be taken forth. But the upper must have but one, whereby the coals or wood may be put in. But in the top or upper part of the Furnace where it shall seem most fit, there shall be two or three holes made, that by them you may blow the fire, and that the smoke may more freely pass out, But these fore-mentioned doors must have their shutters, much like an oven's mouth. But in defect of a furnace or fit matter to build one withall, we may use a kettle, set upon a treefoot, after the manner that we shall presently declare, when we come to speak of that distillation which is to be made by *Balneum Mariæ*.

CHAP. III.

Of vessels fit for Distillation.

Vessels for Distillation consist of different matter and form, for they are either of Lead, Tin, or Brass; or else earthen vessels and these are sometimes leaded, sometimes not: or else they are of Gold, Silver, or Glass. Now for leaden vessels they are worse than the rest, and utterly to be refused, especially when as the liquors which are drawn by them are to be taken into the body by the mouth, by reason of the malignant qualities which are said to be in Lead; by which occasion Galen condemns those waters which run, and are contained in leaden pipes, which by reason of their saltiness and acrimony which favors of quicksilver, they cause dysenteries. Therefore you may perceive such waters as are distilled through a leaden head to be indued with a more acrid and violent piercing vapor, by reason the portion of that saltiness dissolved in them, and as it were shaved from the Alembeck or head, defiles the distilled liquors, and whiten's and turns them into a milky substance: but copper or brass-heads are more hurtful than Lead, for they make the waters that come through them to favor or participate of brass. Those that are of gold and silver are less hurtful; but the greatness of the cost hinders us from making heads of such metals; therefore we must have a care that our vessels for distillation be either of potters-metal leaded, or else of brass, or of that jug metal which is commonly called *terra betovacensis*, and these rather than of lead or any other metal. Verily glasses are thought the best; and next to them earthen vessels leaded, then of jug-metal, and lastly these of tin. There is great variety of vessels for distillation in form and figure; for some are of an oval or cylindrical figure, that is, of a round and longish; others are twined and crooked, others of other shapes, as you may see in the beaks of the Chymists. Of this almost infinite variety of figures I will in fit place give you the delineation and use of such as shall seem to be most necessary.

Leaden vessels
ill.

Brass worse.

The best vessels for distillation.

CHAP. IIII.

What things are to be considered in distillation.

First make choice of a fit place in your house for the furnace, so that it may neither hinder any thing, nor be in danger of the falling of any thing that shall lie over it. When you shall distill any thing of a malign or venenate quality, you shall stand by it as little as you may, lest the vapor should do you any harm: when you provide glass-vessels for distillation, make choice of such, as are exquisitely baked, without flaws or cracks, and such as are everie where smooth. Let not the fire at first be verie violent, not onely for fear of breaking the vessels, but also for that the first fire in distillation must be gentle, and so increased by little and little. The things to be distilled, ought not to be put in too great quantity into the body of the Still, lest they should rise up or fly over. Hot things that they may be more effectual must be twice or thrise distilled, by pouring upon them their own distilled water or other fresh materials, or else by distilling them severally and by themselves: of this kinde are gums, wax, fats, or oils.

Hot things must be often distilled.

But in each other repeated distillations you must something lessen the force of the fire, for the matter attenuated by the former distillation cannot afterward endure so great heat: but aromatick things, as Cloves, Cinnamon, &c. as also the chymical oils of Sage, Rosemarie, Tyme, &c. ought not to be distilled or rectified over again, for that we must presently after the first distillation have a diligent care to separate them from the phlegm, that is, the more watry substance of the whole liquor, to which purpose we must have regard to that which is distilled, for there are some things which send over their phlegm as Vineger; others, wherein it comes last, as *aqua vite*.

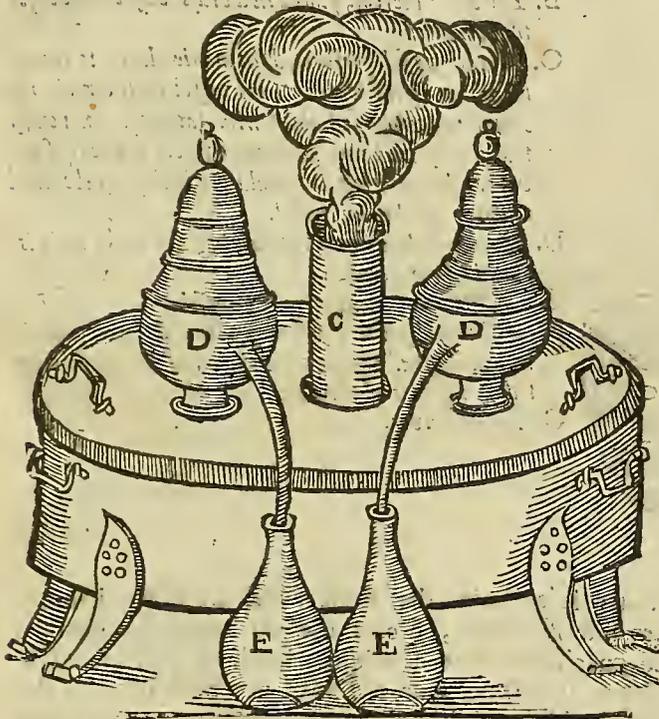
* By *aqua vite* in this and most other places is meant nothing but the spirit of wine.

If you would give to things to be distilled another taste or smell than that which they have naturally, you may mix with them some odoriferous thing, as Cinnamon, Camphire, or Musk, or the like, as you please, and so distill them together. The distilled liquors are drawn by the heat

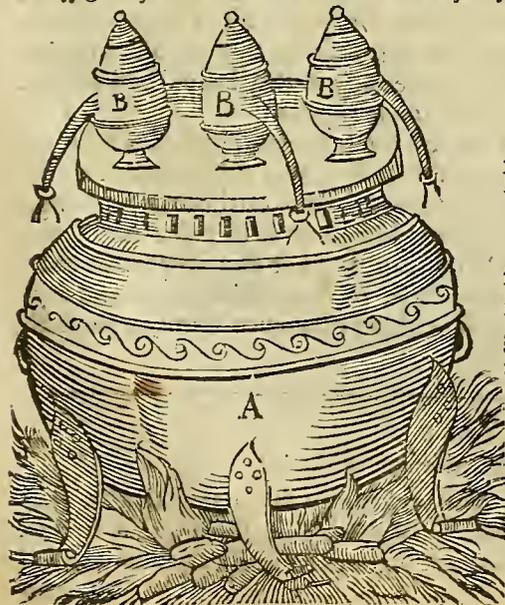
heat of ashes or sand, favor of and retain a certain *empyreuma*, or smatch of the fire; for the helping of which, you shall put them into glasses close stoppt, and so expose them to the sun, and now and then open the glasses that this fierie impression may exhale, and the *phlegmon* bee consumed, if that there shall bee anie. But though in all distillation, there are manie things to bee observed, yet are there two things, chiefly worthie of note. The first is, the matter that is to bee distilled and wrought upon, that is, of what kinde it is, and what the nature thereof may do and suffer. The other is the Fornace, which ought to bee provided of a convenient matter and figure of that which is to bee distilled: for you cannot draw anie thing of anie matter, neither of everie mixture being distilled can you rightly expect oil or water. For mix't bodies do not consist of an equal portion of the four Elements, but som are more aierie, others more fierie, som participate more of the water, others more of the earth, and that presently from their first original. Therefore as watric things yield more water; so aierie and fierie things yield more oil when they are distilled; neither are all instruments fit for the extracting of everie liquor. Moreover you must note, that the waterie liquor somtimes com's forth in the first place, and presently after by the help of a stronger fire follow's the oilie, which wee finde happen's as often as the plant or parts of the plants, which are distilled, are of a cold temperament; for in hot things it happen's otherwise; for the first liquor which com's forth is oilie, and the following waterish.

CHAP. V. Of what fashion the vessels for the distilling of waters ought to bee.

F Or the distilling of anie kinde of waters, two kinde of vessels are necessarie, which are comprehended under this one generall name of an Alembick. They call one of them The parts of an Alembick. the bodie, or containing vessel, the other the head, that is, the cap or top wherein the ascending vapors are condensed or turned into water. It is called the head, because it stand's over the bodie, like as an head; from the head there com's out a pipe or nose whereby the distilled liquor flow's drop by drop into the receiver, as you may see by the figure.

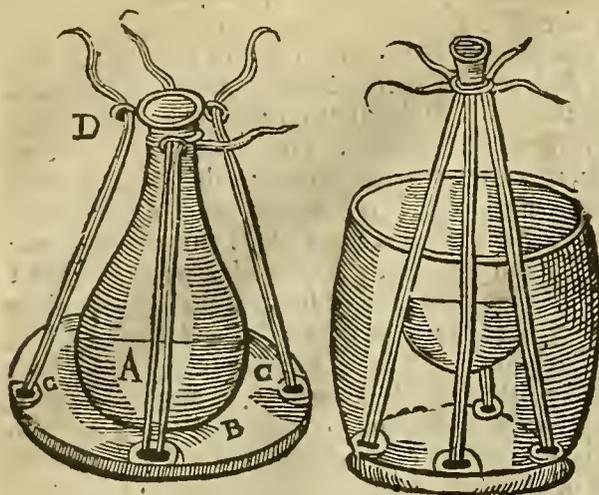


The effigies of another balneum Mariæ, not so easily to bee removed as the former.



A. Shew's the vessel or Copper that contain's the water.
B. The Alembick set in water.

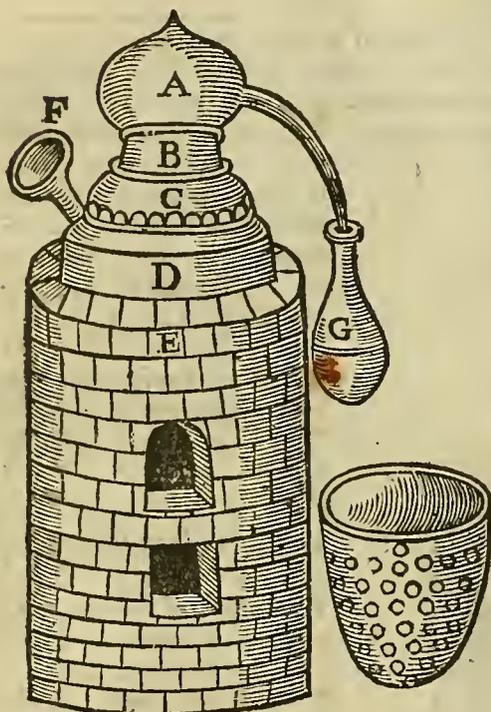
But lest the bottom of the Alembick being half full, should float up and down in the water, and so stick against the sides of the Kettle; I have thought good to shew you the waie and means to prevent that danger.



- A. Shew's the vessel or glass- Alembick.
 B. A plate of lead whereon it stand's.
 C. Strings that binde the Alembick to the plate.
 D. Rings through which the strings are put to fasten the Alembick.

You may distil the liquors of things by the vapor or stream of boiling water, if so bee that you bee provided of Vessels and forms made after this following manner,

A Fornace with his vessels to distil liquors with the steam of boiling water.



- A. Shew's the head of the Alembick.
 B. The bodie thereof, placed in a brass-vessel made for that purpose.
 C. A brass-vessel perforated in manie places to receiv the vapor of the water. This vessel shall contain the Alembick compassed about with saw-dust, not onely that it may the better and longer retain the heat of the vapor, but also lest it should bee broken by the hard touch of the brasen vessel.
 D. Shew's the brass vessel containing the water as it is plac'd in the Fornace.
 E. The Fornace, containing the vessel.
 F. A Funnel by which you may now and then pour in water, in stead of that which is vanish'd and dissipat'd by the heat of the fire.
 G. The Receiver.

Now for the faculties of distilled waters it is certain, that those which are drawn in *balneo Mariae* or a double vessel, are far better and efficacious, because they do not onely retain the smell of the things which are distilled, but also the taste, as aciditie, harshness, sweetness, bitterness, and other qualities, so that they will neither favor of smoak nor burning; for the milde and gentle heat of a bath contain's by his humiditie, the more subtil parts of the plants that are distilled, that they may not bee dissipated and exhale, contrarie to which it usually happen's in things which are distilled by the burning heat of wood or coals. For these have a certain nitrons and acrid taste, favoring of the smoak of fire. Besides, they acquire a malign qualitie from the vessels out of which they are distilled, especially if they bee of Lead, whence they contract qualities hurtful to the principal, vital, and natural parts.

Therefore the plants which are thus distilled, if they bee bitter by nature, presently become insipid, as you may perceiv by wormwood-water thus distilled. Those things which are distilled in *Balneo Mariae* are contained in a glass-vessel, from which they can borrow no malign qualitie. Therefore the waters so drawn are more effectual and pleasing in taste, smell, and sight. You may draw waters not onely from one kinde of plant, but also from manie compounded and mixed together: of these som are alimentarie, others medicinal, yea and purging; others acquir'd for smell, others for washing or smoothing of women's faces, as wee shall shew hereafter.

Why those things that are distilled in *Balneo* retain more of the strength of things.

CHAP. VI.

How the materials must bee prepared before Distillation.

THings before they bee put into the Alembick must undergo a preparation, that is, they must bee cut small, beaten and macerated, that is, steeped in som liquor, that so they may bee the more easily distilled and yield the more water, and retain their native smell and

and faculties; yet such preparation is not convenient for all things; for there bee som things, which need no infusion or maceration, but must rather bee dried before they bee distilled, as Sage, Tyme, Rosemarie, and the like, by reason of their too much humiditie; it will bee sufficient to sprinkle other things with som liquor onely. In this preparation there are two things observable, to wit, the time of the infusion, and condition of the liquor wherein these things ought to bee infused. The time of the infusion is different according to the varietie of the matter to bee macerated; for things that are hard, solid, drie or whole, must bee longer macerated, then such as are tender, freshly gathered or beaten: whence it is that roots and seeds require a longer time of infusion; flowers and leavs a shorter, and the like of other things. The liquors wherein infusion must bee made, ought to bee agreeable to the things infused. For hot ingredients require hot liquors, and cold such as are cold wherein they may bee infused.

What things need not to bee macerated before they bee dissolved.

Such things as have not much juice, as Betonie, wormwood and the like, or which are verie odoriferous, as all aromack things, would bee infused in wine; so to preserv their smell, which otherwise by the force of the fire, by reason of the tennitie of the substance easily vanishes. But if we desire that the distilled liquor should more exactly retain and have the facultie of the things whereof it is distilled, then must you infuse it in the juice thereof, or som such appropriate liquor, that it may swim in it whilest it is distilled, or at least let it bee sprinkled therewith.

The maceration of plants in their own juice.

CHAP. VII.

Of the Art of distilling of waters.

BEfore I describe the manner how to distil waters, I think it not amiss briefly to reckon up how manie sorts of distilled waters there bee, and what the faculties of them are. Therefore of distilled waters som are medicinal, as the waters of Roses, Plantain, Sorrel, Sage, and the like: others are alimentarie, as those waters that wee call restauratives; othersom are composed of both, such as are these restaurative waters which are also mixed with medicinal things; others are purging, as the distilled water of green and fresh Rubarb; othersom serv for smoothing the skin, and others for smell; of which sort are those that are distilled of aromack things.

The varieties of stilled waters.

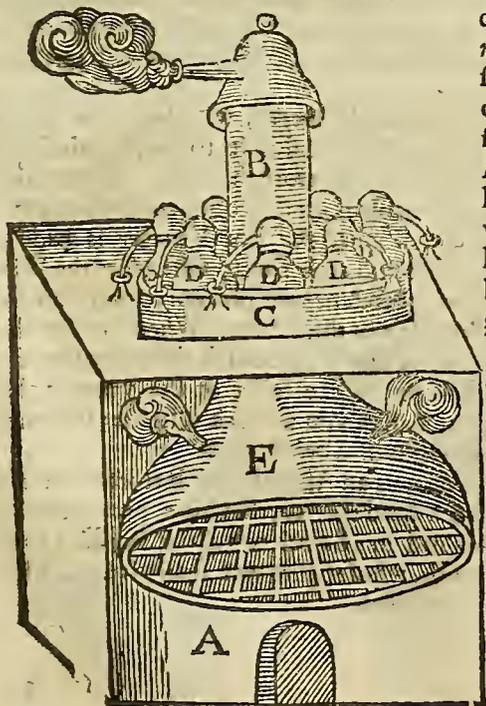
To distil Rose-water, it will bee good to macerate the Roses before you distil them for the space of two or three daies, in som formerly distilled Rose-water, or their pressed-out juice, luting the vessel close; then put them into an Alembic closely luted to his head and his Receiver, and so put into a *Balneum Mariæ*, as wee have formerly described.

Rose-water.

The distilled Alimentarie liquors are nothing elf than those that wee vulgarly call Restauratives; this is the manner and art of preparing them. Take of Veal, Mutton, Kid, Capon, Pullet, Cock, Patridg, Pheasant, as much as shall seem fit for your purpose: cut it small, and left it should require heat, or *empyreuma* from the fire, mix therewith a handful of French-Barlie, and of red Rose-leavs drie and fresh, but first steeped in the juice of Pom granats, or citrons and Rosewater with a little Cinnamom, as much.

Restauratives.

The delineation of a *Balneum Mariæ*, which may also serv for to distil with ashes.



But if you desire that this restaurative should not onely bee alimentarie, but also medicinal, you shall add thereto such things as shall resist the disease, such as are Cordial powders as of *El. Diarmargarit. frigid. De gemmis, Aromaticum Rosat.* Conserv of Bugloss, Borrage, roots, herbs, seeds and other things of that kinde. But if it bee in a pestiferous season, Triacle, Mithridate and other Antidotes shall bee added; each of these shall bee laid in ranks or orders one over another, which is vulgarly termed *stratum super stratum*, in a glass Alembick, and distilled in *balneo Mariæ* with the heat of Ashes, or elf of warm sand, as the figure shew's.

- A. Shew's the Furnace with the hole to take forth the Ashes.
- B. Shew's another Furnace, as it were set in the other: now it is of Brass, and run's through the mid'st of the kettle made also of brass, that so the contained water or ashes may bee the more easily heated.
- C. The kettle wherein the water, ashes, or sand are contained.
- D. The Alembick set in the water, ashes, or sand, with the mouths of the receivers.
- E. The bottom of the second brass Furnace, whose top is marked with B. which contain's the fire.

Another waie
of making re-
staurative Li-
quors.

There may bee made other restauratives in shorter time with les labor and cost. To this purpose the flesh must bee beaten and cut thin, and so thrust through with a double thred, so that the pieces thereof may touch each other; then put them into a glasse, and let the thred hang out; so stop up the glasse close with a linnen cloth, Cotten or Tow, and lute it up with paste made of meale and the whites of eggs; then set it up to the neck in a kettle of water, but so that it touch not the bottom, but let it bee kept upright by the formerly-described means; then make a gentle fire there-under, until the contained flesh by long boiling shall bee dissolved into juice, and that will commonly bee in som four hours space. This beeing don, let the fire bee taken from under the kettle, but take not forth the glasse before the water bee cold, lest it beeing hot should bee broken by the sudden appulf of the cold air. Wherefore when as it is cold, let it bee opened, and the thred with the pieces of flesh bee drawn forth, so that onely the juice may bee left remaining; then strain it through a bag, and aromatize it with Sugar and Cinnamon, adding a little juice of Citron, Verjuice or Vineger, as it shall best like the patient's palate.

After this manner you may quickly, easily, and without great cost have and prepare all sorts of restauratives as well medicated as simple. But the force and facultie of purging medicines is extracted after a clean contrarie manner then the oils and waters which are drawn of Aromatick things, as Sage, Rosemarie, Tyme, Aniseeds, Fennel, Cloves, Cinnamon, Nutmegs, and the like. For the strength of these, as that which is subtil and aerie, flie's upwards in distillation; but the strength of purging things, as Turbith, Agarick Rubarb and the like, subside in the bottom. For the purgative facultie of these purgers inseparably adhere's to the bodies and substances.

Now for sweet waters and such as serv to smooth the skin of the face, they may bee distilled in *Balneo Mariæ* like as Rose-water.

CHAP. VIII.

How to distil Aqua vite or the spirits of Wine.

TAke of good White or Claret-wine or Sack which is not sown nor mustie, nor otherwise corrupt, or of the Lees, that quantitie which may serv to fil the vessel wherein you make the distillation to a third part; then put on your head furnished with the nose or pipe, and so make your distillation in *Balneo Mariæ*. The oftner it is distilled, or (as they term it) rectified, the more noble and effectual it becom's. Therefore som distil it seven times over.

Spirit of wine
seven times
rectified.

At the first distillation it may suffice to draw a fourth or third part of the whole; to wit, of twentie four pintes of Wine or Lees, draw six or eight pintes of distilled liquor.

At the second time the half part of that is three or four pintes.

At the third distillation the half part again, that is, two pintes; so that the oftner you distil it over, the les liquor you have, but it will bee a great deal the more efficacious. I do well like that the first distillation bee made in Ashes; the second in *Balneum Mariæ*. To conclude, that *aqua vite* is to bee approved of, neither is it anie oftner to bee distilled, which put into a spoon or saucer, and there set on fire, burn's wholly away and leav's no liquor, or moisture in the bottom of the vessel; if you drop a drop of oil into this same water, it continually fal's to the bottom; or if you drop a drop into the palm of your hand, it will quickly vanish away, which are two other notes of the probation of this liquor.

The faculties and effects of *aqua vite* are innumerable, it is good against the epilepsie and all cold diseases, it asswage's the pains of the teeth, it is good for punctures and wounds of the Nerves, faintings, swoonings, gangreens and mortification, both of it's flesh, as also put to other medicines for a vehicle.

The faculties
of the spirit
of wine.

There is this difference between the distilling of wine and Vineger, wine beeing of an aerie and vaporious substance, that which is the best and most effectual in it, to wit, the aerie and fierie liquor, com's from it presently at the first distillation. Therefore the residue that remain's in the bottom of the vessel, is of a cold drie and acrid nature; on the contrarie, the water that com's first from Vineger beeing distilled is insipid and flegmatick. For Vineger is made by the corruption of wine, and the segregation of the fierie and aerie parts; wherefore the Wine becoming sown, there remain's nothing of the former substance but phlegm; wherefore seeing phlegm is chiefly predominant in Vineger, it first rise's in distillation. Wherefore hee that hope's to distil the spirit of Vineger, hee must cast away the phlegmatick substance, that first substance that first rise's, and when by his taste hee shall perceiv the spirit of the Vineger, hee shall keep the fire there-under, until the flowing liquor shall becom as thick as honie; then must the fire bee taken away, otherwise the burning of it will caus a great stinch.

The vessels fit to distil *aqua vite* and Vineger are divers, as an Alembick or Retort set in sand or Ashes; a Copper or brass-bottom of a Stil, with a head thereto, having a pipe comming forth thereof which run's into a worm, or pipe fast'ned in a barrel or vessel filled with cold-water, and having the lower end comming forth thereof, whose figure wee shall give you when as wee com to speak of the drawing of oils out of vegetables.

The distilling
of Wine and
Vineger is
different.

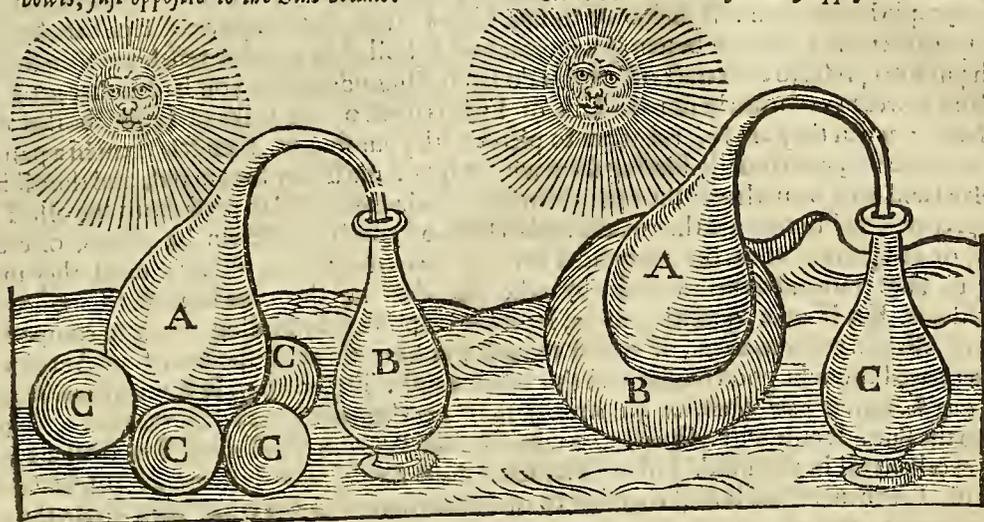
CHAP. IX.

Of the manner of rectifying, that is, how to increase the strength of waters, that have been once distilled.

TO rectifie the waters that have been distilled in *Balneo Mariæ*, you must set them in the Sun in glasses well stopped and half filled, being set in sand to the third part of their height, that the water waxing hot by the heat of the Sun may separate it self from the phlegm mixed therewith, which will be performed in 12. or 15. daies. There is another better waie to do this, which is to distil them again in *Balneo* with a gentle fire, or if you will put them into a Retort furnished with his receiver, and set them upon chrystal or iron-bowls, or in an iron-mortar directly opposite to the beams of the Sun, as you may learn by these ensuing signs.

A Retort with his receiver standing upon Chrystal-bowls, just opposite to the Sun-beams.

Another Retort with his receiver standing in a Marble or Iron-mortar, directly opposite to the Sun.



A. Shew's the Retort.
B. The receiver.
C. The Crystal bowls.

A. Shew's the Retort.
B. The marble, or Iron-mortar.
C. The receiver.

CHAP. X.

Of distillation by filtering.

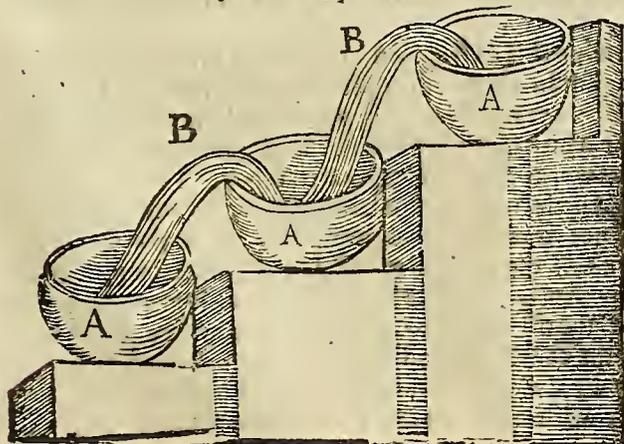
TOU shall set three basins or vessels of convenient matter in that site and order that each may be higher than other; that which stand's in the highest place, shall contain the liquor to be distilled, and that which stand's lowest shall receive the distilled liquor. Out of the first and second vessel shall hang shreds or pieces of cloth or cotten, with their broader ends in the liquor or upper vessel; and the other sharper ends hanging down, whereby the more subtil and defecate liquor may fall down by drops into the vessel that stand's under it, but the grosser and more feculent part may subside in the first and second vessel. You by this means may at the same time distil the same liquor divers times, if you place manie vessels one under another after the fore-mentioned manner, and so put shreds into each of them, so that the lowest vessel may receive the purified liquor. In stead of this distillation Apothecaries oft-times use bags.

This manner of distillation was invented to make more clear and pure waters, and all juices and compositions, which are of such a liquid consistence. You may take an example from

The description of vessels to perform the distillation or filtration by shreds.

Lac. virginis, or Virgin's-milk, of which this is the description.

Rx. litharg. auri diligenter pulveri s. Ziii. macerentur in aceti boni Zvi. trium horarum spatio, seorsim etiam in aqua plantaginis, solani, rosarum, aut communi sal infundatur; then distil them both by shreds, then mix the distilled liquors, and you shall have that which for the milkie whiteness is termed Virgin's milk, being good against the redness and pimples of the face, as we have noted in our Antidotarie.



A. Shew's the vessel.
B. The Cloths or shreds.

CHAP. XI.

What and how manie waies they are to make oils.

Oil may by three means especially draw to extract the oils that you desire. The first is by expression, and so are made the oils of Olives, nuts, seeds, fruits and the like. Under this is thought to be contained elixation, when as the beaten materials are boiled in water, that so the oil may swim aloft, and by this means are made the oils of the seeds of Elder and danewort, and of Baie-berries. Another is by infusion, as that which is by infusing the parts of plants and other things in oils. The third is by distillation, such is that which is drawn by the heat of the fire, whether by ascent or by descent, or by concurs; The first waie is known by all; now it is thus, take almonds in their husks, beat them, work them into a mass, then put them into a bag made of hair, or elf of strong cloth first steeped in water or in white-wine, then put them into press and so extract their oil. You may do the same in pincapple-kernels, Hazel-nuts, Coco-nuts, nutmegs, peach-kernels, the seeds of gourds and cucumbers, pistick-nuts, and all such oilie things. Oil of baies may be made of ripe baie-berries newly gathered, let them be beaten in a mortar and so boiled in a double vessel, and then forthwith put into press, so to extract oil as you do from Almonds, unless you had rather get it by boiling as we have formerly noted. Oile of Eggs is made of the yelks of Eggs boiled verie hard; when they are so, rub them to pieces with your fingers, then frie them in a pan over a gentle fire, continually stirring them with a spoon until they become red, and the oil be resolved and flow from them; then put them into a hair-cloth, and so press forth the oil. The oils prepared by infusion are thus made, make choif of good oil wherein let plants, or creatures, or the parts of them be macerated for som convenient time, that is, until they may seem to have transfused their faculties into the oil, then let them be boiled, so strained or pressed out. But if anie aquositie remain, let it be evaporated by boiling. Som in compounding of oils add gums to them, of which though we have formerly spoken in our Antidotarie, yet have I thought good to give you this one example. *Rx. flor. hyper. Rx. immittantur in phialam cum flo. cent. & gum. elemi, an. ℥ii. olei com. ℔ ii.* Let them be exposed all the heat of Summer to the Sun. If anie will add *aqua vite* wherein som Benzoin is dissolved, hee shall have a most excellent oil in this kind. Oil of Mastich is made *Ex olei rosati ℥xii. mastich. ℥iii. vini optimi ℥viii.* Let them all be boiled together to the consumption of the wine, then strain the oil and reserv it in a vessel.

CHAP. XII.

Of extracting of Oils of vegetables by Distillation.

Almost all herbs that carrie their flowers and seeds in an umble, have seeds of of a hot, subtil and aerie substance, and consequently oilie. Now becaus the oilie substance that is contained in simple bodies is of two kindes, therefore the manner also of extracting is twofold. For som is gros, earthie, viscos, and wholly confused and mixt with the bodies out of which they ought to be drawn, as that which we have said is usually extracted by expression; this becaus it most tenaciously adheres to the grosser substance, and part of the bodie, therefore it cannot by reason of this natural grossness, be lifted up, or ascend. Other som are of a slender and aerie substance, which is easily severed from their bodie, wherefore being put to distillation it easily rises: such is the onely substance of aromattick things, as of Juniper, Aniseeds, Cloves, Nutmegs, Cinnamom, Pepper, Ginger, and the like odoriferous and spicie things. This is the manner of extracting oils out of them; let your matter be well beaten and infused in water to that proportion, that for everie pound of the material, there may be ten pints of water; infuse it in a copper-bottom, having a head thereto either tinned or silvered over, and furnished with a couller filled with cold-water. Set your vessel upon a fornace having a fire in it, or elf in sand, or ashes. When as the water contained in the head shall wax hot, you must draw it forth, and put in cold, that so the spirits may the better be condensed, and may not flie away: you shall put a long-neck't-receiver to the nose of the Alembick, and you shall increas the fire, until the things contained in the Alembick boil.

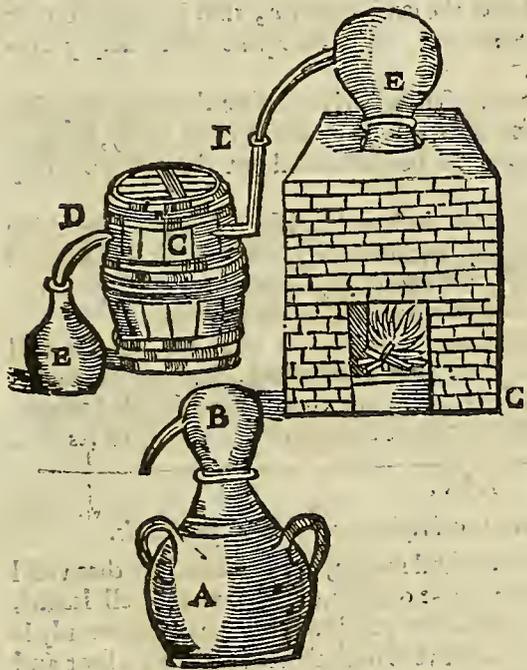
There is another manner of performing this distillation, the matter preserved and infused as we have formerly declared, shall be put in a brass or copper-bottom covered with his head, to which shall be fitted or well luted, a worm of Tin, this worm wall run through a barrel filled with cold-water, that the liquor which flows forth with the oil, may be cooled in the passage forth; at the lower end of this worm you shall set your Receiver. The fire gentle at the first, shall be increased by little and little, until the contained matter, as wee formerly said do boil; but take heed that you make not too quick or vehement a fire, for so the matter swelling up by boiling may exceed the bounds of the containing vessel, and so violently flie over.

Observing these things, you shall presently at the verie first see an oilie moisture flowing forth together with the watrish. When the oil hath don owing which you may know by the color of the distilled liquor, as also by the consistence and taste, then put out the fire; and you may separate the oil from the water by a little vessel made like a Thimble and tied to the end of a stick; [or, which is better, with a glass-funnel, or instrument made of glass for

the same purpose.] Here you must also note that there be som oils that swim upon the top of the water; as oil of aniseeds; other som on the contrarie, which fall to the bottom; as oil of Cinnamom, Mace, and Cloves.

Moreover you must note, that the watriſh moiſture, or water that is diſtilled with oil of Anifeed and Cinnamoni, is whitish, and in ſucceſs of time, will in ſom ſmall proportion turn into oil. Alſo theſe waters muſt be kept ſeſeral, for they are far more excellent then thoſe that are diſtilled by *Balneum Mariæ*, eſpecially thoſe that firſt com forth together with the oil. Oils are of the ſame faculties with the bodies from whence they are extracted, but much more effectual; for the force which formerly was diffuſed in manie pounds of this, or that medicine, is after diſtillation contracted into a few dramis. For example, the facultie that was diſperſed over i. pound of Cloves, will be contracted into two ounces of oil at the moſt; and that which was in a pound of Cinnamoni will be drawn into $\text{z}\text{i}\text{ß}$. or zii . at the moſt of oil. But to draw the greater quantitie with the leſſer charge, and without fear of breaking the veſſels, whereto glaſſes are ſubject, I like that you diſtil them in copper-veſſels, for you need not fear that the oil which is diſtilled by them will contract an ill qualitie from the copper, for the watriſh moiſture that flow's forth together therewith will hinder it, eſpecially if the copper ſhall be tinned or ſilvered over. I have thought good to deſcribe and ſet before your eyes, the whole manner of this operation.

A Fornace with ſet veſſels to extract the Chymical oils, or ſpirits of Sage, Roſemarie, Tyme, Lavander, Anifeeds, Fennel-ſeeds, Cloves, Nutmegs, Cinnamom, Pepper, Ginger, and the like; as alſo to diſtil the ſpirit of Wine, of Vineger and Aqua vitæ. In ſtead of the barrel and worm, you may uſe a head with a bucket or rowler about it.



A. Shew's the bottom, which ought to be of Copper and tinned on the in-side.

B. The head.

C. The Barrel filled with cold water to refrigerate and condensate the water and oil that run through the pipe or worm that is put through it.

D. A pipe of brass or latten, or rather a worm of Tin running through the Barrel.

E. The Alembick set in the fornace with the fire under it.

Now becauſe we have made mention of Cinnamom, Pepper, and other ſpices which grew not here with us, I have thought good to deſcribe theſe out of *Thevet's Coſmographie*, hee having ſeen them growing. Pepper grow's upon ſhrubs in *India*, theſe ſhrubs ſend forth little branches whereon hang cluſters of berries, like to Ivie-berries, or bunches of ſmall black grapes, or currans the leavs are like thoſe of the Citron-tree, but ſharpiſh and pricking.

The deſcription of Pepper.

The *Indians* gather thoſe berries with great diligence, and ſtow them up in large cellars, as ſoon as they com to perfect maturitie. Wherefore it oft-times happen's, that there are more then 200. ſhips upon the coaſt of the leſſer *Iava* an Iſland of that countrie, to carrie thence Pepper and other ſpices. Pepper is uſed in Antidotes againſt poiſons, it provoke's urine, digeſt's, attract's, reſolv's, and cure's the bites of Serpents. It is properly applied and taken inwardly againſt a cold ſtomach; in ſauces it help's concoction and procure's appetite; you muſt make choiſe of ſuch as is black, heavie, and not flaccid. The trees which bear white, and thoſe that bear black pepper, are ſo like each other, that the natives themſelvs know not which is which, unleſs when they have their fruit hanging upon them, as the like happen's upon our Vines which bear white and black grapes.

The uſes thereof.

The tree that yeeld's Cinnamom grow's in the mountain's of *India*, and hath leavs verie like to baie-leavs; branches and ſhoots at certain times of the year are cut from this tree, by the appointment of the King of that Province, the bark of which is that wee term Cinnamom. This is ſold to no ſtranger unleſs at the King's pleaſure and hee ſetting the price thereof, it is not lawful for others to cut thereof.

The Cinnamom tree.

7. *simp.* Galen writes that Cinnamon is of verie subtil parts, hot in the third degree, and partaking of som astringtion; therefore it cut's and dissolv's the excrements of the bodie, strengthen's the parts, provoke's the courses when as they stop by reason of the admixture of grofs humors; it sweeten's the breath, and yeeld's a fine taste and smell to medicines; hippocras, and sauces. Of Cinnamon there is made an excellent water against all cold diseases, & also against swoonings, the plague and poisons. The composition thereof is this. Take of the choicest and best Cinnamon one pound; beat it grossly, and put thereto of Rose-water four pintes, of white-wine half a pinte, beeing thus mixed, put them into a glafs and so let them stand in infusion 24. hours, often stirring of them. Then distil them in *Balneo Mariæ*, closely luting the receiver and vessels lest the spirit should flie away.

An excellent
Cinnamon-
tree.

CHAP. XIII.

Another manner how to draw the essence and spirits of herbs, flowers, seeds, and spices; as also of Rubarb, Agarick, Turbith, Hermodactyls, and other Purgers.



You may extract the essences and spirits of the things mentioned in the title of this Chapter, as thus. Take Sugar, Rubarb, Cinnamon, or anie other material you pleat; cut it small, or elf beat it, then put it into a glafs with a long neck, and pour thereupon as much *aqua vite* as shall bee sufficient to cover the materials or ingredients, and to over-top them som fingers bredth, then stop up the glafs verie close that no air enter thereinto; Thus suffer it to infuse for eight daies in *balneo* with a verie gentle heat; for thus the *aqua vite* will extract the faculties of the ingredients, which you shall know that it hath don, when as you shall see it perfectly tintured with the color of the ingredients. The eight daies ended, you shall put this same *aqua vite* into another vessel filled with the like quantitie of the same materials prepared after the same manner, that it may also take forth the tincture thereof, and do thus three or four times, untill the *aqua vite* bee deeply tintured with the color of the infused Ingredients.

A sign that the
spirit of wine
hath fetcht out
the strength of
the ingredi-
ents.

But if the materials from whence you desire to extract this spirit or essence, bee of great prices, as *Lignum Aloës*, Rubarb, &c. You must not think it sufficient to infuse it once onely, but you must go over it twice, or thrice, until all the efficacie bee extracted out thereof; you may know that it is all wholly insipid.

These things thus don, as is fitting, put all the liquor tintured and furnished with the color and strength of the ingredients, into an Alembick, fitted and closely luted to it's head, and so put into *Balneum Mariæ*, that so you may extract or draw off the *aqua vite*, to keep for the like purpose, and so you shall have the spirit, and essence remaining in the bottom.

A sign that
the ingredi-
ents have lost
their strength.

Now if you desire to bring this extract to the height of honie, set it in an earthen-pot well leaded, upon hot ashes, so that the thin part thereof may bee evaporated, for thus at length, you shall have a most noble and effectual essence of that thing which you have distilled, whereof one scruple will bee more powerful in purging, then two or three drams of the thing its self.

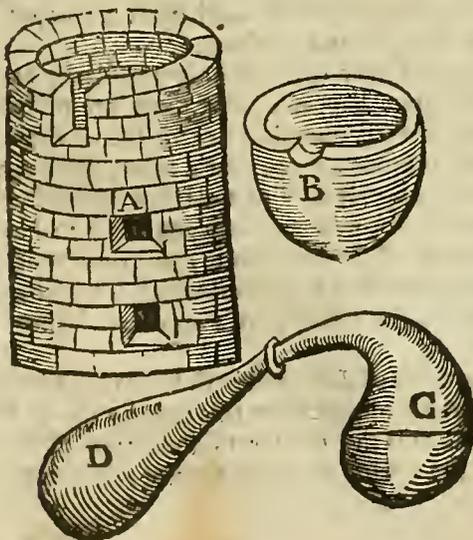
CHAP. XIV.

How to extract oil out of Gums, condensed juices, and rosins, as also out of som woods.

ALL oils that are drawn out of gums, oilie-woods and metals, are extracted by that vessel which wee vulgarly term a Retort. It must bee made of glafs, or jug's-metal well leaded, and of such bigness as shall bee convenient for the operation you intend, though commonly it should bee made to hold som gallon and an half of water; the neck thereof must bee a foot and a half, or at least a foot long. The receiver is commonly a vial whereinto the neck of the Retort is fitted and inserted. Then the Retort shall bee set in an earthen pan filled with ashes, or sand, and so set into a furnace, as you may see by the following figure.

What a Re-
tort is.

The figure of a Furnace, with his earthen-pan and receiver.



A. Shew's the furnace.

B. The earthen-pan, or vessel to set the Retort in.

C. The Retort or Cucurbite.

D. The Receiver.

Of gums, som are liquid, som solid; and of the solid, som are more solid then other som; The differences of Gums. those that are solid are more troublesome to distil then the liquid, for they are not so easily dissolved or melted, neither do they yeeld so well to the fire, so that oft-times they are burnt before they bee dissolved; whence it is that som for everie pound of solid gum add two or three pounds of most clear and liquid oil of Turpentine. Besides, liquid things are also hard to bee Cautions in distilling of Gums. distilled, becaus when as they com to bee throughly hot at the fire, they swell up so much, that they exceed, or run out of the Retort, and so fall into the Receiver, as they were put into the Retort, especially it so bee that the fire bee too hot at the first. Manie to shun this inconvenience add to the things put into the Retort, som sand, as it were, to balast it withal.

Oil of Rosin and Turpentine is thus made; take two or three pounds of Turpentine, and put How to make oil of Turpentine. it into a Retort of such largeness that three parts thereof might remain emptie, and for everie pound of Turpentine add three or four ounces of sand; then place the Retort in an earthen-pan, filled with sifted ashes, and set it upon the fornace as is fit, and to the neck thereof fit and closely lute a Receiver. Lastly, kindle there-under a soft fire at the first, lest the contained materials should run over; increas this fire by little and little, and take heed that the things become not too hot on a sudden. At the first, a clear and acid liquor will drop out, wherein a certain sediment use's to concrete; then will flow forth a most clear oil, somewhat resembling the watric and phlegmatick liquor; then must the fire bee somewhat increased, that the third oilie, clear, thin and verie golden colored liquor may rise and distil; but then also a clearer and more violent fire must bee raised, that so you may extract an oil that will beere like a carbuncle, and of a consistence indifferently thick. Thus therefore you may extract four kindes of liquors our of Turpentine, and receiv them beeing different in several Receivers; yet I judg it better to receiv them all in one, that so by distilling them again afterwards you may separate your desired oil; now there will ten or twelv ounces of oil flow from an ounce of Turpentine. This kinde of oil is effectual against the Pallie, Convulsions, punctures of the nervs, and wounds of all the nervous parts.

But you shall thus extract oil out of wax; Take one pound of wax, melt it, and put it into How to make oil of wax. a glass-Retort set in sand, or ashes, as wee mentioned a little before in drawing of oil of Turpentine, then distil it, by increasing the fire by degrees. There distil's nothing forth of wax, besides an oilie substance and a little *Phlegma*, yet portion of this oilie substance presently concrete's into a certain butter-like matter, which therefore would bee distilled over again; you may draw ζ vi. or ζ viii. of oil, from one pound of wax.

This oil is effectual against Contusions, and also verie good against cold affects.

The faculties thereof.

CHAP. XV.

Of extracting of Oils out of the harder sorts of Gums; as myrrh, mastich, Frankincens, and the like.

Som there bee who extract these kindes of oils with the Retort set in ashes or sand, as wee mentioned in the former Chapter of Oils of more liquid Gums, adding for everie pound of Gum two pintes of *Aqua vite*, and two or three ounces of Oil of Turpentine, then let them infuse for eight or ten daies in *Balneo marie*, or els in horse-dung; then set it to distil in a Retort. Now this is the true manner of making of Oils of Myrrh; Take Myrrh How to make oil of myrrh. made into fine powder, and therewith fill hard Eggs in stead of their yelks beeing taken out; then place the Eggs upon a gridiron, or such like grate in som moist place as a cellar, and set under them a leaden-earthen-pan; the Myrrh will dissolv into an oilie-water, which beeing presently put into a glass and well stopped, with an equal quantitie of rectified *Aqua vite*, and so set for three or four months in hot horse-dung, which past the vessel shall bee taken forth, and so stopped that the contained liquor may bee poured into an Alembick, for there will certain gross settling by this means remain in the bottom, then set your Alembick in *Balneo* and so draw off the *Aqua vite* and phlegmatick liquor, How to give it a pleasing color and smell. and there will remain in the bottom a pure and clear oil, whereto you may give a curious color by mixing therewith som Alkanet, and a smell by dropping thereinto a little oil of Sage, Cinnamon, or Cloves.

Now let us shew the composition and manner of making of balsams by giving you one or two examples; the first of which is taken out of *Vesalius* his *Surgerie*; and is this.

R. terebinth. opt. lb. i. ol. laurini ℥iiii. gum. elem. ℥iiii. β. thuris, myrrhæ, gum. herede, centaur. ma- Vesalius his
goris, ligni aloës, an. ℥iii. galangæ, caryophyll. consolide majoris, Cinnamomi, nucis moschat. zedoaria, Balam.
zinzib. diſſamni albi, an. ℥i. olei vermium terrestrium, ℥ii. aqua vite lbvi.

The manner of making it is this; Let all these things bee beaten and made small, and so infused for three daies space in *Aqua vite*, then distilled in a Retort just as wee said; you must distil oil of Turpentine and Wax. There will flow hence three sorts of liquors; the first watrish and clear, the other thin, and of pure golden color: the third of the color of a Carbuncle, which is the true Balsam. The first liquor is effectual against the weakness of the stomach comming of a cold caus, for that it cut's phlegm and discusse's flatulencies; the second help's fresh and hot bleeding wounds, as also the palsie. The third is chiefly effectual against these same effects. The composition of the following *Balsamum* is out of *Fallopium*; and Fallopium his Balsam. is this. *R. terebinth. claræ, lb. ii. olei de semine lini lb. i. refinæ pini, ℥vii. thuris, myrrhæ, aloës, mastiches,*

mastiche, sarcocollæ, an. ℥iii. macis, ligni Aloës, an. ℥ii. croci, ℥β. Let them all bee put into a glass-Retort, let in ashes and so distilled. First there will com forth a clear water, then presenly after a reddish oil, most profitable for wounds.

What Frankincense is,

Now you must know that by this means, wee may easily distil all Axungia's, fats, parts of creatures, woods, all kindes of barks and seeds, if so bee that they bee first macerated as they ought to bee, yet so that there will com forth more watry then oilie humiditie. Now for that wee formerly frequently mentioned *Thus* or Frankincense, I have here thought good out of *Thevet's Cosmographie* to give you the description of the tree from which it flow's. The Frankincense-tree (saith hee) grow's naturally in *Arabia*, resemble's a Pine, yeelding a moisture that is presently hardened, and it concrete's into whitish clear grains, fattie within, which cast into the fire, take flame. Now Frankincense is adulerated with Pine-rosin and Gum, which is the cause that you shall seldom finde that with us, as it is here described; you may finde out the deceit as thus, for that neither Rosin nor anie other Gum take's flame, for Rosin go's away in smoak, but Frankincense presently burn's. The smell also bewraie's the counterfeite, for it yeeld's no grateful smell as Frankincense doth. The *Arabians* wound the tree that so the liquor may the more readily flow forth, whereof they make great gain. It fill's up hollow ulcers and cicatrize's them; wherefore it enter's as a chief ingredient into artificial balsam; Frankincense alone made into powder and applied, stanche's the blood that flow's out of the wounds.

The faculties thereof.

Mathiolus saith, that it beeing mixed with Fuller's-earth, and oil of Roses, is a singular remedie against the inflammation of the breasts of women lately delivered of childe.

CHAP. XVI.

The making of oil of Vitriol.

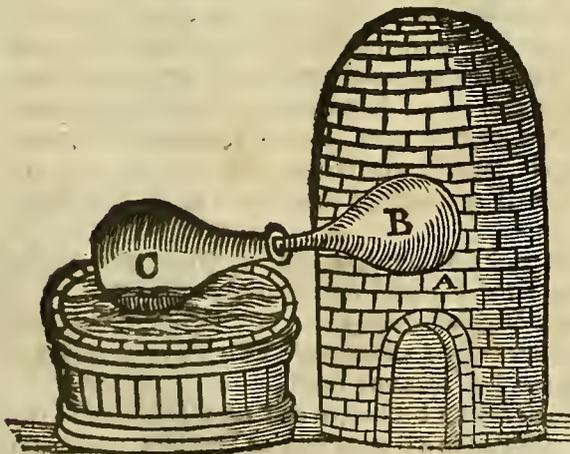
The sign of perfectly calcined vitriol.



Take ten pounds of Vitriol, which beeing made into powder, put it into an earthen-pot, and set it upon hot coals, untill it bee calcined, which is when as it become's reddish; after som five or six hours, when as it shall bee thoroughly cold, break the pot, and let the Vitriol bee again made into powder, that so it may bee calcined again, and you shall do thus so often and long until it shall bee perfectly calcined, which is when as it shall bee exactly red; then let it bee made into powder, and put into an earthen-Retort, like that wherein *aqua fortis* is usually drawn, adding for everie pound of your calcined Vitriol of tile-shreds, or powdered-brick 1 quarter; then put the Retort furnished with it's receiver into a Fornace of Reverberation, alwaies keeping a strong fire, and that for the space of 48. hours, more or les's according to the manner and plentie of the distilling liquor. You shall know the distillation is finished when as the Receiver shall begin to recover his native perspicuitie, beeing not now filled with vaporous spirits, wherewith as long as the humor distil's it is replenished and look's white.

Now for the Receiver there are two things to bee observed. The first is, that it bee great and verie capacious, that it may not bee distended and broken by the abundant flowing of vaporous spirits, as it doth oft-times happen; another thing is, that you set it in a vessel filled with cold water, lest it should bee broken by beeing over hot; you may easily perceiv all this by the ensuing figure.

A Fornace or Reverberation furnished with his Retort and Receiver.



- A. Shew's the Fornace.
- B. The Retort.
- C. The Receiver.
- D. The vessel filled with cold water.

C H A P. XVII.

A Table or Catalogue of Medicines and Instruments serving for the cure of Diseases.

Medicines, and Medicinal meats fit for the cure of Diseases, are taken from living Creatures, Plants and Minerals. From living creatures are taken,

Horns. Hooves. Hairs. Feathers. Shells. Skulls. Scales. Sweats. Skins. Fats. Fleſh. Blood. Entrails. Urine. Bones. Extreme parts. Hearts. Liver. Lungs. Brain. Womb. Secundine. Testicles. Pizzle. Bladder Sperm. Tail. Coats of the Ventricle. Expirations. Bristles. Silk. Webs. Tears. Spittle. Honie. Wax. Eggs. Milk. Butter. Cheef. Marrow. Rennet.

Smells whether they bee stinking or sweet, as also Poisons: whole creatures themselves: as, *Foxes. Whelps. Hedg-hogs. Frogs. Worms. Crabs. Craie-fishes. Scorpions. Horſleeches. Swallows. Dungs.*

From Plants, that is, Trees, Shrubs, and Herbs, are taken

Roots. Moss. Piſh. Siens. Buds. Stalks. Leavs. Flowers. Cups. Fibers, or hairie-threads. Ears. Seeds. Bark. Wood. Meal. Juices. Tears. Oils. Gums. Rosins. Rotteneſs. Maſs or ſpiſſament. Manna, which falling down like dew upon plants, presently concrete's. Whole plants, as Mallows. Onions, &c.

Metals, or Minerals, are taken either from the Water, or Earth, and are either kindes of Earth, Stones, or Metals, &c. The kindes of Earth are,

Bole-Armenick. Terra figillata. Fuller's-earth. Chaulk. Okar. Plaster. Lime.

Now the kindes of Stones are

Flints. Lapis Judaicus. Lapis Lyncis. The Pumice. Lap. Hæmatites. Amiantus. Galactites. Spunge-stones. Diamonds. Sapphire. Chrysolite. Topace. Load-stone. The Pyrites or fire-stone. Alabaſter. Marble. Crystal, and manie other pretious stones.

The kindes of Salts as well Natural as Artificial are

Common salt. Sal nitrum. Sal Alkali. Sal Ammoniacum. Salt of Urine. Salt of tartar and generally all salts that may bee made of anie kinde of Plants.

Those that are commonly called Minerals are

Marchaſite. Antimonie. Muscovie-Glaſs, Tuttie. Arſnick. Orpiment. Lazure, or blue. Roſe-agar. Brimſtone. Quick-ſilver. White-Copras. Chalchitis. Pſorie. Roman Vitriol. Colcother, vitriol, or green copperas. Alumen ſciſſile, Common Alum. Alumen rotundum. Round Alum. Alumen liquidum. Alumen plumoſum. Borax, or Burrace. Bitumen, Naphtha. Cinnabaris, or Vermillion. Lytharge of Gold. Lytharge of Silver. Chryſocolia. Scandaracha. Red-lead. White-Lead, and divers other.

Now the Metals themselves are

Gold, Silver, Iron, Lead, Tin, Braſs, Copper, Steel, Latine and such as arise from these; as the scales, verdigreas, rust, &c.

Now from the Waters; as the Sea, Rivers, Lakes and Fountains, and the mud of these waters, are taken divers medicines, as white and red Corral; Pearls, and infinite other things which Nature the hand-maid of the great Architect of this world, hath produced for the cure of diseases; so that into what part soever you turn your eyes, whether to the surface of the earth, or the bowels thereof, a great multitude of remedies present themselves to your view. The choise of all which is taken from their substance, or quantitie, qualitie, action, place, season, smell, taste, site, figure, and weight, other circumstances, as *Sylvius* hath abundantly shewed in his Book written upon this Subjects. Of these Simples are made divers Compositions; as,

Collyria. Caputpurgia. Eclegmata. Dentifrices. Dentiscalpia. Apophlegmatismi. Gargarismi. Pills. Bole s. Potions. Emplasters. Unguents. Cerats. Liniments. Embrocations. Fomentations. Epithemes. Attractives. Resolvers. Suppuratives. Emollients. Mundificatives. Incarnatives. Cicatrizers. Putrifiers. Corrosives. Agglutinatives. Anodynes. Apozemes. Julips. Syrups. Powders. Tablets. Opiats. Conſeruus. Preſeruus. Conſeſſions. Rowls. Vomits. Sternutatories. Sudorificks. Glysters. Pessaries. Suppositories. Fumigations. Trochisces. Fronirals. Caps. Stomachers. Bags. Baths. Half-baths. Virgins-milk. Fuci. Pications. Depilatories. Vesicatories. Potential cauteries. Nose-gaies. Fans. Canopies, or extended cloths to make winde. Artificial fountains, to distil or drop down liquors.

Now these that are thought to be nourishing Medicines, are,

Restauratives. Cullisses. Expressions. Gellies. Ptisans. Barlie-creams. Panadoes. Almond-milks. march-pains. Wafers. Hydrosacchar. Hydromel, and such other drinks. Mucilages. Oxymel. Oxycrate. Roſe-Vineger. Hydrælium. Metheglin. Cider. Drink of Servisses, Ale. Beer. Vineger. Verjuice. Oil. Steele-water. Water brewed with bread-crumms. Hippocras, Perrie, and such like.

Waters and distilled oils, and divers other Chymical extractions.

As the waters and oils of hot, drie and aromack things, drawn in a copper-Alembick, with a cooler, with ten times as much water in weight as of herbs; now the herbs must be drie, that the distillation may the better succeed.

Waters are extracted out of flowers put into a Retort, by the heat of the Sun, or of Dung, or of an heap of pressed-out Grapes, or by *Balneo*, if there be a Receiver put and closely luted thereto. All kindes of salt of things calcined, dissolved in water, and twice or thrice filtered, that so they may become more pure and fit to yeeld oil.

Other distillations are made either in Cellars by the coldness or moisture of the place, the things being laid either upon a marble, or else hanged up in a bag; and thus is made oil of Tartar, and of salts, and other things of an Aluminous nature.

Bones must be distilled by descent, or by the joining together of vessels. All woods, roots, barks,

barks, shells of fishes, and seed, or grains; as of corn, broom, beans, and other things whose juice cannot bee got out by expression, must bee distilled by descent, or by the joining together of vessels in a Reverberatorie Furnace.

Metals calcined and having acquired the nature of salt, ought to bee dissolved and filtered, and then evaporated till they bee drie; then let them bee dissolved in distilled vinegar, and then evaporated and dried again; for so they will easily distil in a Cellar upon a Marble, or in a bag. Or elf by putting them into a glassie Retort, and setting it in sand, and so giving fire thereto by degrees until all the waterie humiditie bee distilled; then change the receiver, and lute another close to the Retort, then increas the fire above and below, and thus there will flow forth an oil verie red colored: Thus are all metalline things distilled, as Alums, salts, &c.

Gums, *asungia*, and generally all rosins are distilled by Retort set in an earthen vessel filled with Ashes upon a Furnace; now the fire must bee increased by little and little according to the different condition of the distilled matters.

The Vessels and Instruments serving for Distillations are commonly these.

Bottoms of Alembicks. The heads of them, from whence the liquors drop. Refrigeratories. Vessels for sublimation. For Reverberation. For distilling by descent. Crucibles and other such. Vessels for Calcination. Hair-strainers. Bags. Earthen-platters. Vessels for circulation, as Pelicanes. Earthen-Basins for filtering. Furnaces. The secret Furnaces of Philosophers. The Philosopher's egg. Cucurbites. Retorts. Bolt-heads. Urinals. Receivers. Vessels so fitted together that the lowermost receiv's the mouth of the uppermost, whence they may bee termed conjoined Vessels: They are used in distilling *per descensum*. Marbs exquisitely smooth for distillations to bee made in Cellars. Pots to dissolve calcined metals in.

A Catalogue of the Surgeon's Instruments mentioned in this whole work.

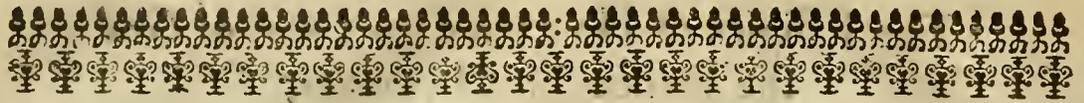
Rings wherein little Lancets lie hid, to open Impostumes. Trunks or hollow Instruments going with springs. A vent, or cooler for the womb made like a pessarie. Hollow tents. Sundrie Cauteries; as flat, round, sharp-pointed, cutting, &c. Constrictorie rings to twitch or binde the Columella. *Speculum Oris. Ocul. Ani. Uteri.* A trunk or pipe with an actual Cauterie in it. Crooked Knives. A pipe in form of a quill. Divers trusses, with one or more boulders. A shoulder-band to bee put about the neck, to hold up a truss. A needle to draw through a golden wier, &c. Pipes with fenestels, and needles fit for sutures. Cutting mallets. Mallets onely to hold and not to cut. Mallets to take forth splinters of bones. Mallets to draw teeth. An incision-knife. Scrapers to plain or smooth the bones, or elf to cut them. Cutting or hollow Scrapers. A leaden mallet to drive the Scrapers or Chizzels into the skull. A Gimblet in shape and use resembling that which Coopers use to lift up the sunk staves of their cask withal. Levatories, of which kinde is the three-footed one. Old Levatories, which taken by their hands; and their tongues put under the depressed bones, lift them up. Saws. A desquamatorie Trepan. Pliers to take forth splinters of bones. A Gimblet to perforate the skull. A Trepan fit to divide the skull, with the scrue, point, or piercer, brace, and cover or cap that keep's it from running in too far. A plate to set one foot of the Compass upon. A cutting pair of Compasses both open and shut. A fit instrument to depress the *Dura mater* without hurting thereof. A syringe to make injection withal. A pair of Pincers with holes through them to take up the skin for making a Seton. Setons as well drie, as moistned with ointments. The Beaks of Crows, Parrats, Swans, Ducks, Lizards, Cranes, are either straight, crooked, toothed, or smooth. Catch-bullets, and Pliers to draw forth pieces of mail, and splinters of bones that lie deep in. Hollow and smooth Dilaters diversly made for the different wounds of the parts. Probes fit for to put flamula's into wounds; and these are either straight or crooked perforated or unperforated. Scrwed mullets to draw forth barbed heads of arrows, and the like. Lancets to let blood, and scarrific as well straight, as crooked. A *pyulcos*, or Matter-drawer. Ligatures, bands, swathes, thongs of leather, woollen, linnen, round, slit, sown together; again som are upper-binders, others under-binders. Again these are either expressing, or elf containing, and that either the applied medicine, or the lips of wounds, or members put in a fit poiture, which therefore they call a sarcotick Ligature. Thred. Bottoms, or clews of thred, or yarn. Pledgets, compresses, boulders, doubled cloaths. *Ferule*, or Splints. Castes. Boxes. Junks. Glossocomies. *Ambi*, a kinde of Glossocomie. A pullie with it's wheels, and wooden and iron-pins, whereon the wheels may run. Ropes as well to draw & extend, as hold up the member, &c. Scrue-pins. A hand-vice. Hooks. Buttons or staies to fasten to the skin to hold together the lips of the wounds. Lint. Cushions, pillows, linnen-cloths. Files. *Dentiscalpia, Dentifricia, Dentispiscia.* Catheters, guiders of the work. A bathing chair or seat, bathing-tubs, half-tubs, caldrons, funnels, with all other circumstances belonging to a bath. Stoves, or hot-houfes to sweat in. Cocks to turn and let out water. A Gimblet to break the stone. Hooks. Hollow probes slit on the upper-sides. Winged Instruments to draw forth stones. An instrument to cleanse the bladder. Spathula's straight and crooked. Cupping-glasses. Horns. Pipes or catheters to wear Caruncles. Artificial members, as eies of gold enamelled, &c. An Urinal, or case to save the water in. An artificial yard. Crutches. Nipples, or leaden covers for fore breasts. Griffins talons to draw forth a *mola*, out of the womb. A sucking-glass to draw a breast withal. Pessaries, both long and oval. Syringes to give glysters, as also to make injection into the ears and womb. The

The Effigies of HIPPOCRATES of Cōos
the Prince of Physicians.



H NVICTUM (Hippocrates) quòd te potuere superbæ
 Eoì nunquam flectere Regis opes,
 Cecropidæ fronti ex auro fulgente coronam
 Promeriti memores imposuere tuæ.
 Gratia sed levis est, Actæis tantus Athenis
 Nec fuit hinc uni quàm tibi partus honos.
 Nam quòd quæ recreent languentia corpora morbo
 Pæonias fueris promere largus opes.
 Sed tua tam fundit, quàm magni machina mundi
 Gratia, & insignis tam tua fama volat.

BON. GRA. PARIS, MEDIC.



Select Aphorisms concerning Surgerie, collected out of the Aphorisms of the great HIPPOCRATES,

Aphor. 27, sect. 6.

Whosoever beeing suppurate or hydropical, are burnt, or cut therefore, if all the matter, or water flow forth at once, they certainly die.

31. 6. The drinking of wine, or a bath, fomentation, blood-letting, or purging, help the pains of the eies.
38. 6. Such as have hidden, or not ulcerated Cancers, had better not to cure them. For healed they quickly die, not cured they live the longer.
55. 6. Gootie-pains usually ite in the Spring and Fall.
28. 6. Eunuchs are not troubled with the Gout, neither do they becom bald.
49. 6. Whosoever are troubled with the Gout, have eaf in fortie daies, the inflammation ceasing.
66. 5. In great and dangerous wounds, if no swelling appear, it is ill.
67. 5. Soft tumors are good, but crude ones ill.
25. 6. For an *Erysipelas*, or inflammation to return from without inwards, it is not good; but to com from within outwards, is verie good.
19. 7. An *Erysipelas* comming upon the baring of a bone, is evil.
20. 7. Putrefaction, or suppuration comming upon an *Erysipelas*, is ill.
21. 6. If *Varices* or Hæmorrhoides happen to such as are mad, their madnes cease's.
21. 7. A flux of blood ensuing upon a great pulsation in ulcers is ill.
26. 2. It is better that a fever happen upon a convulsion, then a convulsion upon a fever.
4. 6. Those Ulcers that have the skin smooth or shining about them, are evil.
18. 6. The wound is deadlie whereby the bladder, brain, heart, midriff, anie of the small guts, stomach, or Liver are hurt.
45. 6. Whatsoever ulcers are of a year's continuance or more, the bone must necessarily scale, and the scars becom hollow.
2. 7. The bone beeing affected, if the flesh bee livid, it is ill.
14. 7. Stupiditie and lack of reason, upon a blow of the head, is evil.
24. 7. A *Delirium* happen's if a bone (to wit, the scull) bee cut even to the hollownes thereof.
- Whil'st *Pus*, or matter is in generating, pains and fevers happen rather then when it is alreadie made.
18. 5. Cold things are hurtful to the bones, teeth, nerves, brain, spinal marrow, but hot things are good.
46. 2. Two pains infesting together, but not the same place, the more vehement obscure's the other.
74. 7. A corruption an abscess of the bone is caused by the corruption of the flesh.
506. *Coacar. prenot.* A livid or drie ulcer, or yellowish, is deadlie.
19. 6. When as a bone, or gristle, or nerv, or small portion of the cheek, or the prepuce is cut asunder, it neither increase's, nor grow's together.
24. 6. *Aph. & 513. Coacar.* If anie of the small guts bee cut, it knit's not again.
50. 7. Those that have the brain sphacelate, that is, corrupt, they die within three daies; if they escape these, they recover.
9. 7. Bleeding at a wound causing a convulsion, is the fore-teller of death.
20. 5. Cold is biting to ulcers; harden's the skin, cause's pain, not easily comming to supuration, blacknes, aguish shakings, convulsions, cramps.
508. *Coac.* Those who have the temples cut, have a convulsion upon the parts contrarie to the section.
44. 7. Whosoever beeing suppurate are burnt or cut, if pure and white quittance shall flow forth they escape; but if that which is bloodie, feculent, and stinking, then they die.

Galen. Comment. ad Aphor. 29. 2. It is not fit to take in hand to cure such as are in a desperate case, but to leav them, one fore-telling the end of the diseaf.

Celsus, Cap. 10. Lib. 20. It is better to trie a doubtful remedie then none at all.

The Effigies of GALEN the Prince of Physi-
cians next to HIPPOCRATES,



QUUM erat Hippocratem divino è semine Divùm,
 Orbem muneribus conciliare sibi :
 Scripta sed in volvit tam multo ænigmate, verum
 Ut quamvis solers nullus habere queat ;
 Pergamei auxilio nisi sint monumenta Galeni,
 Qui doctâ ambages sustulit arte senis,
 Ergo macte esto virtute, arcana resolvens,
 Quæ nulli fuerant nota (Galene) prius ;
 Obstringensque orbem æterno tibi munere totum,
 Æternis sacras te quoque temporibus.

BON. GRA. PARIS. MEDIC.



Rules of Surgerie by the Autor.

- P**Ractice is an operation agreeable to the Rules and Laws of the Theorie.
- 2 Health is not received by Words, but by Remedies fitly used.
 - 3 Remedies known and approved by use and reason, are to bee preferred before such as are unknown, or but lately found out.
 - 4 Science without experience get's the Physician no great credit with the Patient.
 - 5 Hee that would perform anie great and notable work, must diligently applie himself to the knowledg of his subject.
 - 6 It is the part of a good Physician to heal the diseaf, or certainly to bring it to a better pass, as nature shall give leav.
 - 7 The Surgeon must bee active, industrious, and well-handed, and not trust too much to Books.
 - 8 Hee that hath not been versed in the operations of the Art, nor a frequent auditor of the Lectures of such as are learned therein, and set's forth himself for a brave Surgeon, for that hee hath read much, hee is either much deceived or impudent.
 - 9 Hee shall never do anie thing prais-worthie, that hath got his masterie in Surgerie by gold, not by use.
 - 10 You shall comfort the Patient with hope of Recoverie, even when as there is danger of death.
 - 11 To change Physicians and Surgeons is troublesom, but not good for the Patient.
 - 12 Though the diseaf proof long, yet it is not fit that the Physicians give over the patient.
 - 13 Great wounds of large vessels are to bee judged deadlie.
 - 14 Everie contusion must bee brought to suppuration.
 - 15 As the nature or kinde of the diseaf must bee known, so also must the remedie.
 - 16 An Abscess of the bone of the palat, is in danger to caus a stinking-breath.
 - 17 Bleeding caussed by heat must bee prest by cold.
 - 18 Wounds of nervous parts require medicines which by the subtiltie of the parts may enter in and draw from far.
 - 19 It is not fit for such as have Ulcers in their Legs, neither to walk, stand nor sit, but to rest themselvs in bed.
 - 20 All biting and acrid medicines are offensive to clean Ulcers.
 - 21 For restoring of dislocations you must hold them fast, stretch them out, and force them in.
 - 22 A great Gangrene admit's no cure, but cutting.
 - 23 A monster is a thing dissenting from the laws of nature.
 - 24 Wounds of the Chest presently becom fanious and purulent.
 - 25 The wounds made by all venemous creatures are dangerous.
 - 26 The south-winde blowing, wounded members easily becom mortified.
 - 27 Such as are wounded, and desire to bee quickly whole, must keep a spare diet.
 - 28 Untemperate bodies do not easily recover of diseases.
 - 29 Round Ulcers, unless they bee drawn into another figure, do not easily heal up.
 - 30 An Erysipelatous Ulcer require's purgation by stool.
 - 31 Crying is good for an infant, for it serv's in stead of exercise and evacuation.
 - 32 Grief is good for none but such as are verie fat.
 - 33 Idleness weaken's and extinguisheth the native heat.
 - 34 An ill-natured Ulcer yeeld's not unless to a powerful remedie.
 - 35 A bath resolv's and discusses humors, and gently procure's sweat.
 - 36 Cold diseases are troublesom to old people, and hard to bee helped; but in young bodies they are neither so troublesom, nor contumacious.
 - 37 Exercised bodies are less subject to diseases.
 - 38 Moist bodies though they need small nourishment, yet stand they in need of large evacuation.
 - 39 Sick people die sooner of an hot distemper then of a cold, by reason of the quick and active operation of fire.
 - 40 The quittance that flow's from an ulcer is laudable, which is white, smooth and equal.

How to make Reports, and to Embalm the Dead.

The Twentie eighth Book.

Now it onely remain's that wee instruct the Surgeon in making and framing his Report, or opinion, either of the death of anie person, or of the weaknes, or deprivation of anie member in the function or execution of its proper office and dutie. Why a Surgeon must be careful in making of Reports. Herein it is meet that hee bee verie considerate that is to saie, ingenious or wise in making his Report, becaus the events of diseases are often-times doubtful and uncertain, neither can anie man fore-tel them certainly, whether they will bee for life or death; by reason of the manifold nature of the subject of which wee speak, and also the uncertain condition of the humors both in their kinde and motion. Which was the caus why *Hippocrates* even in the first of his Aphorisms pronounceth, that judgment is difficult. What judgment is difficult. But first of all, it is verie expedient that a Surgeon bee of an honest minde, that hee may alwaies have before his eyes a careful regard of true pietie; that is to saie, the fear of God and faith in Christ; and love toward his neighbors, with hope of life everlasting, lest that hee beeing carried away by favor, or corrupted with monie or rewards, should affirm or testifie those wounds to bee small that are great, and those great that are small; for the report of the wound is received of the Surgeon according to the Civil Law.

It is recorded in the works of antient Physicians that wounds may bee called great for three respects. Wounds termed great for three respects.

The first is by reason of the greatnes of the dissolved Unitie or resolution of Continuitie; and such are these wounds which made by a violent stroke with a back-sword have cut off the arm, or leg, or overthwart the breast. The second is by reason of the dignitie or worthines of the part; now this dignitie dependeth on the excellencie of the action; therefore thus anie little wound made with a bodkin, knife, in anie part whose substance is noble: as in Brain, Heart, Liver or anie other part whose action and function is necessarie to preserv life, as in the Weasant, Lungs, or Bladder, is judged great. The third is, by reason of the greatnes and ill habit, or the abundance of ill humors or debilitie of all the wounded bodie; so those wounds that are made in the nervous parts, and old decaied people, are said to bee great. But in searching of wounds let the Surgeon take heed that hee bee not deceived by his probe. For manie times it cannot go into the bottom of the wound but stoppeth, and sticketh in the waie, either becaus hee hath not placed the patient in the same posture, wherein hee was when hee received his hurt; or els for that the stroke beeing made down right, slipt aside to the right or left hand, or els from below upwards, or from above downwards, and then hee may expect that the wound is but little and will bee cured in a short time, when it is like to bee long in curing, or els mortal. Therefore from the first daie it behooveth him to suspend his judgment of the wound until the ninth, for in time the accidents will shew themselves manifestly, whether they bee small or great, according to the condition of the wound, or wounded bodies, and the state of the air according to his primitive qualities, or venomous corruption. How long a Surgeon must suspend his judgment in some cases.

But generally the signs, whereby wee may judg of diseases, whether they bee great or small, of long or short continuance, mortal or not mortal, are four. For they are drawn either from the nature and essence of the disease, or from the caus or effects thereof, or els from the similitude, proportion, and comparison of those diseases with the season or present constitution of the times. Therefore if wee are called to the cure of a green wound, whose nature and danger is no other but a simple solution of Continuitie in the musculous flesh, wee may presently pronounce that wound to bee of no danger, and that it will soon bee cured. But if it have an Ulcer annexed unto it, that is, if it bee sanious, then wee may saie it will bee more difficult and long in curing; and so wee may pronounce of all diseases, taking a sign of their essence and nature. But of the signs that are taken of the causes, let this bee an example. A wound that is made with a sharp-pointed and heavie weapon; as with an halberd beeing stricken with great violence must bee accounted great, yea and also mortal, if the accidents bee correspondent. General signs whereas by wee judg of diseases.

But if the patient fall to the ground through the violence of the stroke, if a cholerick vomiting follow thereon, if his sight fail him, together with a giddines, if blood com for at his eyes and nostrils, if distraction follow with los of memorie and sens of feeling: wee may saie, that all the hope of life remaineth in one small sign which is to bee deduced from the effects of the wound. But by the comparing it unto the season that then is, and diseases that then assault man's bodie, wee may saie, that all those that are wounded with gun-shot are in danger of death, as it happened in the skirmishes at the siege of *Roan*, and at the battel of *Saint Denis*. Wounds deadlie by the fault of the air. For at that time, whether it were by reason of the fault of the heavens, or air, through

- the evil humors of man's bodie, and the disturbance of them; all wounds that were made by gun-shot, were for the most part mortal. So likewise at certain seasons of the year, wee see the small-pocks and meazels break forth in children, as it were by a certain pestilent contagion to the destruction of children onely, inferring a most cruel vomit and lask; and in such a season the judgment of those diseases is not difficult. But you by the following signs may know what parts are wounded. If the patient fall down with the stroke, if hee lie senseless, as it were asleep, if hee avoid his excrements unwittingly, if hee bee taken with giddiness, if blood com out at his ears, mouth, and nose; and if hee vomit choler, you may understand that the scull is fractured, or pierced through, by the defect in his understanding and discours. You also may know when the scull is fractured, by the judgment of your external senses, as if by feeling it with your finger you finde it elevated or depressed beyond the natural limits, if by striking it with the end of a probe, when the *Pericranium* or nervous film that investeth the scull is cut cross-wise; and so divided there from it, yeeld a safe and unperfect sound like unto a pot-sheard that is broken, or rather like unto an earthen-pitcher that hath a cleft, or rent therein.
- Signs of a fractured scull.** But wee may say, that death is at hand if his reason and understanding fail him, if hee bee speechless, if his sight forsake him, if hee would tumble head-long out of his bed, being not at all able to remoov the other parts of his bodie; if hee have a continual fever, if his tongue bee black with driness, if the edges of the wound bee black or drie, and cast forth no sanious matter, if they resemble the color of salted-flesh, if hee have an apoplexie, phrensie, convulsion or palsie, with an involuntarie excretion, or absolute suppression of the urine and excrements. You may know that a man hath his throat, that is, his weason and winde-pipe cut. First by the sight of his wound, and next by the abolishment of the function or office thereof both waies, for the patient can neither speak nor swallow anie meat or drink; and the parts that are cut asunder, divide themselvs by retraction upwards or downwards one from another, whereof commeth sudden or present death. You may know that a wound hath pierced into the breast or concavities of the bodie, if the air com forth at the wound making a certain whizzing nois, if the patient breathe with great difficultie, if hee feel a great heaviness or weight on or about the midriff, whereby it may bee gathered, that a great quantitie of blood lieth on the place or midriff, and so causseth him to feel a weight or heaviness, which by little and little, will bee cast up by vomiting. But a little after a fever commeth, and the breath is unfavorie, and stinking, by reason that the putrifying blood is turned into *sanies*: the patient cannot lie but on his back, and hee hath an often desire to vomit, but if hee escape death, his wound will degenerate into a Fistula, and at length will consume him by little and little.
- Signs of death by a wound on the head.** Wee may know that the Lungs are wounded by the foaming and spumous blood comming out both at the wound and cast up by vomiting; hee is vexed with a grievous shortness of breath and with a pain in his sides. Wee may perceiv the Heart to bee wounded by the abundance of blood that commeth out at the wound, by the trembling of all the whole bodie, by the faint and small puls, paleness of the face, cold sweat, with often swooning, coldness of the extreme parts, and sudden death.
- Signs that the throat is cut.** When the midriff (which the Latines call *Diaphragma*) is wounded, the patient feeleth a great weight in that place, hee raveth and talketh idly, hee is troubled with shortness of winde, a cough, and fit of greivous pain, and drawing of the intrals upwards. Wherefore when all these accidents appear, wee may certainly pronounce that death is at hand.
- Signs that a wound hath pierced in the concavities of the chest.** Death appeareth suddenly, by a wound of the hollow Vein, or the great Arterie, by reason of the great and violent evacuation of blood and spirits, whereby the functions of the Heart and Lungs are stopped and hindered.
- Signs that the Lungs are wounded.** The marrow of the back bone being pierced, the patient is assaulted with a palsie or convulsion verie suddenly, and sence and motion faileth in the parts beneath it, the excrements of the bladder are either evacuated against the patients will, or elf are altogether stopped.
- That the Heart is wounded.** When the Liver is wounded, much blood commeth out at the wound, and pricking-pain disperseth it self even unto the sword-like gristle, which hath it's situation at the lower end of the breast-bone called *Sternon*: the blood that falleth from thence down into the intestines doth often-times infer most malign accidents, yea, and somtimes death.
- The Midriff.** When the stomach is wounded, the meat and drink com out at the wound, there followeth a vomiting of pure choler, then commeth sweating and coldness, of the extreme parts, and therefore wee ought to prognosticate death to follow such a wound.
- The *Vena Cava* and great Arterie.** When the Milt or Splene is wounded, black and gross blood cometh out at the wound, the patient will bee verie thirstie, with pain on the left side, and the blood break's forth into the bellie, and there putrifying causseth most malign and greivous accidents, and often-times death to follow.
- The spinal marrow.** When the guts are wounded, the whole bodie is griped and pained, the excrements com out at the wound, whereat also often-times the guts break forth with great violence.
- The Liver.** When the Reins or Kidnies are wounded, the patient will have great pain in making his urine, and the blood commeth out together therewith; the pain commeth down even unto the groin, yard, and testicles.
- The Stomach.** When the Bladder and Ureters are wounded, the pain goeth even unto the entrails; the
- The Spleen.**
- The Guts.**
- The Kidnies.**
- The Bladder.**
- parts

parts all about, and belonging to the groin are distended, the urine is bloodie that is made, and the same also commeth oftentimes out of the wound.

When the womb is wounded, the blood commeth out at the privities, and all other accidents appear, like as when the bladder is wounded. The womb.

When the sinews are pricked or cut half a sunder, there is great pain in the affected place, and there followeth a sudden inflammation, flux, abcess, fever, convulsion, and oftentimes a gangrene or mortification of the part, whereof commeth death, unless it bee speedily prevented. The nervs.

Having declared the signs and tokens of wounded parts, it now remaineth that wee set down other signs of certain kindes of death that are not common, or natural, whereabout when there is great strife and contention made, it oftentimes is determined and ended by the judgment of the discreet Physician or Surgeon.

Therefore if it chance, that a nurf either through drunkenness, or negligence, lie's upon her infant lying in bed with her and so stifle's or smother's it to death: If your judgment bee required, whether the infant died through the default, or negligence of the nurf? or through some violent or sudden diseases that laie hidden and lurking in the bodie thereof? You shall finde out the truth of the matter by these signs following. Signs that an infant is smothered, or over-laid.

For if the infant were in good health before; if hee were not froward or crying; if his mouth and nostrils, now being dead, bee moist'ned or bedewed with a certain foam, if his face bee not pale, but of a Violet or Purple color; if when the bodie is opened the Lungs bee found swoln and puffed up, as it were with a certain vaporous foam and all other intrals found; it is a token that the infant was stifled, smothered or strangled by some outward violence.

If the bodie or dead corps of a man bee found lying in a field, or house alone, and you bee called by a Magistrate to deliver your opinion, whether the man were slain by lightning or some other violent death? You may by the following signs finde out the certaintie hereof.

For everie bodie that is blasted, or stricken with lightning, doth cast forth or breathe out an unwholsom, stinking or sulphureous smel, so that the birds or fowls of the air, nor dogs will not once touch it, much less preie or feed on it: the part that was stricken oftentimes found, and without a wound, but if you search it well, you shall finde the bones under the skin to bee bruised, broken or shivered in pieces. Signs of such as are slain by lightning.

But if the lightning hath pierced into the bodie, which making a wound therein (according to the judgment of *Plinie*) the wounded part is far colder then all the rest of the bodie. For lightning driveth the most thin and fierie air before it, and striketh it into the bodie with great violence, by the force whereof the heat that was in the part is soon dispersed, wasted and consumed. Lightning doth alwaies leav some impression or sign of some fire either by ustion or blackness: for no lightning is without fire. Lib. 2. cap. 54.

Moreover whereas all other living creatures when they are stricken with lightning fall on the contrarie side, onely man falleth on the affected side, if hee bee not turned with violence toward the coast or region from whence the lightening came.

If a man bee stricken with lightning while hee is asleep, hee will bee found with eies open; contrariwise, if hee bee stricken while hee is awake, his eies will bee closed, as *Plinie* writeth. *Philip Commines* writeth that those bodies that are stricken with lightning are not subject to corruption as others are.

Therefore in antient time it was their custom neither to burn, nor burie them, for the brimstone which the lightning bringeth with it, was unto them in stead of salt, for that by the drieness and fierie heat thereof it did preserv them from putrefaction.

Also it may bee inquired in judgement, Whether anie that is dead and wounded, received these wounds alive or dead. Truly the wounds that are made of a living man, if hee die of them, after his death will appear red and bloodie, with the sides or edges swoln, or pale round about: contrariwise, those that are made in a dead man, will bee neither red, bloodie, swoln, nor puffed up. For all the faculties and functions of life in the bodie do cease and fall together by death; so that thenceforth no spirits nor blood can bee sent, or flow into the wounded place. Therefore by these signs which shall appear it may bee declared that hee was wounded dead or alive. Signs of wounds given to a living and dead man

The like question may com in judgment when a man is found hanged, whether hee were dead, or alive. Therefore if hee were hanged alive, the impression or print of the rope will appear red, pale, or black, and the skin round about it will bee contracted or wrinkled, by reason of the compression which the cord hath made; also oftentimes the head of the *aspera arteria* is rent and torn, and the second spondyl, and the neck luxated or mooved out of his place. Also the arms and leggs will bee pale, by reason of the violent and sudden suffocation of the spirits: moreover there will bee a foam about his mouth, and a foamic and filthie matter hanging out of his nostrils, being sent thither both by reason that the Lungs are suddenly heated and suffocated, as also by the convulsion and concussion of the brain like as it were in the falling-sickness. Contrariwise if hee bee hanged dead, none of these signs appear: for neither the print of the rope appears red or pale, but of the same color as the other parts of the bodie are, becaus in dead men the blood and spirits do not flow to the grieved parts. Signs whether one bee hanged alive or dead.

Whether one
found dead in
the water
came therein
alive or dead.

Whoſoever is found dead in the waters, you ſhall know whether they were thrown into the water alive or dead. For all the bellie of him that was thrown in alive, will bee ſwoln and puffed up by reaſon of the water that is contained therein; certain clammy excrements come out at his mouth and noſtrils, the ends of his fingers will bee worn and excoriated, becauſe that hee died ſtriving and digging or ſcraping in the ſand or bottom of the river, ſeeking ſomewhat whereon hee might take hold to ſave himſelf from drowning. Contrariwiſe if hee bee thrown into the waters, beeing dead before, his bellie will not bee ſwoln, becauſe that in a dead man all the paſſages and conduits of the bodie do fall together, and are ſtopped and cloſed, and for that a dead man breathe's not, there appeareth no foam nor filthie matter about his mouth and noſe, and much leſſe can the tops of his fingers bee worn and excoriated, for when a man is alreadie dead, hee cannot ſtrive againſt death.

But as concerning the bodies of thoſe that are drowned, thoſe that ſwim on the upper part of the water beeing ſwoln or puffed up, they are not ſo by reaſon of the water that is contained in the bellie, but by reaſon of a certain vapor, into which a great portion of the humors of the bodie are converted by the efficacy of the putrifying heat. Therefore this ſwelling appeareth not in all men which do periſh, or elſe are caſt out dead into the waters, but onely in them which are corrupted with the filthineſſe or muddineſſe of the water, long time after they were drowned, and caſt on the ſhore.

Of ſuch as are
ſmothered by
Charcoal.

But now I will declare the accidents that come to thoſe that are ſuffocated and ſtified or ſmothered with the vapor of kindled or burning-charcoals, and how you may fore-tel the cauſſes thereof by the hitorie following. In the yeare of our Lord God 1575. the tenth daie of May, I with *Robert Greauline* Doctor of Phyſick, was ſent for by Maſter *Hamel* an Advocate of the Court of Parliamt of *Paris*, to ſee and ſhew my opinion on two of his ſervants, of whom the one was his Clerk, and the other his Horſe-keeper. All his familie ſuppoſed them dead, becauſe they could not perceiv or feel their Arteries to beat, all the extreme parts of their bodies were cold, they could neither ſpeak nor moove, their faces were pale and wan, neither could they bee raiſed up with anie violent beating or plucking by the hair. Therefore all men accounted them dead, and the queſtion was onely of what kinde of death they died, for their maſter ſuſpected that ſom bodie had ſtrangled them, others thought that each of them had ſtopped one another's winde with their hands: and others judged that they were taken with a ſudden apoplexie. But I preſently inquired whether there had been anie fire made with coals in the houſe lately, whereunto their maſter giving ear, ſought about all the corners of the chamber (for the chamber was verie little and cloſe) and at laſt found an earthen-pan with charcoal half burned: which when wee once ſaw, wee all affirmed with one voice, that it was the cauſe of all this miſfortune, & that it was the malign fume and venomous vapor, which had ſmothered them, as it were by ſtopping the paſſages of their breath. Therefore I put my hand to the regions of their hearts, where I might perceiv that there was ſome life remaining by the heat and pulſation that I felt though it were verie little, wherefore wee thought it convenient to augment and increaſe it. Therefore firſt of all, artificially opened their mouths, which were verie faſt cloſed, and ſticking obſtinately together; and thereinto both with a ſpoon and alſo with a ſilver-pipe, wee put *aqua vitæ* often diſtilled with diſſolved *hiera* and *triacle*; when wee had injected theſe medicines often into their mouths, they began to moove and to ſtretch themſelves, and to caſt up and expell manie viſcous excremental and filthie humors at their mouth and noſtrils, and their lungs ſeemed to bee hot, as it were in their throats.

Therefore then wee gave them vomitories of a great quantitie of *Oxymel*, and beat them often violently on the laſt ſpondil of the back, and firſt of the loins, both with the hand and knee (for unto this place the oriſice of the ſtomach is turned) that by the power of the vomitorie medicine, and concuſſion of the ſtomach, they might bee conſtrained to vomit. Neither did our purpoſe fal us, for preſently they voided clammy, yellow and ſpumous phlegm and blood.

But wee not beeing content with all this, blowed up into their noſtrils, out of a Goof-quill, the powder of *Euphorbium*, that the expulſive facultie of the brain might bee ſtirred up to the expulſion of that which oppreſſed it; therefore preſently the brain beeing ſhaken, or mooved with ſneezing and inſtimulated thereunto by rubbing the chymical oil of minis on the palate and on the cheeks, they expelled much viſcous and clammy matter at their noſtrils.

Then wee uſed frictions of their arms, legs, and back-bones; and miniſtered ſharp glyſters, by whoſe efficacy the bellie beeing abundantly looſened, they began preſently to ſpeak and to take things that were miniſtered unto them of their own accord, and ſo came to themſelves again.

In the doing of all theſe things, *James Guillemeau* Surgeon unto the King, and of *Paris*, and *John* of *Saint Germanes* the Apothecarie, did much help and further us.

In the afternoon that the matter beeing well begun might have good ſucceſſe, *John Hautie*, and *Lewis Thibaut*, both moſt learned Phyſicians, were ſent for unto us, with whom wee might conſult on other things that were to bee don. They highly commended all things that wee had don alreadie, thought it verie convenient that cordials ſhould bee miniſtered unto them, which, by ingendring of laudable humors, might not onely generate new ſpirits, but
alſo

also attenuate and purifie those that were gross and cloudie in their bodies. The rest of our consultation was spent in the inquirie of the caus of so dire a mischance. For they said it was no new or strange thing, that men may bee smothered with the fume and cloudie vapor of burning-coals.

For wee reade in the works of *Fulgosius, Volaterenus* and *Egnatius*, that as the Emperor *Jo-*
vinian, travelled in winter-time towards Rome, hee being wearie in his journie, rested at
a village called *Didastanes*, which divideth *Bithynia* from *Galatia*, where hee laie in a cham-
ber that was newly made, and plaistered with lime, wherein they burn'd manie coals, for to
drie the work or plaistering, that was but as yet green on the walls or roof of the cham-
ber. Now hee died the verie same night being smothered or strangled with the deadlie and
poisonous vapor of the burned charcoal, in the mid't of the night; this happened to him
in the eight month of his reign, the thirtieth year of his age, and on the twentieth daie of
August. But what need wee to amplifie this matter by the antient histories, seeing that not
manie years since three servants died in the houl of *John Bigine* goldsmith, who dwelleth at
the turning of the bridge of the Change, by reason of a fire made of coals in a close cham-
ber, without a chimnie where they laie. And as concerning the causes, these were alledged.
Manie were of opinion that it happened by the default of the vapor proceeding from the
burned coals, which beeing in a place void of all air or winde, infer's such like accidents as the
vapor or must of new wine doth, that is to saie, pain, and giddiness of the head. For both
these kinds of vapor besides that they are crude, like unto those things whereof they com, can
also verie suddenly obstruct the original of the Nervs, and so caus a convulsion, by reason of
the grossness of their substance.

For so *Hipocrates* writing of those accidents that happen by the vapor of new wine, speak-
eth. If anie man being drunken do suddenly becom speechless and hath a convulsion, hee di-
eth unless hee have a fever therewithal; or if hee recover not his speech again when his drun-
kenness is over.

Even on the same manner the vapor of the coals assaulting the brain caused them to bee
speechless, unmoovable and void of all sens, and had died shortly unless by ministring and
applying warm medicines into the mouth and to the nostrils, the grossness of the vapor had
been attenuated, and the expulsive faculties mooved or provoked to expel all those things
that were noisom: and also although at the first sight the Lungs appeared to bee grieved more
then all the other parts, by reason that they drew the malign vapor into the bodie, yet when
you consider them well, it will manifestly appear that they are not grieved, unless it bee
by the sympathie or affinitie that they have with the brain when it is verie grievously af-
flicted.

The proof hereof is, becauf presently after, there followeth an interception or defect of
the voice, sens and motion: which accidents could not bee unless the beginning or original
of the nervs were intercepted or letted from performing its function, being burthened by
som matter contrarie to nature.

And even as those that have an apoplexie do not die but for want of respiration, yet with-
out anie offence of the Lungs, even so these two young men's deaths were at hand, by reason
that their respiration or breathing was in a manner altogether intercepted, not through anie
default of the Lungs, but of the brain and nervs distributing sens and motion to the whole
bodie and especially to the instruments of respiration. Others contrariwise contended
and said, that there was no default in the brain, but conjectured the interception of the vi-
tal spirits letted or hindered from going up into the brain from the heart, by reason that
the passages of the Lungs were stopped, to bee the occasion that sufficient matter could
not bee afforded for to preserv and feed the animal-spirit. Which was the caus that those
young men were in danger of death, for want of respiration, without which there can bee
no life.

For the heart being in such a case, cannot deliver it self from the fuliginous vapor that
encompass it, by reason that the Lungs are obstructed by the grossness of the vapor of the
coals, whereby inspiration cannot well bee made, for it is made by the compassing air
drawn into our bodies: but the air that compasseth us doth that which nature endeavoureth
to do by inspiration, for it moderateth the heat of the heart, and therefore it ought to bee
endued with four qualities. The first is, that the quantitie that is drawn into the bodie
bee sufficient. The second is, that it bee cold, or temperate in quantitie. The third is, that
it bee of a thin and mean consistence. The fourth is, that it bee of a gentle and benign
substance.

But these four conditions were wanting in the air which these two young men drew into
their bodies beeing in a close chamber.

For first, it was little in quantitie, by reason that small quantitie that was contained in that
little close chamber, was partly consumed by the fire of coals, no otherwise then the air
that is contained in a cupping-glass is consumed in a moment by the flame so soon as it is
kindled.

Furthermore it was neither cold nor temperate, but as it were inflamed with the burning fire
of coals.

Thirdly,

Lib. 9. cap. 12.
lib. 23.
An historie.

sect. 5. Apb.
5.

The occasion
of the death
of such as
have the apo-
plexie.

Conditions of
the air good
to breathe in.

Thirdly, it was more gross in consistence then it should bee by reason of the admixtion of the grosser vapor of the coals: for the nature of the air is so that it may bee soon altered, and will verie quickly receiv the forms and impressions of those substances that are about it.

Lastly, it was noisom and hurtful in substance, and altogether offensive to the aerie substance of our bodies. For Charcoals are made of green wood burnt in pits under ground, and then extinguisht with their own fume or smoak, as all Colliers can tell. These were the opinions of most learned men although they were not altogether agreeable one unto another, yet both of them depended on their proper reasons. For this at least is manifest, that those passages, which are common to the brest and brain, were then stopped with the grossness of the vapors of the coals: whereby it appeareth that both these parts were in fault, for as much as the consent and connexion of them with the other parts of the bodie is so great, that they cannot long abide sound and perfect without their mutual help by reason of the loving and friendlie sympathie and affinitie that is between all the parts of the bodie one with another.

Wherefore the ventricles of the brain, the passages of the lungs and the sleepe Arteries beeing stopped, the vital spirit was prohibited from entring into the brain, and consequently the animal spirit retained and kep't in, so that it could not com or dispers it self through the whole bodie, whence happened the defect of two of the faculties necessarie for life.

It manie times happeneth and is a question too frequently handled concerning women's maiden-heads; whereof the judgement is verie difficult. Yet som ancient women and Midwives will brag that they assuredly know it by certain and infallible signs. For (saie they) in such as are virgins there is a certain membrane of parchment-like skin in the neck of the womb, which will hinder the thrusting in of the finger if it bee put in anie thing deep, which membrane is broken when first they have carnal copulation, as may afterwards bee perceived by the free entrance of the finger. Besides, such as are defloured have the neck of their womb more large and wide; as on the contrarie, it is more contracted, strait and narrow in virgins. But how deceitful and untrue these signs and tokens are, shall appear by that which followeth; for this membrane is a thing preternatural, and which is scarce found to bee in one of a thousand from the first conformation. Now the neck of the womb will bee more open or strait according to the bigness and age of the partie. For all the parts of the bodie have a certain mutual proportion and commensuration in a well-made bodie.

Joubertus hath written, that at *Lecloure* in *Gasconie*, a woman was delivered of a child in the ninth year of her age, and that shee is yet alive and called *Joan de Perie* being wife to *Videau Beche* the receiver of the amercements of the King of *Navare*: which is a most evident argument, that there are som women more able to accompanie with a man at nine years old, then manie other at fifteen, by reason of the ample capacitie of their womb and the neck thereof; Besides also, this passage is enlarged in manie by som accident, as by thrusting their own fingers more strongly thereinto by reason of som itching, or by the putting up of a Nodule, or Pessarie of the bigness of a man's yard, for to bring down the courses. Neither to have milk in their breasts is anie certain sign of lost virginicie; For *Hippocrates* thus write's; But if a woman which is neither with child, nor hath had one, have milk in her breasts, then her courses have failed her.

Moreover, *Aristotle* report's that there bee men who have such plentie of milk in their breasts, that it may bee sucked or milked out.

Cardan write's, that hee saw at *Venice* one *Antonie Bussey* som 30. years old, who had milk in his breasts in such plentie, as sufficed to suckle a child, so that it did not onely drop, but spring out with violence like a woman's milk. Wherefore let Magistrates beware lest thus admonished, they too rashly assent to the reports of women. Let Physicians and Chirurgions have a care lest they do too impudently bring Magistrates into an error, which will not redound so much to the judge's disgrace, as to their's.

But if anie desire to know, whether one bee poisoned, let him search for the Symptoms and signs in the foregoing and particular treatif of poisons. But that this doctrine of making reports may bee the easier, I think it fit to give presidents, in imitation whereof the young Chirurgion may frame others. The first president shall bee of death to ensue; a second of a doubtful judgement of life and death; the third of a impotencie of a member; the fourth of the hurting of manie members.

I *A.P.* Chirurgion of *Paris*, this twentieth daie of Maie by the command of the Counsel, entred into the hous of *John Brossey*, whom I found lying in bed, wounded on his head, with a wound in his left temple, piercing the bone with a fracture and effracture, or depression of the broken bone, scales and *meninges* into the substance of the brain, by means whereof, his puls was weak, hee was troubled with raving, convulsion, cold sweat, and his appetite was dejected. Whereby may bee gathered that certain and speedie death is at hand. In witness whereof I have signed this Report with my own hand.

By the Coroner's command I have visited *Peter Lucey*, whom I found sick in bed, beeing wounded with a Halbert on his right thigh. Now the wound is of the bredth of three fingers and so deep that it pierce's quite through his thigh with the cutting also of the vein and arterie whence ensued much effusion of blood, which hath exceedingly weakned him, & caused him to

Of the signs
of virginicie.

Lib. de error.
popul.

Aph. 39. sect.
5.

Lib. 4. de hist.
animal. c. 20.
Lib. 12. de
subtilitate.

A certificate
of death.

Another in a
doubtful case.

swound often; now all his thigh is swoln, livid, and give's occasion to fear worst symptoms, which is the caus that the health and safetie of the partie is to bee doubted of.

By the Justice's command I entred into the hous of *James Bertey*, to visit his own brother; I found him wounded in his right arm, with a wound of som four fingers bigness, with the cutting of the tendons bending the leg, and of the veins, arteries, and Nervs. Wherefore I affirm that hee is in danger of his life, by reason of the maligu symptoms that usually happen upon such wounds, such as are great pain, a fever, inflammation, abscess, convulsion, gangrene and the like. Wherefore hee stand's of provident and careful dressing, by benefit whereof if hee escape death, without doubt hee will continue lame, during the remainder of his life, by reason of the impotencie of the wounded part. And this I affirm under my hand.

In the loss of a member.

Wee the Surgeons of *Paris*, by the command of the Senate, this twentieth daie of March, have visited *Malter Lewis Vertoman*, whom wee found hurt with five wounds. The first inflicted on his head, in the middle of his fore-head-bone, to the bigness of three fingers, and it penetrate's even to the second table, so that wee were forced to pluck away three splinters of the same bone. The other was athwart his right cheek, and reacheth from his ear to the mid't of his nose, wherefore wee stitiched it with four stitiches. The third is on the mid't of his bellie, of the bigness of two fingers, but so deep that it ascend's into the capacitie of the bellie, so that wee were forced to cut away portion of the Kall, comming out thereat, to the bigness of a walnut, becaus having lost it's natural color, it grew black and putrified. The fourth was upon the back of his left hand, the bigness almost of four fingers, with the cutting of the veins, arteries, nervs, and part of the bones of that part; whence it is, that hee will bee lame of that hand, howsoever carefully and diligently healed.

Another in the hurts of divers parts.

Now becaus by hurting the spinal marrow, men becom lame, somtimes of a leg; it is fit you know that the spinal marrow descend's from the brain like a rivelet for the distribution of the nervs; who might distribute sens and motion to all the parts under the head; wherefore if by hurting the spinal marrow, the patient's arms or hands are resolved or numb, or wholly without sens, it is a sign these nervs are hurt which com forth of the fifth, sixth, seventh *vertebræ* of the neck. But if the same accidents happen to the thigh, leg or foot with refrigeration, so that the excrements flow voluntarily, without the patient's knowledg, or elf are totally suppress, it is a sign that the sinews which proceed from the *vertebræ* of the loins and holie-bone are hurt, or in fault; so that the animal-facultie bestowing sens and motion upon the whole bodie, and the benefit of opening and shutting to the sphincter-muscle of the bladder and fundament, cannot shew it's self in these parts, by which means sudden death happen's, especially if there bee difficultie of breathing therewith.

Being to make report of a childe killed with the mother, have a care that you make a discreet report, whether the childe were perfect in all the parts and members thereof, that the Judg may equally punish the autor thereof. For hee meriteth far greater punishment, who hath killed a childe perfectly shaped and made in all the members; that is, hee which hath killed a live-childe, then hee which hath killed an *Embryon*, that is, a certain concretion of the spermatick bodie. For *Moses* punieth the former with death, as that hee should give life for life, but the other with a pecuniarie mulct. But I judg it fit to exemplifie this report by a President.

A caution in making report of a woman with childe being killed

I A.P. By the Judges command visited *Mistris Margaret Ulmarie*, whom I found sick in bed, having a strong fever upon her, with a convulsion and efflux of blood out of her womb, by reason of a wound in her lower bellie, below her navil on the right side, penetrating into the capacitie of her bellie, and the wound therein; whence it hath com to pass, that shee was delivered before her time of a male childe, perfect in all his members but dead, beeing killed by the same wound, piercing through his scull into the marrow of the brain. Which in a short time will bee the death of the mother also. In testimonie whereof, I have put my hand and seal.

The manner how to Embalm the Dead.

Had determined to finish this my tedious work with the precedent Treatis of Reports; but a better thought came into my head, which was, to bring Man, whose cure I had undertaken, from his Infancie, to his End, and even to his Grave; so that nothing might bee here defective which the Surgeon might by his profession, perform about man's bodie either alive, or dead. Verily there hath scarce ever been a Nation so barbarous, which hath not onely been careful for the Burial, but also for the Embalming or preserving of their dead bodies. For the verie *Scythians*, who have seemed to exceed other Nations in barbarousness and inhumanitie, have don this; for (according to *Herodotus*) the *Scythians* burie not the corps of their King, before that beeing embowelled and stuffed full of beaten Cypress, Frankincens, the seeds of Perslie, and Anis, hee bee also wrapped in sear-cloths. The like care hath also possessed the mindes of the *Ethiopians*; for having disburdened the corps of their friends, of their intrals and flesh, they plastered them over, and then having thus rough-cast them, they painted them over with colors so to expresse the dead to the life; they inclosed them

The care of the *Scythians* in the Embalming their dead. The like care of the *Ethiopians*.

them thus adorned in a hollow pillar of glass, that thus inclosed they might be seen and yet not annoie the spectators with their smell. Then were they kept the space of a year, in the hands of their next kindred; who, during this space, offered and sacrificed to them. The year ended, they carried them forth of the citty, and placed them about the walls each in his proper vault, as *Herodotus* affirm's. But this pious care of the dead, did far otherwise affect the *Egyptians*, then it did other nations. For they were so studious to preserv the memorie of their ancestors, that they Embalmed their whole bodie with aromattick ointments, and set them in translucent Urns, or glass-Cells in the more eminent and honored part of their houses, that so they might have them daily in their sight, and might be as monuments, and inciters to stir them up to imitate their Father's and Grandfire's virtues. Besides, also the bodies thus embalmed with aromattick and balsamick ointments, were in stead of a most sure pawn, so that if anie *Egyptian* had need of a great sum of monie, they might easily procure it of such as knew them and their neighbors, by pawning the dead bodie of som of their dead parents. For by this means the creditor was certain, that hee which pawned it would sooner lose his life, then break his promise. But if all things so unhappily succeeded with anie, so that through povertie hee could not fetch home his pawn again, but was forced to forgo it, hee was so infamous amongst all men, during the rest of his life, as one banished, or forlorn; and losing his freedom hee shall become a servant, yea, scorned and reviled of all men, hee should be accounted unworthie to enjoie the light and societie of men. And certainly the *Egyptians* understanding the life which wee here lead, to be of short continuance, comparison being made with that which wee are to live after the separation of the soul from the bodie, they were more negligent in building their houses they dwelt in, but in rareing the pyramids which should serv them in stead of sepulcres, they were so beyond reason sumptuous and magnificent, that for the building of one of these edifices so renowned over all the world, which King *Cheopes* begun, a hundred thousand men were everie three months; for twentie years space there kept at work: It was five furlongs, and being square, each side was 800. foot long, and so much in height. Almost all the pieces of marble went to the building thereof, were thirtie foot long, engraven and carved with various workmanship, as *Herodotus* report's. But before the bodies were committed to these magnificent Sepulcres, they were carried to the Salters and Embalmers, who for that purpose had allowance of out of the publick stock. These besmeared them with Aromattick, and Balsamick ointments, and sewed up the incisions they made, then strewed them over with salt, and then covered them with brine for 70. daies; which being expired, they washed them, being taken thence, and all the filth being taken off, they wrapped them in Cotton-cloths, glued together with a certain gum; then their kinsmen placed them thus ordered in a wooden Coffin carved like to a man. This was the sacred and accustomed rite of Embalming and Burying dead bodies amongst the *Egyptians* which were of the richer sort. Our country-men the *French*, stirred up with the like desire, embalm the bodies of their Kings and Nobles with spices and sweet ointments. Which custom they may seem piously and christianly to have taken from the Old and New Testament, and the antient and laudable custom of the Jews; for you may read in the New Testament that *Joseph* bought a fine linnen-cloth, and *Nicodemus* brought a mixture of myrrh and Aloës about 100. pound weight, that they might embalm and burie the bodie of *Jesus Christ* our Saviour, for a sign and argument of the renovation and future integrity which they hoped for by the resurrection of the dead. Which thing the Jews had received by tradition from their ancestors. For *Joseph* in the old Testament commanded his Physicians, they should embalm the dead bodie of his father with spices.

But the bodie which is to be embalmed with spices for verie long continuance must first of all be embowelled, keeping the heart apart, that it may be embalmed and kept as the kinsfolks shall think fit. Also the brain, the scull being divided with a saw, shall be taken out. Then shall you make deep incisions along the arms, thighs, legs, back, loins and buttocks, especially where the greater veins and arteries run, first that by this means the blood may be pressed forth, which otherwise would putrefie and give occasion and beginning to putrefaction to the rest of the bodie; and then that there may be space to put in the aromattick powders; the whole bodie shall be washed over with a sponge dipped in *aqua vite*, and strong vineger, wherein shall be boiled wormwood, aloës, coloquintida, common salt and alum. Then these incisions, and all the passages and open places of the bodie, and the three bellies shall be stuffed with the following spices grossly powdered. *R. pul. rosar. chamem. melil. balsami, mentha, anethi, salvia, lavender. rorisinar. marjoran. thymi, absinthii, cyperi, calami aromat. gentiana, ireos florent. ass odorata, caryophyll. nucis moschat, cinnamomi, styracis, calamita. benjoini. myrrha, aloës, santal. omnium quod sufficit.* Let the incisions be sowed up and the open spaces that nothing fall out; then forthwith let the whole bodie be annointed with Turpentine dissolved with oil of Roses and Camomil, adding, if you shall think it fit, som Chymical oils of spices, and then let it be again strewed over with the fore-mentioned powder; then wrap it in a linnen-cloth, and then in sear-cloths.

Lastly, let it be put in a Coffin of Lead, sure souldered and filled up with drie sweet herbs. But if there be no plentie of the fore-mentioned spices, as it usually happen's in besieged towns, the Surgeon shall be contented with the powder of quenched lime, common ashes made of oke-wood.

Lib. 3.
Of the *Egyptians*,
ii 225.

The reason of
building the
Egyptians Py-
ramids.

Lib. 2.

Joha 19. 39.

Gen. 50. 2.

The manner
of embalming
for a long
continuance.

How to em-
balm bodies
when as wee
want spices.

For thus the bodie beeing over and above washed in strong vinegar, or Lee, shall bee kept a long time, if so bee that a great dissolving heat do not bear swaie, or if it bee not put in a hot and moist place. And this condition of time and place is the caus why the dead bodies of Princes and Kings, though embalmed with Art and cost, within the space of six or seven daies, in which they are kept to bee shewed to the people after their embalming, do cast forth so greivous a sent, that none can indure it; so that they are forced to bee put in a leaden Coffin. For the air which incompasseth them groweth so hot by reason of the multitude of people flowing to the spectacle, and the burning of lights night and daie, that the small portion of the native heat which remaineth beeing dissipated, they easily putrefie, especially when as they are not first moistened and macerated in the liquor of aromatick things, as the *Agyptians* antiently used to do, steeping them in brine for 70 daies, as I formerly told you out of *Herodotus*. I put in minde hereby, use, that so the embalming may becom the more durable, to steep the bodies (beeing embowelled, and pricked all over with sharp bodkins, that so the liquor hindring putrefaction may penetrate the deeper into them) in a wooden tub filled with strong vinegar of the decoction of aromatick and bitter things, as *Alöes*, *Rue*, *Wormwood*, and *Coloquintida*; and there keep them for twentie daies, pouring thereinto eleven or twelv pintes of *Aqua vite*. Then taking it forth, and setting it on the feet, I keep it in a clear and drie place. I have at home the bodie of one that was hanged, which I begged of the Sheriff, embalmed after this manner, which remaine's found for more then 25 yeers, so that you may tell all the muscles of the right side, (which I have cut up even to their heads, and plucked them from those that are next them for distinction's sake, that so I may view them with my eies, and handle them with my hands as often as I pleas, that by renuing my memorie I may work more certainly and surely, when as I have anie more curious operation to bee performed) the left side remain's whole, and the Lungs Heart, *Diaphragma*, stomach, spleen, kidnies, beard, haiers, yea and the nails, which beeing pared, I have often observed to grow again to their former bigness.

Why the bodies of our Princes, how well soever embalmed, corrupt in a few daies.

And let this bee the bound of this our immens labor's and by God's favor, our rest, to whom Almightye, all-powerful, immortal and invisible, bee ascribed all honor and glorie for ever, and ever, *Amen*.

Labor improbus omnia vincit.

The end of the Treatif of reports, and embalming the dead.



The Apologie and Treatif, conteining the voiages made into divers places. By *Ambrose Pare* of *Laval* in *Maine*, Counsellor and chief Chirugion to the King.

The twentieth ninth Book.



Ruely I had not put my hand to the pen, to write on such a thing, were it not that som have impudently injured, taxed, and more through particular hatred, disgraced mee, then for zeal or love they bear to the publick good; which was, concerning my manner of tying the Veins and Arteries, writing thus as followeth.

Malè igitur & nimium arroganter inconsultus & temerarius quidam, vasorum ustionem post emortui membri reseccionem à veteribus omnibus plurimum commendatam & semper probatam damnare ausus est, novum quendam deligandi vasa modum, contra veteres omnes medicos sine ratione, experientia & iudicio docere cupiens, nec animadvertit majora multo pericula ex ipsa vasorum deligatione quam acu partem sanam profundè transfigendo administrari vult, imminere quam ex ipsa ustione. Nam si acu nervosam aliquam partem, vel nervum ipsum pupugerit, dum ita novo & inusitato modo venam absurde conatur constringere, nova inflammatio necessario consequetur, à qua Convulsio & convulsione cita mors. Quorum symptomatum metu Galenus non ante transversa vulnera suere audebat (quod tamen minus erat periculosum) quam musculorum aponeuroses denudasset. Adde quòd forcipes quibus post seccionem iterum carnem dilacerat, cum retracta versus originem vasa se posse extrahere somniat, non minorem adferant dolorem quam ignita ferramenta adnota. Quod si quis laniatum expertus incolumis evaserit, is Deo optimo maximo, cuius Beneficentia crudelitae ista & carnificina liberatus est, maximas gratias habere & semper agere debet; which is thus: Ill then, and too arrogantly a certain indiscreet and rash person would blame and condemn the cauterizing of vessels after the amputation of a rotten and corrupted member, much praised and commended and alwaies approved by the Antients; desiring to shew and teach us without reason, judgment, and experience, a new waie to tie the vessels, against the opinion

Of what the Adversarie accuseth the Author.

The words of the Adversarie.

of the Ancient Physicians, taking no heed, nor being well advised, that there happen's far greater perils, and accidents, through this new waie of tying the vessels (which hee will have to bee made with a needle, piercing deeply the sound part) then by the burning and ustion of the said vessels; for if the needle shall prick anie nervous part, yea the nerv it self, when hee shall by this new and unaccustomed waie absurdly constrict the vein by bindeing it, there must necessarily follow a new inflammation; from an inflammation, a convulsion; from a convulsion, death: for fear of which accidents, *Galen* never durst stich transversal wounds, (which notwithstanding were lesse dangerous) before hee had discovered the *Aponeuroses* of the muscles. Moreover the pincers with which, after the section, the flesh is again dilacerated, while hee think's to draw the vessels out which are drawn in toward their original, bring no lesse pain then the cauterizing irons do. And if anie one having experimented this new manner of cruelty have escaped danger, hee ought to render thanks to Almighty God for ever, through whose goodness hee hath been free'd from such tyrannie, feeling rather his executioner then his methodical Chirurgeon.

The Autors
answer.

O what sweet words are here for one, who is said to bee a wife and learned Doctor? hee remember's not that his white beard admonisheth him, not to speak anie thing unworthie of his age, and that hee ought to put off and drive out of him all envie and rancor conceived against his neighbor. So now I will prove by autoritie, reason and experience, that the said Veins and Arteries ought to bee tied.

Autorities.

As for *Autorities*, I will com to that of that worthie man *Hippocrates*, who wil's and command' the cure of *Fistula's* in the fundament by ligature, as well to consume the callositie, as to avoid hemorragie. In the book of *Fistula's* of the fundament chap. 3. book 5. leaf 4.

Galen, *Treatis* 2. chap. 17. in his method, speaking of a flux of blood made by an outward caus, of whom see here the words, It is (saith hee) most sure to tie the root of the vessel, which I understand to bee that which is most near to the Liver, or the heart.

Avicen, *Treatis* 3. doct. 1. chap. 3. command's to tie the vein and the Arterie, after it is discovered towards his original.

Guido of Cauliac, speaking of the wounds of the Veins and Arteries, injoineth the Chirurgeon to make the ligature in the vessel.

Master *Hollier* in the 3. book, chap. 4. of the matter of Chirurgerie, speaking of a flux of blood, command's expressly to tie the vessels.

Calmethus in the 12. chap. of the wounds in the Veins and Arteries, tel's a most sure waie to staie a flux of blood, by ligature of the vessel.

Celsus, chap. 26. book 5. from whom the said Physician hath snatched the most part of his book, chargeth expressly, to tie the vessels in a flux of blood happening to wounds, as a remedie most easie & most sure.

Vesalius in his Chirurgerie, chap. 4. book 3. willeth that the vessels bee tied in a flux of blood.

John de Vigo, book 1. treatis 1. treating of a hemorragie in bleeding wounds, command's to tie the Vein, and the Arterie.

Tegaultius chap. 12. book 2. treating of the means to staie the flux of blood, command's to pinch the Vein or Arterie with a Crow or Parrat's-bill, then to tie it with a verie strong thred.

Peter of Argillata of *Bullongne*, treatis 4. chap. 11. book 1. discoursing of a flux of blood, and the means to stop it, giveth a fourth waie expressly, which is made by ligature of the vessels.

John Andreas a Cruce, a *Venetian*, book 1. sect. 3. chap. 16. pag. 5. upon the 88. chap. of the book of *Paul* make's mention of a method, to staie a flux of blood by the ligature of the vessels.

D' *Alechamp* command's to tie the Veins and Arteries.

See then (my little good man) the autorities which command you to tie the vessels. As for the reasons, I will debate of them.

The hemorragie (saie you) is not so much to bee feared in the section of the Call, as that of the Varices, and the incision of the temporal Arteries, as after the amputation of a member. Now you your self command that in cutting the Varices, the flux of blood bee stopped by the ligature of the vessels. in the book 2. chap. of *Angealogie*, leaf 176. You command the same in the book of *Stitches* 1. chap. speaking of the stich, with the amputation and section of the Call, changed by the outward air, see heer your own words: After that must bee considered concerning the Call: for if there bee anie part corrupted, putrified, withered, or blackish: First having tied, for fear of a flux of blood, you do not bid afterward to have it cauterised; but to staie the truth, you have your eies shut, and all your senses dulled, when you would speak against so sure a method, and that it is not but through anger, and an ill will. For there is nothing which hath more power to drive reason from her seat, then choler and anger. Moreover when one come's to cauterise and dismember the parts, oftentimes when the *Eschar* come's to fall off, there happen's a new flux of blood: As I have seen divers times, not having yet been inspired by God, with so sure a means then, when I used the heat of fire. Which if you have not found, or understood this method in the books of the Antients, you ought not thus to tread it under your feet, and speak unluckely of one who all his life hath preferred the profit of the Common-wealth before his own particular. It is not more then reasonable to bee founded upon the saying of *Hippocrates*; in the chapter of burning, 2. book leaf 206. upon whose autoritie you serv your self, which is thus That what the medicament cureth not the iron doth, and what the iron doth not amend, the fire exterminateth: It is a thing which favor's not of a Christian, to fall to burning at the first dash without staying for anie more gentle remedies. As you your self write, in the first book leaf 5. speaking of the conditions required in a Chirurgeon to cure well; which passage you borrow from som other place: for that which may bee don gently without fire, is much more commended then otherwife. Is it not a thing which all schools hold as a Maxim, that wee

Galen in 4. book of the Meth. and in the book of Art of Hippocrates Aphor. the 2. book. 1.

must alwaies begin vvith most easie remedies, vvhich if they bee not sufficient, vvee must then com to extreme, following the doctrine of *Hippocrates*? *Galen* command's in the place before alledged, to treat or dress the diseased quickly, safely, and vvith the least pain that is possible.

Let us com to Reason.

NOVV so it is, that one cannot applie hot irons but vvith extreme and vehement pain in a sensible part void of a Gangrene, vvhich vvould bee caus of a Convulsion, Fever, yea oft-times of Death. Moreover it vvould bee a long vvhile aftervvards before the poor patients vvere cured, becaus that by the action of the fire there is made an eschar, vvhich proceed's from the subject flesh, vvhich beeing fallen, nature must regenerate a nev्व flesh in stead of that vvhich hath been burned; as also the bone remain's discovered and bare; and by this means, for the most part there remain's an ulcer incurable. Moreover there is yet another accident. It happeneth that oftentimes the crust beeing faln off, the flesh not beeing vvell renewed, the blood istueth out as it did before. But vvhen they shall bee tied, the ligature fal's not off until the first flesh have verie vvell covered them again: vvhich is proved by *Galen* in the 5. book of his *Meth.* saying, that escharotick medicines vvhich caus a crust or eschar, vvhensoever they fall off, leav the part more bare then the natural habit require's. For the generation of a crust proceed's from the parts subject, and vvhich are situate round about it, beeing also burned, as I may saie: wherefore by how much the part is burnt, by so much it loseth the natural heat. Then tell mee when it is necessarie to use escharotick medicines, or cauterizing irons? 'T is when the flux of blood is caus'd by erosion, or som Gangrene or putrefaction. Now is it thus? In fresh bleeding wounds there is neither Gangrene, nor putrefaction. Therefore, the cauteries ought not to bee there applied. And vvhen the Antients commanded to applie hot irons to the mouths of the vessels, it hath not been onely to stae the flux of blood, but chiefly to correct the malignitie, or gangrenous putrefaction vvhich might spoil the neighboring parts. And it must bee here noted, that if I had known such accidents to happen, vvhich you have declared in your book, in drawing and tying the vessels, I had never been twice deceived; nor vvould I ever have left by my writings to posteritie, such a waie of stopping a flux of blood. But I writ it after I had seen it don & did it verie often, vvith happie success. See then vvhat may happen through your inconsiderate counsel, without examining, or standing upon the facilitie of tying the said vessels. For see, heer's your scope and proposition, to tie the vessels after amputation is a new remedie, saie you; then it must not bee used, it is an ill argument for a Doctor.

But as for that (saie you) one must use fire after the amputation of members, to consume and drie the putrefaction, vvhich is a common thing in Gangrenes, and mortifications, that indeed hath no place here, becaus the practice is to amputate the part above that vvhich is mortified, and corrupted; as *Celsus* write's in 5. book c. and command's, to make the amputation upon the second part, rather then to leav anie whit of the corrupted. I vvould willingly ask you, if vvhen a vein is cut transvers, and that it is verie much retracted towards the original, vvwhether you vvould make no conscience to burn till that you had found the orifice of the vein, or arterie; and if it bee not more easie onely vvith a Crow-bil to pinch and draw the vessel, and so tie it? In vvhich you may openly shew your ignorance, and that you have your minde seized vvith much rancor and choler. Vvee dailie see the ligature of the vessels practised vvith happie success after the amputation of a part, vvhich I vvill now verifie by experiences and histories, of those to vvhom the said ligature hath been made, and persons yet living.

Experiences. A notable historie.

THe 16. of June 1582. in the presence of *M. John Liebaud* doctor in the facultie of Physick at *Paris*, *Claud Viard* sworn Surgeon, *M. Mathurin Huron*, Surgeon of *Monseigneur de Sourray*, and *I. John Charbonel* M. Barber-Surgeon of *Paris*, vvell understanding the *Theorick*, and *Practick* of *Surgerie*, did vvith good dexteritie amputate the left leg of a woman tormented the space of three years vvith extreme pain, by reason of a great *Caries* vvhich was in the bone *Astragal*, *Cyboides*, great and little *foeil*, and through all the nervous parts, through vvhich shee felt extreme and intolerable pains night and daie: shee is called *Marie* of *Hofstel*, aged 28. years, or thereabouts, vvife of *Peter Herve*. Esquire of the *Kitchin* to the *Ladie Duchess* of *Uzez*, dwelling in the street of *Verbois* on the other side *S. Martin* in the fields, dwelling at the sign of the *S. John's-head*; vvhere the said *Charbonel* cut off the said leg, the bredth of 4. large fingers below the knee, & after that hee had incised the flesh, & sawed the bone, hee griped the vein vvith the Crow-bil, then the Arterie, then tied them; from vvhen I protest to God (vvhich the companie that vvere there, can vvitness) that in all the operation that vvvas suddenly don, there vvvas not spilt one porrenger of blood; and I bid the said *Charbonel* to let it bleed more, following the precept of *Hippocrates*, that it is good, in all wounds and also in inveterate ulcers, to let the blood run; by this means, the part is less subject to inflammation. The said *Charbonel* continued the dressing of her, vvho vvvas cured in two months, vvithout anie flux of blood happening unto her, or other ill accident; and shee vvvent to see you at your lodging beeing perfectly cured.

Another Historie.

Another historie of late memorie, of a singing-man of our *Ladie's Church* named *M. Colt*, vvho broke both the bones of his leg vvhich vvwere crushed in divers pieces, in somuch that there vvvas no hope of cure, to vvwithstand a gangrene and mortification, and by consequence death. *Monseigneur Helin* Doctor Regent in the facultie of Physick, a man of honor and good knowvledg, *Claud Viard*, & *Simon Peter*, sworn Surgeons of *Paris*, men vvell exercised in *Surgerie*; and *Balthazar* of *Lestre*, and *Leonard de Leschenal*, M. Barber-Surgeons, vvell experimented in the operations of *Surgerie*, vvvere all of opinion, to vvwithstand the accidents aforesaid, to make entire amputation of the vvwhole leg, a little above the broken & shivered bones & the torn nervs, veins, arterie; the operation vvvas nimbly don, by the said *Viard* and the blood stanch't by the ligature of the vessels in the presence of the said *Helin*, and *M. Tonsard* great vicar of our *Ladie's Church*, and vvvas continually dressed by the said *Leschenal*, and I vvvent to see him othervvwhiles; hee vvvas happily cured vvithout the application of hot irons, and walketh lustily on a vvwoodden leg.

Another Historie. IN the year 1583. the 10. daie of December, *Toussaint Posson* born at *Ronieville*, at this present dwelling at *Beauvais* near *Dourdan*, having his leg all ulcered, and all the bones cariez'd and rotten, praied mee for the honor of God to cut off his leg by reason of the great pain which hee could no longer endure. After his bodie was prepared, I caused his leg to bee cut off, four fingers below the *rotula* of the knee, by *Daniel Powlet* one of my servants, to teach him and to imbolden him in such works; and there hee readily tied the vessels to staie the bleeding, without application of hot irons, in the presence of *James Guillemeau* ordinarie Surgeon to the King, and *John Charbonell* master-Surgeon of *Paris*: and during the cure was visited by *M. Laffile* and *M. Courtin* Doctors, Regents in the facultie of medicine at *Paris*. The said operation was made in the house of *John Gobel* Inn-keeper, dwelling at the sign of the white-horse in the Greve. I will not here forget to saie, that the Ladie Princess of *Mompensier*, knowing that hee was poor, and in my hands, gave him monie to paie for his chamber and diet. Hee was well cured, God bee praied, and is returned home to his house with a wooden-leg.

Another Historie. **A** Gangreen happened to half of the leg to one named *Nicolas Mesnager* aged 76. years, dwelling in *S. Honores* street, at the sign of the Basket; which happened to him through an inward cause, so that wee were constrained to cut off his leg to save his life: and it was taken off by *Antonie Renaud*, master Barber-Surgeon of *Paris* the 16. daie of December 1583. in the presence of *M. Le Fort*, and *M. La Noüe* sworn Surgeons of *Paris*; and the blood was stanch'd by the Ligature of the vessels, and hee is at this present cured and in health, walking with a wooden-leg.

Another Historie. **A** Water-man at the Port of *Nesle*, dwelling near *Monsieur de Mas*, Post-master, named *John Boussezeau*, in whose hands a Musket brake asunder, which broke the bones of his head, and rent and tore the other parts in such sort that it was needful and necessarie to make amputation of the hand two fingers above the wrist: which was don by *James Guillemau* then Surgeon in ordinarie to the King, who dwelt at that time with mee. The operation likewise beeing readily don, and the blood stanch'd by the Ligature of the vessels without burning irons, hee is at this present living.

Another Historie. **A** Merchant Grocer dwelling in *S. Denis*-street at the sign of the great *Tournois* named the *Judg*, who fell upon his head, where was made a wound near the temporal muscle, where hee had an arterie opened, from whence issued forth blood with great impetuositie, in somuch that common remedies would not serv the turn; I was called thither, where I found *M. Rasse*, *M. Cointeret*, *M. Viard*, sworn Surgeons of *Paris*, to staie blood; where presently I took a needle and thred, and tied the arterie, and it bled no more after that, and was quicklie cured. *M. Rousselet* can witness it, not long since Deacon of your Facultie, who was in the cure with us.

Another Historie. **A** Sergeant of the Chastlet dwelling near *S. Andrew des Arts*, who had a stroak of a sword upon the throat in the Clacks medow, which cut asunder the jugular vein extern, as soon as hee was hurt hee put his handkercher upon the wound, and came to look mee at my house, and when hee took awaie his handkercher the blood leaped out with great impetuositie: I suddenly tied the vein toward the root; hee by this means was stanch'd and cured, thanks bee to God. And if one had followed your manner of stanching blood by cauteries, I leav it to bee supposed whether hee had been cured; I think hee had been dead in the hands of the operator. If I would recite all those whose vessels were tied to staie the blood which have been cured, I should not have ended this long time; so that mee thinks there are Histories enough recited to make you believ the blood of veins and arteries is surely stanch'd without applying anie outward cauteries.

Du Bartas. *Hee that doth strive against experience,
Daign's not to talk of anie learned science.*

Book 6.c. 4.5.
book 2.c. 4.
book 3. c. 9.
sc. 7. **N**OW my little master, seeing that you reproch mee that I have not written all the operations of Surgerie in my works which the Ancients write of, I should bee verie sorrie for it: for then indeed might you justly call mee *Carnifex*. I have left them becauf they are too cruel, and am willing to follow the moderns, who have moderated such cruelty: which notwithstanding you have followed step by step, as appeareth by the operations here written, extracted from your book, which you have drawn here and there from certain ancient Autors, such as follow, and such as you have never practised nor seen.

The first operation.

In the 2 book of the chap of Hypo'parisus, book 14 ch. last of the Meth.
In the 4. ch. of the 16 book of my work,
Book 6.c. 7.
Book 2.c. 5. **T**O inveterate fluxions of the eies, and Migrimes, *Paulus Aegineta* as also *Albucasis* command to make *Arteriotomie*, see here the vvords of the same *Aeginete*. You mark the Arteries vvhich are behind the ears, then divide them in cutting to the verie bone, and make a great incision the bredth of tvo fingers, even till the Arterie bee found, as you command to bee don in your book; but I holding the opinion of *Galen*, vvho command's to dress the diseased quickly, safely, and vvith the least pain that is possible, I teach the young Surgeon the means to remedie such evils in opening the Arteries behinde the ears, & those of the temples, vvith one onely incision, as a letting blood, and not to make a great incision, & cut out vvork for a long time.

The second. **T**O fluxions which are made a long time upon the eies, *Paul Aeginete* and *Albucasis* command to make incision which they call *Perisceribismos* or *Augiologie* of the Greeks; and see heer the vvords of *Paul*; In this operation first the head is shaved, then taking heed of touching the temporal muscles, a transverf incision must bee made, beginning at the left temple and finishing at the right, which you have put in your book word for word, without changing anie thing: which sheweth openly you are a right wound-maker; as may bee seen in the Chapter which you call the Crown cut, which is made half round under the Coronal suture from one temple to another even to the bone. Now I do not teach such a cruel kinde of remedie, but instruct the operator by reason, autoritie and notable proof of a sure and certain waie to remedie such affecti-
ons without butchering men in this kinde.

The third. Book 6. ch. 44. book 2. ch. 3. book 3. ch. 22. **I**N the cure of *Empyema*, *Paul Æginet*, *Albucrasis* and *Celsus* commanded to applie some thirtē, others fifteen Cauteries to give issue to the matter contained in the brest, as the said *Celsus* in the afore-said place appointeth for Asthmatick people, which is a thing out of all reason (which respect to their honor bee it spoken) that since the Surgeon's scope is to give issue to the matter therein contained, there is no other question then to make apertion, to evacuate the matter in the most inferiour part, I have shewed the young Surgeon the means to do it safely, without tormenting the patients for nothing.

The fourth. Guido of Cauliac the 2. treatis. Doct. 1. chap. 1. Book 7. chap. 10. book 6. chap. 46. book 2. chap. 47. **I**N Paps that are too great, *Paul Æginet* and *Albucrasis* command's to make a cross-incision, to take out all the fat, and then join together the wound by stich: in brief, it is to flea a man alive, which I have never practised, nor counsel it to bee don by the young Surgeon.

The fifth. In the first book, chap. 29. and 30. also in book 2. chap. 32. book 6. chap. 47. and 48. **A***lbucrasis* and *Paul Æginet* will cauterize the Liver and the Splene with hot irons, which the moderns have never practised; for indeed reason is manifestly repugnant thereunto.

The sixth. In the 5. book chap. 1. De interitis morbis, book 1. chap. 33. book 3. sect. 2. chap. 89. book 6. chap. 50. In the 3. book 12. ch. 67. **I**N the *Paracentesis* which is made in the third kinde of Dropsie called *Ascites*, *Celius Aurelianus* commandeth divers apertions to bee made in the bellie. *Albucrasis* applie's nine actual cauteries, that is to saie, four about the Navel, one upon the Stomach, one upon the Splene, one upon the Liver, two behinde the spondyls, one of them near the brest, the last near the stomach. *Ætius* is likewise of the same opinion, to open the bellie with divers cauteries. *Paul Æginet* command's to applie five actual cauteries to make the said *Paracentesis*. But abhorring such a kinde of burning, of which you speak much in your third book, I shew another kinde of practice, the which is don by making a simple incision in the said bellie, as may bee seen in my works, with happie success. I do not teach young men in my works the manner of burning, which the Antients have called *infibulare*, that is not in practice though *Celsus* writeth of it.

The seventh. In the 7. book c. 35. book 6. c. 76. book 2. c. 72. upon the sentence 49. of the 1. section of the 1. section of the book of Arts. **I**N the Sciatick proceeding from an internal caus and becaus the viscous humors displace the bones, *Paul* command's to burn or cauterize the said joint to the bone: *Diascorides* command's the same, Which I do not find expedient, taking indication from the subjacent parts: for there where one would burn, 'tis in the place of four twin-muscles, under which passeth the great Nerv descending from the Holie-bone; which being burnt, I leav it to your censure what might happen; as *Galen* remarketh speaking of the *ustion* which must bee made in the shoulders called *humerus*.

The eighth. Sentence the 22 and 23. of the 3. section of the book of the joints c. 16. of the 15. book. **I**N the outward laxation of the Spondyls, *Hippocrates* command's to binde the man right upon a Ladder, the Arms and Legs tied and bound: then afterwards having raised the Ladder to the top of a tower, or the ridg' of an hous, with a great rope in a pullie, then to let the patient fall plumb down upon the hard pavement; which *Hippocrates* saie's was don in his time. But I do not shew of anie such waie of giving the strapado to men, but I shew the Surgeon, in my works, the waie to reduce them surely, and without great pain. Moreover I should bee sorrie to follow the saying of the said *Hippocrates*, in the third book *De morbis*, who command's in the diseas called *Volvulus* to caus the bellie to bee blown with a pair of bellows, putting the nosel of them into the *intestinum rectum*, and then blow there till the bellie bee much stretcht, afterwards to give an emollient glyster, and to stop the fundament with a sponge. Such practice as this is not made now a daies, therefore wonder not if I have not spoken of it. And you not being contented to patch together the operations of the above-said Autors, you have also taken divers in my works, as everie man may know: which sheweth manifestly that there is nothing of your own in your Surgeon's Guide. I leav out divers other unprofitable operations which you quote in your book, without knowing what beasts they are, in never having seen them practised; but becaus you have found them written in the books of the Antients, you have put them into your book.

Moreover you saie that you will teach me my lesson in the operations of Surgerie, which I think you cannot do: becaus I have not onely learned them in my studie, and by the hearing of manie years the lessons of Doctors of Physick: but as I have said before in my epistle to the Reader, I was resident the space of 3. years in the Hospital of *Paris*, where I had the means to see and learn divers works of Surgerie, upon divers diseases, together with the Anatomie, upon a great number of dead bodies, as oftentimes I have sufficiently made trial publickly in the Physicians school at *Paris*, and my good luck hath made mee seen much more. For beeing called to the service of the King of France (four of which I have served) I have been in companie at battels, skirmishes, assaults, and beseiging of citties and fortresses; as also I have been shut up in citties with those that have been besieged, having charge to dress those that were hurt. Also I have dwelt manie years in this great and famous cittie of *Paris*, where, thanks bee to God, I have lived in verie good reputation amongst all men, and have not been esteemed the least in ranck of men of my profession, seeing there was not anie cure, were it never so difficult and great, where my hand and my counsel have not been required, as I make it appear in this my work. Now dare you (these things beeing understood) saie you will teach mee to perform the works of Surgerie, since you never went further then your studie? The operations of the same are four in general (as wee have declared heretofore) where you may make but three, that is to saie, join that which is separated, separate that which was conjoined, and to take awaie that which is superfluous, and the fourth which I make, is as much necessarie as industrious invention, to add to nature that which is wanting, as I have shewed here above. Also it is your will that the Surgeon make but three operations above-said without meddling to ordain a simple Cataplasm, saying it is that which com's to your part belonging to the Physician: And that the Antients (in the discours which you have made to the Reader) have divided the practice of Physick

into three kindes, that is to say, Diet, Medicine, and Chirurgie. But I would willingly demand of you who hath made the partition, and where anie thing should be done, who are those which are content with their part, without anie enterprize upon the other? For *Hippocrates, Galen, Aetius, Avicen*, in brief, all the Physicians, as well Greeks and Latins as Arabians, have never so treated of the one, that they have not treated of the other, for the great affinity and tie that there is between them two, and it should be verie difficult to do otherwise. Now when you will vilifie Chirurgie so much, you speak against your self; for in your Epistle which you have dedicated to Monsieur of *Martignes*, you say, that Chirurgie is the most noble part of Physick, as well by reason of the original antiquitie, necessitie, as certaintie in her actions; for shee work's *Luce aperta*, as learnedly writeth *Celsus* in the beginning of his seventh book; therefore it is to be believed you never went out of your studie, but to teach *Theorick* (if you have been able to doe it.)

A fair similitude.

The operations of Chirurgie are learnt by the eye, and by the touch. I will say that you much resemble a yong Lad of low *Britanie*, of plump buttocks, where was stuff sufficient; who demanded leav of his father to com to *Paris*, to take *France*; being arrived the Organist of our Ladies Church met with him at the Pallace-gate, who took him to blow the Organs, where hee was remaining three years: hee saw hee could somewhat speak *French*, hee return's to his Father, and told him that hee spake good *French*, and moreover hee knew well, to plaie on the Organs: his father received him verie joyfully, for that hee was so wise and learned in so short a time. Hee went to the Organist of their great Church, and praied him to permit his son to plaie on the Organs, to the end hee might know whether his son was becom so skilful a master, as hee said hee was; which the Organist agreed to verie willingly. Being entred to the Organs, hee cast himself with a full leap to the bellows, the master Organist bid him plaie, and that hee would blow; then this good master answer's, Let him plaie himself on the organs if hee would for him, hee could do nothing but plaie on the bellows. I think also my little master, that you know nothing else, but to prattle in a chair; but I will plaie upon the keies, and make the Organs sound (that is to say) I will do the operations of Chirurgie, that which you cannot in anie wise doe, becauf you have not gon from your studie or the schools, as I have said before. But also, as I have said already in the Epistle to the Reader, that the laborer doth little profit by talking of the seasons, discours of the manner of tilling the earth, to shew what seeds are proper to each soil; all which is nothing if hee put not his hand to the Plough, and couple the Oxen together. So likewise is it no great matter if you do not know the *Practick*, for a man may execute Chirurgie well, although hee have no tongue at all. As *Cornelius Celsus* hath verie well remarked in his first book when hee saith, *Morbos non eloquentiâ, sed remedijs curari: quæ si quis elinguis, usu discretus bene nôrit, hunc aliquantid majorem medicum futurum, quàm si sine usu linguam suam excoluerit*; that is to say; Diseases are not to be cured by eloquence, but by remedies well and duely applied, which if anie wise and discreet man though hee have no tongue know well the use thereof; this man in time shall becom the greater Physician, than if without practise his tongue were dip't with oratorie; the which you your self confess in your said book by a *Tetrastick* which is thus:

To talk's not all in Chirurgions Art,
But working with the hands;
Aptly to dress each grieved part,
And guid, fire, knife, and bands.

Aristotle in the first book of his *Metaphysicks* the first chapter saith, Experience is almost like unto science, and by the same, Art and science have been invented. And indeed wee see these which are experimented, attain sooner to that which they intend, then those which have reason and not experience, becauf that the said experience is a knowledg of singular and particular things, and science on the contrarie is a knowledg of things universal. Now that which is particular is more healable then that which is universal therefore those which have experience are more wise and more esteemed, then those which want it, by reason they know what they do. Moreover I say, that science without experience, bringeth no great assurance.

Alciat a Doctor of *Milan*, boasted one daie of himself, that his glorie was greater and more famous then that of Counsellors, *Presidents*, masters of Request: becauf that it was by his science, and his instructions that they became such: but hee was answered by a Counsellor, that he was like unto a whetstone, which made the knife sharp and readie to cut, not being able so to do it self, and alledged the verses of *Horace* that;

*Fungebatur vice cotis, acutum
Reddere quæ ferrum valet, exors ipsa secandi.*

See you now (my little master) my answers to your calumniation, and pray you, if you bear a good minde (to the publick good) to review and correct your book, as soon as you can, and not to hold young Chirurgions in this error by the reading of the same, where you teach them to use hot irons after the amputation of members, to staie a flux of blood, seeing there is another means, and not so cruel and more sure and easie. Moreover if to daie after an assault of a Citie, where divers Souldiers have had arms and leggs broken, and shot off by Cannon-bullets, Cutlas and other instruments of war; to staie the flux of blood, if you should use hot irons, it would be needful to have a forge, and much coals to heat them: and also the souldiers would hold you in such horror for this crueltie, that they would kill you like a Calf, even as in times past they did one of the chiefest Chirurgions of *Rome*, which may be found written before in the third chapter of the Introduction of Surgerie, the 1. book. Now lest the Sectators of your writings should fall into such inconveniencie, I praie them to follow the method aforesaid, the which I have shewed to be true and certain, and approved by autoritie, reason and experience.

The Voiage
of Thurin,
1535.

Moreover, I will here shew to the readers the places where I have had means to learn the Art of Surgerie. for the better instructing of the young Surgeon: and first in the year 1536. the great King *Francis* sent a great Armie to *Thurin*, to recover the Cittie and Castles, which the Marquess of *Guaft*, Lieutenant-General of the Emperour had taken: where the high Constable of *France* the great Master, was Lievtenant-General of the Armie, and *Monfieur de Montain* Colonel-General of the Foot, of which I was then Surgeon. A great part of the Armie arrived in the Countrie of *Suze*; wee found the enemy which stoppt the passage, and had made certain Forts, and Trenches, inso-much that to hunt them out and make them leav the place, wee were forced to fight, where there were divers hurt and slain, as well of the one side as of the other: but the enemies were constrained to retire,

The retiring
of the enemy.

and get into the Castle, which was caused partly by one Captain *Ratt*, who climbed with divers of the souldiers of his companie upon a little Mountain; there where hee shot directly upon the enemies, hee received a shot upon the ankle of his right foot, wherewith presently hee fell to the ground; and said then, Now is the *Rat* taken. I dressed him, and God healed him. Wee entred the throng in the Citie, and passed over the dead bodies, and som which were not yet dead, wee heard them crie under our horse's-feet, which made my heart relent to hear them. And truly I repented to have forsaken *Paris* to see so pitiful a spectacle. Beeing in the Citie, I entred into a stable thinking to lodg my own, and my man's horse, where I found four dead souldiers, and three which were leaning against the wall, their faces wholly disfigured, and neither saw nor heard, nor spoke; and their clothes did yet flame with gun-powder which had burnt them. Beholding them with pittie, there happened to com an old Souldier, who asked mee if there were anie possible means to cure them, I told him no: hee presently approached to them, and cut their throats without choler. Seeing this great crueltie, I told him hee was a wicked man, hee answered mee that hee praied to God, that whensoever hee should be in such a case, that hee might finde som one that would doe as much to him, to the end that hee might not miserably languish. And to return to our former discours, the enemy was summoned to render, which they soon did, and went out, their lives onely saved, with a white staff in their hands; the greatest part whereof went and got to the Castle of *Villane*, where there was about 200. Spaniards; *Monfieur* the Constable would not leav them behinde, to the end that the waie might be made free. This Castle is seated upon a little mountain, which gave great assurance to them within, that one could not plant the Ordnance to beat upon it, and were summoned to render, or that they should be cut in pieces; which

Brave answer
of the souldiers.

they flatly refused, making answer, That they were as good and faithful servants to the Emperour, as *Mounfieur* the Constable could be to the King his master. Their answer heard, they made by force of arm, two great Cannons to be mounted in the night with cords and ropes, by the Swiffers and Lansquenets; when as the ill luck would have it, the two Cannons being seated, a Gunner by great negligence set on fire a great bag of gun-powder; wherewith hee was burned together with ten or twelv souldiers; and moreover the flame of the powder was a caus of discovering the Artillerie, which made them, that all night they of the Castle did nothing but shoot at that place where they discovered the two pieces of Ordnance, wherewith they kil'd & hurt a great number of our people.

Exemplarie
punishment.

The next daie early in the morning a Batterie was made, which in a few hours made a breach, which being made, they demanded to parlie with us; but 'twas too late for them: For in the mean time our French foot seeing them amazed, mounted to the breach, and cut them all in pieces, except a fair young lustie maid of *Piedmount*, which a great Lord would have kept and preserved for him to keep him companie in the night, for fear of the greedie wolf. The Captain and Ensign were taken alive, but soon after were hanged upon the gate of the Cittie, to the end they might give example and fear to the Imperial souldiers not to be so rash and foolish, to be willing to hold such places against so great an Armie. Now all the said souldiers of the Castle, seeing our people comming with a most violent furie, did all their endeavour to defend themselves, they kil'd and hurt a great companie of our souldiers, with pikes, muskets, and stones, where the Surgeons had good store of work cut out. Now at that time I was a fresh water souldier, I had not yet seen wounds made by gun-shot at the first dressing. It is

Counsel of
de Vigo.

true, I had read in *John de Vigo*, in the first book of Wounds in General, the eighth Chapter; that wounds made by weapons of fire did participate of Venenositie, by reason of the powder, and for their cure command's to cauterize them with oil of Elders scalding-hot, in which should be mingled a little treacle; and not to fail, before I would applie of the said oil, knowing that such a thing might bring to the patient great pain, I was willing to know first, before I applied it, how the other Surgeons did for the first dressing, which was to applie the said oil the hottest that was possible into the wounds, with tents and setons; inso-much that I took courage to do as they did. At last I wanted oil; and was constrained in stead thereof, to applie a digestive of yelks of eggs, oil of roses, and turpentine. In the night I could not sleep in quiet, fearing som default in not cauterizing, that I should finde those to whom I had not used the burning-oil dead impoisoned; which made mee rise verie earlie to visit them,

Experience of
a bold man's
happie success.

where beyond my expectation, I found those to whom I had applied my digestive medicine; to feel little pain, and their wounds without inflammation or tumor, having rested reasonable well that night: the other to whom was used the said burning-oil, I found them feverish, with great pain and tumor about the edges of their wounds. And then I resolved with my self, never so cruelly to burn poor men wounded with gun-shot. Beeing at *Thurin*, I found a Surgeon, who had the fame above all others, for the curing of wounds of gun-shot, into whose favor I found means to insinuate my self, to have the receipt of his Balm, as hee called it wherewith hee dressed wounds of that kinde, and hee held mee of the space of two years, before I could possible draw the Receipt from him. In the end by gifts and presents hee gave it mee, which was this, to boil young whelps new pupped, in

Receipt of an excellent balm for wounds with gun shot.

oil of Lilies, prepared earth-worms, with Turpentine of *Venice*. Then was I joyful and my heart made glad, that I had understood his remedie, which was like to that which I had obtained by great chance. See then how I have learned to dresse wounds made with gunshot, not by books. My Lord Marshal of *Montian* remained Lieutenant-General for the King in *Piedmont*, having ten or twelv thousand men in garrison through the Citties and Castles, who often combated with swords and other weapons, as also with muskets; and if there were four hurt, I had alwaies three of them; and if there were question of cutting off an arm or a leg, or to trepan, or to reduce a fracture or dislocation, I brought it well to pass. The said Lord Marshal sent mee one while this waie, another while that waie, for to dresse the appointed Souldiers which were beaten as well in other Citties as that of *Thuriu*, insomuch that I was alwaies in the Countrie one waie or other. Monsieur the Marshal sent for a Physician to *Milan*, who had no less reputation in the medicinal Art (then the diseased Monsieur *le Grand*) to take him in hand for an hepatical flux, whereof at last hee died. This Physician was a certain while at *Thurin* to deal with him, and was often called to visit the hurt people, where hee alwaies found mee, and I consulted with him, and som other Surgeons, and when wee had resolved to do anie serious work of Surgerie, 'twas *Ambrose Pare* that put his hand thereto, where I did it promptly and with dexteritie, and with a great assurance, in so much that the said Physician admired mee, to see mee so readie in the operation of Surgerie, seeing the small age which I had. One daie discoursing with the said Lord Marshal, hee said to him, *Signor tu, hai un Chirurgico giovane di anni, ma egli è vecchio di sapere è di esperientia. Guarda lo bene, perche egli ti fara servizio & honore.* That is to saie; Thou hast a young Surgeon of age, but hee is old in knowledg and experience, preserv him well, for hee will do thee service and honor. But the old man knew not that I had dwelt three years in the Hoipital of *Paris*, there to dresse the diseased. In the end Monsieur *Marshal* died with his hepatical flux. Being dead, the King sent Monsieur the Marshal of *Annebaut* to bee in his place, who did mee this honor to praie mee to dwell with him, and that hee would use mee as well or better, then Monsieur the Marshal *Montian*; which I would not do for the grief I had for the los of my master who loved mee intimately, and I him in the like manner; and so I came back to *Paris*.

Witness of the dexteritie of the Autor

The death of Marshal *Montian*.

The Voyage of Marolle and of low Britannie 1543.

I Went to the Camp of *Marolle*, with the deceased Monsieur *de Roban*, where King *Francis* was in person; and I was Surgeon of the companie of the said Monsieur *de Roban*. Now the King was advertised by Monsieur *de Estampes*, governor of *Britanie*, that the *English* had hoist sail to land in Low *Britanie*, and praied him that hee would send Monsieur *de Roban*, and Monsieur *de Laval* for succour, becaus they were the Lords of that Countrie, and for their sakes those of that Countrie would beat back the enemie and keep them from landing. Having received this advertisement, his Majestie dispatched to send the said Lords for the relief of their Countrie, and to each was given as much power as to the Governor; in so much that they were all three the King's Lieutenants. They took willingly this charge upon them, and speedily went away in Poste, and lead mee with them to *Landreneau*, there where wee found everie one in arms, the Alarum-bells sounding on everie side, yea, five or six leagues about the *Harbors*, that is to saie, *Brest, Conquet, Crozon, Le Fou Doulac, Laudanec*, each of them well furnisht with Artillerie; as Cannous, Demie-cannous, Culverins, Sakers, Serpentes, Falcons, Harquebuzes: in brief, there was nothing wanting in Artillerie, or Souldiers, as well *Britains* as *French*, to hinder that the *English* made no landing, as they had resolved at their parting from *England*. The enemie's Armie came unto the verie mouth of the Cannon, and when wee perceived them that they would land, they were saluted with Cannon-shot, and wee discovered our men of War, together with our Artillerie, they fled to Sea again: where I was glad to see their vessels hoist sail again, which was in a great number and in good order, and seemed like a Forrest which marched upon the Sea. I saw a thing also whereat I marvelled much, which was, that the bullets of great peeces made great rebound's, and grazed upon the water as upon the ground. Now to make the matter short, the *English* did us no harm, and returned whole and sound into *England*, and left us in peace. Wee staid in that Conntrie in garrison, till wee were assured that their Armie was dispersed. In the mean time our horf-men exercised their feats of activitie; as to run at the ring, fight in duel, and others, so that there was still somthing to emploie mee withal. Monsieur *de Estampes*, to make sport and pleasure to said Monsieur *de Roban*, and *Laval*, and other gentlemen, caused divers Countrie wenches, to com to the feasts, to sing songs in the Low *Brittain* tongue, where their harmonie was like the croaking of Frogs, while they are in love. Moreover made them dance the *Britanie Triorie*, without moving feet or Buttocks, hee made them hear and see much good. Otherwhiles they caused the Wraistlers of the Citties, and Towns, to com where there was a Prize for the best, and sport was seldom ended, but that one or other had a leg or arm broken, or the shoulder or hip displaced: there was a little man of Low *Britanie* of a square bodie and well set, who held a long time the credit of the field, and, by his skill and strength, threw five or six to the ground; there came to him a great school-matter, who was said to bee one of the best Wraistlers of all *Britanie*: hee entred into the lists, having taken off his long jacket, in hose and doublet, and being neer the little man, hee seemed as if hee had been tied to his girdle. Notwithstanding when each of them took hold of the collar, they were a long time without doing anie thing, and they thought they would remain equal in force and skill: but the little man cast himself with an ambling leap under this great Pedant, and took him on his shoulder, and cast him on his kidnies spread abroad like a frog, and then all the companie laugh't at the skill and strength of the little fellow. This great *Dativo* had a great spight, for being cast by so little a man: hee rose again in choler, and would have his revenge. They took hold again of each other's collar, and were again a good while at their hold without falling to the ground: in the end this great man let himself

Dances of the Conntrie wenches. Wraistlers: little *Britains* a good wraistler.

The little Brittain kil'd. himself fall upon the little, and in falling put his elbow upon the pitch of his stomach, and burst his heart, and kil'd him stark dead. And knowing hee had given him his death's blow, took again his long cassock, and went away with his tail between his legs and hid himself, seeing that the little man came not again to himself, either for wine, vineger, or anie other thing that was presented unto him; I drew near to him, and felt his puls which did not beat at all, then I said hee was dead: then the *Britans* who assisted the wrastling said aloud in their jabberring, that is not in the sport. And som said that the said Pedagogue was accustomed to do so, and that but a year passed hee had don the like in a Wrastling. I would need's open the bodie to know the caus of this sudden death, where

The Bodie opened by the Autor. I found much blood in the *Thorax* and in the inferior bellie, and I strived to finde out anie apertion in the place, from whence might issue so great a quantitie of blood, which I could not do for all the diligence I could make. Now I belev it was *per Diapedesin* or *Anastomosin*; that is to saie, by the apertion of the mouths of the vessels, or by their porosities; the poor little Wrastler was buried. I took leav of *Messieurs de Roban, de Laval, and Estamps*. Monsieur de Roban, gave mee a present of fiftie double duckets, and an ambling-hors, and Monsieur de Laval another for my man, and Monsieur de Estamps, a Diamond of thirtie Crowns, and so I returned to my hous at *Paris*.

The Voiage of Parpignan, 1543. A Little while after Monsieur de Roban took mee with him poste, to the camp of *Parpignan*; being there, the enemy niade a Sallie forth, and came and inclosed three pieces of our Artillerie, where they were beaten back to the gates of the citie: which was not don without hurting and killing manie, and amongst the rest de *Brissac*, (who was then chief master of the Artillerie) received a musket shot upon the shoulder: returning to his Tent, all the others that were hurt followed him, hoping to bee drest by the Surgeons, that ought to drest them. Being com to his Tent and laid on his bed, the bullet was searched for by three or four the most expert Surgeons of the Armie, who could not finde it, but said it was entred into his bodie.

Address of the Autor. In the end hee called for mee, to see if I were more skilful then them, becauf hee had known mee before in *Piedmount*: by and by I made him rise from his bed, and praised him to put his bodie into that posture as it was then when hee received his hurt; which hee did, taking a javelin between his hands as hee held the Pike in the skirmish. I put my hand about the wound, and found the bullet in the flesh, making a little tumor under the *Omoplate*: having found it I shewed them the place where it was, and it was taken out by Master *Nicolas Lavernaut* Surgeon to Monsieur the *Dolphin*, who was the King's Lieutenent in that armie, yet notwithstanding the honor remained to mee for findeing it.

Historie. I saw one thing of great remark, which is this: That a souldier in my presence gave to one of his fellows a stroke with an Halbard upon the head, penetrating even to the left ventricle of the brain, without falling to the ground. Hee that stroke him said, Hee had heard that hee had cheated at dice, and that hee had drawn a great sum of monie, and that it was his custom to cheat; I was called to drest him, which I did as it were for the last, knowing well that hee would quickly die: having drest him hee returned all alone to his lodging, which was at least two hundred paces distant: I bid one of his companions send for a Priest to dispose of the affairs of his soul; hee help't him to one who staid with him to the last gasp. The next daie the patient sent for mee by his shee-friend in a boie's apparel to com to drest him, which I would not do, fearing hee should die under my hands; and to put it off, I said I must not take of the dressing till the third daie, by reason hee would die though hee were never touched. The third daie hee came staggering, and found mee in my Tent accompanied with his wench, and praised mee most affectionately to drest him: And shewed mee a purf wherein hee had an hundred or sixscore pieces of gold, and that hee would content mee to my desire; for all that, yet notwithstanding I left not off to defer the taking off his dressing, fearing lest hee should die at the same instant. Certain gentlemen desired mee to go drest him, which I did at their request, but in dressing him hee died under my hands in a Convulsion. Now this Priest accompanied him until death, who seized upon the purf left another should take it, saying, Hee would saie Masses for his soul. Moreover hee furnisht himself with his cloaths, and with all the rest of his things. I have recited this Historie as a monstrous thing, that the Souldier fell not to ground when hee had received this great stroke, and was in good senses even till death. Soon after, the Camp was broken for divers causes; the one, becauf wee were advertised that four companies of *Spaniards* were entred into *Parpignan*; the other, that the plague begun much in our camp; and it was told us by the pople of the countrie, that shortly there would bee a great over-flowing of the Sea, which might drown us all; and the presage which they had, was a verie great winde from Sea, which arose in such mannèr that there remained not one Tent which was not broken and overthrown, for all the strength and diligence that could bee given; and the Kitchens being all uncovered, the winde raised so the dust and sand, which salted and powdered our meat in such sort, that wee could not eat it, so that wee were constrained to boil it in pots and other vessels well covered.

Now wee did not un-camp our selvs in so good time, but that there were many Carts and Carters Mules, and Mule-drivers drowned in the Sea, with great los of baggage: The Camp broken, I returned to *Paris*.

The Voiage to Landresy, 1544. King *Francis* raised a great Armie to victual *Landresy*: on the other side, the Emperor had no less people, yea much more; that is to saie, eighteen thousand *Germans*, ten thousand *Spaniards*, six thousand *Wallons*, ten thousand *Englisb*, and a matter of thirteen or fourteen thousand Hors. I saw the two Armies near one another, within Cannon-shot, and it was thought they would never part without giving battel: There were som certain foolish gentlemen who would approach the enemy's Camp; certain shot was made at them, and som died at the place, others had their legs or arms carried away: The King having don what hee desired, which was to victual *Landresy*, retired

tired himself with his armie to *Guise*, which was the daie after *All-Saints*, one thousand five hundred fortie four, and from thence I returned to *Paris*.

The Voiage of
Boulogne.
1545^t

A Little while after wee went to *Boulogne*, where the English seeing our Armie, left the Forts which they had, that is to saie, *Moulambert*; the little *Paradise*, *Monplaisir*, the fort of *Shaitillon*, the *Portet*, the fort *Dardelot*. One daie going through the Camp to dress my hurt people, the enemies who were in the Tower of *Order*, shot off a piece of Ordnance, thinking to kill horimen which staid to talk one with another. It happened that the bullet passed verie near one of them, which threw him to the ground, and 'twas thought the said bullet had toucht him, which it did not at all, but onely the winde of the said bullet in the mid'st of his coat, which went with such a force that all the outward part of the thigh became black and blue, and had much ado to stand. I dress him, and made him divers Scarifications to evacuate the confused blood, which the winde of the said bullet had made; & the rebounds that it made on the ground, kil'd four souldiers which remained dead in the place. I was not far from this stroke, so that I felt somewhat the moved air, without doing mee anie harm, then a little fear which made mee stoop my head verie low, but the bullet was alreadie passed far beyond mee.

The Souldiers mockt mee to bee afraid of a bullet alreadie gon. (My little Master) I think if you had been there, that I had not been afraid alone, and that you would have had your share of it. What shall I saie more? Monsieur the Duke of *Guise*, *Francis* of *Lorraine*, was hurt before *Bullogne* with a stroke of a Lance, which above the right eie, declining towards the nose, entered and passed quite through on the other between the *nucha* and the ear, with so great a violence, that the head of the Lance with a great part of the wood was broken and remained within, in such sort that it could not bee drawn out but with great force, yea, with Smith's pincers. Notwithstanding all this violence which was not don without breaking of bones, nervs, and arteries, and other parts; my Said Lord, by the help of God, was cured: the Said Lord went alwaies with open face, which was the cause that the Lance went through on the other side.

The Voiage of
Germanie.
1552.

I Went the Voiage to *Germanie* in the year 1552. with Monsieur *de Roban* Captain of fiftie hors, where I was Surgeon of his companie, which I have said alreadie. In this voiage Monsieur the high Constable of *France* was General of the Armie: Monsieur *de Chastillon*, since Admiral, was chief Colonel of the Foot, having four Regiments of *Lansquenets*, under the Conduct of these Captains, *Recrod* and *Ringrave*, having each of them two Regiments, each Regiment was of ten Ensigns, and each Ensign of five hundred men. And besides these, was Captain *Chariel*, who conducted the troops that the Protestant-Princes had sent to the King. This was a verie companie on foot, accompanied with fifteen hundred hors, with the following of each one two Archers, which might make four thousand and five hundred hors, besides two thousand Light hors, and as manie musketeers on hors-back, of whom Monsieur *de Aumalle* was General, besides the great number of Nobilitie who came for their pleasure. Moreover, the King was accompanied with two hundred Gentlemen of his hous, and likewise with divers Princes; there was also for his troop that served him, the *French*, *Scottish*, and *Swissers* Guards, amounting to six hundred men on foot, and the Companies of Monsieur the *Dolphin*, *Messieres de Guise*, *de Aumalle*, and of the Marshal of *Saint Andrew*, which amounted to four hundred Lances, which was a marvellous thing to see such a fair Companie; and in this equipage the King entered into *Thou* and *Mets*. I will not omit to tell that it was ordained, that the Companions of *Messieres de Roban*, of the Count of *Sancerr*, of *Iarnac*, which was each of them of fiftie hors, went by the Wings of the Camp; and God know's wee had scarcitie of victuals, and I protest to God, that at three divers times I had thought I should have been famisht, and it was not for want of monie, for I had enough, and wee could not have victuals but by force, by reason that the *Pesants* withdrew it all into the Cities and Castles.

One of the servants of a Captain of the companie of Monsieur *de Roban*, went with others thinking to enter into a Church where the *Pesants* were retired, thinking to finde victuals by force or love: but amongst the rest this man was well beaten, and returned with seven wounds, with a sword in the head; the least of which penetrated the second table of the scull, and hee had four other upon the arms, and upon the right shoulder, which cut more then one half of the blade-bone, or *Omoplate*. Hee was brought back to his master's lodging, who seeing of him so wounded, and they were to depart thence the morrow after at the break of daie, and not thinking ever hee could bee cured, made him a grave, and would have cast him therein, saying that, or elf the *Pesants* would massacre and kill him; I mov'd with pittie, told him, that hee might bee cured if hee were well dress: divers Gentlemen of the companie praied him that hee would cause him to bee brought along with the Baggage, seeing I had the willingness to dress him; to which hee agreed, and after that I had cloth'd him, hee was put up into a cart upon a bed well covered and well accommodated, which one hors did draw. I did the office of a Physician, Apothecarie, Surgeon, and Cook; I dress him even to the end of his cure, and God cured him, in so much that all these three Companies admired at this cure. The hors-men of the companie of Monsieur *de Roban*, the first muster that was made, gave mee each one, one Crown, and the Archers half a Crown.

The Voiage of
Danvilliers.
1552.

At the return from the *German* Camp, King *Henrie* besieged *Danvilliers*, those within would not render. They were well beaten, and our powder failed us, in the mean time they shot much at our people. There was a Culverin-shot passed a traverf the Tent of Monsieur *de Roban*, vvhich hit a Gentleman's Leg, vvhich vvas of his train; vvhich I vvas fain to finish the cutting off, the vvhich vvas don vwithout applying hot irons.

Another:
Historic.

The King sent for povvder to *Sedan*, vvhich beeing com, they began a greater batterie then before, in such sort that they made a breach. *Messiers de Guise*, and the high Constable beeing in

in the King's Chamber, told him they concluded the next daie to make assault, and that they were assured they should enter into it, and that they should keep it secret lest the enemy were advertised. And all of them promised not to speak of it to any one. Now there was a groom of the King's chamber who lay under the King's bed in the Camp to sleep, understood that they resolved the next daie to give an assault, he presently revealed it to a certain Captain, and told him that for certain, the daie following assault should be given, and that he had heard it of the King, and praised the said Captain that he would not speak a word of it to any body, which he promised; but his promise was not kept, for at the same instant, he went and declared it to a Captain, and this Captain to another Captain, and from the Captains to some of the soldiers, saying always, say nothing. It was so well hid that the next daie early in the morning, there was seen the greatest part of the soldiers with their round hose and their breeches cut at knee for the better mounting at the breach. The King was advertised of the rumor which run through the Camp, that the assault must be given, whereof he much marvelled, seeing there were but three of that advice, which had promised one to another, not to tell it to any one. The King sent for Monsieur de Guise, to know if he had not talked of this assault; he swore and affirmed to him he had not told it to any body; and Monsieur the Constable said as much; who said to the King, he must expressly know who had declared this secret Counsel; seeing they were but three. Inquisition was made from Captain to Captain, in the end the truth was found; for one said 'twas such a one told me, another said as much, till at length they came to the first, who declared he had learned it of a Groom of the King's Chamber, named Guyard, born at Blois, the son of the deceased King Francis his Barber. The King sent for him into his Tent, in the presence of Monsieur de Guise, and of Monsieur the Constable, to understand from him whence he had it, and who told him that this assault was to be given. The King told him, that if he did not tell the truth, that he would cause him to be hanged; then he declared, he lay down under his bed thinking to sleep, and so having heard it, he declared it to a Captain who was a friend of his, to the end he might prepare himself with his soldiers the first for the assault. After the King knew the truth; he told him he should never serve him again, and that he deserved to be hanged, and forbid him ever to come again to the Court. My

What it is to reveal the secrets of Princes.

Groom of the Chamber went away with this sad news, and lay with one of the King's Surgeons in Ordinarie, named Master Lewis, and in the night gave himself six wounds with a knife, and cut his throat; yet the said Surgeon perceived nothing till morning, till he saw the bed bloodie, and the dead body by him: he much marvelled at this spectacle upon his waking, and was afraid lest they should say he was the cause of this murder; but was soon freed, knowing the cause to be from desperation, having lost the good amitie which the King bore to him. The said Guyard was buried. And those of Danvilliers when they saw the breach large enough for them to enter in, and the soldiers prepared for the assault, yielded themselves to the mercie of the King. The chief of them were prisoners, and the soldiers sent away without arms. The Camp being broken up I returned to Paris with my Gentleman whose leg I had cut off, I dressed him and God cured him; I sent him to his house merrie with his wooden leg, and was content, saying that he escaped good cheap, not to have been miserable burnt, as you write in your book, my little Master.

A Little while after, King Henrie levied an Armie of thirtie thousand men, to go make Spoil about Hedin. The King of Navarre who was then called Monsieur de Vendosme, was chief of the Armie, and the King's Lieutenant. Being at S. Denis in France, staying while the Companies passed by, he sent for me to Paris to come speak with him; being there, he praised me, and his request was a command, that I would follow him this Voyage; and I about to make my excuse, told him my wife was sick in her bed; he made me answer, That there were Physicians at Paris for to cure her; and that he as well left his own, who was as well descended as mine; promising me that he would use me well, and forthwith gave command that I should be lodged as one of his Train. Seeing this great affection, which he had to lead me with him, I durst not refuse him. I went and met with him at the Castle of Compt, within three or four leagues of Hedin, there where there was the Emperor's soldiers in garrison with a number of Pessants round about: he caused them to be summoned to render themselves; and they made answer they should never have them but by pieces, and let them do their worst, and they would do their best to defend themselves. They put confidence in their ditches full of water, and in two hours with a great number of Bavins, and certain empty Casks, waie was made to pass over the Foot: when they must go to the assault and were beaten with five pieces of Cannon, till a breach was made large enough to enter in, where they within received the assault verie valiantly, and not without killing and hurting a great number of our people with musket-shot, pikes, and stones. In the end when they saw themselves constrained, they put fire to their powder and munition, which was the cause of burning many of our people, and their's likewise, and they were all almost put to the sword. Notwithstanding some of our soldiers had taken twenty or thirtie, hoping to have ransom for them. That was known, and ordered by the Counsel, that it should be proclaimed by the Trumpet through the Camp, that all soldiers who had any Spaniards prisoners, were to kill them, upon pain to be hanged and strangled, which was done upon cold blood. From thence we went and burnt divers Villages, whose barns were full of all kinde of grain, to my great grief. We went along even to Tournahan, where there was a verie great Tower where the Enemies retired, but there was no man found in it, all was pillaged, and the Tower was made to leap by a Mine, and then with gun-powder turned topsie-turvie. After that, the Camp was broken up, and I returned to Paris. I will not yet forget to write that the daie after the Castle of Compt was taken, Monsieur de Vendosme sent a Gentleman to the King to make report to

Historie of desperate people.

The taking of Castle of Compt.

him of all which had passed, and amongst other things, told the King that I had greatly don my dutie in dressing those that were wounded, and that I had shewed him eighteen bullets which I had taken or drawn out of the hurt bodies, and that there were divers more which I could neither finde, nor draw out, and told more good of mee then there was by half. Then the King said hee would have mee into his service, and commanded Monsieur de Goguiet his chief Physician to write mee down as entertained one of his Surgeons in ordinarie, and that I should go meet with him at Rheimes within ten or twelv daies; which I did, where hee did mee the honor to command mee that I would dwell near him, and that hee would do mee good. Then I thank'd him most humbly for the honor it pleased him to do mee, in calling mee to his service.

The Voiage of Mets, 1552. The names of the Princes who were at the siege of Mets.
THe Emperor having besieged *Mets*, and in the hardest time of winter, as each one know's of fresh memorie: and that there was in the Cittie five or six thousand men, and amongst the rest seven Princes; that is to saie, Monsieur the Duke of *Guise* the King's Lievtenant, *Messieurs d' Anguien, de Conde, de Montpensier, de La Roch upon Ton, Monsieur de Nemours,* and divers other Gentlemen, with a number of old Captains of War, who often made sallies forth upon the enemies, (as wee shall speak of hereafter) which was not don without slaying manie, as well on the one side as the other. For the most part all our wounded people died, and it was thought the medicaments, wherewith they were dressed, were poisoned; which caused Monsieur de *Guise* and other Princes to send to the King for mee, and that hee would send mee with *Drogues* to them, for they beleev'd their's were poisoned, seeing that of their hurt people few escaped. I do not beleev there was anie poison, but the great strokes of the Cutlasses, musket-shot, and the extremitie of cold was the caus. The King caused one to write to Monsieur the Marshal of *S. Andrew* which was his Lievtenant at *Verdun*, that hee found som means to make mee enter into *Mets*. The said Lord Marshal of *S. Andrew* and Monsieur the Marshal of old *Ville*, got an *Italian* Captain, who promised them to make mee enter in, which hee did, and for which hee had fifteen hundred Crowns: the King having heard of the promise which the *Italian* Captain had made, sent for mee, and commanded mee to take of his Apothecarie named *Daigue*, such, and as manie *Drogues* as I should think fit for the hurt who were besieged, which I did, as much as a post-hors could carrie. The King gave mee charge to speak to Monsieur de *Guise*, and to the Princes, and Captains who were at *Mets*. Beeing arrived at *Verdun*, a few daies after the Monsieur the Marshal of *S. Andrew*, caused horses to bee given to mee, and my man, and for the *Italian*, who spake verie good high *Dutch, Spanish, and Wallon*, with his own natural tongue. When wee were within eight or ten Leagues of *Mets*, wee went not but in the night, and beeing near the Camp, I saw a league and a half off bright fires about the Cittie, which seemed as if all the earth were on fire, and I thought wee could never pass through those fires without beeing discovered, and by consequent bee hanged and strangled, or cut in pieces, or paie a great ransom. To speak truth, I wished my self at *Paris*, for the imminent danger which I fore-saw. God guided so well our affairs that wee entred into the Cittie at midnight with a certain Token, which the Captain had with another Captain of the companie of Monsieur de *Guise*: which Lord I went to, and found him in bed, who received mee with great thanks, beeing joiful of my comming. I did my message to him of all that the King had commanded mee to saie to him; I told him I had a little letter to give to him, and that the next daie I would not fail to deliver it him. That don, hee commanded mee a good lodging, and that I should bee well used, and bid mee I should not fail to bee the next daie upon the Breach, where I should meet with all the Princes, and divers Captains, which I did; who received mee with great joie, who did mee the honor to imbrace mee, and tell mee I was verie welcom, adding withal, they did not fear to die if they should chance to bee hurt. Monsieur de *la Roch upon Ton* was the first that feasted mee, and inquired of mee what they said at the Court concerning the Cittie of *Mets*: I told him what I thought good. Then presently hee desired mee to go see one of his Gentlemen, named Monsieur de *Magnane*, at this present Knight of the King's Order, and Lievtenant of his Majestie's Guard; who had his leg broken by a Cannon-shot. I found him in his bed, his leg bended and crooked, without anie dressing upon it; becaus a Gentleman promised him cure, having his name, and his girdle, with certain words. The poor Gentleman wept, and cried with pain which hee felt, not sleeping either night or daie, in four daies: then I mock't at this imposture and fals promise. Presently I did so nimbly restore and dress his Leg, that hee was without pain and slept all night, and since (thanks bee to God) was cured, and is yet at this present living, doing service to the King. The said Lord of the *Roch upon Ton* sent mee a tun of wine to my lodging, and bid tell mee, when it was drunken hee would send mee another. That don, Monsieur de *Guise* gave mee a list of certain Captains and Lords, and commanded mee to tell them what the King had given mee in charge; vvhich I did, vvhich vvas to do his commendations and a thanksgiving for the dutie they had don, and did in the keeping of the Cittie of *Mets*, and that hee vwould acknowledge it. I vvas more then eight daies in acquitting my charge, becaus they vvere manie; first to the Princes and others; as the Duke of *Horace*, the Count of *Martigues*, and his brother, Monsieur de *Bauge*, the Lords *Montmorancy*, and *d'Anville*, then Marshal of *France*, Monsieur de *La Chapel*, *Bonnivet* *Caroug* novv Governor of *Roban*, the *Vadasme* of *Chartres*, the Count of *Lude*, Monsieur de *Biron* novv Marshal of *France*, Monsieur de *Randan* the *Rochfoucaut*, *Boxdaille d'Etrez*, the younger, Monsieur de *S. John* in *Dolphiny*, and manie others vvhich it vwould bee too long to recite; and chiefly to divers Captains vvhich had verie vvell don their dutie in defens of their lives and Cittie. I demanded afterwards of Monsieur de *Guise*, vvhich it pleased I should do vwith the *Drogues* vvhich I had brought, hee bid mee impart them to the Surgeons and Apothecaries, and chiefly to the poor hurt Souldiers in the Hospital vvhich vvere in great number; vvhich I did, and can assure you, I could not do so much as go and see them, but they sent

sent for mee to visit and dress them. All the besieged Lords praied mee carefully to sollicite above all others Monsieur *de Piemme* who was hurt at the breach by a stone raised by a Cannon-shot in the Temple with a fracture, and depressing of the bone. They told mee that presently when hee received the stroak, hee fell to the earth as dead, and cast blood out of his mouth, nose, and ears with great vomitings, and was fourteen daies without speaking one word, or having anie reason; there happened to him also startings somewhat like Convulsions, and had all his face swell'd and livid. Hee was trepan'd on the side of the temporal muscle upon the *Os Coronale*. I dress him with other Surgeons, and God cured him; and is at this daie living, God bee thanked. The Emperor caused batterie to bee made with fortie double Cannons, where they spared no powder night nor daie. Presently when Monsieur *de Guise* saw the Artillerie seated to make a breach, hee made the nearest houses to bee pulled down to make Ramparts, and the posts and beams were ranged end to end, and between two clods of earth, beds and packs of wool, and then other posts and beams were put again upon them as before. Now much wood of the houses of the Suburbs, which had been put to the ground for fear lest the enemie should bee lodged; close covered, and that they should not help themselves with anie wood) served well to repair the Breach. Everie one was busied to carried earth to make the Ramparts night and daie. *Messieres* the Princes, Lords and Captains, Lieutenants, Ensigns, did all carrie the Basket, to give example to the Souldiers and Citizens to do the like, which they did: yea, both Ladies and Gentlewomen, and those which had not baskets, helpt themselves with kettles, panniers, sacks, sheets, and with what elf they could to carrie earth; in so much that the enemie had no sooner beaten down the Wall, but hee found behinde it a Rampart more strong. The Wall being saln, our Souldiers cried to those without, the Fox, the Fox, the Fox, and spake a thousand injuries one to another. Monsieur *de Guise* commanded upon pain of death that no man should speak to them without, for fear lest there should bee som Traitor who would give them intelligence what was don in the Cittie; the command made, they tied living Cats at the end of their Pikes, and put them upon the Wall, and cried with the Cats, miau, miau.

Truly the Imperialists were verie much vexed to have been so long making a Breach, and at so great expens, which was the breach of fourscore steps, to enter fiftie men in front, where they found a Rampart more strong then the wall; they fell upon the poor Cats and shot at them with their muskets as they use to do at birds. Our people did oftentimes make sallies by the command of Monsieur *de Guise*. The daie before there was a great pres to make themselves enrowled, who must make the sallie, chiefly of the young Nobilitie, lead by well experimented Captains. Insomuch that it was a great favor to permit them to sallie forth and run upon the enemie: and they sallied forth alwaies the number of one hundred, or sixscore armed men with Cutlasses, Muskets, Piltols, Pikes, Partisans and Halberds, which went even to their trenches to awaken them. Where they presently made an alarum throughout all their Camp, and their Drums founded, plan, plan, ta ti, ta, ta, ta, ti, ta, tou, touf, touf: likewise their Trumpets and Cornets founded, to the saddle, to the saddle, to the saddle, to hors, to hors, to hors, to the saddle, to hors. And all their souldiers cri'd, Arm, arm, arm, to arms, to arms, to arms, arm, to arms, arm, to arms, arm to arms, like the crie after Wolvs, and all divers tongues, according to their Nations: and they were seen to go out from their tents, and little lodgings, as thick as little Bees, when their hive is discovered; to succor their fellows, who had their throats cut like sheep. The hors-men likewise came from all parts, a great gallop, patati, patata, patati, patata, ta, ta, patata, patata, and carried well, that they might not bee in the throng, where stroaks were imparted to give and receiv. And when our men saw they were forced, they returned into the Citie, still fighting, and those who run after were beaten back with the Artillerie which they had charged with flint-stones, and four-square pieces of iron; and our souldiers who were upon the said Wall made a vollie of shot, and showed down their bullets upon them like hail, to send them back to their lodging, where divers remained in the place of the combat, and also our men did not all com with whole skins, and there still remained som for the Tithe, who were joiful to die in the bed of honor. And where there was a hors hurt, hee was flaid, and eaten by the Souldiers in stead of beef and Bacon, and it was fit I must run to dress our hurt men. A few daies after other sallies were made, which did much anger the enemies, becauf they did not let them sleep but little in saferie. Monsieur *de Guise*, made a war-like stratagem, which was, Hee sent a Pesant who was none of the wisest with two pair of letters toward the King, to whom hee gave ten Crowns, and promised the King should give him an hundred, provided hee gave him the letters. In the one, hee sent word that the enemie made no sign of retiring himself, and by all force made a great Breach, which hee hoped to defend, yea, to the losing of his life, and of all those that were within; and that the enemie had so well placed his Artillerie in a certain place which hee named, that with great difficultie was it kept that they had not entered into it, seeing it was a place the most weak of all the Cittie: but hee hoped quickly to fill it up again in such sort, that they cannot bee able to enter. One of these Letters was sewed in the lining of his doublet, and hee was bid to take heed that hee told it not to anie man. And there was also another given to him; wherein the said Monsieur *de Guise* sent word to the King, that hee and all the besieged did hope well to keep the Citie, and other matters which I ceas to speak of. They made the Pesant go forth in the night, and presently after hee was taken by one that stood Sentinel, and carried to the Duke of *Albe*, to understand what was don in the Cittie, and they asked him if hee had anie letters, hee said, yes, and gave them one; and having seen it, hee was put to his oath, whether hee had anie other, and hee swore, not; then they felt and search't him, and found that which was sewed to his doublet, and the poor messenger was hanged.

The said letters were communicated to the Emperor, who caused his counsel to bee called there, where

it was resolved, since they could do nothing at the first breach, that presently the Artillerie should be drawn to the place which they thought the most weak, where they made great attempts to make another breach, and dig'd and undermined the wall, and endeavoured to take the Tower of Hell, yet they durst not com to the assault. The Duke of *Albe* declared to the Emperor that the souldiers died daily, yet more then the number of two hundred, and that there was but little hope to enter into the Citie, seeing the season, and the great quantitie of Souldiers that were there. The Emperor demanded what people they were that died, and if that they were gentlemen of remark or qualitie: answer was made, that they were all poor souldiers; then said hee, It make's no matter if they die, comparing them to caterpillers and grasshoppers, which eat the buds of the earth. And if they were of anie fashion, they would not be in the Camp for twelv shillings the month, and therefore no great harm if they died. Moreover hee said, Hee would never part from before that Cittie, till hee had taken it by force or famine, although hee should lose all his Armie; by reason of the great number of Princes which were therein, with the most part of the Nobilitie of *France*. From whom hee hoped to draw double his expens, and that hee would go once again to *Paris*, to visit the Parisiens, and make himself King of all the Kingdom of *France*. Monsieur de *Guise* with the Princes, Captains, and Souldiers, and generally all the Citizens of the Cittie, having understood the intention of the Emperor, which was to extirpate us all, they advised of all they had to do: And since it was not permitted to the Souldiers, nor Citizens, no nor to the Princes, nor Lords themselves to eat either fresh-fish, or venison, as likewise som partridges, woodcocks, larks, plovers, for fear lest they had gathered som pestilential air which might give us anie contagion; but that they should content themselves with the ammunition-fare; that is to saie, with bisquet, Beef, powdered-cows, lard, and gammons of bacon: Likewise fish; as green-fish, salmon, sturgeon, anchovies, pilchers and herrings, also peas, beans, rise, garlike, onions, prunes, cheef, butter, oil, salt, pepper, ginger, nutmegs, and other Spiceries to put into pies, chiefly to horse-flesh, which without that would have had a verie ill taste; divers Cittizens having gardens in the Cittie sowed therein great Raddishes, Turnips, Carrots, and Leeks, which they kept well and full dear, against the extremitie of hunger. Now all these ammunition-victuals were distributed by weight, measure, and justice, according to the qualitie of the person, becauf wee knew not how long the siege would last. For having understood from the mouth of the Emperor, that hee would never part from before *Mets*, till hee had taken it by force or famine; the victuals were lessened, for that which was wont to be distributed to three, was now shared amongst four, and defens made they should not sell what remained after their dinner, but 'twas permitted to give it to the wenches that followed the Camp, And rose alwaies from table with an appetite, for fear they should be subject to take Physick. And, before wee would yeeld our selves to the mercie of our enemies, had resolved to eat our Asses, Mules, Horses, Dogs, Cats and Rats; yea, our boots and other skins which wee could soften and frie. All the besieged did generally resolv to defend themselves with all sorts of Instruments of War; that is to saie, To rank, and charge the Artillerie, at the entrie of the Breach, with bullets, stones, cart-nails, bars, and chains of iron. Also all kindes and differences of artificial Fire; as Boertes, Bariquado's, Granado's, Ports, Lances, Torches, Squibs, burning-faggots. Moreover, scalding-water, melted-lead, powder of unquenched lime to blinde their eyes. Also they were resolved to have made holes through and through their houses, there to lodg musketeers, there to batter in the flank and hasten them to go, or elf make them lie for altogether. Also there was order given to the women to unpave the streets, and to cast them out at their windows, billets, tables, trefles, forms, and stools, which would have troubled their brains: moreover, there was a little further, a strong Court of Guard, fil'd with carts and pallisado's, pipes and hogheads fil'd with earth for barriquado's to serv to interlaie with faulcons, faulconets, field-pieces, harquibuzes, muskets, and pistols, and wilde-fire, which would have broken legs and thighs, insomuch that they had been beaten in head, in flank, and in tail; and where they had forced this Court of Guard, there was others at the crossing of the streets, each distant an hundred paces, who had been as bad companions as the first, and would not have been without making a great manie Widdows and Orphans. And if fortune would have been so much against us, as to have broken our Courts of Guard, there was yet seven great Bastallions ordered in square, and triangle, to combate altogether, each one accompanied with a Prince to give them boldness, and encourage them to fight, even till the last gasp, and to die altogether. Moreover it was resolved, that each one should carrie his treasure, rings and jewels, and their household-stuff of the best, to burn them in the great place, and to put them into ashes rather then the enemy should prevail, and make Trophies of their spoils; likewise there was people appointed to put fire to the munition, and to beat out the heads of the Wine-cask, others to put the fire in each hous, to burn our enemies and us together: The Cittizens had accorded it thus, rather then to see the bloodie knife upon their throat, and their Wives and Daughters violated, and to be taken by force, by the cruel and inhumane *Spaniards*. Now wee had certain prisoners which Monsieur de *Guise* sent away upon their faith, to whom was secretly imparted our last resolution, will, and desperate mindes; who being arrived in their Camp, do not defer the publishing; which bridled the great impetuositie, and will of the souldiers to enter anie more into the Cittie to cut our throats, and to enrich themselves of our pillags. The Emperor having understood this deliberation of the great Warriour, the Duke of *Guise* put water in his wine, and restrained his great choler and furie, saying, Hee could not enter into the Cittie without making a great slaughter and butcherie, and spill much blood, as well of the defendents, as of the assailants, and that they should be dead together, and in the end could have nothing elf but a few ashes, and that afterward it might be spoken of that, as of the destruction *Jerusalem* already made by *Titus & Vespasian*. The Emperor then having understood our last resolution, & seeing their

little prevailing by their batterie and undermining, and the great plague which was in his whole armie, and the indisposition of the time, and the want of victuals and monie, and that his souldiers forsook him, and went away in great companies; concluded in the end to retire themselves accompanied with the Cavallerie of his Vantgard, with the greatest part of his Artillerie, and the Battalia: The Marquefs of *Brandeborg* was the last which uncamp't, maintained by certain bands of *Spaniards*, *Bobemians*, and his *Germane* companies, and there remained one daie and a half after, to the great grief of *Monfieur de Guife*, who cauffed four pieces of Artillerie to bee brought out of the Cittie, which hee cauffed to bee discharged at him on one fide; and the other to hasten them to bee gon, which hee did full quickly, with all his Troops. Hee beeing a quarter of a league from *Mets* was taken with a fear lest our Cavallerie should fall upon him in the Rere, which cauffed him to put fire to his munition-powder, and leav certain pieces of Artillerie, and much baggage which hee could not carrie, becauf the Vantgard, and the Battalia, and great Cannons had too much broken the waie. Our horf-men would by all means have gon out of the cittie to have faln upon their breech. But *Monfieur de Guife* would never permit them, but on the contrarie wee should rather make plain their waie, and make them bridges of gold and silver, and let them go, beeing like to a good shepherd, who will not lose one of his sheep. See now how our well-beloved Imperialists went away from before the Cittie of *Mets*, which was the daie after *Christmas* daie, to the great contentment of the besieged, and honor of Princes, Captains, and Souldiers, who had endured the travels of this siege the space of two months. Notwithstanding they did not all go, there wanted twentie thousand who were dead, as well by Artillerie, by the sword, as also by the plague, cold, and hunger, and for spite they could not enter into the Cittie to cut our throats, and have the pillage: and also a great number of their horses died, of which they had eaten a great part in stead of Beef and Bacon. They went where they had been encamped, where they found divers dead-bodies not yet buried, and the earth all digged like *S. Inuocent's* Church-yard in the time of the plague. They did likewise leav in their lodgings, pavilions and tents, divers sick people: also bullets, arms, carts, waggons, and other baggage, with a great manie of munition-loavs, spoiled and rotten by the rain and snow, yet the souldiers had it but by weight and measure; and likewise they left great provision of wood, of the remainders of the houses of the Villages which they had pluckt down two or three miles compafs, likewise divers other houses of pleasure belonging to the Citizens, accompanied with fair gardens, grafs-plats fil'd with fruit-trees, for without that they had been starv'd with cold, and had been constrained to have rais'd the siege sooner. The Said *Monfieur de Guife* cauffed the dead to bee buried, and drefs their sick people; likewise the enemies left in the Abbie of *S. Arnoul* divers of their hurt souldiers which they could not lead with them: the Said *Monfieur de Guife* sent them all victuals enough, and commanded mee and other Surgeons to go drefs them and give them medicines; which wee willingly did, and think they would not have don the like toward others (becauf the *Spaniard* is most cruel, perfidious, and inhumane, and therefore enemie to all Nations) which is proved by *Lopez* a *Spaniard*, and *Benzo* of *Milan*, and others who have written the historie of *America*, and the *West-Indies*, who have been constrained to confesse, that the crueltie, avarice, blasphemie, and wickedness of the *Spaniards*, have altogether alienated the poor *Indians* from the Religion which the Said *Spaniards* are said to hold. And all write, they are less worth then the Idolatrous *Indians*, by the cruel usage don to the said *Indians*.

And a few daies after wee sent a Trumpet to *Thionville* toward the enemie, that they should send back for their wonnded men in safetie, which they did with Carts and Waggons, but not enough. *Monfieur de Guife*, cauffed them to have Carts and Carters, to help to carrie them to the Said *Thionville*. Our Said Carters beeing returned back, brought us word that the waie was paved with dead bodies, and that they never lead back the half, for they died in their Carts, and the *Spaniards* seeing them at the point of death, before they had cast out their last gasp, cast them out of their Carts, and buried them in the mud and mire, saying, They had no order to bring back the dead. Moreover our Said Carters said, they met by the waie divers Carts loaden with baggage sticking in the mire, which they durst not fend for back, for fear lest those of *Mets* should fall upon them. I will again return to the cauf of their mortalitie, which was principally through hunger, plague, and cold; for the snow was two foot thick upon the earth, and they were lodged in the caves of the earth, onely covered with a little straw. Notwithstanding each Souldier had his field-bed, and a covering strewed with glittering stars, more bright then fine gold, and everie daie had white sheets, and lodged at the sign of the Moon, and made good cheer when they had it, and paid their hoste so well over-night, that in the morning they went away quite, shaking their ears, and they needed no comb to take away the down out of their hairs either of head or beard, and found alwaies a white table-cloth, losing good meals for want of Victuals. Also the greatest part of them had neither boots, nor buskins, slippers, hose, or shooes, and divers had rather have none then have them, becauf they were alwaies in mud, half waie of the leg; and becauf they went bare-leg'd, wee called them the Emperor's Apostles. After the Camp was wholly broken, I distributed my patients into the hands of the Surgeons of the Cittie, to finish their cure: then I took leav of *Monfieur de Guife*, who came back toward the King, who received mee with a loving countenance, and demanded of mee how I did enter into the Cittie of *Mets*. I recounted to him all that I had don, hee cauffed two hundred crowns to bee given mee, and one hundred I had at my going out, and told mee hee would not leav mee poor; then I thanked him most humbly for the good and the honor which hee pleased to do mee.

The Voiage of
Hedin. 1553.

Charls the Emperor cauffed the Cittie of *Theroüenne* to bee besieged, where *Monfieur*, the Duke of *Savoy*, was General of the whole Armie: it was taken by assault where there

was a great number of our men slain and prisoners. The King willing to prevent that the enemy should not also com to besiege the Cittie and Cattle of *Hedin*, sent Messieurs the Duke *Bouillon*, the Duke *Horace*, the Marquess of *Villars*, a number of Captains, and about eight hundred souldiers, and during the siege of *Tberoienne*, the Said Lords fortified the said Cattle of *Hedin*, in such sort that it seemed impregnable. The King sent mee to the Said Lord to help them with my Art, if there were anie need. Now soon after the taking of *Tberoienne*, wee were beleaged with the Armie: there was a quick clear fountain or Spring, within Cannon-shot, where there was about fourscore whores, and wenches of the enemies, who were round about it to draw water. I was upon a Rampart beholding the Camp, and seeing so manie idlers about the said fountain, I praied Monsieur de *Pont* Commislarie of the Artillerie, to make one Cannon-shot at that roguish companie, hee made mee much denial, answering mee that such kinde of people were not worth the powder they should waite. Again I praied him to level the Cannon, telling of him, the more dead, the fewer enemies; which hee did through my request, and at that shot fifteen or sixteen were kil'd, and manie hurt. Our souldiers sallied forth upon the enemies, where there was manie kil'd and slain with musket-shot and swords, as well on the one side, as of the other, and our souldiers did often make sallies forth upon the enemies before their trenches were made; where I had much work cut out, so that I had no rest night nor daie for dressing the wounded. And I will tell this by the waie, that wee had put manie of them in a great Tower, laid upon a little straw, and their pillows were stones, their coverlets were their cloaks, of those that had anie. Whil'st the batterie was making, as manie shot as the Cannons made, the patients said they felt pain in their wounds, as if one had given them blows with a staff, the one cri'd his head, the other his arm, and so of other parts; divers of their wounds bled a fresh, yea in greater quantitie then first when they were wounded, and then it was I must run to staie their bleeding. My little master, if you had been there, you had been much troubled with your hot-irons, you had need to have had much charcoal to make them red hot, and belev they would have slain you like a Calf for this crueltie. Now through this diabolical tempest of the Echo from these thundering Instruments, and by the great and vehement agitation of the collision of the air resounding and reverberating in the wounds of the hurt people, divers died, and others becauf they could not rest by reason of the groans and cries that they made night and daie; and also for want of good nourishment, and other good usage necessarie to wounded people. Now my little master, if you had been there you would hardly have given them gellie, restauratives, cullises, pressures, panado, cleaned barlie, white meat, almond-milk, prunes, raiins, and other proper meats for sick people: your ordinance would onely have been accomplisht in paper, but in effect they could have had nothing but old Cow-bief, which was taken about *Hedin* for our munition, salted and half-boiled, in so much that who would have eat it, hee must pull it with the force of his teeth, as birds of Preie do carrion. I will not forget their linnen wherewith they were drest, which was onely rewash'd everie daie, and dried at the fire, and therefore drie and stubborn like Parchment, I leav you to think how their wounds could heal well. There were four lustie whores to whom charge was given to wash their linnen, who discharged their dutie under penaltie of the baton, and also they wanted both sope and water. See then how the sick people died for want of nourishments, and other necessarie things. One daie our enemies feigned to give us a general assault, to draw our Souldiers upon the breach, to the end, to know our countenance & behaviour: everie one ran thither, wee had made great provision of artificial fire to defend the breach; a Priest belonging to Monsieur du *Bouillon* took a granado, thinking to throw it on the enemies, and set it on fire sooner then it ought to have don: it brake asunder, and the fire fell amongst our fire-works, which were put into a hous near the breach; which was to us a marvellous disaster, becauf it burned divers poor souldiers: it also took hold on the hous it self, and wee had been all burned had not great help been used for to quench it; there was but one Well there wherein was water in our Castle, which was almost quite dried up, and in stead of water wee took beer and quenched it: then afterwards wee had great scarcitie of water, and to drink the rest that remained which wee must strain through napkins.

Now the enemy seeing this smoak and tempest of the fire-works which cast a verie great flame and clashing nois, belev'd wee had put the fire on purpose for the defens of our breach, to burn them, and that wee had great store of others. That made them to bee of another opinion, then to take us by assault; they did undermine, and dig into the greatest part of our walls, so that it was the waie to overthrow wholly the Castle topsie-turvie, and when the mines were finish'd, and that their Artillerie shot, the whole Castle did shake under us like an earth-quake, which did much astonish us. Moreover hee had levelled five pieces of Artillerie which they had seated upon a little hill, to plaie upon our backs when wee should go to defend the breach.

The Duke *Horace* had a Cannon-shot upon one shoulder, which carried away his arm on one side and the bodie on the other, without being able to speak one onely word. His death was to us a great disaster for the rank vvhich hee held in his place.

Likevise Monsieur de *Martigues* had a stroak vvhith a bullet vvhich pierc't through his Lungs; I drest him, as I vvil declare hereafter. Then wee demanded Parl, and a Trumpet was sent tovvard the Prince of *Piedmont*, to know vvhath composition it pleased him to make us: His ansver vvas, that all the chief, as Gentlemen, Captains, Lieutenants, and Ensigns, should bee taken for ransom, and the Souldiers should go out vvhithout Arms; and if they refused this fair and honest proffer, the next daie vvee ought to bee assured they vvhould have us by assault or otherwise. Counsel vvas held, vvhere I vvas called to know if I vvhould sign as divers Captains, Gentlemen, and others, that the place should bee rendered up. I made ansver it vvas not possible to bee held, and that I vvhould sign it vvhith my proper blood, for the little hope that I had, that vvee could resist the enemies force, & also for the great desire vvhich I had to bee

out of this torment, and hell; for I slept not either night or daie, by reason of the great number of hurt people, which were about two hundred. The dead bodies yeelded a great putrefaction, beeing heaped one upon the other like fagots, and not beeing covered with earth becauf wee had it not; and when I entred into one lodging, Souldiers attended mee at the door to go drefs others at another; when I went forth, there was striving who should have mee, and they carried mee like a holie bodie not touching the ground with my foot in spight one of another; nor could I satisfie so great a number of hurt people. Moreover I had not what was necessarie to drefs them withal; for it is not sufficient that the Surgeon do his dutie towards the patients, but the patient must also do his, and the assistance, and all exterior things; witness *Hippocrates* in his first *Aphorisme*. Now having understood the resolution of the yeelding up of our place, I knew our affairs went not well; and for fear of beeing known, I gave a velvet coat, a Satin doublet, a verie fine cloth-cloak lin'd with velvet, to a souldier, who gave mee a scurvie old torn doublet cut and slah't with using, and a leather jerkin well examined, and an ill favored hat, and a little cloak; I smutcht the collar of my shirt with water in which I had mingled a little soot; likewise I wore out my stockings with a stone at the knees and the heels as if they had been worn a long time, and I did as much to my shooes, in so much, that they would rather take mee for a Chimnie-sweeper, then a King's Surgeon. I went in this Equipage towards Monsieur de *Martigues*, where I praied him that hee would take order that I might remain near him to drefs him, which hee agree'd to most willingly, and had as much desire I should remain with him as my self. Soon after, the Commissioners, who had charge to elect the prisoners, entred into the Castle, the seventeenth daie of *Julie* one thousand five hundred fiftie three, where they made *Messieurs* the Duke of *Bouillon*, the Marquess of *Villars*, the Baron of *Culan*, Monsieur du *Pont* Commissarie of the Artillerie, and Monsieur de *Martigues*, and I to bee taken through the request that hee made to them; and all other Gentlemen which they could perceiv were able to paie anie ransom, and the most part of the Souldiers and the chief of the Companies, having such, and so manie prisoners as they would.

Afterward the *Spanish* Souldiers entered by the Breach without anie resistance, for ours esteemed they would hold their faith and composition that they should have their lives saved. They entred in with a great furie to kill, pillage, and to rife all they retined: som hoping to have ransom, they tied their stones with Arquebus-cords, which was cast over a pike which two held upon their shoulders, then pulled the said cord with a great violence and derision, as if they would ring a bell, telling them that they must put themselves to the ransom, and tell of what houses they were; and if they saw they could have no profit, made them cruelly die between their hands, or presently after their genital parts would have faln into a gangrene, and total mortification; but they kil'd them all with their daggers, and cut their throats. See now their great crueltie and perfidiousness, let him trust to it that will. Now to return to my purpose, beeing lead from the Castle to the Citie with Monsieur de *Martigues*, there was a Gentleman of the Duke of *Savoyes*, who asked mee if Monsieur de *Martigues* wound was curable, I answered not; who presently went and told the Duke of *Savoy*; now I thought hee would send Physicians and Surgeons to visit and drefs my Said Monsieur de *Martigues*: in the mean time I thought with my self whether I ought to make it nice, and not to acknowledg my self a Surgeon; for fear lest they should retin mee to drefs their wounded, and in the end they would know I was the King's Surgeon, and that they would make mee paie a great ransom. On the other side I feared, if I should not make my self known to bee a Surgeon, and to have carefully dressed Monsieur de *Martigues*, they would cut my throat, so that I took a resolution to make it appear to them hee would not die for want of good dressing and looking to. Soon after, see, there arrive divers Gentlemen accompanied with the Physician and Surgeon to the Emperor, and those of the said Duke of *Savoy*, with six other Surgeons following the Armie, to see the hurt of the said Lord of *Martigues*, and to know of mee how I had dressed him, and with what medicines. The Emperor's Physician bid mee declare the essence of the wound, and how I had drest it. Now all the assistance had a verie attentive ear to know if the wound were mortal or not; I began to make a discours that Monsieur de *Martigues* looking over the wall to perceiv them that did undermine it, received a shot from an Arquebus quite through the bodie; presently I was called to drefs him, I saw hee cast blood out of his mouth, and his wounds. Moreover hee had a great difficultie of breathing, and cast out winde by the said wounds with a whistling, in so much that it would blow out a candle, and hee said, hee had a most sharp pricking pain at the entrance of the bullet. I do beleev and think it might bee som little pieces of bones which prickt the Lungs. When they made their *Systole* and *Diastrale*, I put my finger into him; where I found the entrance of the bullet to have broken the fourth Rib in the middle, and scales of bones which the said bullet had thrust in, and the out-going of it had likewise broken the fift Rib with pieces of bones which had been driv'n from within outward; I drew out som, but not all, becauf they were verie deep and adherent. I put in each wound a Tent, having the head verie large, tied with a thred, lest by the inspiration it might bee drawn into the capacitie of the *Thorax*, which hath been known by experience to the detriment of the poor wounded; for beeing faln in, it cannot bee taken out, which is the caus that engender's putrefaction, a thing contrarie to nature. The said Tents were annointed with a medicine composed of yelks of eggs, *Venice-Turpentine*, with a little oil of *Roses*: My intention for putting the Tents was to staie the flux of blood, and to hinder that the outward air did not enter into the brest, which might have cooled the Lungs and by consequent the heart. The said Tents were also put, to the end that issue might bee given for the blood that was spilt within the *Thorax*. I put upon the wound great Emplasters of *Diacalcitheos* in which I had relented oil of *Roses* and *Vineger* to the avoiding of inflammation, then I put great stupes of *Oxycrate*, and bound him up, but not hard, to the end hee might have easie respirations; that don, I drew from

him five porringers of blood from the Basilick vein of the right arm, to the end, to make revulsion of the blood which run's from the wounds into the *Thorax*, having first taken indication from the wounded part, and chiefly his forces, considering his youth and his sanguine temper; Hee presently after went to stool, and by his urine and siege cast great quantitie of blood. And as for the pain which hee said hee felt at the entrance of the bullet, which was as if hee had been pricked with a bodkin, that was becauf the Lungs by their motion beat against the splinters of the broken Rib. Now the Lungs are covered with a coat coming from the membrane called *Pleura*, interweaved with nervs of the *sixt Conjugation* from the brain, which was caus' of the extreme pain hee felt; likewise hee had great difficultie of breathing, which proceeded from the blood which was spilt in the capacitie of the *Thorax*, and upon the *Diaphragm*, the principal instrument of respiration, and from the dilaceration of the muscles which are between each Rib, which help also to make the expiration and the inspiration; and likewise becauf the Lungs were torn and wounded by the bullet, which hath caused him ever since to spit black and putrid blood in coughing. The fever seized him soon after hee was hurt, with faintings and swoonings. It seemed to mee that the said fever proceeded from the putredinous vapors arising from the blood which is out of his proper vessels, which hath faln down, and will yet flow down. The wound of the Lungs is grown great and will grow more great, becauf it is in perpetual motion, both sleeping and waking, and is dilated and compress'd to let the air to the heart, and cast fuliginous vapors out: by the unnatural heat is made inflammation, then the expulsive virtue is constrained to cast out by cough whatsoever is obnoxious unto it: for the Lungs cannot bee purged but by coughing, and by coughing the wound is dilated, and grow's greater, from whence the blood issues out in great abundance, which blood is drawn from the heart by the vein arterial to give them nourishment, and to the heart by the *vena cava*; his meat was barlie-broth, stued prunes, sometimes *panado*; his drink was Ptisan: Hee could not lie but upon his back which shewed hee had a great quantitie of blood spilt within the capacitie of the *Thorax*, and being spread or spilled along the spondyls, doth not so much press the Lungs as it doth being laid on the sides or sitting.

What shall I saie more, but that the Said Lord *Martigues* since the time hee was hurt hath not reposed one hour onely, and hath alwaies cast out bloodie urines and stools. These things then *Messieres* considered, one can make no other prognostick but that hee will die in a few daies, which is to my great grief. Having ended my discours, I dreit him as I was wont; having discovered his wounds, the Physicians and other assistants presently knew the truth of what I had said.

The said Physicians having felt his puls and known his forces to bee almost spent and abolished, concluded with mee that in a few daies hee would die; and at the same instant went all toward the Lord of *Savoy*, where they all said, that the said Lord *Martigues* would die in a short time; hee answered, it were possible if hee were well drest hee might escape: Then they all with one voice said, hee had been verie well drest, and solicited with all things necessarie for the curing of his wounds, and could not bee better, and that it was impossible to cure him, and that his wound was mortal of necessitie. The *Monsieur de Savoy* shewed himself to bee verie much discontented and wept, and asked them again if for certain they all held him deplored and remediless, they all answered, yes. Then a certain *Spanish* impostor offered himself, who promised on his life that hee would cure him, and if hee failed to cure him, they should cut him in an hundred pieces; but hee would not have anie Physicians, Surgeons, or Apothecaries with him. And at the same instant the Said Lord of *Savoy* told the Physicians and Surgeons they should not in anie wise go anie more to see the Said Lord of *Martigues*. Also hee sent a Gentleman to mee to forbid mee upon pain of life not to touch anie more the Said Lord of *Martigues*, which I promised not do; wherefore I was verie glad, seeing hee should not die in my hands, and commanded the said Impostor to drest the said Lord of *Martigues*. And that hee should have no other Physicians nor Surgeons but him; hee came presently to the said Lord of *Martigues*, who told him,

Senor Cavallero el senor Dugue me ha mandado que veniesse á curar vostra herida, yo os juro á Dios que antes de achio dias yo os haga subir á Cavallo con la lansa en puno contaque no ago que yo quos togue, Comereis y bibereis to das comidas que fueren de vostro gusto y yo hare la dieta pro V. m. y desto os de ven asegurar sobre de mi, yo he sanado un vos que tenian magores heridas que la vostra. That is to saie, Lord *Cavalleere*, Monsieur the Duke of *Savoy*, hath commanded mee to com drest thy wound; I swear to thee by God, that before eight daies I will make thee mount on horse-back with thy Lance in thy hand, provided that no man may touch thee but my self; thou shalt eat and drink anie thing thou hast a minde to, I will perform thy diet for thee, and of this thou maiest bee assured upon my promise, I have cured divers who have had greater wounds then thine: and the Lord replied, God give you grace to do it.

Hee demanded of the Said Lord a shirt, and tore it in little rags, which hee put a cross, muttering and murmuring certain words over the wounds; and having drest him, permitted him to eat and drink what hee would, telling him hee would observ a diet for him, which hee did, eating but six prunes and six bits of bread at a meal, and drinking but beer. Notwithstanding, two daies after, the Said Lord of *Martigues* died; and my *Spaniard*, seeing of him in the Agonie, eclips'd himself and got away without bidding farewell to anie bodie; and I belev if hee had been taken, hee had been hang'd for his fals promises, which hee had made to Monsieur the Duke of *Savoy*, and to divers other gentlemen.

Hee died about ten of the clock in the morning, and after dinner, the Said Lord of *Savoy*, sent Physicians, and Surgeons, and his Apothecarie, with a great quantitie of Drogues, to embalm him; they came accompanied with divers Gentlemen and Captains of the Armie.

The Emperor's Surgeon came neer to mee, and praied mee kindly to open the bodie; which I refused, telling him I was not worthie to carrie his plaster-box after him: hee praied mee again, which then I did for his sake, if it so liked him. I would yet again have excused my self, that seeing hee was not

willing

willing to embalm him, that hee would give this charge to another Surgeon of the companie; hee made mee yet answer, that hee would it should bee I, and if I would not do it, I might hereafter repent it: knowing this his affection, for fear hee should not do mee anie displeasure, I took the rasor and presented it to all in particular, telling them I was not well practised to do such operations which they all refused.

The bodie being placed upon a table, truly I purposed to shew them that I was an Anatomist, declaring to them divers things, which should bee here too long to recite. I began to tell all the companie that I was sure the bullet had broken too ribs, and that it had pass'd through the Lungs, and that they should finde the wound much enlarged, because they are in perpetual motion, sleeping or waking, and by this motion the wound was the more dilacerated. Also that there was great quantitie of blood spilt in the capacitie of the brest, and upon the midriff, and splinters of the broken ribs which were beaten in at the entrance of the bullet, and the issuing forth of it, had carried out. Indeed all which I had told them was found true in the dead bodie.

One of the Physicians asked mee, which way the blood might pass to bee cast out by urine, being contained in the *Thorax*. I answered him that there was a manifest conduit, which is the *Vena Azygos*, who having nourish'd the ribs, the rest of the blood descend's under the *Diaphragm*, & on the left side is conjoined to the emulgent vein, which is the waie by which the matter in *pleuresies* and in *Empiema*, do manifestly emptie themselves by urine and stool. As it is likewise seen, the pure milk of the brests of women newly brought to bed, to descend by the *Mammillarie*-Veins, and to bee evacuated downwards by the neck of the womb without being mixt with the blood. And such a thing is don (as it were by a miracle of nature) by her expulsive and sequesting virtue, which is seen by experience of two glasse-vessels called Mount-wine; let the one bee filled with water, and the other with Claret-wine, and let them bee put the one upon the other, that is to saie, that which shall bee filled with water, upon that which shall bee filled with wine; and you shall apparently see the wine mount up to the top of the vessel quite through the water, and the water descend a traverse the wine, and go to the bottom of the vessel without mixture of both; and if such a thing bee don so exteriorly and openly to the sens of our eie, by things without life: you must believ the same in our understanding. That nature can make matter and blood to pass, having been out of their vessels, yea, through the bones, without being mingled with the good blood.

Our discours ended: I embalmed the bodie, and put it into a coffin; after that the Emperors Surgeon took mee apart, and told mee if I would remain with him that hee would use mee verie well, and that hee would clothe mee anew, also that I should ride on horse-back. I thank'd him verie kindly for the honor hee did mee, and told him that I had no desire to do service to strangers, and enemies to my countrie; then hee told mee I was a fool, and if hee were prisoner as I, hee would serv the devil to get his libertie. In the end I told him flat that I would not dwell at all with him.

The Emperors Physician returned toward the said Lord of *Savoy*, where hee declared the cause of the death of the said Lord of *Martigues*, and told him that it was impossible for all the men in the world to have cured him; and confirmed again, that I had don what was necessarie to bee don, and praied him to win mee to his service, and spake better of mee then I deserved.

Having been perswaded to take mee to his service, hee gave charge to one of his stewards named Monsieur du Bouchet, to tell mee, if I would dwell in his service that hee would use mee kindly. I answered him that I thank'd him most humbly, and that I had resolv'd not to dwell with anie stranger. This my answer being heard by the Duke of *Savoy*, hee was somewhat in choler, & said, he would send mee to the Gallies.

Monsieur de *Vaudeville*, Governor of *Gravelin*, and Colonel of the seventeen Ensigns of foot, praied him to give mee to him, to dress him of an ulcer which hee had in his leg this six or seven years; Monsieur de *Savoy* told him because I was of worth, that hee was content, and if I rankled his leg it would bee well don; Hee answered that if hee perceived anie thing, hee would cause my throat to bee cut.

Soon after, the said Lord of *Vaudeville* sent for mee by four Germane Halberdiers, which affrighted mee much, not knowing whither they led mee, they spake no more *French* then I high *Dutch*; being arrived at his lodging, hee told mee I was welcom, and that I was his; and as soon as I should have cured him of that ulcer in his leg, that hee would give mee leav to bee gon without taking anie ransom of mee. I told him that I was not able to paie anie ransom.

Then hee made his Physician and Surgeons in ordinarie to shew mee his ulcerated leg; having seen and considered it, wee went apart into a chamber where I began to tell them, that the said ulcer was annual, not being simple but complicated: that is of a round figure and scalie, having the lips hard and callous, hollow and fordid: accompanied with a great varicous vein which did perpetually feed it; besides a great tumor, and a phlegmonous distemper verie painful through the whole leg, in a bodie of choleric complexion; as the hair of his face and beard demonstrated. The method to cure it, (if cured it could bee) was to begin with universal things, that is, with purgation and bleeding, and with this order of diet, that hee should not use anie wine at all, nor anie salt meats, or of great nourishment, chiefly these which did heat the blood: afterward the cure must begin with divers scarifications about the ulcer, and totally cutting away the callous edges or lips, and giving a long or a triangular figure, for the round vvill verie hardly cure, as the Antients have left it in vvriting, vvchich is seen by experience. That don, the filth must bee mundified, as also the corrupted flesh, vvchich should bee don vvith *Unguentum Aegyptiacum*, and upon it a bolster dipt in juice of Plantain and Nightshade and *Oxycrate*, and roul the leg beginning at the foot, and finishing at the knee, not forgetting a little bolster upon the *Varicous vein*, to the end no superfluities should flow to the ulcer. Moreover that hee should take rest in his bed, vvchich is commanded by *Hippocrates*, vvho saith, that those vvho have sore legs should not use much standing or sitting, but lying along. And after these things don and the ulcer vvell mundified, a plate of Lead rubbed vvith quicksilver

quicksilver should bee applied. See then the means, by which the said Lord *Vaudeville* might bee cured of the said ulcer; all which they found good. Then the Physician left mee with the Surgeon, and went to the Lord *Vaudeville*; to tell him that hee did assure him I would cure him, and told him that I had resolved to do for the cure of his ulcer: whereof hee was verie joyful. Hee made mee to bee called to him, and asked mee if I was of the opinion that this ulcer could bee cured, and I told him, yes, provided hee would bee obedient to what hee ought. Hee made mee a promise hee would perform all things which I would appoint; and as soon as his ulcer should bee cured, hee would give mee libertie to return without paying anie ransom. Then I beseech'd him to com to a better composition with mee, telling him that the time would bee too long to bee in libertie, if I staid till hee was perfectly well, and that I hoped with in fifteen daies the ulcer should bee diminished more then one half, and it should bee without pain, and that his Physicians and Surgeons would finish the rest of the cure verie easily. To which hee agree'd, and then I took a piece of paper, and cut it the largeness of the ulcer, which I gave him, and kept as much my self. I praied him to keep promise, when hee should finde his business don: Hee swore by the faith of a Gentleman hee would doe it; then I resolved to dress him well according to the method of *Galen*, which was, that after all strange things were taken out of the ulcer, and that there wanted nothing but filling up with flesh, I dress him but once a daie, and hee found that verie strange. And likewise his Physician which was but a fresh man in those affairs, who would perswade mee with the patient, to dress him two or three times a daie, I praied him to let mee do what I thought good; and that it was not to prolong the cure, but on the contrarie to hasten it, for the great desire I had to bee in libertie. And that hee would look in *Galen* in the fourth book of the composition of medicaments *secundum genera*, who saith, that if a medicine do not remain long upon the part it profit's not so much, as when it doth continue long; a thing which manie Physicians have been ignorant of, and have thought it hath been better to change the Plaster often. And this ill custom is so inveterate and rooted, that the Patients themselvs accuse often-times the Surgeons of negligence, becauf they do not oftner remove their emplasters; But they are deceived. For as you have read in my works in divers places: The qualities of all bodies which mutually touch, operate one against another, and both of them suffer somthing, where one of them is much stronger then the other, by means whereof the said qualities are united, they familiarise with the time, although they are much differing from the manner, that the qualitie of the medicament doth unite, and somtimes becom's like to that of the bodie, which is a verie profitable thing. Therefore they saie hee is to bee praised much who first invented not to change the plaster so often, becauf it is known by experience, this is a good invention.

Moreover it is said, great fault is committed to dress ulcers often in wiping of them hard, for one take's not away onely the unprofitable excrement, which is the *pus* or *Sanies* of the ulcer, but the matter whereof the flesh is engendred; wherefore for the reasons aforesaid it is not needful to dress ulcers so often.

The said Lord *Vaudeville*, would see whether that which I alleged out of *Galen* were true, and commanded the said Physician to look there, for that hee would knowv it; hee caused the book to bee brought upon the table, vvhether my saying vvas found true, and then the Physician vvas ashamed, and I verie joyful. So that the said Lord of *Vaudeville* desired not to bee dressed but once a daie, in somuch that within fifteen daies the ulcer was almost cicatrized; the composition beeing made between us, I began to bee merrie. Hee made mee eat & drink at his Table, when there were not men of more great rank with him.

Hee gave mee a great red scarf, which hee commanded mee to wear. I may saie I was as glad of it as a dog that hath a clog, for fear hee should go into the vineyard and eat the grapes. The Physician and Surgeon led mee through the Camp to visit their hurt people, where I took notice what our enemies did; I perceived they had no more pieces of Cannon, but onely thentie five or thirtie pieces for the field.

Monsieur de *Vaudeville* held Monsieur de *Bauge* prisoner, the brother of Monsieur de *Martigues* who died at *Hedin*. The said Lord of *Bauge* was prisoner in the Castle of the heap of wood belonging to the Emperor, who had been taken at *Theroüenne* by two *Spanish* Souldiers. Now the said Lord of *Vaudeville* having looked well upon him, conceived hee must bee a Gentleman of som good hous, and to bee the better assured, hee caused him to have his stockings pulled off, and seeing his stockings and his feet clear and neat, together with his white fine sock, it confirmed him the better in his opinion, that it was a man was able to paie som good ransom. Hee demand's of the Souldiers if they would take thirtie Crowns for their prisoner, and that hee would give it to them presently, to which they agree'd willingly, becauf they had neither means to keep him, nor feed him; besides they knew not his worth, therefore they delivered their prisoner into the hands of the said Lord of *Vaudeville*, who presently sent him to the Castle of the heap of wood with a guard of four Souldiers with other Gentlemen prisoners of ours. The said Lord *Bauge* would not discover himself, who hee was, and endured verie much, beeing kept but with bread and water, and laie upon a little straw. The said Lord of *Vaudeville* after the taking of *Hedin*, sent word to the said Lord *Bauge* and other prisoners, that the place of *Hedin* was taken, and the list of those that had been slain, and amongst the rest, Monsieur de *Martigues*: and when the said Lord of *Bauge* heard the sound of the death of his brother the Lord *Martigues*, hee began much to weep and lament; his keeper demanded of him, vvhether hee made so manie and so great lamentations? Hee declared unto them that it vvas for Monsieur de *Martigues* his brother's sake. Having understood that, the Captain of the Castle dispatch'd a man avvaie quickly, to tell it to Monsieur de *Vaudeville* that hee had a good prisoner; vvhich having received this good newvs rejoiced greatly, and the next daie sent mee vvvith his Physician and four Souldiers to the Wood-castle to knowv if his prisoner vvwould give him fifteen thousand Crowns for a ransom; hee vvwould send him free to his ovvn hous, and for the present hee desired but the securitie

tie of two Merchants of *Antwerp*, that hee would name. The said Lord *Vaudeville* perswaded mee that I would make his agreement with his prisoner. See then why hee sent mee to the wooden Castle, and commanded the Captain of the Castle to use him well, and to put him into a Chamber hung with Tapestry, and that they should make the guard more strong, and from that time they made him good cheer at his expence.

The answer of the Said Lord of *Bauge* was, that to put himself to ransom hee was not able; and that, that depended upon Monsieur *d'Estamps* his Uncle, and of *Misiris de Bressure* his Aunt, and that hee had not anie means to paie such a ransom. I returned with my keepers to the said Lord *Vaudeville*, and told him the answer of his said prisoner, who told mee, Perhaps hee should not out at so good a rate, which was true, for hee was discovered. And forthwith the Queen of *Hungarie*, and the Duke of *Savoy* sent word to the Lord *Vaudeville*, that this morsel was too great for him, and that hee must send him to them, (which hee did) and that hee had enough prisoners besides him: hee was put to fourtie thousand Crowns ransom besides other expences.

Returning toward the Said Lord *Vaudeville* I passed by *S. Omer*, where I saw their great pieces of batterie, whereof the greatest part was flawed and broken. I came back also by *Therouenne*, where I did not see so much as stone upon stone, unless the mark of a great Church. For the Emperour gave commandment to the countrie people within five or six leagues about, that they should emptie and carrie awaie the stones; infomuch, that now one may drive a cart over the Cittie, as is likewise don at *Hedin*, without anie appearance of Castle or Fortreís. See then the mischief which com's by the wars.

And to return to my purpose, presently after my said Lord *Vaudeville* was verie well of his ulcer and little wanted of the entire cure, which was the cause hee gave mee my leav, and made mee bee conducted with a Pass-port by a Trumpet to *Abbeville*, where I took post, and went and found the King *Henrie* my Master at *Aufimon*, who received mee with joie, and a good countenance.

Hee sent for the Duke of *Guise* the high Constable of *France*, and Monsieur *d'Estrez*, to understand by mee what had past at the taking of *Hedin*; and I made him a faithful report, and assured them I had seen the great pieces of Batterie, which they had carried to *S. Omer*. Whereof the King was verie joyful, because hee feared lest the enemy should com further into *France*. Hee gave mee two hundred Crowns to retire my self to my own house, and I was verie glad to bee in libertie and out of this great torment and nois of thunder from the Diabolick artillerie, and far from the Souldiers, blasphemers and deniers of God. I will not omit to tell here that, after the taking of *Hedin*, the King was advertised that I was not slain, but that I was a prisoner, which his Majestie caused to bee written to my wife by Monsieur *du Goguiet* his chief Physician, and that shee should not bee in anie trouble of minde for mee, for that I was safe and well, and that hee would paie my ransom.

The battel of S. Quintin. 1557. After the battel of *S. Quintin*, the King sent for mee to the Fere in *Tartemis* toward Monsieur the Marshal of *Bourdillon*, to have a pass-port by the Duke of *Savoie* to go to dress Monsieur the Constable, who was grievously hurt with a Pistol-shot in the back, whereof hee was like to die, and remained a prisoner in his enemy's hands. But the Duke of *Savoy* would not give consent that I should go to the Said Lord Constable, saying, hee should not remain without a Surgeon, and that hee doubted I was not sent onely to dress him, but to give him som advertisement, and that hee knew I understood somthing else besides Surgerie, and that hee knew mee to have been his prisoner at *Hedin*. Monsieur the Marshal of *Bourdillon* advertised the King of the Duke's denial, by which means the King writ to the said Lord of *Bourdillon*, that if my Ladie, the Lord high Constable's wife, did send anie bodie of her house, which was an able man, that I should give him a letter, and that I should also have told him by word of mouth, what the King and monsieur the Cardinal of *Lorraine* had given mee in charge. Two daies after there arrive's a servant of the Lord Constables chamber, who brought him shirts, and other linnen, for which the said Lord Marshal gave pass-port, to go to the Said Lord Constable; I was verie glad thereof, and gave him my letter, and gave him his lesson, of that which his Master should do, being prisoner. I had thought being discharged of my embassage to return toward the King. But the said Lord of *Bourdillon* prai'd mee to staie with him at the Fere to dress a great number of people who were hurt, and were thither retired after the battel; and that hee would send word to the King, the cause of my staie; which I did. The wounds of the hurt people were greatly stinking, and full of worms with Gangrene and putrefaction; so that I was constrained to com to my knife to amputate that which was spoild, which was not without cutting off arms and legs, as also to Trepan divers. Now there were not anie medicines to bee had at the Fere, because the Surgeons of our Camp had carried all with them; I found out that the Chariot of the Artillerie tarried behinde at the Fere, nor had it yet been touched I prai'd the Lord Marshal that hee would cause som of the drogues to bee delivered to mee which were in it; which hee did, and there was given to mee one half at a time: five or six daies after I was constrained to take the rest, neither was there half enough to dress so great a number of the people, and to correct and staie the putrefaction, and to kill the worms that were entred into their wounds; I washed them with *Ægyptiacum* dissolved in wine and *Aqua vite*, and did for them, all which I could possible, yet notwithstanding all my diligence, verie manie of them died.

There were Gentlemen at the Fere who had charge to finde out the dead bodie of Monsieur de *Bois-Dolphin* the elder, who had been slain in the battel; they prai'd mee to accompanie them to the Camp to finde him out amongst the dead, if it were possible, which indeed was impossible; seeing that the bodies were all disfavoured and overwhelmed with putrefaction. Wee saw more then half a league about us the earth covered with dead bodies, neither could wee abide long there, for the cadaverous fents, which did arise from the dead bodies, as well of men as of horses. And I think wee were the cause, that so great

a number of flies, rose from the dead bodies, which were procreated by their humiditie and the heat of the Sun, having their tails green and blew; that beeing up in the air made a shadow in the Sun. Wee heard them buz, or hum, which was much marvel to us. And I think it was enough to caus the Plague, where they alighted. (My little master) I would you had been there as I was, to distinguish the ordures and also to make report to them which were never there. Now beeing cloied and annoied in that Countrie, I praid Monsieur the Lord Marshal, to give mee my leav to bee gon, and that I was affraid I should bee sick, by reason of my too great pains, and the stinks which did arise from the wounded bodies, which did almost all die, for what diligence soever was used unto them. Hee made other Surgeons to com finish the dressing of the said hurt people, and I went away with his good grace and favor. Hee wrote a letter to the King, of the pains hee had taken with the poor wounded. Then I returned to *Paris*, where I found yet manie Gentlemen who had been hurt, and were there retired after the battel.

The voiage of the camp of Amiens. 1558 **T**He King sent mee to *Dourlan*, and made mee bee conducted by Captain *Govast* with fiftie men in arms, for fear I should bee taken by the enemies. And seeing that in the waie wee were alwaies in alarms, I caused my man to alight, making him to bee my master for that time, and I got upon his horse, which carried my mail, and took his cloak and hat, and gave him my ambling Mare. My man beeing put upon her back, one would have taken him for the master, and I for the servant. Those of *Dourlan* seeing us far off, thought wee were enemies, and let flie their Cannon-shot at us. Captain *Govast* my conductor, made sign with his hat, that wee were not enemies, so that they left shooting, and wee entred into *Dourlan* with great joie. Those of *Dourlan* made a fallie forth, upon the enemies five or six daies before, who kil'd and hurt divers of our Captains, and good souldiers; and amongst the rest Captain *St. Aubin* valiant at the sword, whom Monsieur de *Guise* loved verie well, and for whom chiefly the King sent mee thither, who beeing in the fit of a quartan fever, would needs go out to command the greatest part of his companie: a *Spaniard* seeing him that hee commanded, perceived hee was a Captain, and shot a musket-bullet quite through his neck; my Captain *St. Aubin* thought with this stroak hee was dead, and with the fear (I protest to God) hee lost his quartan ague, and was altogether free'd from it. I dressed him with *Antoine Portal* Surgeon in ordinarie to the King, and divers other Souldiers: som died, others escaped quite with the los of a leg, or an arm, or the los of an eie, and they said they escaped good cheap, escape that can. When the enemy had broke their Camp, I returned to *Paris*. Here I hold my peace of my little master, who was more at eas in his house, then I at the Wars.

The voiage of Harbor of Grace. 1563. **Y**Et I will not omit to speak of the voiage of the *Harbor of Grace*; then when they made the approches to plant the Artillerie, the English who were within it kil'd som of our Souldiers, and divers Pioners, who undermined, who when they were seen to bee so hurt that there was no hope of curing, their fellows stript them and put them yet alive, in the Mines, which served them for so much filling earth. The English seeing they could not withstand an assault, becaus they were verie much attainted with diseases, and chiefly with the plague, they yielded, their lives and jewels saved. The King caused them to have ships to return to *England*, beeing glad to bee out of this place infected with the Plague: the greatest part died, and carrid the plague into *England*, and since have not yet been exempted. Captain *Sarlabous* master of the Camp, was left there in garrison, with six Ensigns on foot, who had no fear of the plague, and were verie joiful to enter therein, hoping there to make good cheer. My little master had you been there you had don as they.

The voiage to Rouen. 1562. **N**OW for the taking of *Rouen* they kil'd divers of ours before the assault, and at the assault: the daie after they entred into the Cittie, I trepaned eight or nine, who were hurt at the breach with the stroaks of stones. There was so malignant an air, that divers died, yea of verie small hurts, infomuch that som thought they had poisoned their bullets: those within said the like by us, for although they were vvell treated in their necessities vwithin the cittie, yet they died also as vvell as those vwithout. The King of *Navar* vvas hurt in the shoulder vvith a bullet som few daies before the assault; I visited and helpt to dress him, vvith his ovvn Surgeon, named *M. Gilbert* one of the chief of *Montpelier*, and others. They could not finde the bullet, I search'd for it verie exactly, I perceived by conjecture, that it vvas entred by the head of the *Adjutorium*, and that it had run into the cavities of the said bone, vvich vvas the caus vvee could not finde it. The most part of them said it vvas entred and lost vvithin the cavity of the bodie. Monsieur the Prince of the *Rock upon Ion*, vvho intimately loved the King of *Navar*, drevv mee to one side, and askt mee if the vvound vvas mortal. I told him yea, becaus all vvounds made in great joints, and principally contused vvounds, vvere mortal according to all Autors vvho had vvritten of them. Hee inquired of the others vvhat they thought, and chiefly of the said *Gilbert*, vvho told him that hee had great hope that the king his master vvould bee cured, and the Said Prince vvas verie joyful. Four daies after the King and the Queen-mother, Monsieur the Cardinal of *Bouillon* his brother, Monsieur the Prince of *Rock upon Ion*, Monsieur de *Guise*, and other great personages, after vvee had dressed the King of *Navar*, caused a consultation to bee made in their presences, vvhere there vvere divers Physicians and Surgeons: each man said vvhat seemed good unto him, and there vvas not one of them, vvho had not good hope of him, saying that the King vvould bee cured, & I persisted alwaies on the contrarie.

Monsieur the Prince of the *Rock upon Ion* vvho loved mee, vvithdrevv mee aside, and said I vvas onely against the opinion of all the rest, and praised mee not to bee obstinate against so manie vvorthie men. I answered him, that vvhen I savv anie good signs of cure, I vvould change my advise. Divers consultations vvere made, vvhere I never changed my vvord, and prognostick, such as I had made at the first dressing, and alwaies said that the arm vvould fall into a Gangrene, vvich it did, vvhat diligence soever could bee had for the contrarie; and gave up his soul to God the eighteenth daie of his hurt. Monsieur the Prince upon *Ion*, having heard of the death of the Said King, sent his Physician and Surgeon toward mee,

mee, named *Feure* now in ordinarie to the King, and to the Queen-mother, to tell mee, that hee would have the bullet taken out, and that it should bee look't for in what place soever it could bee found: then I was verie joyful, and told them that I was well assured to finde it quickly, which I did in their presences, and divers Gentlemen. It was lodged in the verie midst of the cavitie of the Adiutorie bone. My Said Prince having it, shewed it to the King and the Queen, who all said my prognostick was found true. The bodie was laid to rest in the Castle-Galliard, and I returned to *Paris* where I found divers hurt men who were hurt at the breach of *Roien*, and chiefly *Italians*, who desired mee verie much to dresse them, which I did willingly; there were divers that recovered, and others died. I believ (my little master) you were called to dresse som of them, for the great number there was of them.

The voiage of
the battel of
Dreux. 1592.

THe daie after the battel given at *Dreux*, the King commanded mee, to go dresse Monsieur the Count of *Eu*, who had been hurt with a Pistol-shot in the right thigh, near the joint of the hip; which fractured and broke the *Os femoris* in divers places, from whence divers accidents did arise, and then death, which was to my great grief. The daie after my arrival I would go to the field, where the battel was given, to see the dead bodies; I saw a league about, all the earth covered, where there was by estimation five and twentie thousand men and more. All which were dispatch'd in the space of two hours. I would (my little master) for the love I bear you, that you had been there to recount it to your scholars and to your children. Now in the mean time while I was at *Dreux* I visited and drest a great number of gentlemen and poor souldiers, and amongst the rest manie *Swisser*-Captains, I drest fourteen in one chamber onely all hurt with Pistol-shot, and other instruments of diabolical fire, and not one of the fourteen died. Monsieur the Count of *Eu* beeing dead, I made no long tarrying at *Dreux*: there came Surgeons from *Paris* who performed well their dutie toward the hurt people, as *Pigray*, *Cointeret*, *Hubert*, and others; and I returned to *Paris*, where I found divers gentlemen wounded, who had retired themselvs thither after the battel to bee drest of their hurts.

The voiage of
the battel of
Montcontour,
1569.

DVring the battel of *Moncontour* King *Charls* was at *Plesis* the Towers, where hee heard they had won it; a great number of hurt gentlemen and Souldiers withdrew themselvs into the Cittie and suburbs of Towers, to bee drest and help'd, where the King and Queen-Mother commanded mee to shew my dutie with the other Surgeons, who were then in quarter, as *Pigray*, *du Bois*, *Portail*, and one named *Siret*, a Surgeon of Towers, a man verie skilful in Surgerie, and at that time Surgeon to the Kings brother, and for the multitude of the wounded wee were but little in repose, nor the Physicians likewise. Count *Mansfield* Governor of the *Duchie* of *Luxembourg*, Knight of the King of *Spains* order, was greatly hurt in the battel, in the left arm, with a Pistol-shot, which broke a great part of the joint of the elbow, and had retired himself to *Bourgueil* near Towers; beeing there hee sent a gentleman to the King, affectionately to beseech him to send one of his Surgeons to help him in his hurt. Council was held what Surgeon should bee sent. Monsieur the Marshal of *Montmorency* told the King and Queen, that it were best to send him his chief Surgeon, and declared to them that the Said Lord *Mansfield* was one part of the caus of winning the battel. The King said flat hee would not that I should go, but would have mee remain close to him. Then the Queen-Mother said, I should but go and com, and that hee must consider it was a strange Lord, who was com from the king of *Spain*'s side, to help and succour him. And upon this hee permitted mee to go, provided that I should return quickly. After this resolution hee sent for mee, and likewise the Queen-Mother, and commanded mee to go finde the Said Lord *Mansfield* in the place, where I was to serv him in all I could, for the cure of his hurt; I went and found him, having with mee a letter from their Majesties: having seen it, hee received mee with a good will, and from thenceforth discharged three other Surgeons that drest him; which was to my great grief, becauf his hurt seemed to mee incurable. Now at *Bourgueil* there were retired divers Gentlemen, who had been hurt at the said battel, knowing that Monsieur *de Guise* was there, who had been also verie much hurt with a Pistol-shot through one leg, well assured that hee would have good Surgeons to dresse him, and also that hee, beeing kinde and liberal, would assit them with a great part of their necessities. And for my part, I did help and aid them with all my Art, as much as it was possible; som died, som recovered according to their hurts. The Count *Ringrave* died, who had such a shot in the shoulder, as the king of *Navar* before *Roien*. Monsieur *de Bassompierre* Colonel of twelv hundred hors, was hurt also in such a like place as Count *Mansfield*, whom I drest and God cured. God so well blessed my vwork that vwithin three vveeks I led him back to *Paris*, vwhere I must as yet make som incisions in the arm of the Said Lord *Mansfield*, to dravv out the bones vvhich vvere greatly broken and caries'd: hee vvas cured by the grace of God, and gave mee an honest revvard, so that I vvas vvell contented vwith him, and hee vwith mee, as hee hath since made it appear: hee vvrut a letter to the Duke of *Ascot* hovv that hee vvas cured of his hurt, and also Monsieur *de Bassompierre* of his, and divers others, vvhich I had drest after the battel of *Montcontour*, and counsell'd him to beseech the king of *France* my good master to give mee leav to go see Monsieur the the Marquefs of *Auret* his brother.

Voiage of
Flanders.

Monsieur the Duke of *Ascot* did not fail to send a Gentleman to the king vwith a letter, humbly to beseech him to do him so much good and honour, as to permit and command his chief Surgeon to com to see the Marquefs of *Auret* his brother; vwho had received a Musket-shot near the knee, vwith fracture of the bone, about seven months since, vvhich the Physicians and Surgeons in those parts vvere much troubled to cure. The King sent for mee and commanded mee to go see the Said Lord *Auret*, and to help him in all that I could for the cure of his hurt; I told him I vwould emploie all all that little knowvledge vvhich it hath pleased God to give mee. I vvent then conducted by tvo gentlemen to the Castle of *Auret*, vvhich is a league and a half from *Mounts* in *Hainaut*, vwhere the Said Marquefs vvas: as soon as I arrived I visited him, and told him the King had commanded mee to com to see him,

and

and to dress him of his hurt; hee told mee hee was glad of my comming, and was much bound to the King to have don him the honor to have sent mee to him I found him in a great fever his eies verie much sunk, with a countenance gathlie and yellow, his tongue drie and rough, and all the bodie emaciated and lean, his speech low like that of a dying man: then I found his thigh much swelled, apostemated, ulcerated, and casting out a green stinking matter; I search'd it with a silver probe, and by the same I found a cavities neer the groin, ending in the middle of the thigh, and others about the knee, fanious and cuculious; also certain scales of bones, som separated, others not. The legs were much tumified, and soaked with a pituitous humor, cold, moist, and flatulent; insomuch that the natural heat was in the waie to bee suffogated, and extinguished, and the said leg crooked and retracted toward the buttocks, his rump ulcerated the bredth of the palm of an hand, and hee said hee felt there a great pain and smarting, and likewise in his reins, insomuch that hee could not take anie rest night or daie; neither had hee anie appetite to eat, but to drink enough; it was told mee that hee fell often into faintings and swoonings, and somtimes as it were by an Epilepsie, and had oftentimes desire to vomit, with such a trembling that hee could not carrie his hands to his mouth. Seeing and considering all these great accidents, and the forces much abated; truly I was much grieved to have gon to him, becaus mee thought there was little appearance that hee could escape. Notwithstanding to give him courage and good hope, I told him, that I would quickly set him on foot by the grace of God, and the Phylician's and Surgeon's help. Having seen him, I went a walking into a Garden, where I praied to God that hee would give mee the grace to cure him, and that hee would give a blessing to our hands and medicaments, to combate against so manie complicated maladies. I bethought in my minde the waies I must keep to do it. They called mee to dinner, I entred into the kitchin where I saw taken out of a great pot, half a Mutton, a quarter of Veal, three great pieces of Beef, and two pullets, and a great piece of Bacon, with great store of good Herbs. Then I said to my self this broth was full of juice, and of good nourishment; After dinner all the Physicians and Surgeons assembled, wee entred into conference in the presence of Monsieur the Duke of Ascot, and som Gentlemen that did accompanie him; I began to tell the Surgeons that I marvelled much they had made no apertions in the Marquess's thigh, which was all apostumated, and the matter that issued out was foul and stinking, which shewed it had a long time lurked there, and that I had found with my probe a *Caries* in the bone, and small scales which were already separated; they made mee answer, hee would never give consent. and likewise it was almost two months since they could win him to put on clean sheets on his bed, neither durst Janie one scarce touch the coverlet hee felt so great pain. Then said I, for to cure him, wee must touch other things then the coverlet of the bed. Each one said what hee thought best of the Lord's grief, and for conclusion held it altogether deplorable. I told them there was yet som hope, becaus of his youth, and that God and nature do sometime such things which seem to Physicians and Surgeons to bee impossible. My consultation was, that all those accidents were com by reason of the bullet hitting near the joint of the knee, which had broken the ligaments, tendons, and *oponeuroses* of the muscles which tie the said joint together with the *Os femoris*; also nervs, veins, and arteries from whence had followed pain, inflammation, aposteme and ulcer: and that wee must begin the cure by the disease, which was the caus of all the said accidents, that is to saie, to make apertions, to give issue to the matter reteined in the interspaces of the muscles, and in the substance of them: Likewise to the bones which caused a great corruption in the whole thigh, from whence the vapors did arise and were carried to the heart, which caused the syncope and the fever; and the fever an universal heat through the whole bodie; and by consequent, depravation of the whol *Oeconomie*; Likewise that the said vapors were communicated to the brain, which caused the Epilepsie, and trembling, and to the stomach disdain and loathing, and hindred it from doing his functions, which are chiefly to concoct and digest the meat, and to convert it into *Chylus*; which not beeing well concocted, they ingender crudities and obstructions, which make's that the parts are not nourished, and by consequent the bodie drie's, and grow's lean; and becaus also it did not do anie exercise, for everie part which hath not his motion remaineth languid, and *atropiated*, becaus the heat and spirits are not sent or drawn thither, from whence follow's mortification. And to nourish and fatten the bodie, frictions must bee made universally through the whole bodie, with warm linnen clothes above, below, on the right side: and left, and round about: to the end to draw the blood and spirits from within outward, and to resolv anie fuliginous vapors reteined between the skin, and the flesh; thereby the parts shall bee nourished and restored, (as I have heretofore said in the tenth book treating of the wounds of Gun-shot) and wee must then cease when wee see heat and rednes in the skin, for fear of resolving that wee have already drawn, and by consequent make it become more lean. As for the ulcer which hee hath upon his rump, which came through too long lying upon it without beeing removed, which was the caus that the spirits could not flourish or shine in it; by the means of which there should bee inflammation, aposteme and then ulcer, yea with loss of substance of the subject flesh, with a verie great pain: becaus of the nervs which are disseminated in this part. That wee must likewise put him into another soft bed, and give him a clean shirt, and sheets; otherwise all that wee could do would serv for nothing, becaus that those excrements and vapors of the matter reteined so long in his bed, are drawn in by the Systole and Diastole of the Arteries which are disseminated through the skin, and caus the spirits to change and acquire an ill qualitie and corruption which is seen in som that shall lie in a bed where one hath sweat for the Pox, who will get the Pox by the putrid vapors which shall remain soaked in the sheets and coverlets. Now the caus why hee could in no wise sleep, and was as it were in a consumption, 'twas becaus hee ate little, and did not do anie exercise, and becaus hee was grieved with extreme pain. For there is nothing that abateth so much the strength as pain. The caus why his tongue was drie and fowl, was through the vehemencie of the heat of the fever, by the vapors which ascended through

through the whole bodie to the mouth. For as wee saie in a common proverb, when the oven is well heat, the throat feel's it. Having discoursed of the causes and accidents, I said they must be cured by their contraries, and first wee must appeas the pain, making apertions in the thigh to evacuate the matter retained, not evacuating all at a time for fear lest by a sudden great evacuation there might happen a great decay of spirits which might much weaken the patient and shorten his daies. Secondly, to look unto the great swelling and cold of his leg, fearing lest it should fall into a Gangrene; and that actual heat must be applied unto him, because the potential could not reduce the intemperature *de potentia ad actum*; for this cause hot bricks must be applied round about, on which should be cast a decoction of several herbs boiled in wine and vinegar, then wrapt up in some napkin, and to the feet an earthen bottle filled with the said decoction, stopt and wrapt up with some linnen clothes; also that fomentations must be made upon the thigh, and the whole Leg, of a decoction made of Sage, Rosemarie, Tyme, Lavender, flowers of Camomile, Melilot, and red-Roses boiled in white-Wine, and a *Lixivium* made with Okeashes, with a little Vineger, and half an handful of salt. This decoction hath virtue to attenuate, incise, resolv and drie the gross viscous humor. The said fomentations must be used a long while, to the end there may be a greater resolution; for being so don a long time together, more is resolved then attracted, because the humor contained in the part is liquified, the skin and the flesh of the muscles is rarified. Thirdly, that there must be applied upon the rump a great emplaster made of the red desiccative and *unguentum Comitissæ* of each equal parts incorporated together, to the end to appeas his pain and drie up the ulcer, also to make him a little down-pillow which might bear his rump aloft without leaning upon it. Fourthly, to refresh the heat of his kidneys one should apply the unguent called *Refrigerans Galeni* freshly made, and upon that the leavs of water-Lilies. Then a napkin dipt in *Oxycrate*, wrung out and often renewed: and for the corroboration and strengthening of his heart a refreshing medicine should be applied made with oil of *nenuphar*, and unguent of Roses and a little saffron dissolved in Rose-vineger, and Triacle spread upon a piece of Scarlet: For the *Syncope* which proceeded from the debilitation of the natural strength troubling the brain. Also hee must use good nourishment full of juice, as rare eggs, Damask-prunes stewed in wine and sugar; also *Panado* made of the broth of the great pot (of which I have already spoken) with the white fleshy parts of Capons, and Partridge-wings minced small; and other roast-meat easie of digestion, as Veal, Goat, Pigeon, Partridge, and the like. The sauce should be Oranges, Verjuice, Sorrel, sharp Pomgranats; and that hee should likewise eat of them boiled with good herbs; as Sorrel, Lettuce, Purslain, Succorie, Bugloss, Marigolds, and other the like. At night hee might use cleansed Barlie with juice of *Nenuphar* and Sorrel, of each two ounces, with five or six grains of *Opium* and of the four cold seeds bruised, of each half an ounce, which is a remedie nourishing and medicinal, which will provoke him to sleep: that his bread should be of Mellin, neither too new, nor too stale; and for the great pain of his head, his hair must be cut, and rub his head with *Oxirrhodinum* luke-warm, and leav a double-cloth wet therein upon it; likewise should be made for him a frontal of oil of Roses, *Nenuphar*, Poppies, and a little *opium* and Rose-Vineger, and a little Camphir and to renew it sometimes. Moreover one should cause him to smel to the flowers of Henbane and *Nenuphar* bruised with Vineger, Rose-water and a little Camphir wrapped in a handkercher, which shall be often and a long time held to his nose, to the end that the smell may be communicated to the brain, and these things to be continued, till that the great inflammation and pain be past, for fear of cooling the brain too much. Besides one may cause it to rain artificially in pouring down from some high place into a kettle, and that it may make such a noise that the patient may hear it, by these means sleep shall be provoked on him. And as for the retraction of his leg that there was hope to redress it, when evacuation was made of the matter and other humors contained in the thigh, which by their extension (made by repletion) have drawn back the leg; which might be remedied in rubbing the whole joint of the knee with *unguentum Dialtheæ* and oil of Lilies, and a little *aqua vitæ*, and upon it to be laid, black-wool with the greaf thereof. Likewise putting in the ham of a feather-pillow folded in double, and by little and little to make his leg to stretch out. All which my discourse was well approved of by the Physicians and Surgeons. the consultation ended wee went to the sick patient, and I made him three apertions in his thigh, from whence issued out great quantities of matter and *Sanies*; and at the same time I drew out some scales of bones, nor would I let out too much abundance of the said matter for fear of too much decaying his strength: Then two or three hours after I caused a bed to be made near his own, where there were clean white sheets, then a strong man lifted him into it, and rejoiced much in that hee was taken out of his foul stinking bed. Soon after hee demanded to sleep, which hee did almost four hours, where all the people of the house began to rejoice, chiefly Monsieur the Duke of *Ascot* his brother.

The daies following I made injections into the bottom of the cavities of the ulcer, made with *Egyptiacum*, dissolved sometimes in *aqua vitæ*, and sometimes in wine. I applied to mundifie and drie the spongie and loof flesh, bolsters; at the bottom of the sinuosities, hollow rents of lead, that the *Sanies* might have passage out; and upon it a great Emplaster of *Diacalcitheos* dissolved in wine: likewise I did rowl it with such dexteritie, that hee had no pain, which being appeas the fever began much to diminish. Then I made him drink wine moderately alliaied with water, knowing that it restore's and quicken's the spirits: and all the things which wee rested on in the consultation were accomplished, according to time and order; and his pains which wee ceased, hee began to grow better and discharged two of his Surgeons, and one of his Physicians, so that wee were but three with him. Now I remained thereabout two months, which was not without seeing divers sick people, as well rich as poor, which came to mee three or four leagues about. They gave meat and drink to the needie, all which hee recommended to mee, and praised

mee also for his sake to help them. I protest I did not refuse anie one, and did to them what I possibly could, whereof hee was joyfull. Then when I saw hee began to mend, I told him hee must have a comfort of Violons and a Jesier to make him merrie, which hee did: in one month wee so wrought; that hee could hold himself up in a chair, and made himself to bee carried and walk in his garden, and at the gate of his Castle to see the people pass by. The Countrie people of two or three leagues about, knowing they could see him, came the feast daie male and female, to sing and dance pell mell, in joie of his amendment, all beeing verie glad to see him, which was not don without good laughing and drinking. Hee caus'd still a barrel of beer to bee given them, and they drank all merrily to his good health. And the Citizens of *Mont Hainaut* and other gentlemen neighbors came to see him in admiration, as a man coming from the tomb. And as soon as hee began to mend, hee was not without companie, and as one went out another came in to visit him: his table was alwaies well covered. Hee was greatly loved of the Nobilitie, and of the common people, as well for his liberalitie as by reason of his beautie, and honestie, having a pleasant look and a gracious speech, infomuch that those that beheld his face were constrained to love him. The chief of the Cittie of *Monts* came on Saturdaie to beseech him to permit mee to go to *Mons* where they had a great desire to feast and make mee good chear for his sake. Hee told them hee would praie mee to go there, which hee did. But I made them answer that they should not do mee so much honor, as also that they could not give mee better chear then I had with him. And hee praied mee again affectionately to go thither, and that I should do that for his sake, to which I agreed. The daie after they fetcht mee with two Coaches, and beeing arrived at *Monts* wee found the dinner readie, and the chief of the Cittie with their wives, staid for mee with a good will. Wee went to the Table and they placed mee at the upper end, and drank all to mee; and to the health of Monsieur *D'auret*, saying that hee was verie happie, and they likewise to have obtained mee to take him in hand; for that they knew that in this companie, hee was greatly honored and loved. After dinner they led mee back to the Castle of *Auret*, where Monsieur the Marquess staid for mee with great expectation to recount unto him, what wee had don in our banquet, I told him that all the companie had drank divers times to his health; in six weeks hee began to uphold himself a little with crutches, and to grow verie fat and get a livelie natural colour. Now hee had a desire to go to *Beaumont* which is the dwelling place of Monsieur the Duke of *Ascot*, and made himself bee carried in a great chair with eight men by turns, and the Countrie folks where wee passed along, knowing 'twas Monsieur the Marquess fought and strove together who should carrie him, and constrained us to drink, but it was but Beer, but I believ had it been Wine or Hippocras they would have given it us with a verie good will, so much did they shew themselves joyfull to see the Said Marquess, and praied all to God for him. Beeing arrived at *Beaumont* all the people came before us to do him reverence, and praied God to bleas him, and keep him in good health. Wee entred into the Castle where there was more then fiftie gentlemen which the Duke of *Ascot* had sent for to com make good chear with his brother, who kept his table furnisht three daies together. After dinner the gentlemen ran at the Ring, plaied at Foils, and rejoiced greatly to see Monsieur *Auret*, becauf they had heard hee would never com out of his bed again, or bee cured of his hurt. I was alwaies at the upper end of the table, where everie one drank carouses to him, and mee, thinking to make mee foxt, which they could not do: For I drank but according to my old custom. A few daies after wee returned back and took leav of Madam the Dutchesse of *Ascot*, who took a Diamond ring from her finger which shee gave mee, acknowledging I had verie well drest her brother; which Diamond was better worth then fiftie Crowns. Monsieur *Auret* grew still better and better, and walked all alone round about his garden with crutches. I beg'd leav of him divers times to com awaie to *Paris*, declaring that his Physician and Surgeon would well do the rest that remained, for the cure of his grief. And now to begin a little to estrange my self from him; I praied him to give mee leav to go see the Cittie of *Antwerp*, which hee willingly accorded to: and commanded his Steward to conduct mee thither accompanied with two pages: wee passed through *Malignes* and *Bruxelles*, where the chief of the Cittie praied the Said Steward, that at our return they might hear of it; and that they had a great desire to feast mee, as they of *Monts* had don. I thank'd them most kindly, and told them that I was not worthie of such honor; I was two daies and a half to see the Cittie of *Antwerp*, where som Merchants knowing the Steward, praied him to do them the honor, that they might bestow a dinner or supper upon us. There was striving who should have us, and were all verie joiful to hear of the good health of the Marquess of *Auret*, doing mee more honor then I expected. To conclude, wee came back to the Marquess making good cheer, and within five or six daies I asked my leav of him, which hee granted with great grief, and gave mee an honest Present, and of great value, and made mee bee conducted by the said matter of his hous and two Pages, even to my hous at *Paris*.

I have forgot to tell you, that the *Spaniards* have since ruined, and demolishe his Castle of *Auret*, sack't, pillag'd, rifled and burnt all the houses, and Villages belonging unto him, becauf hee would not bee of their side; in the slaughters and ruines of the Lovv Countries.

The voiage of *Bourges*, 1562. **T**he King vvith his Camp remained not long at *Bourges*, but those vvithin yielded it up, and went out vvith their jevvels saved. I know nothing vvorthie of memorie, but that a boie of the Kings privie kitchen, vvho beeing neer the vvalls of the Cittie before the composition vvas made, cried vvith a loud voice, Hugue not, huguenot, shoot here, shoot here having his arms lifted up, and his hand stretched out; a souldier shot his hand quite through vvith a bullet: having received his stroak, hee came and found mee out to drest him. My Lord high-Constable, seeing the boie to have his hand all bloodie, and all rent and torn; demanded of him vvho had hurt him. Then there vvas a Gentleman vvho savv the shot made, said it vvas vvell bestovved becauf hee cried, *Huguenot*, shoot here, shoot here.

here. Then the Said Lord Constable said this *Huguenot* was a good musketeer, and parr a pittiful minde, for it was verielikely if hee would have shot at his head, hee might have don it more easily then in the hand. I dress'd the said Cook who was verie sick, but at length was cured, but with lameness of his hand, and ever since his companions call him *Huguenot*; hee is living.

The battel of S. Denis, 1567 **A**Nd as for the battel of Saint *Denis* there were divers slain as well on one side, as on the other: ours beeing hurt, went back to *Paris* to bee dressed together with the prisoners who were taken, whereof I dressed a great part. The King commanded mee, by the request of the Ladie high-Constable, to go to her hous to dress my Lord, who had received a Pistol-shot in the middle of the spondils of his back, whereby hee presently lost all sens and motion of thighs and legs, with retention of excrements, not being able to cast out his Urine, nor anie thing by the fundament, becaus that the spinal marrow, (from whence proceed the sinews to give sens and motion to the inferiour parts,) was bruised, broken, and torn by the vehemence of the bullet. Hee likewise lost his reason, and understanding, and in a few daies hee died. The Surgeons of *Paris* were a long time troubled to dress the said wounded people, I believ (my little master) that you saw som of them. I beseech the great God of victories, that wee may never bee employed in such evil encounters and disasters.

The voiage of Bayonne, 1564. **N**OW I saie moreover, what I did in the voiage with the King to *Bayonne*, where wee have been two years and more to compass all this Kingdom, where in divers Citties and Villages I have been called into consultations for divers diseases, with the deceased Monsieur *Chaplain* chief Physician to the King and Monsieur *Chastellan* chief to the Queen-Mother, a man of great honor and knowledge in Physick and Surgerie: making this voiage I was alwaies inquisitive of the Surgeons if they had marked anie rare thing of remark in their practice, to the end to learn som new thing. Beeing at *Bayonne* there happened two things of remark for the young Surgeons. The first was, that I dress'd a Spanish Gentleman, who had a grievous great impostume in his throat: hee came to have been touched by the deceased King *Charls* for the Evil. I made incision in his Apostemie, where there was found great quantitie of creeping worms as big as the point of a spindle, having a black head; and there was great quantitie of rotten flesh. Moreover there was under his tongue an impostume called *Ranula*, which hindered him to utter forth his words, and to eat and swallow his meat: hee praied mee with his held up hands to open it for him if it could bee don without peril of his person, which I immediately did, and found under my Lancet a solid bodie, which was five stones, like those which are drawn from the bladder. The greatest was as big as an Almond and the other like little long Beans, which were five in number; in this aposteme was contained a slimie humor of a yellow color which was more then four spoonfuls; I left him in the hands of a Surgeon of the Cittie to finish his cure.

Monsieur *de Funtain* Knight of the Kings Order, had a great continual pestilent Fever, accompanied with divers Carboncles in divers parts of his bodie, who was two daies without ceasing to bleed at at nose, nor could it bee stanch'd; and by that means the fever ceased with a verie great sweat, and soon after the Carboncles ripened and were by mee dressed, and, by the grace of God, cured.

I have publish'd this Apologie to the end that each man may know, with what foot I have alwaies marched, and I think there is not anie man so ticklish, which taketh not in good part what I have said, seeing my discours is true, and that the effect sheweth the thing to the eie, reason beeing my warrant against all Calumnies.

The end of the Apologie and Voiages.

F I N I S.

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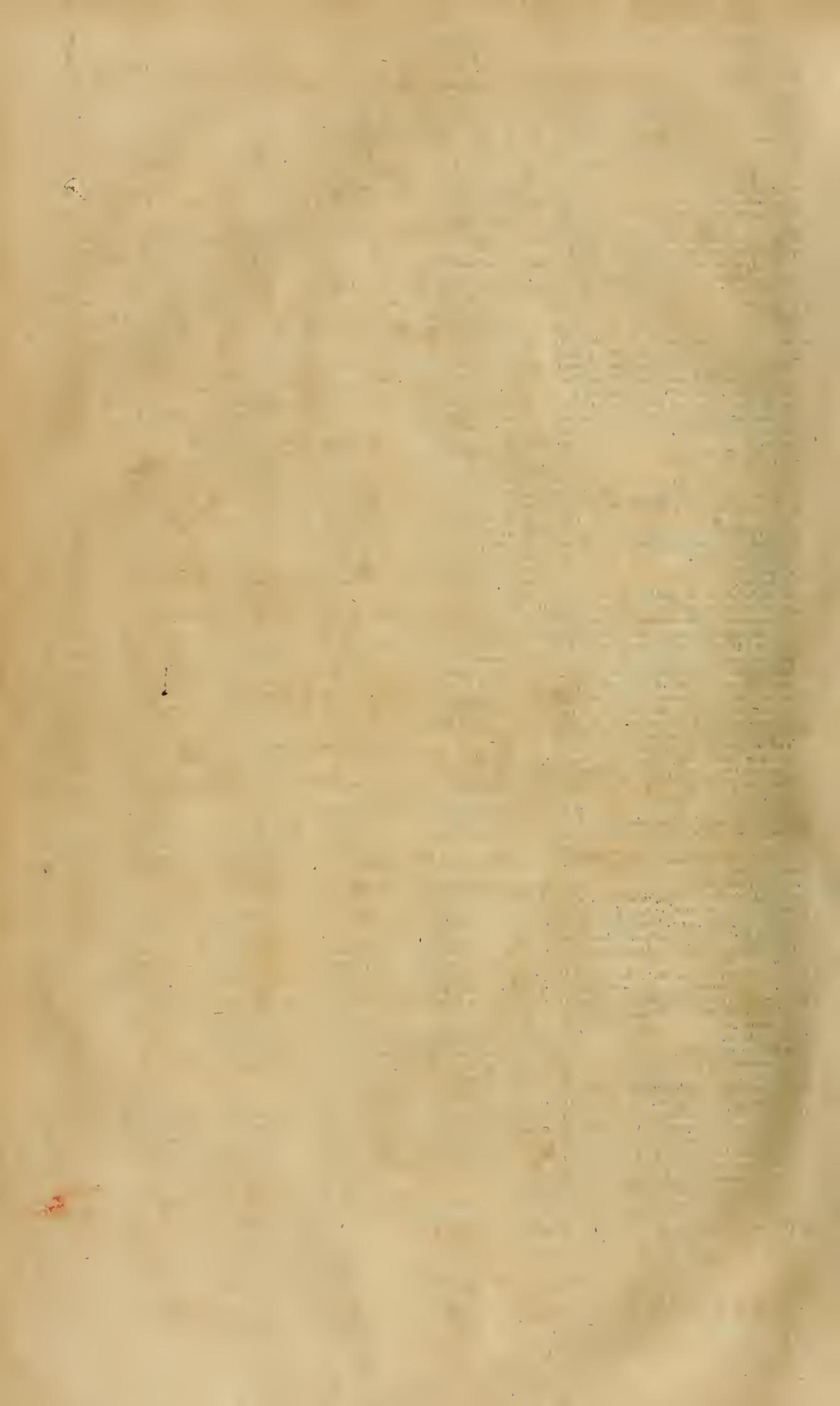
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ΑΓΓΕΙΟΛΟΓΙΑ:

Or, A

Description of the Vessells in the body of

M A N,

Of the three kinds, *i. e.*

OF THE

VEINS, ARTERIES, and NERVES,

Especially of those in the Limbs and Habit of the Body :

Whereof there are also given Anatomicall Figures,

(the largest and fairest that ever were published with any
ENGLISH Book.)

In three Tractates.

Translated out of the Anatomie of *Adriannus Spigelius*, by
whom these parts are more largely and accurately described then
by other Authors; the more full tractation whereof, being a part
of Anatomie so usefull in order to Chirurgicall Operations, hath been
judged very worthy to be annexed unto this present work.



LONDON,

Printed by *Richard Cotés*, for *Iohn Clark*, and are to bee sold at the lower
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The Preface.



OF how great consequence a more perfect knowledge of Anatomie is to the Art of Physick, and Chirurgery, hath been frequently and abundantly made out by Anatomists, Physitians and Chirurgeons, upon occasion, in their severall writings; though the thing it self speak so plainly in its own behalf, that much need not be said in this kind. The case is plain, that with the like facility and successe may a Mariner, making out some unknown land, steer his course through the main Ocean, where nothing but sea and skie appears, without the help of his Card and Compasse; as a Physician judg of the naturall action, or preternaturall affect of any part of the body; or a Chirurgeon institute any operation about the same, without the Anatomical knowledge thereof; and therefore no more shall be said to this effect. Anatomie may be very commodiously reduced to four distinct kinds, or distinguished according to so many principall parts. 1. Σπλαγχνολογία, Splanchnologie; that is, the description of the Bowels contained in the three Cavities or Bellies of the body; the lower, middle, and supreme. 2. Οσσεολογία, Osteologie, which is the description of all the bones of the body. 3. Μυολογία, Myologie, being the Anatomical history of all the Muscles. 4. Αγγειολογία, Angeiologie, describing all the Vessells of the body: i. e. the Veins, Arteries, and Nerves; these last, though having no sensible cavities, being reputed vessells in the account of Anatomists. Now though all these parts or kinds, of Anatomie, are needfull both to Physick and Chirurgery; yet are they not all of a like necessity to both: but the first of more absolute necessity to the Art of Physick; the other three, to Chirurgery. And therefore though all four have been treated on by the learned author of this Volume; yet in reason it could not but be advantageous and acceptable to Chirurgeons to have some farther helps in our English tongue, for improvement in the three later kinds before mentioned, or in some of them at least. Now for Osteologie, the parts themselves, or the dry bones are and may be kept at hand, for frequent view and contemplation upon them; whereby their severall Figures, Articulations, and all other particulars observable about them, may be rendred familiar; in order to practice about Fractures and Luxations: and without such Autopsie, much cannot

The Preface.

be acquired by the reading of Descriptions, or sight of Delineations. Toward Myologie, there hath been a peculiar tractate of late published in English, which may be useful in that respect to those who cannot peruse Latin Authors. So that the greatest want seemed to be in that kind or part of Anatomie, which is the last in the Enumeration, i. e. Angeiologie, or the Description of the Vessells; the more exact or particular knowledge whereof, especially of those in the Habit of the body, will appear, upon a true accompt, more necessary to the exercise of Chirurgicall operations, at greater certainty, and with more security, then the knowledg of the Muscles. Upon these considerations, being consulted by the Publisher of this Work, what peece or Tractate in any kind, of Chirurgery or Anatomy, I thought might to good purpose be added thereunto; I resolved him, that I could think of nothing more advantagious in this kind, then a fuller and more accurate Anatomieall Description of the Veins, Arteries, and Nerves in the body of Man, translated out of the Anatomie of Spigelius; adding also the most usefull Anatomieall Figures, relating to the said Descriptions, of the same largeness as they are in the Editions of the said Author intolio; which were first taken out of Vesalius, and are the largest and fairest that are extant: the case being here, as in Mathematical instruments, in which, how much the largeness conduceth to certainty in use, is well known. Accordingly he hath not spared for care and cost, in procuring a Scholar every way competent to translate the Descriptions of these parts, out of the forementioned author; and an able Artificer to cut the Figures. And as the work is now accomplished, I doubt not but good improvement may be made thereof, by such Chirurgeons, as being not able to make use of the Originall, stand in need of such helps, if they will not be wanting to themselves for industry in the use hereof.

J. G.

The first Treatise,

Concerning

The VEINES.

CHAP. I.

Reckons up the branches or propagations of the vena portæ or the Gate-vein, and explains an Aphorism of Hippocrates, that makes very much to the purpose.



Et us come now to the History of the veins, in which we will begin with the vena portæ or gate-vein, as that which spreads not so wide and far as the common hollow one. For it is wont to be distributed only through the lowest belly, and not at all to propagate it self out of it; nor does it branch through all the parts of that, but such only as are appropriated to the nutritive faculty, namely the Liver, the bladder of Gall, the Stomach, the Spleen, the Sweet-bread, Kall, Guts, and Mesentery, for the Hollow vein sends its propagations to the rest, as the Reins, Bladder, and those parts which serve for generation. But that the manner of this distribution may be more easily understood, for our better method in teaching, likening the whole vein to a tree, we will divide it into four parts, one of which we will call the Roots, as that part which is in the Liver; another the Trunk, which continues it self on and is not divided; a third the Branches into which the Trunk is divided; a fourth, Twigs or Sarcles, such small veins as the Trunk shoots out at its sides; before it be divided into its branches. Which terms ought diligently to be observed, because we have endeavoured by the propriety of these words to give light to this obscure Treatise concerning the veins. But that they may more easily be committed to memory, and all that concerns this business be written with more brevity, following some very learned later Authors, we will give every part its name from the place of its insertion.

From the outside then of the Liver some very little hairy veins are prolonged towards its inner region, and by little and little meet together into greater branches, so that at length they become five, which again gathered together like roots about the middle of the hollow side of the Liver, but somewhat hinderly near to the back, make a notable stock or Trunk, which at length issuing forth near to those eminencies of the liver, which by the Greeks are termed *πύλας* Gates, is cal'd the Gate-vein, and now deserves the name of a Trunk.

This Trunk parting now from the Liver descends somewhat obliquely towards the left side, under the Gut cal'd *Duodenum*, where above the Rack-bones it gets a firm seat; but before it be divided into branches, two twigs sprout from it; the first of which being very small, arising out of the uppermost and forepart of the Trunk, as soon as it is come forth from the Liver, is scattered into the neck, and body of the bladder of Gall, or into its outer coat, with a numerous succession of very little branches, such as we have said above are called hairy veins. This twig is cal'd in Greek *νεφρική*, in Latin you may render it *vesicalis*, the vein of the bladder of Gall. *Vesalius* says there are two branches, which run through the bladder of Gall, whence they are called by some *Cystica gemelle*, the twin veins of the Gall, but this makes no great matter. The second twig being greater then the former, but lower, arising from the same fore part, and more to the right, is inserted into *pylorum* or the lower mouth of stomach, into whose hinder part, which looks towards the back, it scatters many small branches, from whence it is commonly called *Gastricæ*, the stomach-branch, but perhaps for memories sake it may be better termed *Pyloricæ*, or branch of

Note that the Letters, which are enclosed thus [] refer to the particular tables at the end of this Treatise, wherein they are set.

Through what parts the Gate-vein is dispersed.

The division of the Gate-vein into the roots, trunk, branches and twigs.

The Roots

The Trunk

The twigs, that grow out before the division of the trunk.

Gastricæ

the lower mouth of the Stomach, because there are others also, which are called Stomach-branches.

The two branches. These two twigs being thus propagated, the Trunk runs downwards, and inclining all the way somewhat to the left is divided into two notable branches, a right, and a left one: the left is some thing higher then the right, but lesser; the right lower, but greater: the left spreads it self through the stomach, the kell, one part of the *colon* or colique gut, and the spleen; the right through the Guts and Mesentery that is called *Splenica* or Spleen-vein, or the linear one; this the Mesenterick.

Splenica. Now the Spleen-vein, after it is thus come forth from the Trunk, is carried athwart, being underpropt by the membrane of the Kall, toward the Spleen, into which before it be consumed, it shoots forth certain twigs, both from its upper part, and from its lower; from its upper part one, that ascending obliquely to the left side of the Stomach, that looks toward the back, is divided into three propagations, of which the outermost on either side are conveyed into the Stomach, and presently scatter into more twigs; but the middle one ascending through the same hinder part spreads itself through the upper region of the Stomach, and compasses the left orifice or mouth, round about like a crown, from whence it is called *sepanaia* or *Coronaria*, the Crown-vein of the Stomach. This again sends forth continually some small branches upwards to the end of the Gullet, and others downwards through the Stomach. All this branch is called *Gastricus*, the Stomach branch, because it is the greatest, and most capacious of all those, which come to the Stomach. From the lower part of the Spleen branch arise two twigs; one, which is small, sending forth other little sprigs to the right side of the lower membrane of the Kell, and the colique Gut annexed thereunto, is commonly called *Epiplois dextra*, you may Latin it *Omentalis*, the right Kall-vein. Another answering to that branch, which arises from the higher part of the Spleen-vein, and begets the Crown-vein, is inserted in the lower membrane of the Kall, and presently after its rise is divided into two branches, which parting one from another a great distance beget many other twigs, which are spent upon the lower membrane of the Kall, which like a Mesentery ties the colique gut to the back, as also upon that part of the colique Gut, which is so tyed. It is called *Epiplois*, or *Omentalis postica*, the hinder Kall vein. After the Spleen-branch has thus scattered many twigs, now drawing near to the Spleen it is cleft into two branches, an upper, and a lower one; which are broken into others in the very *Parenchyma* or flesh of the Spleen. From the upper, sometimes before it enters the Spleen, sometimes when it is already entered, there sprouts forth a double or threefold twig, very famous among the writers of Physick, which they commonly call *vas breve* the short vessell, but we the *venall*, to distinguish it from the Arteriall vessell that answers to it: this is inserted into the left side of the bottom of the Stomach, sometimes also higher, and about the left orifice or mouth. Which is the cause why some Physitians, and commonly Anatomists too have foolishly thought, that the melancholick humor is returned, from the Spleen through this vessell back into the Stomach, to provoke appetite. But you may often find bodies, in which it is altogether wanting. From the lower branch, which goes to the nether part of the Spleen, one propagation arises, which being pretty big, and notable is reflected towards the right hand, like the foregoing, and compasses the bottom of the Stomach on the left side, and also sends many little branches to the higher membrane of the Kall on the left side; it is called *Gastro-epiplois sinistra*, the left Stomach and Kell-vein. There is also another notable branch, which is found in most to arise from the lower Spleen-branch; very seldom from the Spleen it self. This is carried downwards, and scattering twigs over all the left side of the colique Gut, goes on further by the whole length of the strait Gut, and at length determines in the membranous substance thereof, and in the fundament with many little twigs. Physitians make mention of this very often, and call it *Hæmorrhoidalis interna*, the inner emroid vein, to distinguish it from the outer, which is derived from the Hollow-vein. It is truly and properly called the Emroid vein; I say, properly, and truly, because sometimes they call by that name the veins of the nostrills, gums, and mouth, that cast forth blood, and without pain. In this large sense the Philosopher took it 3. *de part. animal.* where he makes menstruus, purgation also a species of the emroids. But the Emroids properly so called by Physitians are dilatations of this vein in the fundament, caused as well by black and yellow choler, as also by a salt phlegm, as by the melancholick humor. And these are of two kinds; *Cæca*, blind piles, which cast out no blood, but swell out like the stone of a grape into the fundament or out of it: Others *aperta*, open, which cast out the blood, which they contain. The learned *Hippocrates* hath left us a peculiar book, a golden one indeed, concerning the cure of these. The remaining part of the Spleen-branch is spent upon the whole Spleen, and therein is scattered into divers and very small propagations, entering the very flesh of it about the hollow, and middle line. And these are the sprigs which grow out of the Spleen-branch.

The Mesenterick vein, or right branch of the Gate-vein is joined to the Mesentery, as soon as it comes from the back, and is divided into two chief branches, which passing through

through the Mesentery betwixt its two coats, are each of them cleft into an infinite number of small branches, and they again into less twigs, which going to the guts make up those veins so famous among Physicians, that are called the Mesaraick-veins. The first of these branches is called the right Mesenterick vein from the right side, wherein it is placed, and is likewise twofold, whence it came to pass, that *Vesalius*, and almost all others, who follow him, reckon three Mesenterick veins. This branch is inserted into the *Jejunum* or empty gut, the *Ileum*, or circled gut, the *cæcum* or blind gut, and the right side of the Colique gut, where it lies next to the reins, and liver; and although both its branches shoot forth many propagations from themselves, so that it is very hard to expresse any number of them; as well because they vary much by reason of their subjects, as also because they do not observe the very same order and course, yet it hath been observed, that for the most part there are fourteen, which afterwards are scattered into an infinite company of other twigs. These when they are come to the guts, only gape with their little mouths into their coat, and enter not the cavity it self, that being compassed about within with a certain crust. But as we have said above, that in most parts of our body, the divarications or divisions of the vessels are attended with certain glandules, partly that they may make the safer progresse, partly lest they should sink down, and withall the flow and ebb of the blood so very necessary be hindered; so here also the divisions of the vessels, which are scattered through the Mesentery, are bolstered up with certain glandules, which with their propagations observe such an exact proportion, that the greater glandules do sustain the greater branches, and the less the lesser. When these glandules swell with a *Scirrhus* the vessels being prest close together, and the distribution of the chylus through the veins, and consequently of the blood through the body being hindered; there follows a Consumption, and pining of the whole body. The left Mesenterick vein is divided into the middle part of the Mesentery, and also that part of the Colique Gut, which runs from the left region of the Stomach as far as to the strait gut. The *hæmorrhoidalis interna*, or inner Emroid vein, of which we spake a little before, sometimes arises from this vein, as *Vesalius* hath observed, which affording some sprigs to the Colique gut, at last running forward through the whole length of the strait gut, determines in the fundament. But before the Mesenterick trunk be divided into these two branches, it first sends forth two propagations, one of which is called *Gastro-epiplois dextra*, or the Right Stomach and Kall-vein, which creeps through the right bottom of the Stomach, before, and behind, as also through the upper membrane of the Kall: the other called by others *Intestinalis*, or the Gut vein, by us the *Duodena*, reaches to the middle of the Gut *Duodenum*; and the beginning of the Empty gut or *Jejunum*, and descends all along through them.

The right Mesenterick branch.

The left Mesenterick.

Propagations that arise before the division of the Mesenterick. *Gastro-epiplois Dextra.*

Intestinalis. The first use of the Gate-vein.

The chief use of the Gate-vein is to nourish those parts, which are seated in the lowest belly, and need a thicker and more saculent blood, such as are all those parts, which serve for nutrition. For their blood ought to be thicker, that it might be hotter, when heat is alwayes more powerfull in a thicker body: so then the Roots of the Gate-vein nourish the Liver, the Trunk nourishes the *Pancreas* or Sweet-bread; of the Twigs, the *Cysticus*, or Gall-twig nourishes the bladder of the Gall; the Spleen-branch, all the entrails, which serve for nutrition, except the Mesentery, and the Guts; the Twig *Pyloricus*, or of the lower mouth of the Stomach, the *Gastricus* or Stomach-branch, both the Stomach and Kall-veins, and the short vessell nourish the Stomach. For I do not think that the short vessell was made by nature for the carrying back of melancholick humor to the Stomach, but chiefly for its nourishments sake; when that blood, which is generated in the Spleen, is not melancholy, and excrementitious humor, but rather the best, although somewhat thicker then other blood, and that because the parts that are to be nourished by the Spleen branch, needed a thicker blood, then they which are to be nourished by the Mesenterick. Both the Stomach and Kall-veins nourish the upper membrane of the Kall; the right and the hinder *Epiplois*, or the Kall-veins, the lower. The Spleen is nourished by those two branches, into which the Spleen-vein is cleft, and which enter its *parenchyma*, or flesh through its middle line: the Mesentery, and almost all the Guts by the two Mesenterick branches; the Gut *Duodenum* by the propagations called *Duodena*; but the empty Gut, the *Ileum* or circled Gut the blind Gut, or the right side of the Colique or *Colon* by the right Mesenterick-branch. The left side of the Colique, and all the strait-Gut by the hæmorrhoidall vein; but the middle part which lies under the Stomach, by the hinder Kall-vein. The second use is to attract the *Chylus*, and carry it to the Liver; whose veins are most famous for the making of blood. But the same veins which nourish the Mesenterick branch, do also attract the *chylus*, as we shall shew you hereafter, when we shall insist upon the History of it. The third use is to empty out the excrements from the body through the Guts. Thus we see that the choleric humor is sometimes poured forth out of the Liver through the Mesenterick-branch in the bloody flux, and choleric loofness, and the melancholick dregs through the Emroid-vein. The fourth use is to help the concoction of the Liver. Thus we see that the thicker part of the *chylus*, which is called melancholy, is attracted by the spleenick branch, not that the seat of melancholy

The second use.

The third use.

The fourth.

is in the Spleen, but that it may be more attenuated, and better concocted by the benefit of the arteries, which are most abounding in the Spleen, and so not disturb, or hinder the concoction, which is famed to be in the veins of the Liver, as it usually happens, that whensoever the Spleen is troubled with any disease, the work of making blood is presently harmed.

The explanation of a certain Aphorism of Hippocrates.

But because there has been mention made here of the Emroid-veins, it seemed, that it would not be unseasonable if I did refer to this place the explanation of a most excellent Aphorism, which is the twelfth of the sixth Section, when it cannot be understood without the History of Anatomy, and is not so faithfully explained by others, as was necessary. Hippocrates writes in it, ἀμφοτέρωθεν ἰσθῆνη χειρίας ἢ μημία φυλαχθῆ κίονον ὁ ὕδρωσις ἐπιπέδου ἢ φθίσου, that is, he that is cured of old Emroids, unless one of them be preserved, is in danger of falling into a Dropsie, or Consumption. In explanation hereof we will first doubt of the Aphorism, then we will dispute of the manner whereby a Dropsie, or Consumption follows upon the cure of old Emroids. But we may not without cause doubt of the truth of it, because the same Hippocrates in a Book concerning the Emroids, which I think to be very much his own, whatever Mercurialis say though otherwise a most learned man, bids us to turn the Emroids, and forbids us to leave any unburnt, but to burn them all. And truly Aetius in his 14. Book, desirous to reconcile these two places, at those words ἢ μὴ μία φυλαχθῆ, that is, unless one be preserved, being overcome, thinks that a manner of diet is to be understood, not an Emroid, as if Hippocrates should say: Thou shalt not cure one that hath long had the Emroids, unless the Patient will diligently observe a convenient manner of diet prescribed by thee; for otherwise there is danger of his falling into a Dropsie, or Consumption. But Galen in his Comment upon that Aphorism writes expressly, that Hippocrates sayes, that unless one Emroid be preserved, such danger will ensue, and makes no mention at all of diet. And, what is more, dayly experience sufficiently witnesseth, that such mischiefs do ensue though never so exact a diet be kept, and the reason taken from the manner, wherein they happen, and which we shall presently explain, does abundantly manifest it. Whence it is evident, that these two places of Hippocrates are left still in controversie, and contradicting one another from this answer of Aetius. But the right answer will be, if we say, that Hippocrates when he writes in his Book of the Emroids, that for a perfect cure they must all be burnt, speaks not of old Emroids, but of such only as are lately come, or when nature has already endeavoured to expell the humor, which was otherwise purged out of the Emroids some other way, whether it be by issues, or by a Fistula, or some ulcer in the Leg. For such may be yet whole and sound, and especially if a good rule of diet follow. Nor does the cure of all old Emroids necessarily bring on a Dropsie or Consumption, but only for the most part they threaten a danger of these diseases to ensue, for sometimes the melancholick matter being hurried up into the brains, there follows madness, as it happened to Alcippus, in Hippocrates 4. Epidem. For, sayes he, this Alcippus having the Emroids was forbidden to be cured, for after the cure he fell madd, but an accute Feaver following it, he was recovered. For explanation of the second doubt, first let us hear Galen for he in his Commentary upon the Aphorism, sayes “ That the Emroids come by reason of fæculent and melancholick blood, which the Liver drives down to the mouths of certain veins, and so this way being stopt, and abundance of gross humor burdens the Liver, and stifles the naturall heat, which being extinguisht, no more blood is generated, but only water, which nature afterwards driving it into the abdomen, or paunch, makes a Dropsie. But if the Liver send that abundance of melancholick humor to the Lungs, some vessell being broken, there follows a Consumption. This interpretation of Galen, besides that it seems very obscure to us, is not altogether agreeable to truth. For first, it is false in my judgment, which Galen sets down in his Comment, that it is impossible, that the Emroids should be caused without an abundance of fæculent and thick blood; when it may be proved both by reasons, and authority, that they come also from choler and phlegm. By the authority of Hippocrates, who in the beginning of his Book concerning the Emroids, witnesseth that this disease is caused in this manner; to wit, when choler, or phlegm falling down into the veins of the Straight-Gut, heats the blood, which is in the veins. For these veins being heated attract the blood out of the little veins, that are near, and when they are filled, the inward part of the Seat swells, and the heads of the veins appear out of it. But by reason it is proved thus; when madneses are caused by phlegm, or choler, as Hippocrates witnesseth in his Book De Morbo Sacro, the same Author in the 6. Aphorism, 21. professes that that madnes is taken away, if there follow swellings of the veins, or Emroids in those that are so mad. Now the madnes would not be taken away, if melancholick humor did only come forth by the Emroids; for then the cause of the disease would not be purged out. But I my self also have seen formerly in Germany some Noblemen, that were troubled with salt catarrhs, afterwards recovered by a great flux of the Emroids; that I am of opinion, that not only melancholy, but also salt phlegm and choler are wont to be purged out by the Emroids. Wherefore if it happen, that one, who has been long troubled

bled with the Emroids, be cured afterwards, that choler and phlegm, either breed, obstructions in the Liver, or Spleen, or being gathered together in some plenty by stretching the vessels contained in the *abdomen*, or paunch, breaks through them, or by their quality corrodes and eats their way out, and makes a Dropsie in the *Abdomen*; or else by raising obstructions in the Liver, and extinguishing the naturall heat, generates much water, and serous humor in stead of blood, which passing through the veins, make a species of the Dropsie called *Leucophlegmatis*; but if this humor go back to the Breast, or Lungs, it breaks through, or eats out their vessels, and hence follows a spitting first of blood, then of corrupt matter, and from thence at last a Consumption, as *Hippocrates* teaches in his Aphorism. But in this place it is first of all to be observed, that there are two sorts of propagations of veins, which make the Emroids: for there are some propagations of the Gate-vein, of which we have already treated; but there are others of the hollow-vein, which arise from the Iliacall branches, of which we are to speak hereafter. Now if the forementioned humors, whether melancholick, or cholerick, or phlegmatick, and salt, flow through the propagations of the Gate-vein, the internall Emroids are caused, which being cured, the matter flows back into the branches of the Gate-vein, that are scattered through the lower Belly into which the veins being loaden with these humors unburden themselves, and make a species of the Dropsie called *Ascites*. But if they flow through the branches of the Hollow-vein, they cause the external Emroids, and these being cured against the Precept of *Hippocrates*, there is danger of a Consumption to ensue, because from hence there is an easie passage of the peccant matter through the Hollow-vein to the Lungs, nigh to the Heart. And this is that which we have of a good while observed, that many, who have been long troubled with Fistula's of the Fundament; and afterwards cured, through the ignorance of Physicians, have fallen into a spitting of blood, and then into a Consumption. Nay we remember, that a maid was once cured by us in *Germany*, which had a Fistula in the middle of her Hip, and for three years had sought help from many in vain, but being cured shee fell at length after three or four months into a spitting of much blood. Although shee was scarce ten years old, I let her bleed presently in the foot of that side on which shee had been troubled with the Fistula, and purging her body, and laying on a cautery near the place, in which the Fistula had been, I easily freed her in this manner from imminent danger of a Consumption. This spitting of blood happened from no other cause, but that sharp and cholerick matter, which when it could no longer find a way out by the Fistula, got up afterwards to the Lungs through the branches of the Hollow-vein. But *Hippocrates* sayes expressly, that there is danger of a Dropsie, or Consumption to follow, because it sometimes falls out, that neither of these happen, but rather some other disease insues, as it happened to *Alcippus*, who fell into a madnesse, and from that into an acute Feaver: sometimes also the bloody flux follows, and other mischiefs. Sometimes also it happens, that they who are so cured, are preserved still in health, by abundance of urine, sweatings, remedies, and a good rule of diet.

CHAP. II.

Treats of the superior, or ascendent Trunk of the Vena Cava, or Hollow-vein, and the branches which it scatters through the Head.



WE are now to consider the other vein, which as we told you is called *Cava*, the Hollow one [a], which spreads it self much wider, then the Gate-vein, as being distributed throughout the whole body. For its office is to nourish all those parts of our body, which conduce not to the concoction of the food, and those parts being spread far and wide, it is necessary, that the Hollow-vein also be very large, and extended to a great length: and because they ought to be nourisht with a thinner, and more elaborate blood, and not so thick and *feculent*, as that wherewith the Stomach, Spleen, and Kall are nourisht; therefore the blood which the Hollow-vein makes, and carries, is also more pure, thin and sincere.

In delivering the History of this vein, although we are not of their opinion, who derive its beginning either from the Liver, or heart, yet because we must begin our Treatise of it somewhere, we thought fit to follow the received custome of Anatomists, and so for perspicuities sake we shall alwayes speak of it, as if it took its birth from the Liver. It may be added, that it spreads certain roots as it were in the Liver, just like the Gate-vein, in the History of which when for that reason we took our rise from those roots, we may not without cause begin thence also with the Hollow one. But this vein although it run directly through the whole Trunk of the body, and make one very notable stock [D] that is drawn out through the middle, and lowest belly, like one straight line continued, or rather in manner of a channell, or conduit pipe, is notwithstanding wont to be divided into two by reason of the Liver, and so one to be called the Ascendent Trunk, the other the Descendent. For indeed that is not true, to which many perswade themselves,

The use of the Hollow-vein.

The method to be observed in the History of this Vein.

that

that the Hollow-vein in its going forth from the Liver, like the great Artery, when it comes out of the heart, is cleft into two Trunks; but if hereafter they be called Trunks by me, you must believe, that I do it only for orders sake in teaching. The Ascendent therefore or upper Trunk [A.D.] is that which stands about the Liver, and is terminated about the *Jugulum*, or Hollow of the Neck; but that is called the Descendent one [T.V.] which is beneath the Liver, and reaches down as far as the Legs. For both of them are afterwards divided into branches, of which they of the Ascendent [m and q] are carried upwards to the Head, as the Jugular or Neck-branches; or to the Arms, as the *Brachiales* [G and I] or Arm-veins; these of the Descendent Trunk to the Legs, and are called the Crucial branches. [T]. We will speak therefore of all these in order, so that we first deliver the History of the Ascendent Trunk, then of its branches, that grow up partly to the Head, partly to the Arms, after that we will come to the Descendent Trunk, and its branches, that are digested into the Legs.

The Ascendent Trunk.

As therefore we have said, that many little Veins like roots grew out of the Hollow side of the Liver, which alwayes by degrees inserted into the greater veins, and all of them at length meeting together about the middle of it did make a Trunk; so in the same manner out of a circuit of the Convex side of the Liver a numerous propagation of veins issues forth, which afterwards meet together in one Trunk. This Trunk makes its way through the nervous part of its midriff on its right side, and passing through it goes undivided to the *Jugulum*, or Hollow of the Neck, and because it climbs upwards, it is commonly called the Ascendent Trunk by them, who conceive that the Hollow-vein rises out of the Liver. It is much greater then the Descendent, because the upper parts are nourished by it alone; but almost all the inferior parts, that are contained in the lowest Belly, by the Gate-vein. But although it be not parted into any branches, untill it come to the *Jugulum*;

Propagations of the Ascendent Trunk. *Phrenica*.

yet before that it spreads some propagations at its sides, and of those, three notable ones. The first [e e] is that which is called *Phrenica*, or the vein of the Midriff, on either side one, and is distributed throughout the whole Midriff, which is called *φρένες*, with a numerous issue, sending little branches to the neighbouring *Pericardium*, or purse of the Heart, and the *mediastinum*, or partition of the Chest; which when it has now got above, and entered the Chest, it inclines a little to the left hand, and enters the *pericardium*, and being hidden very close over against the eight rack-bone of the Chest, is very strongly infixed into the Right ventricle [C] of the heart; that *Aristotle* did not without cause guess, that it sprung from hence. But before it be so infixed, it sends out another propagation [b b] which is a notable one, and extends itself by the hinder part of the Heart, and the left side of it, towards the forepart, compassing the *basis* of the Heart like a

Coronaria.

Crown, from whence it is called *Coronaria*, or the Crown-vein of the Heart. This scatters many branches through all the outer surface of the Heart, but especially through the left side, as that which needed a more copious aliment then the right side, because of the continuall, and greater motion there. But because the flesh of the Heart is hard, and solid, it ought therefore to be nourisht with a thicker blood, from whence it is, that this branch grows out of the vein, before it enters the Heart, to wit, when the blood is somewhat thicker, and not yet attenuated in the cavities of the Heart. Near to the originall of this there is a little valve, or floud-gate, which hinders the blood from flowing back to the Hollow-vein, as it might easily do by reason of the continuall motion of the Heart. When the Hollow-vein has now gotten above the Heart, it becomes lesser, and perforates again the *Pericardium*, and forsakes the Rack-bones of the Back, and being got above the Gullet, the rough Artery, and the *aorta*, or Great Artery, (which lean so upon one another, that the Gullet takes hold of the bodies of the Rack-bones, the rough Artery lies upon that, and the *aorta* again upon this) it climbs upwards through the midst of the division of the Lungs, where the right part is separated from the left. But because by this means it could not get to the Back, and the little branches, if it should have sent forth any such, had been very liable to danger of breaking, being so hanged up; therefore it sends forth

Αζυγος.

a third propagation [c c] as soon as it is got out of the *Pericardium* or purse of the Heart. The Greeks call this vein *αζυγος*, the Latins *sine pari*, or *carens conjuge*, without a companion, or wanting a mate, because in a man there is but one, and it has no companion, or mate on the left side, as other veins have; though in creatures that chew the cud, it is double, and plainly to be perceived of both sides. But it issues forth about the fifth Rack-bone of the Chest out of the hinder part of the Hollow-vein, and the right side, and goes downwards, not directly, but inclining a little toward the right hand is as it were reflected backwards to the Back-bone: but as soon as it reaches the eighth, or ninth rib, it is cleft above the Spine of the Back into two branches, which running downwards passe through the division of the Midriff, which is betwixt its two productions, and so are spread abroad into the lowest Belly: Of these the left, which is sometimes the greater, hiding itself about the transverse Processes of the Rack-bones, and under the left production of the midriff and the originall of the first bending muscle of the thigh, is inserted into the left Emulgent, either near to its beginning, or (as it oft happens) into the middle of it. But the right, running on likewise under the mem-

branes

branes about the transverse processes of the right side, and the right production of the *Septum* or Midriff, and the beginning of the same first bender of the thigh, which keeps the right side, is implanted sometimes into the very Trunk of the Hollow-vein, sometimes into the first vein of the Loins: And we are indebted for this observation to the learned *Fallopian*, who would have the matter that is gathered together in the Chest, whether it be watery, or purulent and corrupt, or sanguinous, to be evacuated by the benefit of the left branch of this vein; of which notwithstanding we will say something briefly in the following Book. But this vein in its journey downwards shoots forth twigs of both sides, as well right, as left, of which the right are more notable, and larger, of which there are numbered almost alwayes ten; which run out to as many distances of the lower ribs, and make the inferiour Intercoastall veins. But I say they are almost alwayes ten, because it happens very seldom, that all the distances of the ribs receive branches from this vein, the two uppermost, to wit, the first and second distance getting their furcles or twigs from the fourth branch, that is presently to be mentioned. But these twigs run straight forwards near to the lower side of the ribs, where there are cavities cut out for them, as we have taught in the second Book. And truly this place is diligently to be taken notice of by Students in Chirurgery, because of the opening of the Chest in the disease called *Empyema*, that they may know that incision is to be made in the uppermost place of the rib, because in the lower the vessels would be harmed to the great endangering of life. But these veins do not run through the whole length of the true ribs, but are terminated together with the bony part. But the propagations of the Mammary vein nourish the six distances between the gristles of the seven true ribs, as we shall tell you by and by. Yet in the Bastard ribs they run even beyond the Gristles towards the *Abdomen* or Paunch, into whose Muscles they insinuate themselves. But there are certain other little branches propagated from the same vein, by which nourishment is derived to the marrow of the Rack-bones, and the Muscles, to wit, those about which they are carried: some also are implanted into the *Mediastinum* near to the back. This vein *sine pari* without a companion, being thus constituted, the Hollow-vein ascends to the *Jugulum*, or Hollow of the Neck [D] being supported by the *Mediastinum*, and a certain soft and glandulous body, which the Greeks call *θυμὸς*, and is placed in the highest part of the Chest, to defend the divarications of the veins there hanging up from all danger of breaking.

And here the Hollow-vein is first divided into two notable branches [E E] from which all those veins arise, that run as well to the Head, as to the Arms, or to certain Muscles of the *Abdomen*. Of these one goes to the right side, and the other to the left, which as long as they yet are in the Chest, are called *Subclavii*, subclavian branches, because they go under the *claviculae*, or Coller-bones; but as soon as they have gotten out of the Chest, and attain to the Arm-hole, they are named *Axillares*, the Axillary-veins [F]. From both of them very many propagations issue forth, some of which arise from their upper part, and some from their lower. In our recitall of them we will observe this order, that they which are nearest to the Trunk, shall be first mentioned by us; and they last, which are farthest from it.

The first propagation then issues out near the very root of the divarication or division of the Trunk, and is called *Intercoastalis superior*, the upper Intercoastall vein; [e] there is of either side one, which being very little, and descending along by the roots of the ribs, as far as to the third rib, sends two twigs [f f] overthwart, like the *vena sine pari*, to the two distances of the upper ribs. But if the *vena sine pari* sends its propagations to all the distances (as it sometimes happens) then it is wanting not without cause. Sometimes the same vein arises from the Trunk of the Hollow-vein, before its division into the subclavian branches.

Another vein [g] sometimes arises from the fore-part of the bifurcation; sometimes from the root of the Subclavian branch, and is double, of either side one: sometimes also only one grows out of the middle of the Trunk, before it be divided, which at length, when it has attained unto the Breast-bone, is parted into a right, and a left branch. For Nature is wont to sport, as sometimes in its other works, so especially in the rise of veins, so that they are not spread in all bodies after the same manner. But this is called *Mammaria*, the Mammary vein, which, when soever it arises, going toward the fore-part, strives to get up to the higher part of the Breast-bone, and descends by the sides of it, and when it is come to the Breast-blade, about its sides goes out of the Chest, and runs on directly under the right Muscles of the *Abdomen*, even to the Navill, near to which it is joynd by an Anastomosis, or inoculation [10] with an Epigastrick-vein [9] that ascends and meets it; by the benefit whereof arises that notable sympathy betwixt the womb, and Breasts of women, of which we shall speak more hereafter in the eight Chapter, when we shall insist on that History of the Epigastrick-vein. But before it leave the Chest, in its descent, it distributes one branch a piece to the six distances betwixt the Gristles of the seven upper true ribs, of either side, which are terminated with the Gristles near to the end of the bony part of the ribs, in which place we told you that the branches of the vein *sine pari*, (with the extremities of which these are joynd) were ended. From these

The division of the Hollow-vein into the two Subclavian branches.

Propagations from the lower part of the Subclavian-branches. *Intercoastalis superior*.

Mammary.

veins, which are distributed in this manner to the distances of the Gristles, some others very worthy of our notice do arise, which are disseminated both into the Muscles, that lye upon the Breast, and into the Paps. Near to these a third [h] arises, and sometimes also grows out of the Trunk, which is called *Mediastina*, because it spreads itself into the *Mediastinum*, or membrane that closes up the cavity of the Chest, being extended all along by it, with the left Nerve of the Midriffe. The fourth [i] commonly called *Cervicalis*, or the Neck-vein, is a large vein of both sides which running obliquely, upward, and backward, to the Transverse processes of the Rack-bones of the Neck, and climbing up through their holes, (from whence perhaps it might be better named *Vertebralis*) affords sprigs to the Muscles, that lye next upon the Rack-bones. When this vein has got above the Transverse Process of the seventh Rack-bone, it derives a notable branch of the *Sinus* or *Canale*; in the Neck, through the hole that is made for the outlet of the Nerves; and then another, when it comes above the Process of the sixth Spondyll, or Rack-bone, and again another, when it has left the fifth Spondyll, untill at last it comes to the Process of the first Rack-bone, which notwithstanding it does not touch, much lesse does it passe into the Skull, (as *Vesalium* would have it) near which it goes partly to the same *sinus* or canale, partly it is distributed into the hinder parts of the Neck. For there are two long *sinus* filled with blood, which are made out of the hard membrane of the Brain, one of each side, being placed at the sides of the marrow of the Neck. From these little branches are distributed, which nourish the marrow of the Back-bone, and the neighbouring parts; they begin about the Juncture of the Head with the first Rack-bone, and end near to the seventh Rack-bone of the Neck. These two *sinus*, of which one is of the Right, the other on the Left side, have some communion betwixt themselves by a little pipe, and that a short one, which is derived overthwart from the one to the other, for the most part about that region of the Neck, which is betwixt the second, and third Rack-bones. At last there is a fifth vein [l] which arises from the hinder part, called *Muscula inferior*, or the lower Muscle-vein, which is distributed in many branches to the Muscles in the lower part of the Neck, (and so extending the Head and Neck, from whence the vein might be rightly called *Cervicalis*, or the Neck-vein) and also to those in the higher part of the Chest near to the Rack-bones.

Propagations
that arise from
the upper part
of the Subcla-
vian branches.
*Jugularis in-
terna.*
Externa.

From the upper part of the Subclavian branches, whilst the Hollow-vein is yet in the Chest, three propagations issue forth, two of which do very well deserve to be noted, which take their way upward, under the Muscles that bend the Head. The former of the two looks more inwards, and is called *Jugularis interna*, the inner Jugular vein: the other inclines to the outer parts, and is commonly called *Jugularis externa*, the outer Jugular vein. For both of them arise near to the *Jugulum*, or Hollow of the Neck, and ascend by that to the Head. The inner is greater, and the outer lesse in a man; but in Brutes 'tis contrary. But when almost all Appellations are derived, and that best, not from the place, through which the veins passe, but from their insertion; perhaps they might be rightlier named *Cephalice* or *Capitales*, Head-veins. The inner Jugular vein [m] takes its originall near to the joint, by which the Clavicles or Patel-bones are tyed to the Clieft; and as soon as it arises, is joined with the *arteria carotis*, or sleepy Artery, and a Nerve of the sixth pair, as companions in its journey, at the side of the rough Artery, and climbing to the Chops, about the middle of the way is parted into two branches, of which one is called the outer, the other the inner branch. The outer is so called, because it comes not into the inner parts of the Head, but being divided into two, at the corner of the lower Cheek, distributes one branch to the Chops, and the other near to the Ears, and Face. The inner branch, all the way, is joynd to the *Arteria Carotis*, or sleepy Artery, even to the basis of the Skull, whither when it is arrived on the backside, it is likewise cleft into two branches, but of unequall bignesse. For the first [n] is greater and more hinderly, being carried backward obliquely, which having propagated some twigs to the Muscles under the Gullet, and in the forepart of the Rack-bones of the Neck, through the second hole of the *occipitium* or Nowl-bone enters the Skull with the lesser branch of the *Arteria Carotis*, through which said hole the sixth pair of the Nerves descends: and thus this branch enters the first [1] and second [2] *sinus* of the thick membrane. The second branch [p] being smaller, and more to the forepart, quite forsaking the *Arteria Carotis*, or sleepy Artery, goes to the forepart of the Head, and after that by the way it has bestowed a Circle not very notable upon the Organ of hearing, it enters the Skull through the seventh hole of the Wedg-bone, or *Os cuneiforme*. This is dispersed through the *basis*; and sides of the thick membrane, with a numerous issue of branches, the prints whereof are observed in the inner surface of the bones of the forepart of the Head, as we have said above in the second Book. Wee will call these two branches, because they go to the brain, *Encephalici*, as if you should say *Cerebrales*, of the Brain, and that shall be the greater *Encephalicus*, this the lesser. The externall Jugular vein [q] ascending under the skin, and the *musculus quadratus*, or Square-Muscle, that draws down the Cheeks, by the sides of the Neck, when it comes to the Ear, is cleft into two branches [r] one of which I call *Profundus*, the deep one, because it enters the Muscles, and retires into

*Jugularis
Externa.*

Profundus.

into the more inward parts, the other *Cutanes* the Skin-branch. The deep or inner one [s] in its first divarications meets with Glandules about the Chops, and sends forth propagations worthy of our notice to the *Larinæ* or Throttle, and the Glandules, that grow to it; as also to the Muscles of the Chops, and of the bone called *hyodes*, among which that which creeps all along under the tongue, is a notable one, and is scattered into many little branches, which are seen, if the Tongue be lift up, even before dissection. From this deep branch three others arise, which enter into the inner parts of the Head, and the Skull. The first, after it has spread little branches into the Chops, and Mouth, enters the Skull, through the first hole of the Temple-bone. The next [e] passes out of the fore part of the eye through the second hole of the Wedg-bone, at which the second pair of Nerves gets out, and runs with some circles through the thicker Membrane upwards. The third is scattered out of the breadth of the Nostrils through the hole of the *Os cribrosum*, or five-bone into the same Membrane. These two nourish this forepart, to which the third *sinus* reaches not, but ends near to the partition of the Mamillary Proccesses. But the outer or Skin branch [u] creeping by the skin of the Head, and stayed up with the Glandules under the Ear, which they call *Parotides*, is divided into two branches; of which the Anterior [x] is carried upward obliquely through the Cheeks to the inner corner of the Eye, distributing little branches by the way to the Nose; and going on to the Eye-brow, is joyned with the remainder of the branch of the other side, and makes the Strait-vein, which they call *vena frontis*, the Fore-head vein, [y] and which in madnesse is opened to very great advantage. To this the *Satyrus* alludes, when speaking of a certain foolish fellow, hee sayes, --- *Mediam pertundite venam*.

Three branches entering the skull:

Cutentis:

The other or Posterior branch is carried behind, and sends branches to the Temples [z] and skin of the Back-part [a] of the Head. A third vein, which arises out of the upper part of the Subclavian branches, is commonly called *Muscula superior*, the upper Muscle-vein, in relation to another of the same name arising out of the lower part. It issues out near to the externall Jugular vein, and is dispersed into the Muscles, and skin of the back-side of the Neck, in regard whereof we shal not do amisse to call it *Cervicalis superior* or the higher Neck-vein [β]. But now let us return to the distribution of the Subclavian-vein, from which we have digrest. This vein, as soon as it gets out of the cavity of the Chest, is called *Axillaris* [F], and when it comes to the Arm-pit, is divided into two notable branches, called *Cephalica* or Head-vein [G] and *Basilica* [I], which are afterward disseminated throughout the whole Arm. But before the Axillary-vein be thus divided, it sends forth two twigs: the first [γ] is called *Scapularis interna* the inner Blade-vein, and is distributed through the Muscles on the inside of the Shoulder-blade: the other [δ] is named *Scapularis externa*, or the outer blade-vein, it is a pretty big one, and is implanted into the Muscles of the outer, and gibbous part of the same Shoulder-blade. But the vein *Basilica* also, before it enters the Arm, shoots out two propagations; one called *Thoracica superior*, or the upper Chest-vein [ε] because it arises out of a higher part then the following, it is a very notable one, and runs through the inside of the pectorall Muscle that brings the Arm forward to the Brest; it distributes branches also to the other Muscles of the Brest, as also to the Skin of the Dugs in women. The other is called *Thoracica inferior*, the lower Chest-vein [ζ], a great and notable one likewise, which descending along the side of the Chest is distributed especially through the third broad Muscle or *Latissimus* that moves the Arm backward, scattering many little branches from itself, which afterwards are joyned by *Anastomosis* or inoculation, with the branches of the vein *sine pari*, that fall out of the Chest. And this vein sometimes grows out of the former, or the upper Chest-vein. These branches being thus distributed, the Axillary-vein reaches into the Arm.

Muscula superior.

The division of the Axillary vein into two branches.

Its propagations before its division.

Scapularis interna
Externa
Thoracica superior.

Thoracica inferior.

CHAP. III.

Shews how the Axillary-vein is distributed through the Arm.

THe Axillary-vein [F] therefore is cleft into two branches, as soon as it comes near to the Arm, but those branches are of different bignesse. For the upper [G] which they call *Cephalicus*, the Head-branch, is smaller; but the lower vein [I] called *Basilica*, is almost thrice greater. The Cephalick also is as it were wholly just under the skin, & sinks not with above one branch into the deeper retreats of the Muscles; wherefore it has neither Artery, nor Nerves for its companions, they being addicted to the more inward rooms of the body. But the Basilick-vein partly creeps on under the skin, partly hides itself under the Muscles, and therefore it ought with good reason to exceed the other in bignesse, as being destined for the nourishment of more parts. It hath both Nerves, and Arteries as companions in its journey, which is the cause, why upon the cutting of this vein the blood spins out with a force; but of the

The division of the Axillary vein.

contrary, the Cephalick being cut, it comes forth softly: which we see some Physitians unskilfull in dissections, standing by whilest the vein is opened, foolishly refer to the strength, or weaknesse of the mind, or body. We are now to speak briefly of the manner of the distribution of both these veins through the Arm, beginning from the upper, as the lesser branch.

The Cephalick vein.

The *Cephalica* [G] therefore is called by *Vesalius* *Humeraria*, or the vein of the Arm, because by the Arm it descends into the Hand; by others *Cubiti exterior*, the outer vein of the cubit, from its situation, because it runs on the outside of the Cubit, as the *Basilica* contrariwise does on the inside. By some later writers it is commonly called *Cephalica*, the Head-vein, because it is wont to be opened in diseases of the Head, through the error of the Ancients, who thought ignorantly, that it arises from the external Jugular vein, and therefore empties the blood immediately out of the Head. But it arises from the upper part of the Axillary vein, & climbing over the Tendon of the *Serratus minor*, or lesser Saw-Muscle, that bends the Shoulder-blade forward to the Breast, it runs betwixt the Muscle called *Deltoides*, which lifts up the Arm, and the beginning of the Pectorall Muscle, which brings it forward to the Breast, where it arises from the Clavicle or Coller-bone, and so it runs down by the Arm to the outside of the first Muscle that bends the Cubit, which they call *Biceps*, or the double-headed Muscle; by reason whereof the more learned Chirurgeons have wisely used to make issues betwixt the Muscles *Biceps*, and *Deltoides*; for issues ought always to be made at the seat of some notable vein, that the matter may more easily be voided out. But although this vein be not divided into branches, whilest it is thus carried down by the upward part of the Arm, yet it scatters some twigs [u and e] of both sides into the aforesaid Muscles, and the skin. At length when it is come to the Cubit, it runs under the fleshy Membrane, as a vein under the skin should, and so presents itself to the sight without dissection. But about the very joint of the Cubit at the external protuberation of the Arm, it is wont to be divided [H] for the most part into three branches, an outer, an inner, and a middle one. The two former run under the skin, the third deeper. The first or middle one, [i] which is often wanting, is very little, and deeper, and penetrates into the substance of the Muscles, especially of those two, that bend the second, and third joint of the fingers, as also of the long *supinator* of the *Radius*, or wand of the Arm. The second [x] and inner, and chief of the three branches is carried down obliquely under the skin, and joins with the inner branch of the *Basilica*, three fingers below the joint of the Cubit, with which it makes up the vein, that Physitians call *Mediana*, the middle vein [λ]. This running down obliquely by the middle Region of the Cubit, distributes many Circles to the *Radius* or wand, and at length itself is divided into two lesser branches; of which the outer [ρ] goes to the inside of the wrist, toward the thumb; the other and inner [σ] runs to the fore, and middle fingers. The outer of these is called by some *Cephalica manus*, and is opened to very good purpose in diseases of the Head, or Teeth. Now the third branch [η] or outer Cephalick-vein climbs up to the Muscle called the long *supinator* of the *Radius*, or wand, dispersing divers little veins into the skin, and so is carried obliquely [ν] through the *Radius*, or wand, and having attained to the middle of its length enters the outside of the Cubit, and in that same place is joyned with a little branch [τ] of the Basilick-vein; being united thereto it goes on to the outside of the wrist; and distributes veins to that part of the Hand, which lies before the little, and Ring-fingers, as also to the fingers themselves. This vein, especially that, which respects the little Finger, is commonly called *Sabatella*, and the Section of it is much commended by Practitioners in Physick in melancholy diseases. Which being sometimes called in question, and I having observed, that experience does favour those Practitioners, endeavoured to find out the cause, and found that there are many inoculations here of this vein with the Arteries, as the inoculations are usually more frequent about the extrem parts, as being more removed from the fountain of heat, and therefore wanting a hotter, and more spirited blood. This vein therefore being cut, because the Inoculations are so near, it cannot be, but that the blood of the Arteries should be also let out, which cannot be so well done by opening the veins of the Cubit, because the *Anastomoses* or Inoculations are somewhat more distant from the place, in which the vein is opened. And hence it is, that the blood, which is emptied out of the Hand, is much fairer and redder, than that out of the Arm, because the Arterious blood there always runs out together with that of the veins. But there being six times more Arteries, than there are veins in the Spleen, it is necessary, that its diseases be much helped, when the peccant blood is drawn out of those vessels, wherein it was.

Three branches of the Cephalick-vein.

Sabatella.

The basilick vein.

The other branch of the Axillary-vein, that is the inner, and greater, is the *Basilica* [I] which according to its situation in different arms hath found different names among writers practised in Physick. For in the right arm it is called *Hepatica* or the liver-vein; but in the left *Splenica*, or the spleen-vein. They choose that to be opened in diseases of the liver, this in diseases of the spleen. But it issues forth under the armpit, and dispersing many propagations to the Glandules, that are frequent thereabout, it is carried down by the upper part of the Arm to the side of the double-headed-Muscle, or *Biceps*, between the Muscles that

that bend and stretch out the Cubit, and not far from its egress out of the Chest, is divided [K] into two notable branches, of which one is called *Profundus* or deep, the other *Subcutaneus*, or branch under the skin, from their site, and progressive. The deep one or *Profundus* [L], which for the most part is the thicker, all the way it goes, penetrates into the more inward parts of the Arm; having the Axillary Artery, that runs into the Arm, every where for its companion, as also the fourth branch of the third Nerve of the Arm. But it is carried betwixt the two Muscles, which bend the Cubit, and, having past its joint, is cleft [M] into two branches; of which the outer [N] near to the *radius* or wand, (from whence it might be called *Raditus*) goes down to the Hand, and scatters little branches toward the Thumb and Fore-finger, as also the middle one; but the inner branch [O] passing near to the bone of the Cubit, (from whence it deserves the name of *Cubitew*) distributes small branches to the middle, and little fingers; but as the outer sends its propagations to the Muscles on the outside of the Hand; so the inner to those on the inside. The other is the branch *Subcutaneus*, or under the skin [P] which is carried down by the inside of the Arm, scattering divers little branches to the skin, and parts adjacent, but when it is come to the inner protuberation of the Arm, it is divided [Q] into an outer, and inner branch, like as the Cephalick is. The inner [R] is carried down obliquely, beneath the bought of the Arm, and being united with the inner branch [x] of the Cephalick, makes the vein called *Mediana*, [λ] of which we spake before. But the outer [S] near to the inner protuberation of the Arm being divided into two branches, is carried by the greater along the Region of the *ulna* or ell downward to the wrist, and scatters itself into the little Finger, but by the other it is derived to the inside of the Hand.

The branches of the baslick vein *Profundus*.

Subcutaneus. Its division into an outer and an inner branch.

But in this place it is worth our pains to advertise with other the most learned Anatomists; that it ought not to be believed, that the same order, and course of veins is to be found in all men; when the dissection of bodies does demonstrate, that scarce two in a thousand do accurately observe the same distribution of the veins. Wherefore we ought not to be so scrupulous in choosing out places for the openings of veins, as some that are unexperienced, are wont; but to choose that vein especially, which may be most safely opened, because it is best seen. For sometimes the Cephalick or Head-vein is so small, that it can hardly be discerned; and sometimes on the contrary the Baslick is so. Wherefore he shall do best, who will rather follow wise counsell, then the scrupulous opinion of unskillfull men.

CHAP. IV.

Explains the lower, or descendent Trunk of the Hollow-vein.

E have done with the upper Trunk, and branches of the Hollow-vein, it remains now, that we treat also of the lower. Neverthelesse (as we have above also admonisht) they are not indeed two Trunks, as *Galen* would have them, but one only which reaches in one continued line from its division about the fifth Rack-bone of the Loins [V] as far as to the *Jugulum*, or Hollow of the Neck [D]: but, for methods sake in teaching, we thus divide it by reason of the Liver, which standing as it were in the middle of it, seems to part it into an upper, and a lower Trunk. As therefore that is the upper one [AD] which runs up from the Liver to the Hollow of the Neck; so that is the lower [TV] which beginning at the same Liver is terminated at the *Ossacrum*, or Holy-bone. And as the upper did run on undivided through the Chest, scattering only some propagations at its sides; so the lower also slides down intire through the whole *Abdomen*, or paunch, only some twigs sprouting from it. But when it has attained to the fifth Rack-bone of the Loins, it is cleft into those two notable branches called *Iliaci* [XX] as the upper is into the Subclavian, which Iliacall branches afterward reaching into the Legs make the Crurall-veins; as the subclavian carried into the Arms make the *Brachiales*, or Arm-veins. Let us speak therefore in this Chapter of the Trunk, and its propagations, as long as it yet is in the lower belly. Then let us come to the crurall branches.

The inferior Trunk of the Hollow-vein.

From the descendent Trunk then [TV] before it part into branches, arise four veins. For as soon as it is come forth from the hinder part of the Liver, it declines to the right side of the Back, and sends forth a propagation from its own left side which they call *Adiposa sinistra*, the left fatty vein [v on the left side] because it passes to the fat and outer membrane of the Kidneys, which arises from the *Peritoneum* or Rim of the Belly, as also to the Glandule, that grows above the Kidneys. There is another [v on the right side] answering to this on the right side, but which does very seldom grow out of the Trunk, but rather from the upper side of the middle part of the Emulgent vein; and because it is distributed in the same manner as the left is, it is called *Adiposa dextra*, the right Fatty vein. Yet sometimes you may see the contrary also to happen, and this right vein to

Four propagations arising from the Trunk before its division. *Adiposa*

Emulgentes.

The place in which the stones of the Kidneys are bred.

Why the left Kidney is more subject to the Stone, than the right.

Spermaticea.

come forth of the Trunk, and the left out of the Emulgent. For there are divers sportings of nature to be seen in the veins; and you cannot easily meet with a dead body, in which you may not find something new, and differing from others. After this the Hollow-vein passing on, when it comes beyond the middle of the back, about the first Rack-bone of the Loyns, it brings forth a second pair of veins [o] very notable, which hastens directly to the Kidneys, upon whose substance it is wholly spent. And hence it is called *Renale*, the pair of Kidney-veins from its insertion; but from its use *Emulgens*, because the Kidneys seem by this pair to milk out the wheyie or serous moisture in the blood, and to draw it to themselves. It is therefore very thick, but yet short, and not of equal length, nor rising directly opposite each to his fellow. It is short, because it did not need length, which for the most part is given by nature to vessels for some previous preparation. It is unequal, because it was fitting the left should be longer than the right, by reason that it was necessary to bring the spermaticall vein out of it. But the beginning of both answers not directly one to another, lest one should be hindered by the action of the other. And the left is higher than the right, because the left Kidney is also seated higher, than the right. But the Emulgent branches, as soon as they arise out of the Trunk, do not presently go to the cavity of the Kidneys, but are first divided into two greater branches, and so, accompanied with Arteries, enter the concave side of the Kidneys, and afterward being broken into lesser branches are scattered quite through the whole substance of the Kidneys, and at last determine with their small hairy ends in certain fleshy processes, which they call *Mammillares*. These veins do serve not only for the bringing of nourishment to the Kidneys, but also for the carrying down of the serous moisture to those fleshy Processes called *Mammillares*, through which it is strained into the pipes of the Ureters, and then gathered together into that cavity of theirs called the *Pelvis*, and so drops down by little and little into the bladder, as we shall shew, when we open the History of the Kidneys. And here the place is to be noted, in which the stones of the Kidneys are wont to be generated, which is not in the Emulgent vessels, I mean veins, or Artery; but rather in the very cavity of the Kidneys, or in the *Pelvis*, and pipes of the Ureters. For in these if a viscous matter be at any time received, either it is hardened there by reason of a notable heat, or else through cold is congealed into gravell or stone. For this matter is not only a crude, and uncocted kind of blood, which like snivell sometimes is wont to abound in the mass of blood, but oftentimes also that excrementitious phlegm which falls down from the Head, through the veins and Arteries, both into the Hollow-vein, and the great Artery, and sometimes into the Stomach, and Guts. Of which this seems to be a manifest sign, that they who are subject to diseases of the Stone, are very often troubled with rheumes, and pains of the Colique; of which whilst some persuade themselves that it is caused by wind, daily experience hath taught me, that it comes from phlegm; because I have observed, that they, who are troubled with the Stone in the Kidneys, had their *Colon* or Colique-gut alwayes stuf with plenty of this phlegm, and that this being taken away, the Stone has been no longer bred. And therefore oft-times I give scouring Clysters, and such as gently purge phlegm, not only to such as have the Stone already, but also to such as are threatned with the breeding of it, with a great deal of benefit to the Patients. But all those things are perpetually to be avoided, which drive out the Stones, as well because most of that nature are hot, as also because they are able to drive down the crude matter plentifully to the Kidneys. We thought fit therefore to insist upon this, that we may accommodate the study of Anatomy to the very practise of Physick; especially seeing that the place, wherein the Stone is bred, is not commonly known, because the most famed *Fernelius*, whom the greatest number of Physicians does for the most part follow, *Lib. 6. Patholog. c. 12.* thinks that small gravell is bred in the proper substance of the Kidneys, and washed from thence by the flowing of the Urine, and carryed into the cavity, and so the Urine full of gravell slides down through the Ureters into the Bladder. But if any one enquire also the cause, why the left Kidney is more subject to the Stone, than the right; we must conclude, that this happens, because the Colique-gut lies more upon the left Kidney, in whose cells this phlegm, of which we spake, abounding, either it sweats through the pores, and is suckt into the Kidneys, or else by reason of its nearness, the Kidneys are exceedingly cooled; experience having often taught us, that this kind of phlegmatick matter is indeed actually exceeding cold in the body, as they have sufficiently perceived, who have voided it in great plenty by Stool. After this there follows a third pair [x and ↓] called *spermaticea*, or *seminales*, the spermaticall, or seeds veins, because they carry down matter for making of the seed. These differ in their originall. For the left [↓] arises from the inside, and middle part of the Emulgent, and communicating some furcles to that part of the *Peritoneum*, or rim of the belly, which covers the Muscles, that lie in the Loyns, it goes fast by the said *Peritoneum*, and descends obliquely; but, when it has attained to the *Os pubis*, or the Share-bone, riding over it, it passes through the *Peritoneum*, and holes of the oblique and transverse Muscles of the *Abdomen*, with whose processes being sustained it is concocted into certain varicous

varicous circlings, which are joined with the spermatick Artery by *Anastomoses* or Inoculations, and at length it ends in the Testicle of its own side. But the right spermatick vein [X] arises not out of the Emulgent, but the Trunk itself, and the forepart of it, a little beneath the Emulgent-vein, and afterwards observes a like course with the former. And thus they are in males, though we may observe nature oftentimes varying in them: but in women, although they arise in the same manner, and observe the same course with those in men, as far as the Holy-bone; yet they fall not out of the *Peritonæum*, nor reach unto the share-bones, but before they come to the Testicles, are cleft into two unequal branches; the lesser of which is scattered into the sides of the Womb, toward the bottom of it; the greater being joined to the spermatick Artery, and inoculated with it, enters into the Testicle of its own side. Last of all the fourth pair is called [X] *Lumbares*, the Loin-veins [4 4 4] two, or three, which the Hollow-vein sends forth from its backside, which looks towards the bodies of the Rack-bones of the Loins; and therefore they are not to be seen, unless the Trunk of the Hollow-vein be lifted up. These veins go in through the holes of the Rack-bones, through which the Nerves go out, and so carry nourishment to the Spinal marrow. From them two other veins, tyed on both sides to the side of the Marrow, ascend toward the brain, with which afterward two veins descending from the internal Jugular, are joined by an *Anastomosis* or Inoculation.

These propagations being thus sent out, when the Hollow-vein has almost attained to the *Sacrum*, or Holy-bone, about the fifth Rack-bone of the Loins, it inclines under the great Artery, and is cut into two notable branches called *Iliaci* [XX] which having gone a little way are again cleft into two others [Y and Z] of unequal bignesse, of which one is called the inner, the other the outer. The inner is lesse, the outer larger and greater. But before they be so divided, they scatter two other propagations, the first of which [5] is commonly called *Muscula superior*, the upper Muscle-vein, which is disseminated overthwart, through the Muscles of the Loins, and *Abdomen*, or paunch, from whence I would call it *Muscula lumbalis*, the Muscle-vein of the Loins: the other [6] is named *Sacra*, or the Holy-vein, because it reaches some little twigs to the upper holes of the Holy-bone, for the nourishing of the said bone and the Spinal-Marrow.

But from both the Iliacall branches many veins issue, before they go out of the *Peritoneum* or Rim of the Belly toward the Legs; and from the inner branch two. The first [7] arises from the outside called *Muscula media*, the middle Muscle-vein; because it is scattered into all the Muscles of the Buttocks, and into their skin: For it carries aliment to all those Muscles, which are of the outside, or Back of the bone *Ilium* or Hanch-bone, as also to the very joint of the Hip, that for this cause it ought to be especially taken notice of by them, who would somewhat curiously consider the cause of the ach in the Hip, or the *Sciatica*. I should think that this vein may not be amiss called *Glutea* from its insertion, because it is implanted into the Muscles called *Glutei*, or Muscles of the Buttocks. The other [8] grows out of the inside, and is a notable vein, called *Hypogastrica*, or the vein of the water-course, from its distribution into almost all the parts of the *Hypogastrium*, or water-course. From this issues a branch named *Hæmorrhoidalis externa*, the outer Emroid-vein, because if at any time it swells with a more faculent blood, or hot, or salt, it makes the outward Emroids of the Fundament. This affords twigs to the holes of the *Os sacrum*, or Holy-bone, but bestows greater branches upon the Muscles of the *Rectum Intestinum*, or the Strait-Gut, as far as to the outer skin of the Fundament. There is also another branch arising from the same Hypogastrick-vein, which we call *Cystica*, the Bladder-branch, and is worthy of observation both in men, and women; in men, because it is spent upon the Bladder; but in women, because in them being sustained with a fat membrane, it goes with some twigs to the Bladder; but with more to the bottom of the Womb; and with more manifest ones to the Neck of it, by which veins alone some think that the monthly courses flow in Virgins, and some also think the same in women. But the monthly courses do not only flow out by these branches, but by those also, which we told you were sent from the spermatick branch, and which go to the bottom of the Womb, not to the Neck. For the menstruous blood is usually purged out, whether in virgins, or women, every month; not only through the Neck, but especially through those passages of the Womb, called *Cotyledones*. Which we have shown here at *Padua*, publicly in the Theater, the first year of our being Professor, in the carcase of a certain woman having her monthly courses. For we saw that the Hypogastrick branches, and the spermatick vessels with the Testicles were filled with blood, and that the Womb itself did pour out a thicker blood, the little mouths of the veins in the inner part of the Womb lying open, and manifestly gaping. Yet I saw twice in others, that the menstruous blood came out of the veins of the Neck only, not also out of the Womb, and in another on the contrary that it flowed out of the Womb only. But the ordinary way is for women to be purged at them both, and not at one only, except when besides the intent of nature obstructions do seem to hinder their flowing.

Lumbares.

The division of the Trunk into the two Iliacall branches.

Muscula superior.

Sacra.

Propagations of the inner Iliacall branch.

Glutea.

Hypogastrica.

Hæmorrhoidalis externa.

Cystica.

But we have observed, and seen divers times, whilest we were about the cure of Ulcers in the privie Members, and Neck of the Womb, that at what time the monthly courses do flow, the mouth of the Womb gapes. I saw also then, that those parts were dilated with a certain stinking moisture, and that the Neck of the Womb appeared much larger, then it was wont to be at other times. And therefore no man need to wonder at that, which hath been observed by some Writers of our age, that in the time of their courses these parts have been so widened in some, that being new married, although they were true Virgins, they have for this reason been accused, and thought to have been deflowered. Wherefore if it happen, that any, who are new married, doubt of their Wives virginity, because they find the privy passage very wide, it will behove them to consider, whether their flowres were not at that time upon them. Now at length the remainder of the inner Iliacall Trunk makes to the Share bone, and taking to it a propagation of the outer Iliacall, together with which it makes one vein, and so passing through the *Peritoneum*, and hole of the Share-bone, it spreads itself into the Leg, and is extended almost beyond the middle of the Thigh on the inside.

Propagations
of the outer
Iliacall branch.
Epigastrica.

From the outer branch in like manner some veins issue: and first of all, that which is called *Epigastrica*, or vein of the lower Belly [9] which arises from the higher part of the branch, and is so named, because it goes to the Muscles of the *Epigastrium*, to wit, the right Muscles of the *Abdomen*. For passing with its chief branch out of the *Peritoneum* or Rim of the Belly, it climbs straight up of both sides under the right Muscle, till it come near to the Navill, where it is joined by *Anastomosis* with the descending Mammary-veins. But this *Anastomosis* or Inoculation is seldom found in men, but in women it is very conspicuous, from whence also *Galen Lib. de Disssect. ven. & Arter. Cap. 8.* witnesses, that that great sympathy betwixt the Womb and the Breasts or Dugs is caused by these two vessels. But the most learned *Hippocrates* has explained this sympathy in many Aphorisms of the fifth Section. For in the fiftieth Aphorism he says, If you would stop the courses in a woman, apply a very great Cupping-glasse to her Breasts. And in the thirty seventh. If the Breasts of a great bellied woman, do of a sodain become small, the child proves Abortive. And in the thirty eight; If one of the Breasts of a great bellied woman become small, one of the Twins, that she goes with, proves Abortive; and that a Male, if the right Breast be small; a Female, if the left: so the Womb being diseased, the Nipples become pale; and upon a Dropsie in the Womb they swell up. But there is a sympathy also not only by reason of the veins, but also of the Nerves, that come from the sixth Conjugation. Whence we see, that if the Breasts of a Woman, or Virgin be handled, they are provoked to lust; so that for this reason also those women, that have great Breasts may be accounted more lustfull, as *Asra* is in *Martiall*. But it is convenient to note concerning the original of this vein, that very often it arises out of the Cru-rall branch, which we shall by and by describe, but oftner out of the Iliacall. Another vein is the *Pudenda* [11] which arises from the inside of the outer Iliacall branch, after it is come out of the *Peritoneum*, or Rim of the Belly, and it is called *Pudenda*, because it is spent upon the privities of both Sexes. For in men it is distributed into the *Scrotum* or Cod, and into the skin of the Yard; but in women it is propagated to the Lips and skin of the privy passage, to the *Nympha* or wings, and other parts of it; but in both men and women to the Glandules, that lye about the Leskes, whence arises that conflux of matter into these Glandules, in a pestilent or venereous *Bubo*. Lastly, the *Muscula inferior*, or lower Muscle-vein [12] is that, which goes to the joint of the Hip, and is disseminated into the skin, and Muscles thereabout, by reason whereof in my judgment by a stricter Appellation it might be better called *Coxendica*, or *Coxalis*, the Hip-vein.

Pudenda.

Muscula Inferior.

CHAP. V.

Reckons up the propagations, and branches of the outer Iliacall branch disseminated through the crus, or great Foot, that reaches from the lower part of the Buttocks to the ends of the Toes.



The outer branch then of the Iliacall veins [Z] when it hath sent forth the said propagations, falls out of the Rim of the belly, and is carried to the *Inguina* or Leskes, through the upper and inner region of the Hip-bone, through which the first and second bending Muscles of the Thigh do descend, and makes the Cru-rall vein [T]. The History whereof that we may deliver in an easie method, we will divide it into Trunk, and Branches. But before the Trunk be cleft into its branches, it shoots out four propagations; the first of which is that they call *Saphena*, [13] and vein of the inner Ankle, because it runs near thereunto; it is also commonly called by Physicians *venatali*, but improperly, as we have said above in our first Book. But it arises from the inner side of the Trunk, presently after its departure out of the *Peritoneum*, or rim of the Belly, and having no Artery for its companion, runs straight downwards under the skin

The division of
the Cru-rall vein
into a Trunk
and branches.
Four propaga-
tions of the
Trunk before
its division.
Saphena.

skin, through the insides of the Thigh, & Leg; and when it is now come to the inner Ankle, it spreads itself into the upper part of the Foot, and scatters a branch overthwart, from which afterward many others arise, that are distributed in their order to every one of the Toes. This vein scatters other propagations by the way, but which are seldom found answerable one to another, either in number, or bignesse; as we have already more then once intimated, that nature is found to sport in the veins, but especially in those of the joints: The first [17] of these propagations, not far from the originall of the vein itself, is delt into the upper skin of the inner Region of the Thigh, in two branches; of which the outer, which is the thicker, creeps through the fore, and outside of the Thigh, under the skin; but the inner goes more inwardly, and spreads itself into the rim of the Belly. The second [18] is propagated, when the vein has now attained to the middle of the Thigh. The third propagation [19] arises about the Knece, and brings forth two off-springs, one, which is disseminated into the skin of the forepart of the Knee, by the *Patella* or Whirlbone, but the other into the skin of the Backside, where the bending, or Ham is, about which it is rowled orbicularly. The fourth [20] is carried to the middle of the *Tibia* or Leg, with furcles forward, and backward. Over against the *Saphena*, another vein [14] is brought forth from the outside of the Trunk, but shorter then the vein *Saphena* is, and reaches outward, and overthwart into the skin, that covers the forepart of the Hip-bone, as also into the Muscles of the same place, which the later Anatomists call *Ishia*. These propagations being brought forth, the Trunk afterwards is drencht into the Muscles, that compass the bone of the Thigh, and sets out a third propagation [15] which they call *Muscula* the Muscle-vein; and there use to be two of them. For the outer, which is the lesse, sends shoots to the second, and fourth, extending Muscles of the *Tibia* or Leg, together with the skin; the inner, and greater, affords twigs to the third extender of the Leg, and to almost all the Muscles about the Thigh. After this the Trunk turning to the Backside, and descending by degrees, scatters some other twigs into the membranes of the Muscles, and by and by sends out a fourth vein, which runs into the backside of the Thigh, and is called *Poplitea*, the Ham-vein [16] much spoken of by writers of Physick, but especially by *Hippocrates* the chief of them, who 6. *Epidem.* 1. 5. commends much the opening of it in diseases in the Kidneys. But it is oftentimes seated too deep to be cut without very great difficulty. I have learnt by frequent experience, that issues made in the *Sura* or calf of the Leg, to which this vein spreads itself, have done a great deal of good in many diseases. This vein, when it is propagated, sometimes receives the addition of a Sprig from the inner branch of the Muscle-vein; oftentimes also two propagations issue from the Trunk, one higher, and another lower, which afterward are united in their journey. But presently after its rise it scatters some branches into the skin of the Thigh, about the higher and hinder part of it; then it runs down directly through the middle of the Ham, or bending of the Leg, into the Calf, to which it distributes many Surcles, that run on with an uncertain course, some directly, some overthwart, and some obliquely. These little branches being thus disseminated, the vein passes on as far as to the *Talus*, or Cockall-bone, and there at length determines.

Four propagations of the vein *Saphena*.

Ishia.

Muscula.

Poplitea.

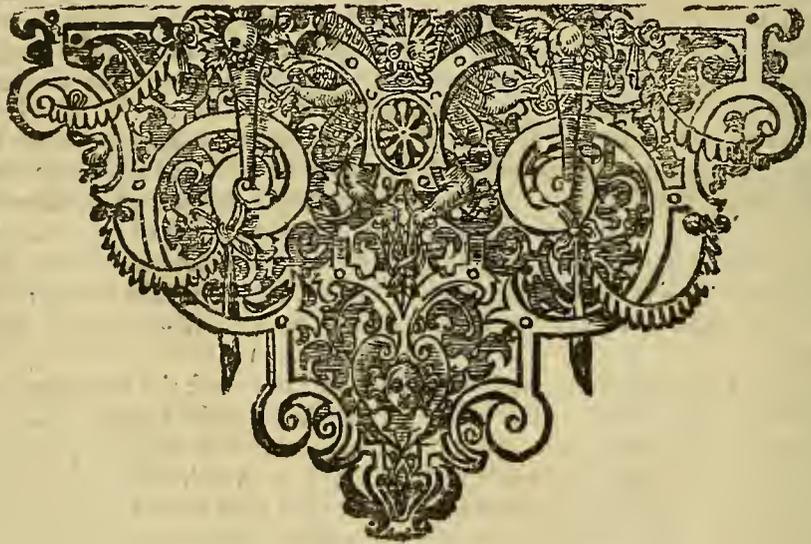
And this is the progresse of the Crural-Trunk, and these the propagations which it scatters, before it be divided. For lying upon the bone of the Thigh, it so descends, and runs side-long near to it, that, when it has attained to the Knee, it is carried betwixt the two lowest, and hindmost heads of the Thigh, in which place [Δ] it is cleft asunder into two branches, an outer, and an inner one. But they are of unequal bignesse, the outer being the smaller, and the inner the greater, but both of them [⊙ Δ] are scattered through the Leg, and lowest part of the Foot. The inner [⊙] in its descent sends some propagations to the Muscles, that are placed on the backside of the Leg, and especially those which make the Calf, but most of all to the inner part [21] of the *Gasteronemius externus*, or outward Calf-Muscle, and so afterward continuing its course downward, when it is come to the lower *Appendix* of the *Tibia* or Leg, and has bestowed some shoots upon the skin, it is reflected under the inner Ankle [22] and runs out as far as to the great Toe. The outer [Δ] is presently cleft into two lesser branches, that are likewise unequal, of which the inner [Ξ] that is the greater, and lies deep, is wholly spent upon the Muscles of the Calf, running all along directly betwixt the two heads of the *Gasteronemius externus*, or first moving Muscle of the Foot, as also betwixt the *Gasteronemius internus*, or inward Calf-Muscle, and the *Tibieus anticus* or forward Leg-Muscle, and at last betwixt the Muscles, that bend the Toes, distributing some furcles every where by the way to the Muscles, through which it passes. When it comes to the mid length of the Leg, it is again subdivided into an inner, and an outer branch. The inner of these distributes a twig near to the joint of the *Tibia* or greater Leg-bone, and the bone called the Cockall, descends with the Tendons of the Muscles, and is divided into the great, the fore, and the middle Toes. The outer passes on near to the *Fibula*, or lesser bone of the Leg, and when it comes to the Ligament, which ties together the greater and lesser bones of the Leg, it shoots forth a branch, which perforating the Ligament runs into the Foot, and is scattered into the Muscles; which bend the Toes of the Foot outward.

The division of the Trunk into two branches.

But

But the outer and lesse branch [II] of the Crurall-vein goes from that division of the outer branch, which is made near the Ham, to the upper *Appendix* of the *Fibula*, as alio to the outer, and hinder part of the *Tibia*, where scattering many little branches, it goes to the outer Ankle, and at last ends in the Foot.

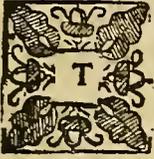
And this is the univerfall History of the Hollow and Gate-veins, wherein we have perfected the whole course of their distributions. It seems yet to remain, that we speak of the Umbilicall, and Arterious veins. But because the Umbilicall vein is nothing else but a more notable propagation issuing out of the Gate-vein; and in a man grown performs the office of a Ligament, rather than a vein; because it keeps the *Liver* in its place; as the stories of them do witness, who upon the cutting off, or wounding of the *Navill*, have sodainly dyed, their respiration being hindred by the weight of the *Liver* falling out of its place, and putting down the *Diaphragma* or *Midriffe* with it; we thought it not worth our pains to make any more mention of it in this place. But if any one will obstinately contend that it is a peculiar vein with arguments fetcht out of his own *Brain*, we know no better counsell, that we can give him, then to consult better with his own sense, or if he will contend further, to purge his Head with *Hellebore*, that that dimness of his *Eye-sight* may be a little taken away. But we shall with more convenience make mention of the *Vena Arteriosa*, or *Arteriall-vein*, in the following Book, when we shall explain the History of the *Arteria venosa*, or *venall Artery*, because they are very like one another, and therefore the same pains may serve them both.



An Explanation of the Table of the Veins.

This Table delineates the Hollow-vein, entire, and free from all parts. Wherein we have marked the Trunks, and larger branches, with pretty great letters: but the propagations with little ones; and when they are at an end, with figures.

A D.



The Ascendent Trunk of the Hollow vein, the beginning whereof is about **A**, which notes the place, wherein the Liver should stand in the proportion of this figure, the end about **D**. For it passes on undivided from the convex part of the Liver, about which it scatters little branches, **a a a**, as far as to the Hollow of the Neck; but it scatters some propagations, three in number. The first of these, **æ æ**, is called vena Phrenica the vein of the Midriffe, which is distributed of both sides into the midriffe and Pericardium, or purse of the Heart growing thereto, as also into the Mediastinum or partition of the Chest.

a a a.

æ æ.

b b.

c c.

d d d.

B.

C.

D.

E E.

e.

f f.

g.

h.

i.

l.

m.

Another is Vena Coronaria the Crown-vein, **bb**, which embraces the basis of the heart in manner of a Crown, dispersing many Surcles to the point of it. The third is the vein Azygos, or without a mate, **cc**, which issuing out from the right side of the Hollow-vein, about the heart, about the fifth Rack-bone of the Chest, goes down near to the right side of the Rack-bones, as far as to the second almost of the loines. There are ten propagations **ddd** from this, sent to as many bony distances of the ribs, which are called Intercostales inferiores, the lower veins betwixt the ribs.

Shows how the Trunk **A D** is bowed toward the right side, because of the situation of the heart.

The orifice of the Hollow-vein reaching into the right ventricle of the heart.

The division of the Ascendent Trunk about the Hollow of the Neck, into two branches **E E**, which they call subclaviae, or the veins under the Collar-bones. From these arise many propagations, some issuing from the lower, others from the upper part of them.

Out of the lower part issue five. The first is called Intercostalis superior the upper vein between the ribs, **e**, and scatters two Surcles **f f**, to the distances of the three upper ribs: The second is mammaria the vein of the dugs, **g**, which, descending under the breast-bone, as far as to the strait Muscles of the Abdomen, is inoculated **l o**, with the Epigastrick vein climbing upward, **9**, giving surcles to the Gristly distances of the true ribs, as also to the Mediastinum, and Muscles, that lie upon the breast. The third called Mediastina, **h**, is disseminated into the Mediastinum, or partition of the Chest. The fourth, vertebralis, or the vein of the Rack-bones, **i**, climbs up through the holes, that are bored in the transverse processes of the Rack-bones of the Neck, distributing sprigs to the Muscles, that lie upon the Rack-bones. The fifth is called Cervicalis or the vein of the binder part of the Neck, **l**, distributed into the Muscles, seated on the lower part of the back side of the neck, and on the upper part of the Chest. Out of the upper part issue three. The first is Jugularis interna, the inner vein of the Hollow of the Neck, **m**, which having sent over small sprigs from its outer branch to the Chops,

n.

o o.

P.

q.

r.

s.

t.

u.

x.

y.

α.

β.

1.

2.

3.

F.

γ.

δ.

ε.

ζ.

G.

η.

H.

ι.

κ.

λ.

μ.

ν.

and region of the Ear, is joined by the inner all the way to the Arteria carotis, or sleepy Artery, and is divided near to the skull into two branches called Encephalici or of the Brain, by Spigelius; of which the hindmost and greater, **n**, having entred into the skull through the second hole of the Nowl bone, is inserted **o o**, into the first **1**, and second **2** sinus of the thick membrane. But the foremost and lesser, **p**, having entred through the seventh hole of the wedg-bone, is scattered through the sides of the thick membrane. The second is the outer Jugular vein, **q**, which getting up by the sides of the Neck, is divided near to the Ears, **r**, into two branches; of which the one called Profundus, **s**, is variously disseminated into the Muscles of the Larinx or Throttle, and the bone called hyoides, as also into the Tongue, the Palat, and hollownesse of the Nostrils, and lastly into the skull with three propagations, of which that which passes **t** out of the forepart of the eye, through the second hole of the wedg-bone, is very well delineated here. The other called Subcutaneus, **u**, first of all spreads its fore-branch **x**, into the Muscles and skin of the Face, which joins with its fellow **a** about the top of the nose, and makes the Forehead vein **y**; then it issues out another hinder branch, which partly, creeps upward along the temples, **z**, and partly is carryed behind the ears to the skin of the back part of the head.

α The third, Cervicalis Superior, the upper vein of the Neck, **β** is propagated into the Muscles behind on the back side of the Neck. There are three sinus or small channels of the thick membrane of the brain, the first or right one is marked with **1**, the second or left one with **2**, the third with **3**. The hinder part of this, which is nearer to the Nowl of the Head, is shadowed; but the forepart, which is next the Forehead, is seen manifestly. From this sinus many little veins, which they call Ductus, are reacht forth to both sides.

Here the subclavian vein takes on it the name of Axillaris or the vein of the Armpit, and is divided into two branches, the Cephalick **G**, and the Basilick **I**. But before this division it scatters two twigs: the first called scapularis interna, or the inner vein of the shoulder blade, **γ**, the other Scapularis externa, the outer blade vein **δ**. The Basilick vein also, **l**, before it enters the Arm, propagates two; one called Thoracica superior, the upper Chest-vein, **ε**, which is distributed through the inside of the Piciorall Muscle, and in women, through the Dugs: the other called Thoracica inferior, the lower Chest-vein, **ζ**, which descending along the side of the Chest, goes to the Muscle called Aniscalptor.

The Cephalick vein, which, before its division, sends away a sprig, **η**, into the Muscle deltoides, and another **θ** into the Muscles of the Cubit.

When the Cephalick vein comes to the joint of the Cubit, at the outer bunching forth of the Arm it is cut into three branches, **H**. The first, **ι**, or deep and middle one goes to the Muscles arising from the said protuberation. The second **κ**, or inner goes to the making of the vein called Mediana **λ**. The third **μ**, or outer is carried obliquely, **ν**, by the radius or lesser bone of the Cubit, to the outside of the Arm, and so creeping on obliquely all the way, when it is come to the root of the wrist, it is joined with a little branch of the Basilick

D d d d

sick

filick-vein, τ , and makes the vein called *Salvatella*.

The *Basilick-vein*, which on the right hand is called *Hepatica*, or of the *Liver*, on the left *Lienaris*, of the *Spleen*. This before its division sends out a *Surcle*, σ , to the heads of the *Muscles* of the *Cubit*; and then another notable one π , which being carried down obliquely, bestows its *Surcles* upon the *Muscles*, that arise from the outer protuberation of the *Arm*.

The division of the *Basilick-vein* K into two branches, the one called *Profundus* or the deep one, the other *Subcutaneus*, or branch under the skin. The deep one L , when it comes to the bending of the *cubit*, is divided into two, M , one of which called *Radius* N , at the *Radius*, or lesser bone of the *Cubit*; the other called *cubiteus*, O , at the greater bone of the *Cubit*, goes to the hand.

Subcutaneus, or the branch next under the skin P , near to the inner protuberation of the *Arm* is divided, Q , into two other, of which the inner R together with the inner branch of the *Cephalick* κ , makes up the vein *mediana* λ , which is likewise divided into two branches, the outer of which, ρ , is called by some *Cephalica manus*, and goes to the *Thumb*; the inner σ to the fore and middle fingers: The outer S going to the wrist, is joined toward the little finger with the outer branch of the *Cephalick-vein* about τ .

The little valves, which are found in the veins of the joints, are handsomely cut out here, as it were to be seen through.

The *Descendent Trunk* of the *Hollow-vein* which begins about the region of the *Liver* T , and ends about the fifth *Rack-bone* of the *loins* V . There are four *Twigs* growing from this. The first u called *Adiposa* or *Fattic-vein*, distributed to the *Membrane* of the *Kidneys*. The second ϕ the *Emulgent* going to the *Kidney*. The third, *præparans vas*, the preparing vessel; the right one χ arising out of the *Trunk* $T.V$. the left \downarrow out of the left *Emulgent*, both afterward going into the *Testicles* ω . The fourth is the three *Lumbares* or *loin-veins* 444.

The division of the *Descendent Trunk* V , into the two *Iliacall* branches XX , both which are again divided into two other, an inner one Y , and an outer Z . But before this division two propagations are issued forth, *Muscula lumbalis*, or the *Muscle-vein* of the *loins* 5,

and *Sacra* or the *holy-vein* 6.

Y . The inner *Iliacall vein*, before it goes out of the *Peritoneum*, or rim of the *belly*, shoots out two propagations, the first called *Glutæa* 7, and the second *Hypogastrica* 8. The remainder of it passing through the *Peritoneum*, is spent upon the inside of the *Thigh*.

Z . The outer *Iliacall vein* likewise before its going forth of the *Peritoneum* scatters three propagations; the first called *Epigastrica* 9, going into the *Muscles* of the *Epigastrium*, and the strait ones of the *Abdomen*, where they are joined by *Anastomosis*, or *inoculation* 10. The second called *Pudenda*, 11, spent upon the *privy parts*. The third *Coxalis*, 12, upon the *Muscles* of the *Hip*.

Here the outer *Iliacall vein* having past through the *Peritoneum* or rim of the *Belly* enters the *Crus*, and begins to be called the *Crurall Trunk* Γ , that is undivided as far as to the two lower heads of the *Thigh*. But it reaches forth four propagations before its division.

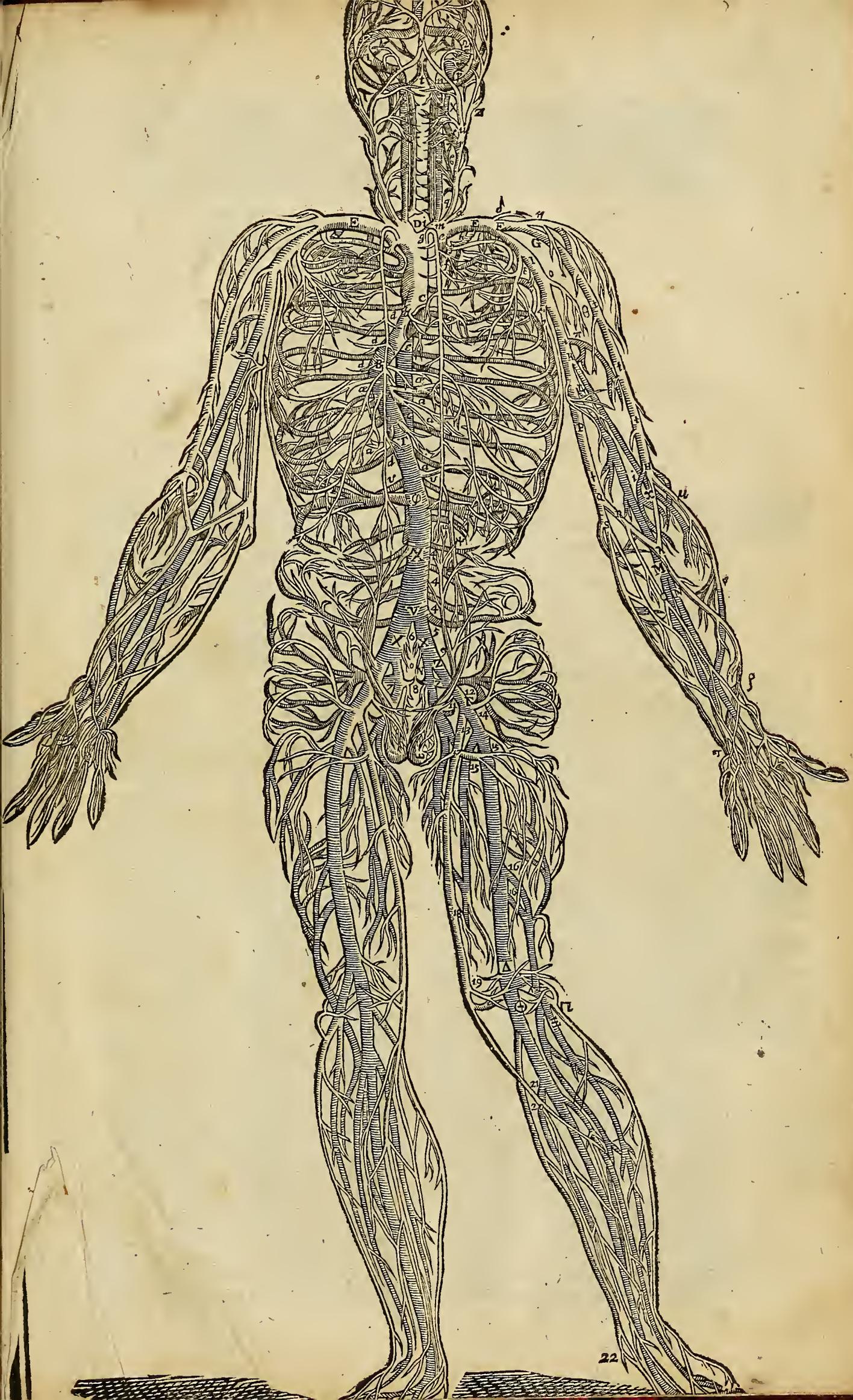
Γ . The first; 13, is called *Saphena*, which creeps through the inside of the *Leg*, under the skin as far as to the ends of the *Toes*. Another 14 called *Ischia* is spread out into the skin upon the *Hip-bone*. The third 15 named *Muscula* is sent to the *Muscles*, which extend the *Leg*. The fourth 16 named *Poplitea* is distributed into the *Calf* of the *Leg*.

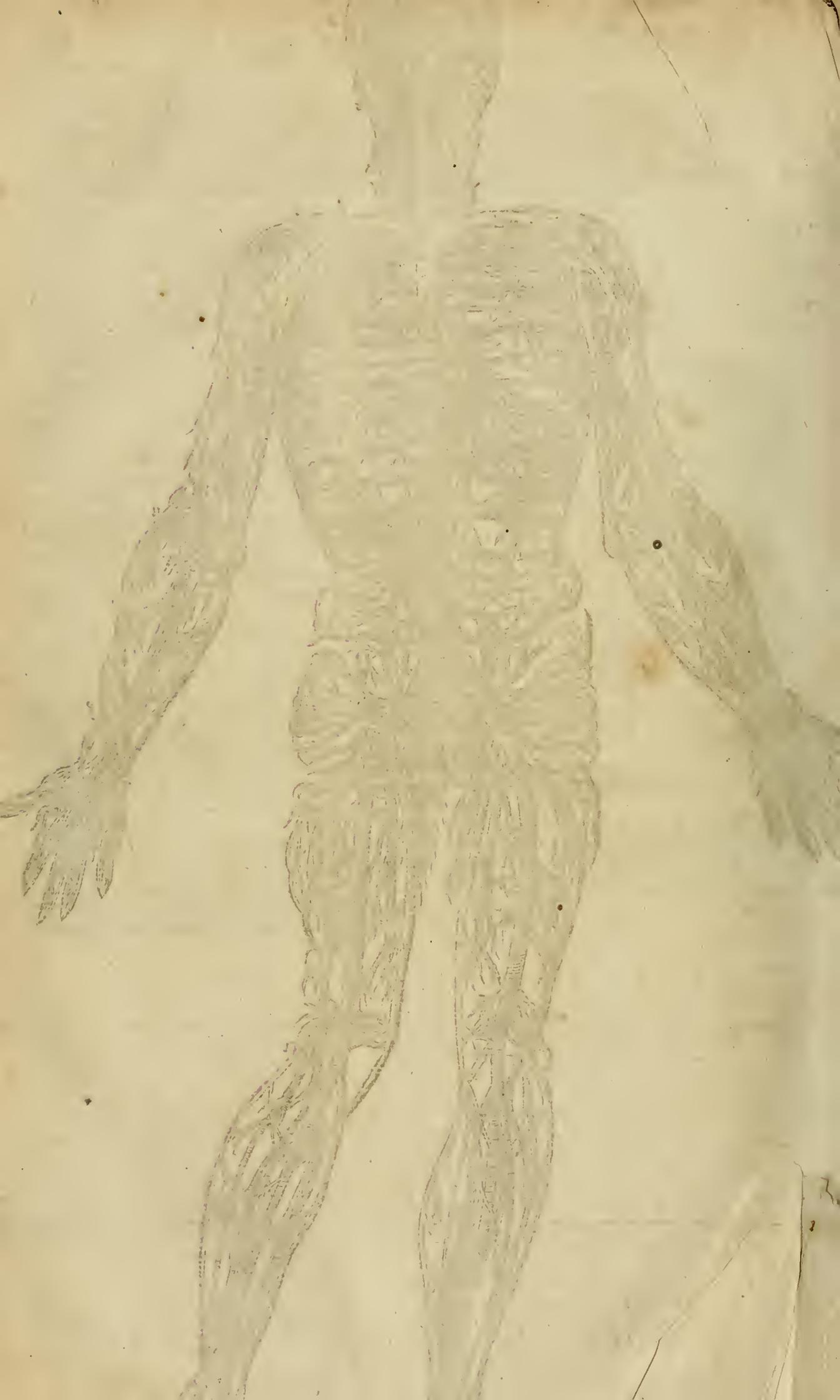
The vein *Saphena* also scatters from itself four surcles, the first 17 into the upper part of the skin of the inside of the *Thigh*: the second 18 about the middle of the *Thigh*: the third 19 into the *Knee*: the fourth 20 is carried forward and backward to the middle of the *Leg*.

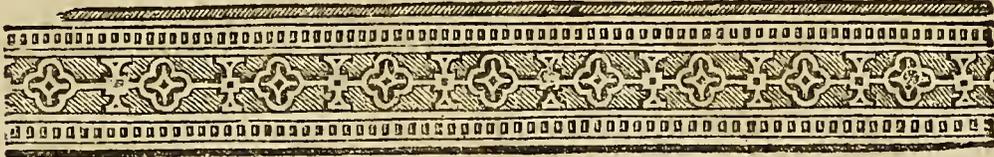
The division of the *Crurall Trunk* near to the two lower heads of the *Thigh* into an inner branch Θ , and an outer one Λ .

The inner distributes little branches to the *Muscles* of the *Calf* 21, and then runs down under the inner ankle to the great *Toe* 22.

The outer presently is cleft into two branches, an inner one Ξ , and an outer Π . That is spent wholly upon the *Muscles* of the *Calf*: this passes on near to the *Fibula* or lesser bone of the *Leg*, through the outer and back-side of the *Leg*.







The second Treatise,

Concerning

The A R T E R I E S.

CHAP. I.

Shows the upper or ascendent Trunk of the great Artery, with its propagations that are distributed through the Head.



Here is no controversie among writers of Anatomy concerning the number and originall of the Arteries, but an unanimous consent, that all the propagations, which are scattered throughout the body, take their rise from one, which they call *Aorta*, and that this is derived out of the Heart. But the Heart consisting of two *sinus* or cavities, a right, and a left one; this great Artery grows out of the left *sinus* or ventricle [A], where it is largest, and more hard, and gristly, then elsewhere. But as soon as it is grown out, and before it fall out of the *Pericardium* or purse of the Heart, it presently propagates two small sprigs [a a] one of each side, which they call *Arterie Coronariae*, the *Crown-Arteries*, because together with the *vena Coronaria*, or *Crown-vein*, they compass the *basis* of the Heart in manner of a *Crown*, and from these many propagations are scattered downward all along the Heart. But they are more, and greater about the left, then the right ventricle, as we have also formerly said concerning the vein, because the Heart needs a greater plenty of blood on that side, as which beats with a perpetuall, and more violent motion, wherein more blood is digested, then the right *sinus* or ventricle does: yet that propagation is bigger, and longer, which arises out of the right side of the Artery: sometimes also there is only one, at whose orifice a little valve is found. These propagations being thus disseminated, the Artery ascends somewhat, under the Trunk of the *vena Arteriosa*, or *Arteriall-vein*, and pierces through the *Pericardium*, and, having got above it, is cleft [B] into two branches, which because of their notable greatnesse we will call Trunks, and because one ascends [C] and the other runs downward [Q] that shall be the Ascendent Trunk, this the Descendent. Yet the Descendent, and lower one is bigger by much then the upper, because that serves more parts, then this. For the Ascendent one goes only to some parts of the Chest, to the Head, and Arms; but the lower to very many parts of the Chest, to all the lowest Belly, and the Legs. That therefore we may treat of the great Artery with more perspicuity, we will first shew the Ascendent Trunk, and its progresse through the Chest, and Head, and after that its branches distributed through the Arms. Then we will fall upon the Descendent one; and explain the manner of its distribution through the Chest, and lowest belly, and lastly through the Legs.

The Ascendent therefore or upper Trunk of the *Aorta* [C], being fastened to the *Oesophagus*, or Gullet, climbs upward betwixt the rough Artery, and Hollow-vein, and the *mediastinum*, or partition of the Chest. Which situation of it they ought diligently to observe, who desire to know the reason of that Aphorism, which is the four and twentieth of the fifth Section in *Hippocrates*: For, sayes he, cold things, as snow, and ice, are enemies to the Breast, provoke coughs, and cause eruptions of blood, and distillations. Truly they are enemies to the Breast, because, whilest they are swallowed down through the Gullet, they cool the rough Artery, that lies next to it, together with the Gullet, which part being of it self cold does easily take harm from so violent a cold: hence the cough, and other diseases of the Breast follow one another in a long row. But issues of blood happen in like manner, the great Artery being cooled, whereby the vitall Spirits, and the blood are driven back to the Heart, and from thence are sent up forcibly to the Head, which being stuff, eruptions of blood are caused by its dropping forth at the Nostrils, as

The originall of the great Artery.

Arterie Coronariae the *Crown-Arteries*.

The division of the great Artery into two Trunks.

What parts both the Trunks nourish.

The order of that which is to be said.

also

also catarrhs and distillations, it being driven down undigested to the inferiour parts. And hence also a reason may be rendred, why some, upon drinking of cold water after vehement motions, and exercise of the body, have presently been suffocated, the passion of the heart, and grievous swooundings following thereupon. For the Artery being vehemently cool'd, the blood is congealed, as well that, which was in the *Aorta*, or Great artery, as that which abides in the heart; from whence happen at first fearfull symptoms, and then suddain death. But we have seen in these men, that a vein being opened, the blood hath come out thick, and cold, and with very great difficulty, whence also we have not found a more present remedy for them, then such things, as by reason of the thinness of their parts have a power of dissolving the clots of blood. Hence also a reason may be given, why in burning feavers the tongue becomes black, and the diseased can hardly swallow. For although it be true (which is the cause commonly assign'd) that many vapors are sent up from the whole body to the head; yet we may ascribe a main cause of this blackness to the nearness of the artery, which being set on fire, and inflamed, procures much mischief to the gullet, and consequently to the tongue itself.

The division of the Ascendent trunk into two branches. The subclavian arteries.

Intercostalis superior, the upper artery between the ribs.

Vertebralis, the artery of the rack-bones.

Mammaria, the artery of the paps.

Cervicalis, the artery of the neck.

Arteria axillaris. Its branches before it enters into the arm. From its lower part.

From its upper part one.

But the Ascendent Trunk, whilst it passes thus upwards, is divided into the two subclavian arteries, [DD] of which one runs to the right side, and the other to the left. They are called *subclaviae*, as long as they are in the chest, for the same reason as the subclavian veins are so called, because they run under the *claviculae* or collar-bones: but as soon as ever they are fallen out of the chest, they change their name, and are called *Axillares* [E]. From both the subclavian arteries, when they have attained to the first rib (for before that they send forth no propagations) many sprigs issue out, as well from their upper, as lower part. From the lower issues the upper Intercostal artery, or *Intercostalis superior* [b], which being fastned to the roots of the ribs, bestowes particular branches upon the distances of the four uppermost which run under the ribs, together with the veins, as far as to the gristles, from which propagations are dispersed into the marrow of the back, and the neighbouring muscles. From the upper part issues first that which is commonly called *Cervicalis*, or the artery of the neck [c], but better *vertebralis*, of the rack-bones, which arises more backward, and toward the bodies of the rack-bones, and ascending obliquely, near to the seventh rack-bone of the neck, like the neck-vein, passes through the holes of the transverse processes, and upper rack-bones of the neck, where it shoots out many propagations, which enter the spinall marrow through the common holes, at which the nerves go out. It sends also a pretty company to the muscles that are seated on the backside of the neck, and ascends to the nowl-bone together with the vein, through whose first notable hole, by which the spinall marrow descends out of the head, it enters the skull. After this it is joined with its fellow of the other side under the spinall marrow, which remains yet in the skull, and so runs straight forwards, under the middle of the *basis* of the brain; but when it hath now attain'd to the *sella*, or saddle of the wedg-bone, upon which the phlegmatick glandule lies, it is divided into two branches, a right, and a left one, both which at the side of the saddle creep to the second pair of the nerves, where being broken on both sides into an infinite number of furcles, they are dispersed betwixt the first and second pair of the nerves; and folded together with the thin membrane make that complication of vessels call'd *plexus Choroides*. The next is *arteria mammaria* or artery of the paps [d] which being reflected under the breast-bone (accompanied with the mammary vein) descends along its sides, and when it comes to the gristle called *Ensi-formis*, or the breast-blade, about the sides thereof goes out of the chest, and running under the right muscles of the *abdomen*, descends directly through the lower side of them, and at length near the navell, is joined by *anastomosis* or inoculation [x] with the Epigastrick artery plying upward [i]. But before it leaves the chest, it scatters particular branches to the six distances betwixt the gristles of the seven true ribs, which branches determin together with the gristles. A third [e] is otherwise called *Muscula* the muscle artery, but might be better, and more strictly named *Cervicalis*, being it is disseminated into the muscles, that are placed in the region of the neck, as far as to the *occipitium* or nowl of the head.

These branches being sent out, the subclavian artery goes out of the cavity of the chest, and getting above the first ribs tends obliquely to the arm-pit, and so makes the axillary artery [E] which afterward is spread into the arm. But before that it scatters some propagations, and from its lower part three, of which the first is *scapularis interna*, the inner-blade artery [f] which goes to the muscles on the hollow side of the shoulder-blade. Another is *Thoracica superior* the upper chest artery [g], which goes to the pectorall muscle, that leads the shoulder forward to the breast, and the other muscles that lie upon the breast, and is a pretty big one. The third is *Thoracica inferior* the lower artery of the chest, [h] which is also a large one, and running down all along the side of the chest, is the greatest part of it scattered into the broad muscle called *Latissimus*, which moves the shoulder backward from the breast. From the upper part of the axillary artery arises one called *scapularis externa* the outer blade-artery [i], which climbing up to the top of the shoulder is disseminated into the muscles that cover the gibbous side of the shoulder-blade.

blade. The remaining part of the axillary artery passes on in company of the Basilick vein to the arm, upon all which it is afterward spent, of whose distribution we will speak in the following Chapter.

That which remains yet of the Ascendena Trunk [L] being sustained with the *Thymus* near to the upper part of the breast-bone, is divided into two branches [MM] which they call *Carotides*, or *soporales* the sleepy arteries, because they being obstructed, or any way stoped, we presently fall asleep, of which *Valuerda* witnesses in *Anatom. lib. 6. c. 11.* that *Realdus Columbus* made tryall in a young man, among a great company of men: They are unequal in bignesse, the right one being much thicker then the left, but they tend directly upward, being carried along by the sides of the neck, and fastned to the rough artery, and to the internall jugular veins, by the benefit of a membrane, and when they are come to the cups, are divided into two branches [N] of which one is the outer, the other the inner one: that is the lesse, this is the greater. The outer [O] sends propagations [†] to the cheeks and muscles of the face; then when it is come to the ear, it is divided in twain; for one branch [r] of it goes to the backside of the ear, from which two branches under the ear enter the neather jaw through the first hole of it, that is seated at its process, and throughout the length thereof are disseminated into the roots of all the lower teeth; that which remains, going out at the second hole; which is placed at the chin, is scattered into the lip. The other branch [q] creeps through the Temples and fore-head, and is spent upon the muscles of the face. The inner branch [P] of the sleepy artery, or *arteria Encephalica* the brain-artery, is carried into the chops; and having scattered some propagations to the tongue and throttle, is divided about the *basis* of the skull, into two unequal branches, to wit, a greater, and a lesser one. The lesser and hindmost [s] is carried together with the greater Encephalick branch of the internall jugular vein to the back-side of the skull, enters through the second hole of the *occipitium* or nowl-bone, and goes into the *sinus* or canale of the thick membrane. The greater and more forward [t] having entred the cavity of the skull through a hole made on purpose for it in the temple-bone, and attain'd to the saddle of the wedg-bone, going every where under the hard membrane; first of all propagates a branch on both sides into the side of the thick membrane, then in beasts scattering an infinite number of surcles makes the *Rete mirabile* or wonderfull net, which indeed may be found in a man too, but it is very little, and seems but a shadow in respect of that in beasts. These surcles being thus placed it pierces through the thick membrane of the brain, and having got out of it, sends another propagation out of the skull, through the second hole of the wedg-bone to the eye, and its muscles, as also to the temple muscle, that lifts up the lower jaw; and then going straight up to the side of the phlegmatick glandule, it is divided into two branches, an outer, and an inner. The inner is joined with its fellow of the other side, and being joined they are wasted into many little arteries, which are dispersed through the thin membrane, and the very substance of the brain, to the originall of the optick nerves. The outer being reflected and sustained with the thin membrane, goes into the forward ventricle of the brain; being divided into many surcles, which are united with those little arteries, which arise from the *vertebralis*, or artery of the rack-bones; some with those which the vertebrall artery scatters through the *basis* of the head under the brain, but others with those which it dessemimates through the thin membrane and substance of the brain, together with which they make the *plexus choroides*.

The sleepy arteries.

The division of them. The outer, or branch of the face,

The inner; or branch of the brain.

The division thereof into a lesser and greater branch;

A subdivision of the greater;

CHAP. II.

Declares the History of the Axillary artery being distributed through the Arm.

THE Axillary artery therefore when it is come to the arm, taking the name of the Arm-trunk [FF] is carried in one undivided stock, beyond the bent of the cubit, through the inside of the arm, dispersing some small propagations on both sides to the muscles that lie on the inside of the upper part of the arm. But it goes fast by the inner or deep branch of the Basilick vein; as an unseparable companion of it, whose conduct and steps it every where follows. But presently falling down by the back-side of the upper part of the arme, where the muscles which extend the cubit stick to it, it sends forth two propagations [l & m] the lower of which is a very notable one, and so it is writhed back toward the bent of the cubit; and having attained thereunto it reaches out two surcles [n n] one of each side, so manifest, that the pulse is there oftentimes evidently enough perceived. Then going under the bent of the cubit, through the inside of it, and sinking down betwixt the two muscles that bend the second and third bones of the four fingers, it is cut [G] into two notable branches, one of which is an outer, the other an inner one. The outer [H] is carried along

Brachialis trunk, the trunk of the arm,

The division thereof into two branches. The outer branch,

along

along the *Radius*, or lesser bone of the cubit (whence I call it *Radium*) and goes directly to the wrist, in which place Physicians feel the pulse, it being very manifest, by reason that the artery lies next under the skin. But not far from the root of the wrist it shoots out a little branch [o] which runs under the tendons of the muscles, which extend the thumb, into the outside of the hand, and is spent upon the muscles, which are placed betwixt the first bone of the thumb, and that of the after-wrist, which supports the fore-finger. This branch being propagated, going under the inner annular ligament of the wrist, and the broad tendon of the palm-muscle, it is divided into three branches [ppp] like the vein, and nerve, that are its companions. The first of these goes to the inside of the thumb, the second to the inside of the fore-finger, and the third to that of the middle. The first, and second are each of them parted into two branches; the third is undivided. *The inner branch* of the trunk of the arm [I] runs straight along the *ulna* or greater bone of the cubit (and for that reason I call it *Cubitus*) and is dispersed into the palm of the hand. But it is so hidden among the muscles, that it is hardly perceived to beat, unlesse in lean folkes; and therefore Physicians alwaies lay their hands upon the outer branch, when they feel the pulse in the wrist. But it passes on under the transverse ligament of the wrist, and the tendon of the palm-muscle, in company of a vein, and nerve, and scatters two branches into the little finger, as many into the ring-finger, and one into the outside of the middle.

The inner
branch.

CHAP. III.

Shewes the Inferiour or Descendent Trunk of the great artery, and the propagation thereof through the middle and lowest bellies.



WE have said above, that the great artery [A] as soon as it has gotten above the *Pericardium* or purse of the heart, is divided [B] into two branches; of which one goes upward, the other descends to the parts below. We have already handled the upper branch; it remains that we explain the other also.

The Descendent trunk therefore [Q] answering in proportion to the stock of a tree, is carried down to the fifth rack-bone of the chest, and declining somewhat to the left, cleaves to that side of the body of the rack-bones, and so descends leisurely. When it has now past the midriff through that division resembling a semi-circle, which is betwixt the productions of the *septum transversum* or midriff, presently it runs out by the rack-bones of the loins, leaning upon the middle of their body, til it come to the last of them, where near to the *os sacrum* it is divided [R] into two notable branches [SS] which with other Anatomists we wil call *Iliacæ* the Iliacal arteries from their situation. In this journey it scatters many propagations from it self, which are very worthy to be diligently observed, because from thence we may easily give a reason of many accidents in diseases. But they are in number eight, the Intercostal arteries, the two *Phrenicæ* or arteries of the midriff, the *Cœliacall* one, then the upper *Mesenterick*, the two *Emulgents*, as many *spermatocall* ones, at last the lower *Mesenterick*, and the *Lumbares*, or arteries of the loins. Of these the Intercostals are scattered, whilst the trunk is yet in the chest; the rest, whilst it passes on through the lowest belly. But some of them accompany the branches of the gate-vein, as the *Cœliacall*, and both the *Mesentericall* arteries; others those of the hollow vein, as the rest. Now we will treat of these in order, beginning from the Intercostals, or arteries between the ribs, which are placed uppermost. Presently therefore after the Descendent trunk [Q] is issued forth, from its back-side it sends over little branches on both sides to the distances of the eight lower ribs, which they call *Intercostales inferiores*, the lower arteries between the ribs [u u u] in respect of the upper Intercostall, of which we have spoke above. These associating themselves with the veins and nerves of the same name, go straight on by the lower side of the ribs, where peculiar *sinus* or channells are cut out for them. But as the Intercostall veins reach in the true ribs only to the gristles, but in the bastard ones somewhat farther, to wit, to the sides of the *abdomen*: so also the arteries end in them together with the bony part of the ribs, but in these run out a little farther. And these arteries send over some propagations through the holes of the nerves to the spinall marrow, and to the muscles that lie upon the rack-bones of the back, just as we have said the Intercostall veins were propagated. But the use of them is to diffuse the vitall spirit, and the blood to the muscles betwixt the ribs, besides which they have also another notable office, to wit, of carryng down the water, and purulent matter, that is gathered together in the chest, into the great artery, and from thence by the *Emulgent* branches to the bladder. Although I am not ignorant that the most learned *Fallopium*, and others who have read before me in this most famous University of *Padua*, have shewn another way to their Auditors; by which either purulent matter, or water might be conveighed forth by help of the kidneys, to wit, the vein *sine pari*, or without a companion, a little branch whereof in the left

The Descendent trunk.
Its progresse.

Its propagati-
ons.

Intercostales inferiores, the arteries between the lower ribs.

Their use.

eft side goes into the Enalgent of the left kidney. But this way which we shew through the Intercoftall arteries, is by much the shorter; that I pafs by this, that any matter heaped together may be more easily difpatcht away through the arteries then the veins. Nor needs any one here to be afraid, left the vital fpirits fhould be infected from thefe excrementitious and ill humors, whereby the heart may incurre fearfull fymptomes; when we willingly grant (which experience alfo hath often taught us) that whillt the corrupt matter is emptied out by the urine, the fick parties have often fallen into fits of fwoounding, and other difeafes; fometimes alfo have died fuddenly, when the peccant humor has been of too great a quantity, or too bad a quality, and has offered fo much violence to nature, that the heat, and fpirits have been overcome therewith. But here a certain place in *Hippocrates* calls upon me to explain it, which has long and often troubled my mind. The place is in *Cocis pneumonia*, where he fays, They, who together with the heart have their whole lungs inflamed, fo that it falls to the fide, are deprived of motion all over; and the parties fo difeafed lie cold, fenfeleffe, and die the fecond or third day. But if this happen to the lungs without the heart, they live not fo long. Yet fome alfo are preferved. I have often thought with my felf, what fhould be that fymptomy of the heart and lungs with the brain and nerves, that from the inflammation of thofe parts, the Patient fhould be fo deprived of fenfe and motion all over, when the fame *Hippocrates* teacheth in the fame place, that the difeafed fuffer fuch deprivation in that part, & livid fpoats appear on the outside about the rib, where-about the *Aorta* (fo he feems to call the lobes or divifions of the lungs) being inflamed fall to the fide. But if they be not much inflamed, fo that they fall not down to the fide; he fays that there is a pain indeed all over, but no deprivation of fenfe or motion, nor any fpoats appear. Having deliberated often with my felf, at length I came to be of this opinion; that there was no other caufe, but the fymptomy betwixt thefe Intercoftal arteries, and the marrow in the back-bone. This fymptomy arifes from thofe propagations, which we told you paff through the holes of the rack-bones of the cheft into the back-bone. Wherefore if the lungs, and heart be fo mightily inflamed, that great plenty of bloud rufh into the great artery, whereupon it fwells; as alfo thefe vefels betwixt the ribs, and confequently thofe furcles which go to the marrow of the back-bone; truly it cannot be, but that both the marrow, and the nerves, which iffue out of it, be compreffed; from whence what elfe can follow, but the refolutions of thofe parts, into which thofe nerves are implanted, and to which they impart the faculty of motion? This opinion feems to mee to be wonderfully confirmed by a certain pretty obfervation, which the learned *Cornelius Gemma* has in his book, *de hemittico peftilenti*. A certain ftudious young man, fays he, through the whole courfe of his difeafe, had his left eye leffe then the other. He was pain'd in the left fide, efppecially all the time the fit raged; but about the *crifis* or change thereof, the artery of his left leg being fwoln up was moved according to its length, that being to be feen by us it feemed to be turned upward and downward like a rope pull'd back. Who will not here willingly confefle, that this matter was in the arteries; when the *crifis* was made by them? But from this that hath been faid a reafon may be alfo given of another obfervation of *Galen*, which is *de locis affect. o. 4.* where he fays thus: In a certain man, who was troubled with a vehement inflammation of the lungs, as well the outer, as the inner parts of his arm, from the cubit to the very ends of his fingers labour'd with difficulty of fenfe, and their motion alfo was fomewhat empair'd. In the fame man alfo the nerves, which are in the firft, and fecond diftances betwixt the ribs, fufained harm. And a little after, This man was quickly reftor'd to his health, to wit, a medicine being applyed to the place, from whence the nerves iffue forth, near to the firft, and fecond fpaces betwixt the ribs. By reafon of the fame branches betwixt the ribs *John Valeriola*, the fon of that Phyfician, whofe obfervations we have, being yet a boy fuffered Convulfion-fits in a grievous Pleurifick.

The arteries called *Phrenice* of the midriff, [x x] are two, one of each fide, which arifing out of the trunk, prefently after it is come forth of the hollow of the cheft, being divided into more branches, are fcattered into the midriff, but efppecially into the lower fide of it, near to the rack-bones of the back. They fprinkle fome fmall twigs alfo into the upper part, which afterwards go to the *Pericardium* or purfe of the heart, there where it growes to the midriff.

The *Caliaca* or Stomach-Artery is but one, fo called, becaufe it fends over branches to the *Stomach*, that is, the Stomach. This, being moft like to the fpleenick branch of the Gate-vein, affords many branches to the Stomach, Liver, Bladder of Gall, Kell, the gut *Duodenum*, the beginning of the *Jejunum* or empty Gut, a part of the *Colon* or Colique-Gut, the Sweet-bread, and Spleen. But it arifes out of the forefide of the body of the Trunk, and being ftayed up all the way by the upper part of the lower membrane of the Kall, is divided into two notable branches, but of unequal bignefle, one of which goes to the right, the other to the left: that is the leffe, this the greater. The right branch therefore is joined with the defcendent Gate-vein in the *Pancreas* or Sweet-bread, that is placed under the hinder part of the Stomach, and leaning there upon the membranes of the Kall goes to the Liver; and its fmalneffe is worth the taking notice of, if you look upon the largenefle of the Liver, which the Ancients long fince, and many at this day have made the work-

The explanation of a place in *Hippocrates*.

2. The Phrenice the arteries of the midriff.

3. The Caliac.

The two branches thereof. The right branch.

house of the blood. But it is inserted in the hollow part, near to the Trunk of the Gate-vein, and is so small, because that part of the Liver, which entertains the roots of the Gate-vein, needed not a greater Artery; but the other part which hath the propagations of the Hollow-vein, receives great plenty of vitall spirit sent over from the Heart through the Hollow-vein. Yet before it enters into the Liver, it disseminates in the way many surcles, and those partly from its upper side, partly from its lower: *from the upper side two*, first, that which I call *Pyloricus*, which arises in the mid-way, and being divided into many little branches is scattered into the back-side of the right orifice of the Stomach. The other is called *Cystice gemelle*, the Twin-Arteries of the bladder of Gall, which are two little branches, and go into the bladder of Gall, and presently are divided into many propagations. *From the lower side likewise two arise*. The first is *Epipliois dextra* or the right Kall-Artery, which is implanted into the right side of the lower membrane of the Kall, and part of the Colique-Gut annexed therunto. The other is cleft into two branches, of which one called *Intestinalis*, the Gut-Artery passes on to the *Duodenum*, and beginning of the *Jejunum* or empty Gut: the other, named *Gastro-epipliois dextra* the right Stomach and Kall-Artery, somewhat larger then the former, turns down to right side of the bottome of the Stomach, and being supported by the upper membrane of the Kall, issues out some shoots from the upper part to the fore and back-sides of the Stomach; but from the lower to that membrane of the Kall, upon which it leans. *The left and greater branch is called Arteria Splenica* the Spleen Artery, which sticking to the lower membrane of the Kall, and the Glandules placed therein, passes on together with the Spleen-vein, to which it is fastened, and in like manner distributes its propagations to the Spleen. But in the way likewise it distributes branches from both parts of it: *from the upper issues Gastrica* the Stomach-Artery, which reaches into the middle of the hinder part of the Stomach, or that, wherewith it leans upon the back, and ascending from thence it compasses the left orifice of the Stomach round about like a crown, and disperses little twigs, partly upward to the end of the Gullet, partly downward, and those greater, and more numerous, into the Stomach, and so it makes the *Arteria Coronaria* or Crown-Artery, like to the Crown-vein, which arises from the Gate-vein, as we have said in the fore-going Treatise. But *from its lower side* the Spleen-Artery sends out the *Epipliois sinistra*, or left Kall-Artery, about that part, wherewith it now attains to the Spleen, which runs out into the left side of the membrane of the lower part of the Kall. This Artery presently after its rise is cleft into two branches, which part very far asunder from each other, from which many other Arteries arise, that are all consumed upon the said membrane of the Kall, and the Colique gut, that is tyed thereto. These branches being issued, the Spleen-Artery draws nearer to the Spleen, and just like the vein of the same name, which accompanies it all the way, is cleft into two branches like the Letter Y, one of which may be called the upper, the other the lower, which afterward entering by the hollow part of the Spleen are splintered into an infinite number of little sprigs, so that there are five times more Arteries there, then veins. Whence it comes to passe, that in inflammations of the Spleen, if you lay your hand to the left *Hypochondrium*, or place under the Gristles of the Bassard-ribs, it seems to pant. But before this entry of the Artery of the lower branch makes a notable *anastomosis* or inoculation with the lower branch of the vein, and propagates a twig to the lower membrane of the Kall. But from the upper branch issues one called *Gastro-epipliois sinistra*, the left Stomach and Kall-Artery, which being fastened to the upper membrane of the Kall is derived into the left side of the bottom of the Stomach, bestowing little branches upon the fore and back-sides of it, or also upon the upper part of the Kall. Another issuing from the upper branch makes the *vas breve Arteriosum*, or short Arteriell vessell, carried, like the vein its name-fake, to the left side, and orifice of the Stomach.

The use of the right branch, is this, as often as the bladder of Gall is obstructed, to carry down choler to the Guts, and especially to the *Colon*, into which some of its branches are implanted. Which is the reason, that in bloody Fluxes the Ulcers are almost alwayes found in the great Guts, and especially in the *Colon*, very seldome in the small ones. For this artery, when either the Liver being over hot breeds abundance of choler, or the bladder of Gall is obstructed, receiving into itself store of choler carries it directly over to the *Colon*, or Colique Gut. In like manner the use of the left branch, or Spleen Artery, besides the common one, is to throw down choler, melancholy and wheay humors, if at any time the Spleen abound with them, to the Guts. Moreover by this same way the waterish humors in such as have the Droplie, are sometimes committed either to the Guts, or to the Kidneys and Bladder. This same branch is that by which the drink passes so sodainly through the whole body, and by which ill humors are cast out by vomit. This same is the cause, that upon a full Stomach we make little water; but more when the concoction therein is finished. For the Stomach being much distended presses it; but that once empty, it can perform its office. This same branch teaches us that a slender diet is to be prescribed to them, who are to take purges, that the way may be open for the medicins, as well that, by which

the excrements are sent over to the Stomach, as that, by which they are conveyed to the Guts. This same branch also, if you adde the two Mesentericks, is the seat of the hypochondriacall Melancholy. For this disease arising from the obstruction of the entrails, which are contained in the lowest belly, it is necessary that the arteries here should suffer very much, which the very Symptoms, that happen in this disease, may sufficiently inform us.

Mesenterica superior, the upper Artery of the Mesentery [γ] arises a little below the Cœliacall, being distributed like the Meseraick vein (which is its companion) with numerous propagations into the Guts called *Ilium* and *Jejunum*, as also that region of the *Colon*, which reaches from the Hollow of the Liver as far as the right Kidney, and so for the most part into the upper part of the Mesentery. In which place it is to be observed, that the Artery sometimes lies upon the vein, sometimes on the contrary the vein upon the Artery, and so is carried betwixt both the Membranes of the Mesentery. But these Arteries in many places in the Mesentery have Glandules, which were made for the free perspiration of the vessels, and especially of the Arteries, whereby it comes to passe, that these Glandules labouring with a hard tumor, or *Scirrhus*, the vessels are compressed, and a pining away of the whole body follows thereupon.

The Emulgent arteries [α] are two, one the right, another the left one. Both issue out under the forementioned Artery, where the first, and second Rack-bones of the loins are coupled together by the Ligament. But they arise out of either side of the Trunk, although not directly over against one another, as also it is in the Emulgent veins, the right one being lower then the left. These Arteries, when they come to the Kidney, are cleft into two branches, with which they are inserted into the *sinus* or channels of the cavity of the Kidneys, and like the veins are consumed in an infinite number of little sprigs upon their substance. Their use, besides the common one, is to purge out the whey, which is found in great plenty in the Arteries.

The spermaticall, or seed-arteries [α] are likewise two, which arise out of the forepart of the Trunk of the great Artery, their originals touching each other; for the left Artery issues not from the Emulgent, as the left spermaticall vein does. Afterward in their descent they are made fast to the veins of their own side, and in men are carried through the processes of the *Peritoneum* or Rim of the Belly to the Testicles: but in women, when they come somewhat near to the Testicles, they are divided into two parts, one of which is carried to the Testicles, the other to the bottom of the womb. But the arteries do so come to the womb, that they only water it at the sides, and pierce not at all into the inner parts of it. Which truly came to passe by the great providence of wisest nature, since it had not been so safe to have brought them down to the inner surface of the womb, by reason that in the coming forth of the child very great issuings of blood would be caused to the no small danger of the woman in Child-bed, if the Arteries had been annexed to the Womb on the inside. Hence also it is, that in the time of delivery they flow by little and little, not rushing down with violence.

Mesenterica inferior, the lower Artery of the Mesentery [β], arises near to the *Os sacrum*, or great bone, a little above the division of the Trunk into the Iliacall branches, and goes into the left side of the *Colon*, and into the strait gut, descending with the hæmorrhoidall veins to the very end of the Fundament, and making the hæmorrhoidall Arteries. It is questioned concerning the use of both the Mesentericks, whether besides the common, they have any peculiar one. For *Galen* in his 4. of the use of the parts, seems to make mention of some other when he would have some part of the *chylus* to be attracted by them. And in the book, whether blood be contained in the Arteries, in the fifth Chapter, he sayes: If we divide the lowest belly, and the inner membrane, we shall plainly see the Arteries in the Mesentery filled with milk in Kids newly yeaned, but in living creatures that are grown, full of something else. In which words Anatomical experience teaches us, that not onely the Meseraick veins, but Arteries also do manifestly draw the *chylus* to them. Which being so indeed, it is altogether to be beleaved, that the *chylus* is either afterward transported by them into the veins, or else turned into blood by the Arteries themselves. Nor will this seem wonderful to any one who shall consider also that the mothers blood is conveyed through the Umbilicall Arteries to the child, whilest it is yet shut up in the Womb. But if the blood which is received by the veins ought yet to be better worked, as any diligent inquirer into nature will conclude it ought; truly that which is received by the Arteries will require to be so much the more exactly laboured, by how much the better it is, then that of the veins. But it is so laboured in the Arteries themselves, and in the Spleen, being haled into the Cœliacall Artery, and carried to the Spleen. And this is an excellent use of the Mesenterick Arteries, whilest a man enjoys perfect health, besides which wee will adde another also, as often as he leaves to be in health. For these Arteries take to them the excrements of the whole body, that they may carry them down to the Guts, in like manner as the veins do, by which nature doth both attract the *chylus*, and likewise expell the noisome humors out of the body, as choler, phlegm, and melancholy. Choler is thus expelled oftentimes in continuall and intermitting cholerick feavers, a solution whereof follows by a loosnesse: Phlegm is so

expell'd, as often as bloody fluxes happen to such as have the gout in the feet, which ease them of their pain, if the intent of nature be advanced by the help of a wise Physician. Lastly melancholy is conveyed out by both the Mesentericks, but especially by the hæmorrhoidall branch; whence *Hippocrates* sayes, 6. *Epidem.* He which has the Emroids naturally, shall neither be troubled with the pain of the side, or inflammation of the lungs, nor with felons or black pustles, called *Terminishi*, nor with the Leprosy, canker, or other diseases. For there is a very great sympathy betwixt the breast and the hæmorrhoidall artery, because the trunk, out of which it arises, descending from the heart, presently after it first issues from thence, propagates the Intercoastall branches. Moreover all black choleric humours are purg'd by this means out of the whole body, that cankers, and leprosy cannot be caused by them. From these voluntary purgings which nature it self has found out, wee may now judge of such as are caused by the help of a Physician, and may be termed Artificiall. For an opinion of some men hath prevailed much in our age, that the body cannot be purged by clysters, but only by those medicins, which are taken at the mouth. But I will not only believe, but also being taught it by experience can witness, that, if the clysters contain in them purging medicins, the whole body is very commodiously cleansed. For the whole colick gut receiving the matter of the clyster, the vertue itself of the medicin draws down the noisome humors by the arteries out of the *Aorta* or great artery. Which being granted, we may give a reason (what we have seen very often) why Suppositories made of white hellebore produce the some symptoms, as are wont to be caused in them, who have taken in white hellebore at the month. In like manner from hence we may fetch the reason, why the belly is strongly purged, the region about the navell, being anointed with purging medicins. For the vertue of the medicin is attracted by the arteries, and by them afterward it purges. These arteries are they, by which the disease of the colick is changed into the gout, and on the contrary the gout into the colick, as we have it in *Hippocrates*, 6. *Epidem. Sect. 4.* where he sayes: One, that was vexed with the pain of the colick on the right side, had some ease, whilest the gout held him; but this disease being cured, he was pained more. The reason hereof was this, because that humor, which caused the gout, was carried out of the joints to the colick gut, whereby the colick disease was increased. *Laurentius*, inquiring into the cause of this, refers us to hidden and unknown passages, to which, it seems to me, that we need not fly, if we say, that the humors are brought out of the crural arteries into the trunk, and out of this into the Mesenterick branches, and lastly, out of these into the guts; for this is the shortest, and most convenient way. Nor is there any reason, that we should be a fraid of that pollution of the vitall spiritus, which they will object to us if the excrementitious humors passe through the arteries; for this betrayes their great ignorance as well in Anatomy, as in solid physick; and it would be very easie, if I would digresse, to prove in this place, that a great part of the humors in our body flow down through the arteries. For in them the strength of nature exceeds, and is more vigorous, that whensoever it is provoked, it is most apt to expell; and the blood being stirred by their continuall beating, as also by its own nature, makes all that is therein more fit to flow. And who will not believe that excrements are carried through the arteries, who considers the flowings down from the spleen, in which there being five times more arteries, then there are veins, truly it is necessary that that ballast of the spleen be carried out through the arteries?

8.

Lumbares.

The four *Lumbares* or loin-arteries [γγγ] arise out of the backside of the trunk of the great artery, all along as it passes through the region of the loins. They run through the common holes into the rack-bones of the loins, and to their marrow, and also into the neighbouring muscles. And at the side of the marrow, after they have entred the rackbones, they climb upon both sides to the brain together with the veins of the loins. But they are equally big, if you except those two, which issue out near to the *os sacrum* or holy-bone, which are not only derived into the rack-bones to the marrow, and to the muscles thereabout, but are also sent overthwart through the *peritoneum*, and muscles of the *Abdomen*. The two last are by some called *Muscula superiores* the upper muscle-arteries, and are distinguished from the *Lumbares*. And these are the arteries, which if we observe, we shall easily give the reasons of many things, of which Physicians do still dispute very hotly; but especially of that most difficult question, which is controverted among Physicians, by what wayes, and in what manner the colick ends in a palsie or in the falling sicknesse. For we have the observation in *Paulus Aeginetalib.* 3. c. 43. where he sayes: the colick, as it were by a certain pestilent contagion, ended with many in the falling sicknesse, with others in a resolution of the joints or palsie, their sense remaining; and they who fell into the falling sicknesse, for the most part dyed; but they who fell into the palsie, were most of them preserved; the cause of the disease being carried to another place in the solution. For the humor, that caused the disease, came back out of the colick gut through the mesentericall arteries, from whence being afterward transported into the trunk of the great artery, it came also to the *lumbares* or arteries of the loins, which swelling with blood prest together the neighbouring nerves, from which came the palsie in the feet. And this we have often observed, as well in our selves, as in others, especially in former years, when these diseases

An observati-
on.

Why anointing of the navell with such things as purge, loosen the belly.
How the colick is changed into the gout; and on the contrary.

How the colick disease ends in a palsie or Epilepsie.

eases at *Padua* were Epidemiall. Yet the Palsie is not alwayes a perfect one, but often (as I am wont to call it) imperfect, because the power to walk is not wholly taken away, but the diseased stand upon their feet with a great deal of difficulty. Many at that time being deceived in the knowledge of the disease, mistaking this for a great weaknesse of body contracted by their sicknesse, endeavoured to take it away by eating and drinking largely, but in vain. This also is the cause, why the Falling-sicknesse, and Lethargies too, as we have oft-times seen, follow after the Colick, because the matter being sent over from the Mesenterick arteries to those of the loins, may easily go from them into the brain, to which those very vessells are carried.

But the trunk of the great artery, when it is come to the last rack-bone of the loins, having taken its journey all the way, which we have shewed, under the hollow vein, at the left side, here gets above the vein, lest it should be worn away in that continuall motion by the hardnesse of the holy-bone. But it is divided, no otherwise then the hollow vein is, into two notable branches [S. S.] which are called by Anatomists the Iliacall arteries from their situation, and being carried downward obliquely to the thigh resemble the γ of the Greeks turned upside down. But they also just like the Iliacall veins, to which they are exactly answering, before they be implanted into the thigh, shoot out a pretty number of branches. But from the lower side of the artery before the Iliacall branches be divided, issue forth *saera* Sacra. the holy arteries [δ] which are notable ones, and carried downward, leaning upon the holy-bone, passe through the holes thereof, and run to the marrow and backside of the bone. And through these also there is a way for the matter, that makes the Colick; to cause the Palsie of the legs.

After this a little below the division of the trunk, the Iliacall arteries are subdivided into two branches, one of which is the inner and lesse; the other outer and greater. *The lesse and inner* [T] issues out two propagations, one from its outside, the other from its inside. *The outer* [ϵ] is commonly called *Muscula*, by us more strictly *Glutea* the muscle of the buttocks, because it runs down with its name-fake vein, betwixt the holy and hip bones, where they part one from another, and scatters many twigs into the muscles, which lye upon the *Os Ilium*, or hanch-bone, called *Glutei*, or the muscles of the buttocks; because they are the authors of them.

The inner is called *Hypogastrica* [ζ] which is very notable, and large, and, being carried directly down to the lower side of the holy-bone, it affords certain propagations in men to the bottome, and neck of the bladder, as also to the strait gut, which also may bee called the Hemorrhoidall arteries; but in women, to whom this branch is somewhat larger, it distributes a great number of propagations, besides those to the fore-named parts, into the lower region also of the bottome of the womb, and likewise into its neck. Hence we may gather the reason, why, if the womb reach to the middle of the hip, Convulsions are caused, as *Hippocrates* witnesseth, *lib. de natura muliebri*. As also if the womb fall down to the hip, why the monthly flowers are suppress'd, and a pain is caused in the softness of the sides, and in the lowest belly. For the blood which nature drives to the wombe, cannot bee laid in there, the arteries being prest together by the falling down of it; so that necessarily flowing back, it fills the neighbouring veins and arteries, which swelling up cause these pains. For wee have oft-times seen in dissections these veins so swolln, that they have been seven fold bigger then themselves. Hence also a reason may be given of the thirty second Aphorism of the fifth section in the same *Hippocrates*, where he witnesseth, that a woman vomiting blood is rid of her disease, upon the issuing forth of her teares. Which happening by the consent of all by revulsion or attraction of the humour to a contrary part, and that not by the benefit of the veins, because the veins of the stomach arise out of the gate-vein, but they of the wombe from the Hollow one; there is no other sympathy to bee sought for, then that which is caused by the arteries, especially when the Hypogastrick or artery of the lower part of the lowest belly is not far distant from the Coeliacall, or artery of the stomach. Hence likewise a reason will be given of the Aphorism that follows this, wherein he judgeth the *Hæmorrhagia* or abundant issuing forth of blood at the nostrills to bee profitable when the monthly courses do fail. The remaining part of the lesse Iliacall artery descends, and brings forth the Umbilicall or navell artery [η], which is carried down near to the length of the great artery, and is tyed wih strong membranes to the sides of the bladder of urine. But it loses its hollownesse in those that are once out of the wombe. After this [θ] like the Iliacall vein which is joined to it, it goes through the hole of the share bone, or *os pubis*, which before it be past, it takes to it a propagation issued from the outer Iliacal branch, and so goes out of the hole, and being departed from it spends it self, in like manner as the inner Iliacall vein does, upon the muscles; partly those with which the hole is stopt; and partly those which arise from the share-bone. At length being terminated at the middle almost of the length of the thigh, the end of it meets [\omicron], and is united with the ends of the branches [ν] of the inner muscle-artery of the leg, of which we shall speak in the next Chapter.

The greater or outer Iliacall artery [ν] produces likewise two propagations, the first of which [ι] is called *Epigastrica*, which arising from the outside of it, a little before it passes through the *peritonæum* or rim of the belly is reflected upward, and ascends by the inside of the strait muscle the lower belly,

The division of the Iliacall arteries into an inner and outer branch.

Propagations of the inner or lesse branch.

1.

Glutea.

2.

Hypogastrickæ

Arteria umbilicall.

Propagations of the outer or greater Iliacall branch.

1.

Epigastrica, or the artery of the upper part of the lower belly,

Pudenda or the artery of the Privy parts.

muscle til about the navel it be inoculated with the descendent Mammary artery. The other [A] is called *Pudenda*, which is a little inner propagation, being not divided into so many branches, as the vein of that name is. But it arises presently after the artery is gone out of the *peritoneum*, and being carried overthwart along the commissure or joyning together of the share-bones, is spent at the privy parts upon the skin of the yard. That which remains of this trunk goes into the *crus* [X], whereof we shall now speak.

CHAP. IV.

The propagations of the outer Iliacall branch, which are distributed through the Crus or great foot, containing the thigh, leg, and foot.



The trunk of the crural artery and its propagations are divided.

- After that the outer branch [V] has propagated the fore-mentioned branches, it departs out of the *peritoneum* or rim of the belly, and at the groin is carried into the *crus*, by the same way which the crural vein takes; under which it goes, and is joined in company therewith every where, and so it makes the trunk of the Crural arterie [X], (as we will alwaies call it). But presently after it hath got beyond the *peritoneum*, it issues forth a propagation from the outside, which is called *Muscula cruralis exterior*, the outer muscle-artery of the *Crus*, which being carried downward is propagated into the muscles that cover the fore-side of the bone of the thigh. Sometimes over against this, but oftner a little below, yet of the inside another is brought forth, called *Muscula cruralis interna*, the inner muscle-artery of the *Crus*, [v] which is distributed in many branches through the third bending muscle of the thigh, called *Triceps*, and those on the inside of the thigh, as far as the knee; the ends of which branches are joined with the end of the inner Iliacall artery, which we told you descends through the hole of the share-bones to the *Crus*. These propagations being dispatcht away, the crural trunk descends from the groin, together with the crural vein; and is so bent backward near to the bone of the thigh, that when it is come to the ham, it stands betwixt the two hindmost heads of the thigh. For prudent nature does alwaies observe this, to carry down the vessells about that side of the joint where the bending is, lest if they should go on that side whereon the joint is extended, they should be compressed. But in the very mid-way as it were, as it runs down through the thigh, it sends out a propagation [π] which breaking into more furcles runs out through the muscles that are seated on the backside of the thigh, together with the ham-vein; and at length descending through the ham (whence it is called *Poplitea* the ham-artery) is distributed with many sprigs into the calf of the leg. But whilst it staves in the ham, it sends out a propagation [ρρ] on each side, to the sides of the joint of the knee, which then sinking deeper, are consumed partly in the joint it self, partly upon the muscles called *gasteromenii* that make the calf; from whence they are called *Surales*, the arteries of the calf.
- 1.
 - 2.
 - 3.
 - 4.

After that the Crural trunk lyes in the ham [Y], it sends forth a propagation from its outside [σ] which runs down near to the *Fibula* or lesser bone of the leg, and is hid betwixt the muscle, that moves the foot outward, and the second bending muscle of the instep, and distributes it self into the rest, that lye on the forepart of the leg, as far as they are fleshy, and till they begin to be contorted by the outer ankle. A little under this same another artery [τ] is brought forth out of the backside of the trunk, which runs down as far to the mixing together of the tendons of the calf-muscles. Then another [υ] issues out of the same backside of the trunk, but under the second, which descending and passing through the transverse ligament, runs down by the top of the foot, and is diffused into the muscles that move the toes outward. The remainder [r] of the trunk is carryed downward by the backside of the leg, and about the inner ankle offers a furcle [φ] to the foot, which goes to the muscle of the great toe, and creeps through the top of the foot. But the trunk it self lying hid among the tendons of the muscles of the toes is cut [χ] into two branches; of which the Inner [ψ] bestowes two furcles upon the great toe; two upon the fore toe, and one upon the middle; the outer [ω] two upon the little toe, and two upon the toes next to it, on the lower side. But although the progresse of the arteries be for the most part such, as we have described, yet what we have said formerly of the veins, that their distribution varies much, not only according to the diversity of bodies, but also of sides in the body of the same man, is true also of the arteries, which in divers men are diversly distributed.

An Explanation of the Table of the Arteries.

This Table comprises the delineation of the great Artery, entire and free from all the parts.

A



He large beginning of the great artery, where it issues out of the left ventricle of the heart; but presently after its rise, and before it yet falls out of the pericardium or purse of the heart, it shoots forth the two Coronary arteries,

a a

a, a, which encompasse the basis of the heart in manner of a crown.

B

But presently having past the pericardium it is divided B into two trunks; one of which is the Ascendent C, the other the Descendent one Q.

C

The Ascendent trunk C, is by and by divided into the two subclavian arteries D D, both which when they have attained to the first rib, scatter many propagations; partly from the higher, partly from their lower side.

D D

From the lower side issues Inter-costalis superior, the upper artery between the ribs, b, communicating particular twigs to the distances of the four upper ribs.

b

From the higher side issue three. The first is vertebralis, the artery of the rack-bones, c, creeping on by the transverse processes of the rack-bones of the neck, as far as to the skull. The second mammaria the artery of the dugs, d, which descending under the breast-bone, runs out as far as to the seat of the navill, and distributes sprigs into the distances of the gristles of the true ribs, and then into the muscles that lye upon the breast; at length about the navill it joins by anastomosis or inoculation, x, with the ascending Epigastrick artery, i. The third cervicalis or the artery of the back side of the neck, e, is propagated to the muscles on the back side of the neck, as far as the nowl of the head.

c

d

e

These branches being issued out, the subclavian artery goes to the arm-pit, and takes the name of Axillaris, about E, and so is diffused into the arm. Yet before it enters thereinto, it shoots out some twigs from both parts of it: from the lower three; of which the first, f, is called scapularis interna the inner blade artery, because it is spent upon the muscles that cover the hollow side of the shoulder-blade. The second is Thoracica superior the upper chest artery, g, dispersed into the muscles on the fore side of the chest. The third

E

f

g

h

h, Thoracica inferior the lower artery of the chest, which descending along the sides of the chest, is inserted into the muscle called Aniscalptor, that moves the upper part of the arm backward. Betwixt g and h a little branch is placed, one of them which here are disseminated into the glandules of the arm-pit. From the upper part issues one, i, caled scapularis externa the outer blade artery, being disposed of into the muscles, on the outside of the shoulder-blade.

i

F F

In this place the axillary artery changes its name, and is called Brachialis the trunk of the arm, that is undivided as far as G, scattering two twigs l and m into the muscles that cover the bone of the upper part of the arm on the back side; and two other n n, one of each side about the bending of the cubit.

l m

n n

G

The parting in twain of the Brachiall artery under the bought of the cubit into an outer H, and inner branch I.

H

The outer branch of this division, or Radius, running straight along the radius or lesser bone of the cubit to the wrist, and distributing a branch o into the muscles seated betwixt the first bone of the thumb, and that of the metacarpium or after-wrist, which sustains the fore-finger, and then three other, p p p, which are dispersed into the first outer fingers, the thumb, and wit, the two fingers next thereunto.

o

p p p

I

The inner branch, or Cubitus passing along the greater bone of the cubit, is at length consumed in a double branch upon the two inner fingers; to ring-finger and little one.

L

M M

The remaining part of the Ascendent trunk, which near to the upper part of the breast-bone is cleft into two branches M M called Carotides, or the sleepy arteries. These tend directly upward by the sides of the neck, and being come to the chops are divided into two branches about N, one of which is the outer O, the other the inner P.

N

O t

The outer Carotis propagates twigs t to the Bucca or cheek pusses, and to the muscles of the face; but about the ear it is cut into two branches, a formost one, q, which is carried through the Temples; and a hinder one, r, that is disseminated along the back side of the ear under the skin.

q

r

P

f

The Inner Carotis, going to the skul is divided near to the basis thereof into two branches; of which the one and lesser, f, which goes into the sinus on the side of the thick membrane, is cut off here, whereabout it sinks into the

t the skull: the other and greater, t, enters the skull, through a peculiar hole bored for it in the temple-bone.

Q The Descendent trunk of the great artery, reaching downward to the rack-bones of the back.

From this before its division at R, many propagations are scattered, which we will now rehearse in order.

First then are Intercostales inferiores, the lower arteries between the ribs, u u u, distributed to the distances of the eight lower ribs, from which propagations are brought to the marrow of the back-bone; and to the muscles that grow to the back and chest. After this the trunk passing on distributes two more, called Phrenicæ the arteries of the midriff x x, because they are disposed of into the midriff. Then follows Cœliaca or the stomach. After that Mesenterica superior, the upper artery of the Mesentery, y, reaching out into the guts Jejunum, and Ileum, as also into that part of the Colon, which reaches from the hollow of the liver as far as the right kidney. After this the Emulgent arteries, z, propagated to the kidneys. Then Spermaticæ, the seed arteries, a, going to the testicles, under which is Mesenterica inferior the lower artery of the Mesentery, ß, departing into the left side of the colick, and into the strait gut, and making the hemorrhoidall arteries. Lastly Lumbaræ the arteries of the loins, γ γ γ, which going to the rack-bones, the loins joint by joint, are distributed, into the peritonæum or rim of the belly, and the muscles growing to the rack-bones.

R These branches being issued forth, the trunk about the fifth rack-bone of the loins, is divided into two branches S'S called the Iliacall, both which are again broken into two other, an inner branch T, and an outer one V. But before this division in the very parting in twain of the Trunk, arises sacra the holy artery d, distributed into the holes of the os sacrum or holy bone, to the marrow thereof.

T The inner Iliacall artery, before it falls out of the peritonæum, issues forth two propagations: from its outer side, that called glutæa, e, distributed into the muscles of the buttocks; from its inner side, that called Hypogastrica, ζ, going into the bladder and yard, and in women also to the bottome of the womb. After this it runs down, and sends forth the umbilicall arteries η η, that tend upward near to the length of the great artery.

θ The remainder under θ, taking to it a propagation from the outer Iliacal artery, slips down through the hole of the share-bone into the Crus, the end of it joining about o with the inner muscle artery of the Crus.

V The outer Iliacall artery likewise before its going forth of the peritonæum produces two. The first is called Epigastrica, ι, digested into the muscles of the Epigastrium, and the straight ones of the abdomen, where it is joined by inoculation, κ, with the descending mammary artery d. The other called Pudenda λ, goes to the privy parts.

X In this place the outer Iliacall artery having past the Peritonæum, enters the Crus, and begins to be called the Crural trunk, which issues out more propagations. The first is Muscula cruralis exterior, the outer muscle artery of the Crus, μ, that is propagated into the muscles, that cover the fore side of the Thigh-bone. The second is the inner muscle-artery of the Crus, ν, digested through the third bending muscle of the thigh; and those muscles that are on the inside of the thigh; the ends of it are joined with the ends of the inner Iliacal artery about o. The third is Poplitea, the ham-artery, π, running out into the muscles on the back-side of the thigh. The fourth is Suralis the calf-artery ρ ρ, which is double, issuing out there, where the crural trunk is hid betwixt the two lower heads of the thigh, and spreading out on both sides into the joint of the knee, and the two heads of the first extending muscle of the foot.

Y Here the great artery lyes in the ham, where it is divided into branches of unequal bignesse.

σ A sprig issuing from its outside, and reacht out to the fibula or lesser bone of the leg, betwixt the muscle that moves the foot outward, and the second bending one of the instep.

Z The trunk descending by the back-side of the leg.

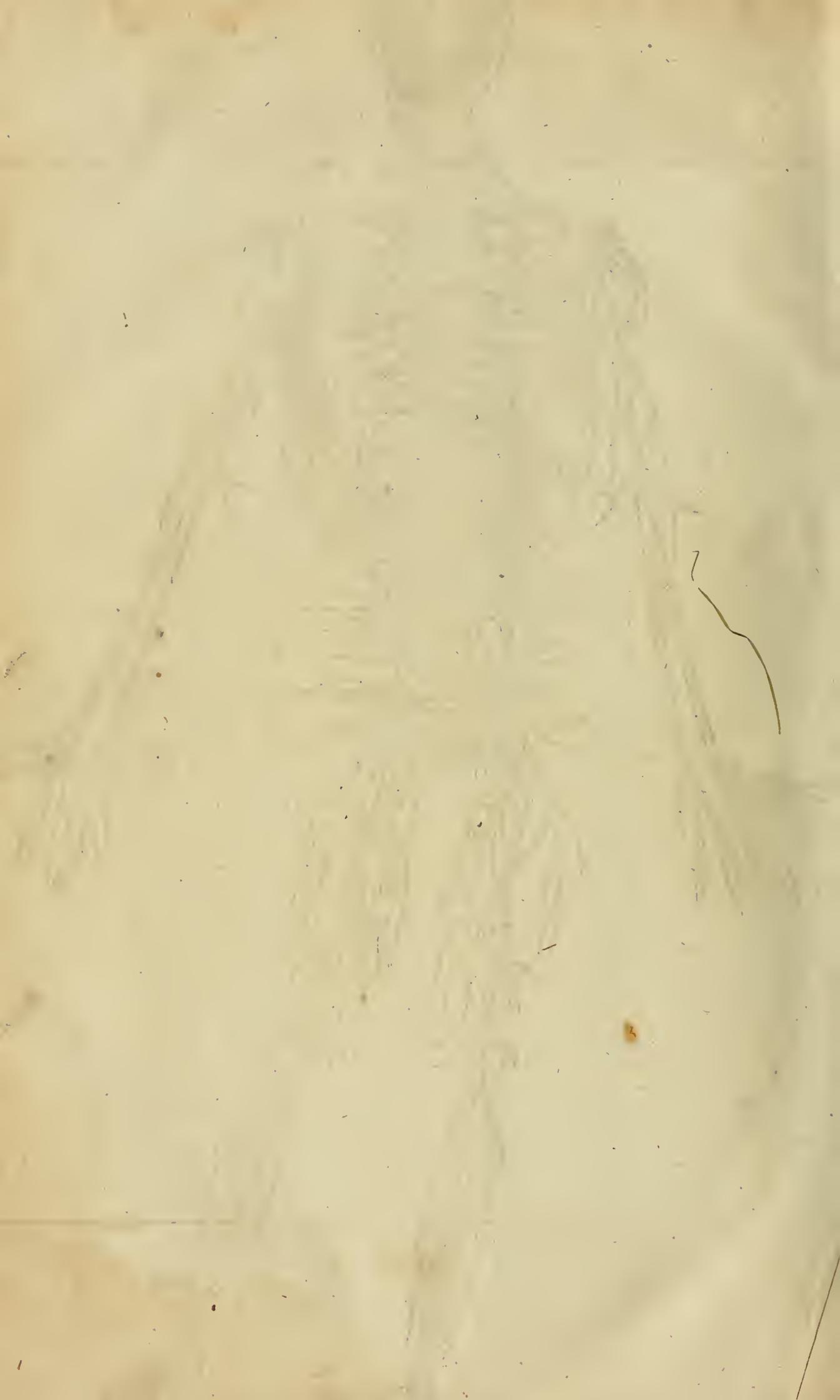
τ A higher branch issuing out of the back-side of the trunk.

υ A lower branch issuing out of the back-side of the trunk.

Γ The remainder of the trunk descending by the leg, which offers a little branch φ to the inner ankle.

φ The division of the trunk χ into an inner branch ψ that is propagated to the great toe, and the two next; and an outer, ω, propagated to the little toe, and the two next to that.





The third Treatise,

Concerning

The N E R V E S.

CHAP. I.

Of the nerves of the brain.



AMong those eight Conjugations, which arise from the marrow of the brain drawn out in length, whilest it is yet contained within the limits of the skull, that offers itself in the first place, which makes the *Optick nerves*, that are so famous among all the Masters of Anatomy. The first part of the brain.

For these are not only the biggest, if you look upon their thickness; but also without doubt the softest of all the nerves of the body. But they arise out of the middle of the *basis* of the brain, on the forepart, according to the opinion of the Ancients, but indeed, if the head be turned upside down in the dissection (which is the proper

way) out of the beginning of the former trunks of the spinall marrow, that their original is as it were in the back part of the head, and presently each of them by little and little making towards its mate, they are united (not only joyned, as some would have it) over the saddle of the wedg-bone, and make one common square body, the marrow within them being mixt together. Its original.

After that presently separating again, each of them is carried obliquely into the eye of its own side, entering the orb thereof through the first hole of the wedg-bone, and ending at the very centre of the eye. In this pair we may easily shew those two membranes, which are derived to the nerves from the two meninges of the brain, as also the very inner marrowy substance, which comes from the body of the brain. Progress.

Yet the nerve it self is not cleft into more branches, (as the other are) but lying hid makes the coats of the eye; and out of the thick membrane it forms that coat, which is called *Cornea*, the horny one; out of the thin membrane that is called *Uvea*, the grapey one; but out of the substance of the marrow the *Retina* or coat like a net. For as soon as it is arrived at the centre of the eye, these membranes are displayed, and making a sphere contain the humors in them. Inferior.

These nerves convey the faculty of seeing to the eyes; wherefore, they being obstructed, or compressed, a blindness insues. *Galen* hath ascribed holes to them, and *Herophilus* for the same reason called them *πύρις ὀπτικῆς*, the passages of the sight, teaching that there is a sensible hollownesse plainly to be seen in them, whom for all that almost all Anatomists do contradict. But I have heretofore shewen in the Universitie of *Padua*, and in a great assembly of men, that there are certain passages continuing from the beginning of these nerves, as far as to the place, where they meet together, and presently after that vanishing away toward the eye. And therefore I shewed that the Ancients may not only be excused, but also that they writ the truth, especially when none of them have said, that these passages were great, but only such, as did not altogether escape the sight, if one would make tryall thereof in a great living creature, and by a clear light, and presently after it is killed. For *Galen* himself requires these three conditions, 7. *placit.* 4. and *lib. de oculis*, that one may see them. Use.

But before we depart hence, I will bring in some problemes, that, besides the history itself, I may also shew the use of that, which I say, especially when in our time they only for the most part follow the study of Anatomy, who imploy their industry in the behalf of Physick. The first therefore shall be, what is the cause, that many upon sneezing often (especially when they have provoked it for the nonce) have of a sodain fallen blind. This happens, either because the branches of the sleepy arteries, which are so near to the optick nerves, that they touch, are filled, and being so, presse together those nerves; or else because

cause a copious, and that a phlegmatick humor has fallen out of the brain into the optick nerves, and obstructed them. I have seen those, that have been blind through the first cause, sometimes cured by a Seton; but I never remember, that any, in whom this arose from phlegmatick humors, have recovered, except one having the French pox, who being anointed with quick-silver, all the humors melting away, was restored to health. But it is not the part of a good and pious Physitian, to make use of those things, which, being full of danger, may do more harm, if they prove hurtfull, then they can procure good, if they be profitable. And truly it is better not to cure blindness, then to cause death; although oftentimes rashness helps them, whom reason helps not, as the most elegant of Physitians *Celsus* says elegantly. In the mean time in diseases of the eyes, they who practise Physick, may learn rather to administer those things, which bring the phlegm out by the palat, then to draw the noxious humors to the nostrils. That I may conceal besides the danger which they avoid, that more profit arises from the medicines, that void the phlegm out of the head through the mouth; which both long experience hath hitherto taught, and Anatomy persuades, when the optick nerves in their original are not far distant from the palat; but farther from the spongy bone, and it is a preternatural way, by which the humors are carried, as hath been already demonstrated by the learned *Vesalius*. Then it is disputed, by what means the eye can fall out of its orb. 2. the optick nerve not being broke, whereof we have very many histories. But it is not hard to give an answer, to wit, that the nerves may be very much extended in length. Whilest therefore this nerve receives much moisture in the inflammations of the eyes, it easily comes to passe, that it is slackned; but the muscles themselves swelling very much, when they can no longer be contained in the orb, leap forth out of it. For this falling forth of the eyes most commonly proceeds from inflammations; such as are the stories of the most learned *Vega*, who cured a woman in this case by procuring the flux of her terms, and a young man by digesting ointments. But the question is very worthy to be made mention of, and that gives me an occasion to explain it, which I have read in some Authors, that such as were before blind, upon receiving of a wound overthwart the forehead, and some, upon a great looseness of the belly arising on a sodain, have received their sight, and that presently. The cause of their blindness was no other, then the compression of these nerves proceeding from the neighbour-vessels, to wit, the veins, and arteries being swollen with blood, which such a wound presently emptied. Wherefore I also sometimes, and not without success, in that species of blindness, which the Barbarians call *Gutta serena*, open the middle vein of the forehead, out of which I draw blood so long, till it ceases to run of its one accord.

The second pair. Its original.

The second pair arises, as the ancient Anatomists say, from the sides of the basis of the forepart of the brain, near to the original of the first pair. But the new dissection shews, that it issues out at the inside of the beginning of the spinall marrow, and that they are so united in their original, that they make one common angle, which is the cause why both the eyes are moved together to the same sides. It is much smaller, if you compare it with the first pair, and harder, and goes out of the skull through the second hole of the wedg-bone, which is somewhat long, and so it enters the orb of the eye. By and by it is divided into many sprigs, which goe to the muscles of the eye; and the first climbing up above the first pair, or the optick nerves, is disposed of into the two muscles, as well that, which lifts up the eye-lid, as that which lifts up the eye. Another very conspicuous one is disseminated in many surcles into the muscle, which moves the eye inward. The third, no contemptible one neither, being divided first into two fibres, and by and by into more, is sent into the muscle, that draws down the eye: the fourth, into the lower or lesser of the oblique muscles, that rowls the eye about toward the other angle. At length it issues out some thin fibres, which being joined with the first pair are distributed to the outer membranes of the eye, so that this second pair is propagated only to four muscles of the eye, and to that, which lifts up the eye-lid. The use of this pair is, to impart the faculty of motion to the muscles of the eyes.

Branches.

- 1.
- 2.
- 3.
- 4.

Use.

The third pair. Its original. Branches.

- 1.

An observation.

The third pair arises with a very small nerve out of the lower, and hinder part of the marrow of the brain, and runs directly forwards under the basis of the brain, being tyed to the second conjugation, together with which it enters into the orb of the eye through the said second hole of the wedg-bone. By and by it is divided into four branches, of which the first offers a little branch to the upper, and greater of the oblique muscles of the eye, or that called the muscle of the pulley, and then falling out through the hole of the forehead-bone above the orb of the eye, in the skin, and muscle of the forehead, which ought rather to be called the muscle of the eye-brows. This branch is diligently to be taken notice of, because I have long since observed, that, it being hurt with a slight wound the eye-lid fell down, whilest the muscle of the eye-brow by reason thereof fell into a Palsie. I have seen also the same palsie caused by cold, and narcotick medicines, somewhat unreasonably applyed for the procuring of sleep. But hence also a reason may be rendred, why *Hippocrates* 1. Prognostic. reckons it among the signs of death in acute diseases to sleep with the eyes half open. For this is an ill sign for that reason, because it signifies, that

that the nerves are very much dried, and so the brain itself, whence it comes to passe, that they, who are so diseased, for the most part suffering convulsions afterward dye. In some also a fore-runner of the Falling-sicknesse is wont to arise from the same cause in the eye-lids, the eyes, and the whole face, when this third pair is pluckt by the humors begetting the falling-sicknesse, and so a convulsion of the eyes, and face is caused. *The second* branch is carried downward, and falls out through the hole of the fourth bone of the upper jaw, which is under the orb of the eye, and presently scattering into more propagations, on the forepart of the face, is spent upon the muscles, that move the upper lip, and wing of the nose outward, as also upon the lip itself, and the gums of the teeth, called *Incisoria*, or shredders. *The third* is sent through the hole of the second bone of the upper jaw, behind the caruncle, that is placed in the inner angle of the eye, to the wide cavity of the nostrills, being spread throughout its coat, whereby it comes to passe, that it is indued with a very sharpe sense, and being but lightly touch't causes sneezing. *The fourth* goes out through that crevice, which is betwixt the first bone of the upper jaw, and the wedg-bone, in the outer angle of the eye, or through the fourth hole of the wedg-bone, and departs to the inner side of the temporall muscle. The use of this pair is to convey the faculty of moving to the said muscles.

The fourth pair arises out of the marrow of the brain on the backside, goes out of the skull through the sixth hole of the wedge-bone, and running straight down, propagates three branches from itself. *The first* is presently after its going out of the skull, which being writhed sometimes about in manner of the tendrells of a vine, or gourd, and united to two sprigs of the Auditory nerve (of which we are to speak next) afterward distributes surcles to the temporall muscle, that lifts up the lower jaw, and that which moves it forward from the head, as also to the muscles of the cheeks. After this the pair running farther down, issues forth a *second* branch, which propagates surcles in order to the gums of the upper cheek-teeth called the grinders, and also to the teeth themselves. *The third* branch issuing forth from the backside of the nerve, and entering the hole of the lower jaw-bone that is bored in the inner surface of it, at the originall of the processes, bestows little branches in order to the roots of the teeth, and at length going forth through the foremost hole in the outer surface is terminated in the lower lip, and skin of it. The remainder of this nerve is spent upon the coat of the tongue near to the root, and so gives it the power of distinguishing savors or tasting.

But note in this place, that these two pairs which we have now recounted, I say, the third and fourth, are commonly reckoned for one by Anatomists, and that the third; but with this distinction, that they say this very pair arises with a double root; the one smaller, and the other thicker. They call that the smaller root, which we set down for the third pair; that the thicker, which we make the fourth. But we distinguish them, because indeed they are not joined together, neither in their originall, nor in their progress. But that which they account for the fourth pair, seems not to be distinguished, from the third; as *Valuerda* himself grants, *lib. 7. Anatomie. cap. 4.*

The fifth pair issues out of the marrow of the brain drawn out in length, on that side whereon a part of the *cerebellum* or after-brain is joined to it, arising out of two nerves, of which one is softer, the other harder. These go out of the membrane together, and enter the organs of hearing, through the hole of the temple-bone, that is bored in the stony proesse thereof, being a large one and winding. After this that *harder* part goes forthwith to the foreside, being carried through a peculiar channell, and returns backward again obliquely through the same bone, and departs into the first cavity of the inner ear. From thence being more reflected, it sends forth two propagations, one higher, the other lower; but both pass through their peculiar holes. *The upper* is carried through the transverse hole of the same bone, through which also a little vein passes into the organ of hearing; and a little after it is come forth of it, is joined with that branch of the fourth pair (as we have delivered; but as other commonly count the pairs of the third) which we told you was writhed about, like the tendrell of a Vine. *The lower* goes out through the third hole of the same bone, which is very narrow and winding; and being carried overthwart above the muscle of the lower jaw, that moves it sidwards, descends into the chops, having disseminated a pretty many propagations into the nostrills. But forthwith it is joined with the propagation of the fourth pair, that resembles the tendrell of a Vine, or that sprig which goes to the tongue, from which it passes to the roots of the teeth, and muscles of the cheeks, as also to the skin that goes about the root of the outer, or little ear. Anatomists do beleve, that by means of this branch it comes to passe, that they who are born deaf, are for the most part dumb also. But that *softer* part of this pair is carried together with the hard part; and when it is come to that first cavity of the inner ear, it is spread throughout it in manner of a membrane, and so it deserves to be called the Auditory nerve, as ministring all the spirits, that serve for hearing.

The sixth pair arises somewhat more toward the lower and hinder part, then the fifth, and its originall.

2i

Use.

The fourth pair. Its original branches.

1.

A note.

The fifth pair. Its originall. Its two parts.

The harder.

The soft part.

Its use.

The sixth pair and its originall.

and not with one, but with many little nerves severed from each other, which for all that are presently joined together, although they do not close so, as to make one only, but two distinct ones alwaies, yet are they contained in one membrane, arising from the *Dura meninx* of the brain, which hath deceived many, so that they have accounted them for one. Being thus joined, they descend both together out of the skull, through the second and third hole of the nowl bone; through which same the lesser branch of the sleepe artery, and the greater of the Jugular vein enter into the skull. There being then two nerves, the *one* in its egress inclines more to the forepart of the said hole, and is the lesser of the two; the *other* to the hinder part, and is the *greater*. That presently after its going forth of the skull, tends straight downward to the muscles of the tongue and chops, and to the parts placed in the mouth, upon which it is wholly consumed.

The lesser nerve.

The greater nerve, and its propagation.

This on the contrary sends its first propagation to the muscles seated on the backside of the neck, especially to the first muscle of the shoulder-blade, called *Cucullaris* or the cowl-muscle, and then adhering to the seventh pair, and the aforesaid artery and vein, by the benefit of certain membranes, it runs down to the sides of the throtle, to whose muscles, especially those seated in the inner cavity, it distributes surcles overthwart. Here many propagations of nerves meeting together, and parting asunder again, a certain texture is made, wherein knots are found not unlike to the glandules, that are tyed to the divarications of the vessels; which was first observed by the most learned Anatomist *Fallopins*, who would have it resemble the body of an olive. But the greater nerve itself going in the middle betwixt those same vessels which I spake of, is carried leisurely from the throtle to the rough artery, and running down at the side thereof, tends to the chest.

The branches of the greater nerve.

But before it enters therewith, it is divided over the hollow of the neck into two branches, of which one is the outer and lesse: the other the inner and greater. We shall now speak briefly of the distribution and propagations of them, but so that being the right trunk is diffeminated in another manner then the left, we set down the history of each by itself; and first of the right, then of the left.

The propagations of the outer branch of the right nerve.

The outer branch then of the right nerve sends out propagations presently after the division to the muscle that bends the head, called *Mastoides*, as also to that of the bone *hyoides*, called *sternohyoides*, and that of the *Larinx* or throtle, called *sternothyroides*; after this it enters the cavity of the chest, and when it comes to the axillary artery, issues forth from its inside sometimes three, sometimes two surcles one under another which are returned about the said axillary artery, as it were an axel tree, or (to say truly) a kind of pulley, and closing together make one nerve; which being fastned to the right side of the rough artery, by the benefit of a membrane, runs back from the lower part thereof to the highest, and hasts to the right side of the throtle, leaning upon a glandule, which is placed at the root of the right side. Having past this, it is forthwith divided into many surcles, which are spent upon the muscles of their own side, which are placed in the throtle, and have their heads downward, giving motion to them. And this nerve is called *Recurrentes*, the returning one from its progresse, and is very famous among all, being so made by skilfull nature with great wisdom, that it might be inserted into the muscles of the throtle, whose heads look downward, when all the nerves that give motion, ought to be inserted into the heads, and to look towards the end, not on the contrary. And because the throtle is an organ of the voice, but the voice cannot be uttered without motion of the muscles, that either open the cartilages of the throtle, or shut them; therefore these nerves, which impart to the muscles the power of moving and contracting themselves, being either bound hard or cut off, it happens for that cause, that the voice is taken away. This may be very handsomely shewn in dogs, or in a hog, because the one continually makes a noise with barking, the other with grunting. For one of these nerves being cut off, halfe the voice is taken away; but both being cut, it is wholly lost. The recurrent propagation being thus constituted, the outer branch running down obliquely under the hollow of the neck, after that by the way it hath distributed surcles of an indifferent bignesse into the *Pleura*, or membrane of the ribs, and into the coat of the lungs, and given others to the *pericardium* or purse of the heart, and to the heart it self; it descends farther within the duplication of the *mediastinum*, and near to the rack bones is divided into two branches, which make the right nerve of the left orifice of the stomach, are carried obliquely, and then piercing through the midriff, together with the gullet, to which for all that they afford never a branch, are consumed upon the left orifice of the stomach, with many branches like a little net, and so encompass it together with the left nerve, that it seems wholly to consist of nerves. Hence there is so great a sympathy of the stomach, not only with the brain, but with the heart also; that such diseases, as pain the upper orifice, seem to be of the heart, and indeed so they are, the same heart suffering pain, because of this nerve being pained. And this is the true cause, to wit, the communion of this nerve, not the nearness of both the entrails; as others say. The inner branch goes to the inner side of the root of the first rib of the chest, and cleaving to the

The right recurrent nerve.

1.

2.

3.

4.

5.

VVhence the sympathy is betwixt the stomach and heart. Propagations of the inner branch.

the rack-bones under the *Pleura*, runs down through the roots of the rest of the ribs, taking to it a little branch from every one of the Intercoftall nerves, that issue out of the back-bone, then passing through the midriffe with the Descendent trunk of the great artery it is carried as far as to the *os sacrum* or great bone, at the region whereof it issues out three propagations, which are distributed into the naturall inner parts. *The first* goes to the lower membrane of the Kall, and descending through it is parted into three little branches, of which *one* is distributed to the right side of the same membrane, and to that part of the colick gut, that is joined unto it: *another* the least of them, and a very small one, to the guts *duodenum*, and the *jejunum* about its beginning; *the third* to the bottom of the stomach on the right side, and to the upper membrane of the Kall, which is something the larger. That which remains of this propagation is spent upon the hollow part of the Liver, and the bladder of gall. *The second* goes into the right kidney, and the membrane thereof. *The third*, which is greater then either of the former, descending to the first rack-bone of the loins, reaches into the right side of the mesentery and into the guts, that are tyed thereto, entering the center of the mesentery in company of an artery, and a vein. The remainder goes into the bladder, and in women into the right side of the bottom of the womb. But *the outer* branch of the left nerve, saving that in its descent it has offered sprigs both to the *Pleura*, or membrane investing the ribs, and to the coat of the lungs, and that outwardly, as also to the purse of the heart, and heart itself inwardly, at that part of the Descendent trunk of the great artery, where it first issues out of the heart, and is bowed to the back-bone, it sends forth three surcles, which returning to the said artery close together into one nerve, which is called *sinister recurrens nervus*, the left returning nerve, and in like manner as the right one, takes its progresse upward, and is propagated into the muscles of the *Larina*, or throtle. After this it issues out a small sprig, which is distributed through the *basis* of the heart, and coat of it in manner of hairs. Afterward the remainder descends inclining itself obliquely to the right, and goes to the upper orifice of the stomach, into the right side whereof it is diffused, as the right branch was before into the left side, being divided into many little branches in manner of a net. From this a surcle is carried down along the upper part of the stomach to the *pylorus*, or lower orifice, which when it hath as it were interwoven with some sprigs, it goes into the hollow of the liver. *The inner* branch first of all takes to it propagations from the intercoftall nerves, and then passing through the midriffe is divided into three. *The first* of them goes overthwart to the Spleen, and in the way shoots out two sprigs, *one*, which is likewise sent into the lower membrane of the Kall, and part of the colick-gut, which is tyed thereto; *another* into the left side of the bottom of the stomach, and into the upper membrane of the Kall. *The second* propagation goes into the left side of the Mesentery, and the guts of that place; sometimes also it issues sprigs, which run out with the seminary vessels through the processes of the *Peritoneum*, or rim of the belly to the testicles. *The third* goes to the left Kidney, and the fat membrane thereof. The remainder of the branch passes to the left side of the bladder, and of the bottom of the womb. The use of this pair is manifest enough, as being very notorious, when the outer branch bestows little boughs upon the middle bowels, but the inner upon all those of the lowest belly, and the right branch upon those of the right side, the left on those of the left. Besides this use it conduces by the returning branches also to the framing of the voice, by imparting the faculty of motion to the muscles of the throtle.

The seventh pair arises in the utmost part of the nowl-bone, where the marrow of the brain is ready to goe out of the skull, and so is counted the hardest of all the nerves, that have their originall within the skull. But it arises in some roots separated from each other, which joining together on both sides into one, it goes out of the skull through the fourth and fifth holes of the nowl-bone (which are placed betwixt that greatest one, which opens a way for the descent of the spinall marrow, and that, at which the sixth pair goes out) and presently after its egress is involved in one common membrane with the sixth pair; whence some, not so diligently observing it, have beleevd that they were mixt one with another; and thus they descend together. When it comes to the root of the tongue, it distributes surcles into all the muscles thereof, sending over some also to certain muscles of the bone *hyoides*, and of the throtle, as also to those, which take their beginning from the *appendix* called *styloides*. The use of this conjugation is to carry down the faculty of sense, & motion from the brain, to the muscles of the tongue.

To these seven pairs, which are commonly so numbred, we adde an *Eighth* which makes the nerves of smelling, by which a faculty is derived from the brain of apprehending the odours of things without. These are commonly affirmed to arise out of the marrowy substance of the brain, in the *basis* thereof, near to the first pair; but the new dissection of the brain, and which is performed by turning it upside down, hath taught us, that they arise at the utmost sides of the brain, in that part, which is above the holes of the ears, whereby it is manifest, that hitherto only one half of them hath been shewn. They are very sharp at their originall, and distant one from the other, but going forward by degrees

2.
3.The outer
branch of the
left nerve.Its propaga-
tions.
The left recur-
rent nerve.Propagations
of the inner
branch of the
left nerve.

1.

2.

3.

Use.

The seventh
pair.
Its originall.

Its use.

The eighth
pair.

Its originall.

grees, betwixt the uppermost and middle prominence of the brain, they grow thicker, and draw nearer one to another, and so at length they lye down above the *sinus* or cavities of the spongy bone within the skull. These are thrust into the mammillary processes of the brain: but *Galen* and *Marinus*, (whom almost all Anatomists have followed) would not call them by the name of Nerves, although they altogether agree therewith in their colour, course, and use, because they neither have productions like the rest of the nerves, nor go out of the cavity of the skull: but truly they seem to me to commit no other a sophism, then they, who have expelled the teeth out of the number of the bones because they are not invested on the outside with a membrane, as others are, although neither this makes any thing to the essence of the bones, nor that to the essence of the nerves.

CHAP. II.

Concerning the nerves of the Spinall marrow properly so called,
and first of those of the Rack-bones of the Neck.



ATURE, the wise parent of all things, as shee hath framed the nerves, that they might serve for the carrying of the faculties, and spirits, that are generated in the brain, because the brain itself could not be diffused through the whole body: so when the same could not conveniently bestow nerves upon all the parts, by reason of their too great distance, shee made the spinall marrow, which is nothing else, but the marrow of the

The spinall marrow.

Why it is called marrow.

It is wrapt up in two membranes.

The conjugations or pairs of the spinall marrow.

The first pair of the neck.

after-brain and brain, extended through the long conduit pipe of the rack-bones of the back. And therefore we having already viewed those nerves, which take their originall from the marrow of the brain, whilest it is yet contained in the skull; it remains now, that we take a view of them also, which come from the spondyls of the back-bone: But it is called marrow, not that it hath any affinity by reason of its substance with the marrow of the bones; but because like marrow it is contained within the rack-bones; but the substance thereof is like that of the brain, which itself also *Plato* called marrow; and it is named the *spinall* marrow, or of the back, to distinguish it from both those, that are not contained in the back-bone, but either in the skull, as the brain, or in the hollownesse of the bones, as that which is properly called marrow. This substance is covered with two membranes, no otherwise then the brain itself is, from whence it takes its originall, the one thick, the other thinner, which are invested with a certain third, strong, and membranous covering, that *Galen* thought to be the ligament of the rack-bones. But it was made to that end, that it might distribute sense, and motion to the muscles, and membranes, to which those pairs of the brain do not reach. Therefore, when there is a good number of nerves arising there from, yet we shall easily reduce them to some certain *classes*, or companies, if we say that they all make up thirty pairs, of which seven belong to the marrow, whilest it is carried through the rack-bones of the neck; twelve, whilest it is carried through those of the chest; five, through those of the loins; and lastly six to that, which is contained in the holes of the *os sacrum*, or great bone. But these nerves go out through the holes of the rack-bones, and either with a double originall on the fore and hinder part, as it happens in the two first conjugations of the neck, and five of the great bone, which arise not from the sides, that is, from the right, or left part, but issue forth two branches before and behind; or else with a single one, through one hole bored in both sides of the rack-bones, as happens in all the rest of the pairs, in which one nerve issues from the right side, the other from the left. But the first, and second pair have a double beginning, lest if they should arise with a single one, that being somewhat thicker might have been hurt by the joints of the rack-bones; or if the hole should be made larger, the rack-bone (which was small enough of itself) should be liable to breaking. Therefore that both these evils might be avoided, the wise Opificer made a double beginning, one on the forepart, another on the hinder. But the right branches go every where to the right side, the left to the left, and they are distributed on both sides after the same manner.

The first pair therefore [*tab. 1. n. 1.*] arises with its first, and foremost propagation [*tab. 1. B.*] from the forepart of the spinall marrow, and passes out betwixt the nowl-bone, and the first rack bone of the neck, near to the sides of that round ligament, wherewith the tooth-like processe of the second rack-bone is tyed to the fore side of the nowl-bone, and so it is distributed into the muscles over the neck, and under the gullet, that bend the neck. With the other, and hinder propagation, [*tab. 2. Fig. 1. C.*] it likewise falls out through the hole, that is common to the nowl-bone, and first rack-bone of the neck, toward the hinder part, but with a double sprig, one of which being small is spent upon the lesser frait muscles, and the upper oblique ones, that extend the head; the other reaches out into the beginning of the muscle, which lifts up the shoulder-blade.

The second pair [tab. 1. 2.] with its fore-branch [tab. 1. D₂] (which is slender, then the hinder one, though both of them seem small enough) arising from the fore-part of the marrow goes forth betwixt the first, and second rack-bones at the side of the tooth-like proceſſe, which branch is diſtributed into the muſcles, that lie upon the neck, as well as the fore-branch of the firſt pair, which is wrapped together with it; and is almoſt wholly ſpent upon the ſkin of the face. With its hinder branch [tab. 2. Fig. 1. E.] it ſlips out through the ſides of the backward proceſſe of the ſecond rack-bone, but preſently is cleft into two branches of unequal bigneſſe, of which that which is the thicker [tab. 2. fi. 1. F.] tends from the forepart to the hinder, where the muſcles ſeated on both ſides of the hinder part of the neck do meet together, & there being mixt [t. 2. f. 1. G.] with the third propagation of the third pair of the nerves, it runs out through the middle of the ſaid muſcles, returning from the hinder to the foreparts, and ſo is diſtributed into all the ſkin of the head, as far as to the top of the crown, [t. 2. f. 1. H] as alſo to the ears. The other branch, which is the ſlenderer, is in erted into the greater ſtraight muſcles, and the lower oblique ones, that extend the head. Galen makes mention of theſe branches lib. 4. de locis affect. which place we ſhall not think much to tranſcribe hither, it making very much to the illuſtration of the uſe of this kind of learning. Not long ſince, ſayes he, they ulcerated the head of a certain man, by laying on medicins vehemently heating, thinking by this means his ſenſe, that was greatly impaired, might be recovered. But we cured this very man, having found out the ſeat of the diſeaſe as well from other accidents, as from the primitive, or procatarctick cauſes. For we diligently examined him about every one of them, and found that this was one; when he had walked in much rain cauſed by a violent wind, his cloak was wet about his neck, ſo that he felt himſelf affected with a vehement cold in that part: ſo then if you know, that four nerves aſcend from the firſt racks of the back-bone to the head, from which the ſkin about it receives its ſenſe, you will eaſily find out the ſeat of the diſeaſe, that therefore being healed, the ſkin of the head was healed alſo, as having no primary diſeaſe.

The third pair [tab. 1. 3.] iſſues out of the common hole in the ſides, which is betwixt the ſecond and third rack-bones, and preſently after it gets out, is cleft into two branches, of which the more forward one [tab. 1. I.] is ſubdivided into four propagations. The firſt [t. 2. K] goes to the firſt bending muſcle of the neck, or the long one: the ſecond [t. 1. L.] runs down, and being united with a ſprig of the fourth pair [tab. 1. Q] ends in the muſcles, that lye under the gullet. The third [tab. 1. M.] climbs up, and joining with the thicker branch of the ſecond pair but now mentioned [tab. 2. f. 1. F] is ſpent upon the ſkin of the hinder part of the head. The fourth [tab. 1. N] is imparted to the tranſverſe muſcles, or to the firſt pair of the extenders of the neck, and to that, which lifts up the ſhoulder-blade, of which two muſcles that ends in the tranſverſe proceſſes of the neck, this begins therein; and at length it is digeſted into the ſquare muſcle, that draws down the cheeks, which is called by Galen πλάσιμα μυῶδες. The hinder branch [tab. 2. f. 1. O] is implanted into the ſecond pair of muſcles, that extend the cheſt.

The fourth pair [tab. 1. numb. 4.] iſſues out of the common hole of the third, and fourth rack-bones, and like the third pair is divided into two unequal branches. The more forward and greater [tab. 1. P] is cleft into three other twigs, of which the firſt [tab. 1. Q] is joined with another branch of the third pair [tab. 1. L] and goes to the firſt long pair of muſcles, that bend the neck. Another [tab. 1. R] goes to the tranſverſe muſcle, or firſt of thoſe, which extend the neck, and to the firſt of the ſhoulder-blade, called Cucullaris, the cowl-muſcle. The third [tab. 1. S] being ſmaller then the other, and joyned with a ſurcle of the fifth pair, and another branch of the ſixth pair, near to the mediſtinum or membrane that parts the cheſt in the middle, and above the Pericardium, paſſes on downward, that out of theſe three principles the nerve of the midriffe may be made up. The hinder branch [tab. 2. f. 1. T] goes toward the ſpine or ridge, under the muſcles, which are placed thereabout, to which alſo it affords a good number of branches, and from thence being led downward between the muſcles on both ſides of the neck, it is carried to the ſquare muſcle, that draws down the cheeks. In this place it is worth our labour to inquire what may be the reaſon, that they who are troubled with a Reſolution, or deprivation of motion in the whole body, have nevertheless the motion of their midriffe for a while free: ſome make answer, that this happens, becauſe although no ſpirits are ſent over from the brain, yet they may be diffuſed out of the marrow of the back. But theſe men beg the queſtion, when we ſuppoſe, that no ſpirits come from hence, becauſe we ſee that all the muſcles of the whole body, to which nerves are ſent from the marrow of the back, are reſolved or deprived of motion. Therefore I thought fit to ſeek out for another answer, and to ſay that the midriffe has two motions, one, that is voluntary, which we uſe, whilſt we breath ſtrongly; another naturall one, when the fibres are extended, and contracted of themſelves. A man therefore is preſerved by this naturall motion, when we ſee that breathing is little, and weak, and as much as ſuffices, that the lungs may be moved a little.

The fifth pair [tab. 1. numb. 5] goes out betwixt the fourth and fifth rack-bones, and, like the two laſt fore-going, is cleft into two branches. The forwarder of them [tab. 1. U] iſſues forth

forth some propagations. *The first* [tab. 1. betwixt U and 6] goes to the muscles, that bend the neck. *Another* [tab. 1. X] together with propagations of the fourth, and sixth pairs, sometimes also of the seventh, to wit, then when the branch of the fourth is wanting, descends near to the side of the gullet through the forepart of the rack-bones of the neck, and is implanted into the midriffe, & so makes the midriffe nerve. *The third* [t. 1 Y] is carried through the upper part, and outside of the arm, to the second muscle of the arm, to wit, that which lifts it up, called *Deltoides*, from whence little branches are sent over to the first, and second, that is to the cowl-muscle, & the lister up of the shoulder-blade. *The fourth* propagation [tab. 1. b] at the neck of the shoulder-blade is cleft into two, of which the former [tab. 1. c] goes into the muscle *Deltoides*, at that part where it arises from the clavicles or canal-bone: the latter and thicker [tab. 1. d] is inserted into the fourth pair of muscles of the bone *hyoides*, called *coracohyoideum*, and from thence imparts a small branch to the upper muscle over the shoulder-blade called *superscapularis*, and to the muscle *Deltoides*, where it arises from the spine of the shoulder-blade. *The hinder branch* [tab. 2. f. 1. e] is writhen toward the back-bone, and distributed in the same manner, as the hinder branch of the fourth pair is.

The hinder
branch.
The sixth pair.
Its fore-
branch.

The sixth pair [tab. 1. numb. 6] goes out under the fifth rack-bone, and in like manner as the other pairs are, is divided into two branches. *The forwarder and greater* [tab. 1. f] after it has propagated that sprig, [tab. 1. g] which we said is joined with the fourth, and fifth pair, [tab. 1. S and X] to the making up of the nerve of the midriffe [tab. 1. i] passing on farther is united with the two next following pairs, the seventh of the neck, and the first of the chest, and is again separated from them, and then again being joined with them it so weaves a certain net-like texture, from which nerves are issued forth, that go to the arm. *The hinder* [tab. 2. fig. 1. l] is carried to the hind muscles, which extend the head, and neck.

Its hinder
branch.
The seventh
pair.
The fore-
branch.
The hinder.

The seventh pair [tab. 1. n. 7] is derived from the marrow of the neck, and issues forth through the common hole of the sixth, and seventh rack-bones. *The forwarder, and greater* branch thereof [tab. 1. m] is joined presently after its egress with the sixth nerve of the neck, and the first of the chest, and for the greater part is carried with the rest to the arm. *The hinder and lesser branch* [tab. 2. fig. 1. n] goes to the muscles, that lye upon the neck, and to the square one, that draws down the cheeks.

CHAP. III.

Concerning the Nerves of the marrow of the rack-bones of the Chest.

TWELVE conjugations of nerves issue forth from the spinall marrow, whilst it runs through the rack-bones of the back, as the most learned *Vesalius* has rightly opinioned, however there are but eleven holes bored in the twelve rack-bones thereof, as *Columbus* objected, because the first pair passes out between the last rack-bone of the neck, and the first of the back, wherefore it ought to be numbred rather among the pairs of the chest, then those of the neck. All these conjugations after their egress are divided in two; and the one branch which is the greater, alwayes bends forward; the other which is the lesse is bent to the hinder parts, and to the muscles, that lye upon the back.

The first Pair.

Its fore-branch

The first pair then, [tab. 1. numb. 8] of the nerves, which issue forth from the marrow of the chest, goes out of the common hole of the seventh rack-bone of the neck, and the first of the chest, in the same manner, as the five pairs last mentioned do, and in like sort also is forthwith divided into two branches. *The forwarder, and greater* [tab. 1. o] is united, [tab. 1. p] partly with the seventh nerve of the neck, partly with the second of the chest, in that manner, which we have before explained; and so afterward is wholly consumed upon the arms, excepting one propagation [tab. 1. q] which arising at the beginning of it, is joined with the said nerves, and runs into the foreparts, near the length of the first rib of the chest, to the breast bone, bestowing a sprig upon the subclavian muscle; after that being reflected upward it is fixed upon the muscles, which take their originall from the top of the breast-bone: such are the muscle, that bends the head called *Mastoides*; that which draws down the bone *hyoides*, or *sternohyoideus*, and the first of them which extend the buckler-like gristle of the throttle, called *thyroides*, or the muscle *sternothyroideus*. But to the two last sometimes branches are sent over from the sixth conjugation of the brain, and the third of the chest. The same branch also when it has pass the arm-pit, being ready to go to the arm, issues forth a certain other propagation from its hinder part, which goes to the muscles seated in the hollownesse of the shoulder-blade. *The hinder and lesse branch* [ta. 2. fig. 1. r] lies hid under the muscles, which grow to the rack-bones, and imparts some propagations to the second bending muscle of the neck, and to them which extend the head and neck; but when it has attained to the spine of the seventh rack-bone, it goes overthwart to the lower side, and distributes surcles into the first muscle of the shoulder-blade, or that like a Monk's cowl, and into the third of the same, called *Rhomboides*, as also into the upper of the hindmost saw-muscles.

Its hinder
branch.

The second pair [*ta. 1. num. 9.*] breaks out betwixt the first and second rack-bones of the chest, and is cleft likewise into two branches. The forwarder [*t. 1. s.*] is united with the first pair of the chest; and thus the first and second pairs of the chest are united by turns, with the fifth, sixth, and seventh of the neck, that the one are not discerned from the other; but make a net not unlike to those strings which hang at Cardinals hats; from which afterward all the nerves that go to the arms, issue forth, and take their originall. This spreads out a branch [*t. 1. t.*] which goes forward through the first distance betwixt the ribs, according to the course of the first rib, as far as to the breast-bone, making the first Intercostall nerve, from which surcles [*t. 1. u.*] are distributed into the muscles that lie upon the chest. The hinder branch [*t. 2. f. 1. x.*] has the same dissemination with that of the foregoing pair.

The other ten pairs [*tab. 1. numb. 10, 11, 12. and so on to 19 inclusively*] of the nerves of the chest, observe the same manner both of their rise, and distribution. For they all issue out of the common holes of the rack-bones at the sides, and presently after their egress are cleft into two branches of unequal bignesse, one of which is the forwarder and greater; the other, the inner and lesse. The forward branches [*ta. 1. y.*] (which make the nerves between the ribs) are carried into the fore-side, and each of them affords a little branch in order according to its length, to the inner branch of the sixth pair, which descends under the *pleura* to the roots of the ribs. These branches are joined with the Intercostall veins and arteries; together with which they passe along the rib to the forepart through the *sinus* or chanel, which is cut out on the lower and inside of the ribs. But they which belong to the true ribs, go on as far as to the breast-bone; but they which belong to the bastard ones, are carried into the forepart of the *abdomen* above the *peritonæum* or rim of the belly. From these nerves many branches are disseminated into the muscles between the ribs, not only in the inner, but the outer ones also, as well as into the other, [*ta. 1. z.*] which lye upon the chest; such as are the fourth, and fifth muscles of the shoulder-blade or the two formost saw-muscles, as also the broad one, called *Latissimus* [*tab. 1. β*] that moves the arm backward from the breast. In like manner a propagation goes from the fifth Intercostall nerve, about the middle of the rib, passing through the Intercostall muscle, into the first pair of the muscles of the *abdomen*, [*ta. 1. a.*] as also into the skin of the chest; and being divided in four parts is distributed into the pectorall muscle that moves the arm forward to the breast, and also into the skin, from which some sprigs doe afterward goe to the nipples of the breast [*ta. 1. γ*] and impart to them a very sharp sense. The hinder branches [*ta. 2. fi. 1. δ*] goe backward to the spine, or ridge, between the muscles going to the rack-bones, which have the charge of extending the chest. Yet are they not wholly spent upon these muscles, but when they have now attained to the tops of the spines, they fall out between the muscles of both sides, whereabout they are joined to one another, and so afterward they give nerves to all the muscles, which arise out of the tops of the spines of the rack-bones. Such are the first extending muscle of the head, called *Triangularis*, or *Spleneus*; the third muscle of the shoulder-blade, or *Rhomboides*; the first of the shoulder-blade, or *Cucullaris*; the third broad muscle that leads the arm away from the breast, called *Aniscalptor*, and the hinder saw-muscle. A good number also of surcles are distributed into the skin of the back.

CHAP. IV.

Concerning the nerves of the marrow of the rack-bones of the loins.

From the spinall marrow, whilst it is carried through the loins, although there be only four holes, yet five pairs issue forth, the first being between the last rack-bone of the chest, and the first loins. But they go forth through the common holes, and being gone forth, are distributed in like manner as we have said of the nerves of the chest; when from every one of them, presently after its going out, one branch, and that the greater, spreads it selfe forward; the other, and lesse backward. The formost branches run to the muscles of the *abdomen*, or outer, and forepart of the lowest belly; the hindmost to them, which lie upon the spines of the rack-bones, and the bones without a name, from whence they impart some little branches also to the skin that covers the loyns. But the fore-branches are knit together, the first with the second, the second with the third, the third with the fourth, and the fourth with the fifth in the same fashion, as we said the nerves of the arm were, whilst they make the net-like complication.

The first pair then, [*ta. num. 1. 20.*] as the rest do also; going out under the *peritonæum*, or rim of the belly, through the common hole of the rack-bones, which is betwixt the last rack-bone of the chest, and the first of the loins; presently after its egress is cleft into two branches. The fore-branch, which is greater, goes into the fleshy parts of the midriff, and into the beginning of the first bending muscle of the thigh, called *Flexor*.

- The hinder one.** From this nerve a certain surcle [*ta. 1. 39.*] takes its beginning, reaching out for the most part with the preparing artery to the testicle. *The hinder branch* [*ta. 2. fig. 1. nu. 42.*] sends propagations into the muscles that lie upon the backside of the rack-bones of the loins, such as are the first and third of them which extend the chest, that being called *Dorsi longissimus*, this *sacrolumbus*, as also the muscle which extend the loins : but when they issue out from the tops of the spines, wherabout the said muscles are joined one to another, they run to the sides, and are implanted into the broad muscle, that leads the arm outward from the breast, called *Latissimus*.
- The second.** *The second pair* [*t. 1. n. 21.*] goes out under the first bending muscle of the thigh, called *Iliacus*, betwixt the first and second rack-bones of the loins. *The fore-branch* thereof is distributed to the second bending muscle of the thigh, that fills up the cavity of *os Ilium*, or the hanch-bone, and the first bending one of the leg, called *Fascialis*, as also to the skin of the thigh. *The hinder branch* going out of the *abdomen* is distributed to the three muscles that extend the thigh, or the *Glutæi*; and to that which extends the leg, called *Membranosus*, the membranous muscle.
- The third.** *The third pair* [*t. 1. n. 22.*] issues forth likewise under the first bending muscle of the thigh, betwixt the second and third rack-bones. *The fore-branch* thereof passes over near to the hanch-bones, distributing two propagations; *one* which goes to the knee, and its skin; *another* [*t. 1. 51.*] which accompanies the vein of the inner ancle, called *saphena*. *The hinder branch* is reflected and disseminated into the muscles which lie upon the loins.
- The fourth.** *The fourth pair* [*t. 1. n. 23.*] is the greatest of all the nerves of the loins, and being carried under the said muscle that bends the thigh, as also under the *os pubis*, or share-bone, accompanies the Crurall vein and artery.
- The fifth.** *The fifth and last pair* [*t. 1. n. 24.*] issues out betwixt the fourth and fifth rack-bones; *the fore-branch* whereof passes through the hole which is betwixt the hip-bone, the *os pubis*, or share-bone, and the *os Ilium* or hanch-bone, and distributes some propagations to the two muscles that turn the thigh about, called *Obturatores*, others to the second and third bending ones of the thigh, and others to the muscles of the yard. *The hinder branch* goes into the muscles, and skin upon the rack-bones.

CHAP. V.

Concerning the nerves of the marrow of os sacrum or the great bone.

The first pair. **A**ll of all from the marrow which is contained in the rack-bones of the *os sacrum*, the six last pairs of the nerves of the spinall marrow do issue forth. *The first* of these [*t. 1. n. 25.*] goes out betwixt the last rack-bone of the loins, and the first of the great or holy bone, in the very same manner as the rest, that arise out of the rack-bones of the loins, and likewise after the same sort is divided into two branches. *The fore-branch* although it be mixed with the crurall nerves, sends yet a surcle [*t. 1. 43.*] over near to the inner region of *os Ilium*, and is dispersed into the muscles of the *abdomen*, and into the second bending one of the thigh. *The hinder* [*t. 2. f. 1. n. 44.*] is disseminated into the muscles that arise from the *os Ilium* or hanch-bone, and especially into the first of them, that extend the thigh, or the greater *Glutæus*, as also into the skin of the buttocks.

The other five pairs. *The other five pairs* have something proper to themselves; so that before they go out of the bone, they are every of them double on each side, and so from every one of them a double branch is carried on each side, one to the forepart, another to the hinder. The three uppermost of the fore-branches, as that of the first pair also, go to the *Crus*, or parts of the body below the buttocks : the two lowest go into the muscles of the fundament and bladder; and in women to the neck of the womb, in men to the yard; but in both sexes to the outer privy parts. The hinder branches are distributed to the muscles seated on the backside of the bones *Ilium*, and *sacrum*. Of this sort are the first and third extending muscles of the chest, or *Dorsi longissimus*, the long muscle of the back, and *sacrolumbus*, that which bends the loins, called *sacer*, and the broad muscle that leads the arm away from the breast; as also the three which extend the thigh, being the authors of the buttocks, and therefore called *glutæi* the buttock-muscles. And this is the utmost end of the spinall marrow, which reaching into the rump-bone, called *os coccygis* is in this manner terminated : And this is the history of the thirty pairs of the nerves which go out of the spinall marrow, which is diligently and accurately to be committed to the memory, that we may know to what place remedies ought to be applied, if at any time from some externall cause, as by a fall from aloft, or a bruise, or some notable compression, any part shall have lost either motion, or sense, or both. For the remedies must be applied alwaies to the beginning of that nerve, not to the place, in which the symptome is perceived.

CHAP. V I.

Concerning the Nerves which are distributed through the Arms.

These nerves being now enumerated, which are dispersed through the muscles of the three bellies, and the parts contained in them; it remains that we describe those also, which are propagated through the *artus*, or extrem parts of the body. Here we meet with them first, which are distributed through the arms, whereof there are six pairs commonly set down by Anatomists arising from the fifth, sixth, and seventh pair of the nerves, that come out of the marrow of the neck, and from the first, and second of those, which issue out of the chest. These nerves go out through the common holes of the rack-bones, on both sides, and presently after their going out are united one among another with their forwarder, and greater branches, by and by are separated one from another again, and joined again, and finally separated, so that they seem to make out a certain net-like texture, which cannot be better likened then to those strings of Cardinals hats. This implication of nerves goes forth under the clavicle, or collar-bone, about that place, where the axillary veins and arteries go out of the hollow of the chest, and from this all the nerves of the arm take their originall. But their rise is very uncertain by reason of their being so knit together, wherefore wee in our relation of them will rather follow the footsteps of other men; then our own observations, lest wee should seem to affect new opinions rashly, and without necessity.

The first nerve then [tab. 1. e] which is carried to the arm, is a double propagation, namely the third, and fourth of the fore branch of the fifth pair of the neck. For the one branch [tab. 1. Y] is carried to the second muscle of the upper part of the arm called *Deltoides*, and to the skin that lies upon it: the other [tab. 1. b] goes toward the neck of the shoulder-blade, where it is cleft into two branches; the former of which [tab. 1. c] goes into the muscle *Deltoides*, where it arises from the collar-bone; the latter [tab. 1. d] is inserted into the fourth pair of the muscles of the bone *hyoides* called *coracohyoideum*, and from thence affords a little branch to the upper superseapular muscle, and the *Deltoides*, at what place it arises from the spine of the shoulder-blade. This nerve runs out through the higher side of the arm; but the other five are carried through the arm-pit into the arm, and in the same are scattered into more branches.

The second nerve [tab. 1. 2] is thicker, and takes its originall from that net-like complication, of which we spake, yet, from what nerve cannot be evident enough. This is carried down through the middle, and fore-part of the arm; into which it enters under the first bender of the cubit, or the double-headed muscle, at that part, where its two heads are united one with the other, and where the tendons are inserted both of the pectorall muscle, that leads the arm forward to the breast, and of the *Deltoides*, that lifts it up. Being hid then under this muscle it sends forth two propagations [tab. 1. n] one of each side, which enters into the two heads of the muscle *biceps*; and after that about the middle of the length of the upper part of the arm, going under the same double-headed muscle, it shoots forth another sprig [tab. 1. f] by means whereof it is joined with the third nerve; and from thence descending it distributes in its progresse a surcle [tab. 1. 8] from its outside to the head of the longer of the two muscles of the *radius* or wand, that turns the palm of the hand downward. When it is now come to the bending of the cubit, being led to the fleshy membrane, near to the outside of the tendon of the said double-headed muscle, it is distributed into the skin, being divided into two branches, of which one is the outer, the other the inner; that is the slenderer, this the thicker. The outer then [tab. 1. i] being carried down a good way with a branch of the Cephalick-vein through the inside of the cubit, is distributed [tab. 1. 2] to the second bone of the thumb. The inner branch [tab. 1. u] is subdivided under the common vein of the arm, or the middle one, called *Mediana*, into two branches, the outer whereof [tab. 1.] going on obliquely under the skin leaving the vein goes away toward the *radius* as far as to the wrest: but the inner [tab. 1. v] being fastened to the inner branch of the Cephalick-vein, when it goes more obliquely, in the region of the cubit is cleft into two speciall branches, of which one [tab. 1. 7] is distributed through the region of the lesser bone of the cubit, the other [tab. 1. o] through the region of the greater bone to the wrist, and from thence, that being past, into the skin of the inside of the hand.

The third nerve of the arm [tab. 1. p] or the third, which is carried to the arm, lies next under the second, and in like manner with it arises from that net-like texture. This nerve, whilst it passes through the arm-pit, before it has yet attained to the arm, brings

forth a propagation, [tab. 1. σ] which is dispersed under the skin betwixt the Pectorall muscle, that leads the arm to the breast, and the muscle *Deltoides*, that lifts up the same. But when it hath first attained to the arm, it hides itself under the muscle *Biceps*, or first bender of the cubit, and passing on downward together with the second nerve, it sends out a little branch [tab. 1. τ] into the head of the second bending muscle of the cubit. After this descending it receives a branch [tab. 1. υ] from the second nerve, by means whereof they are joined one with the other; and then it goes farther through the forepart of the arm unto the bending of the cubit, being alwayes equally distant from the second nerve, and is carried into the protuberation of the inside of the arm, and the fore-part thereof. When it hath past this, it issues forth many propagations, [tab. 1. φ] which together with the branches, that are derived from the fifth nerve, which is carried through the hinder region of the same protuberation, are distributed into the muscles, that are seated on the inside of the cubit, and arise from the inner protuberation of the arm: such are the two, that bend the uttermost bones of the fore-fingers, and that, which bends the third joint of the thumb. After this it sends out another propagation, which is carried down between the said muscles through the *radius* together with a vein, and artery, to the wrist, and passing through under the the transverse ligament, scatters some small sprigs into the muscle, that moves the thumb outward from the fingers, and the two, that bend the first joint of the same. After this when it is come to the palm of the hand, it is divided [tab. 1. χ] into three branches; the first of which scatters two twigs into the thumb, the second as many into the fore-finger, the third sends one to the middle finger on the inside.

The fourth.

The fourth nerve [tab. 2. fig. 1. ψ] is the biggest of all them, which are carried to the arm, as being almost thrice thicker than the rest. This arises, as well as the other, from the net-like complication, and from thence is carried down through the arm, in like manner as the third is, lying deep every where among the muscles, having the basilick-vein, and axillary artery for its companions. But presently after it hath entred the arm, it derives many, but small sprigs [tab. 2. fig. ω] into the heads of the muscles, that extend the cubit; and before it is come to half the length of the upper part of the arm, it is contorted obliquely downward to the bone thereof, and passes on betwixt that, and the muscles, which extend the cubit. But before it be wholly reflected, it sends forth a surcle [tab. 2. fig. 1. Γ] from its inside, which goes betwixt the said muscles, as also the second of them, that bend the cubit, and is spent upon the skin, that clothes the inside of the arm, some fibres being propagated upward, and downward. Having disseminated this propagation it goes by degrees through the hinder part to the outside of the arm, being carried through the cavity of the outer protuberation of the upper bone of the arm, that is cut out in the back-side thereof, where likewise it sends out a surcle, [tab. 2. fig. 1. Δ] going to the skin, that covers the lower part of the outside of the arm; and then another [tab. 2. fig. 1. Θ] which is distributed into the skin, as far as to the wrist. After that near to the joint of the cubit it is divided into two branches, an outer, and an inner one, which being hid deep, and among the muscles, as the whole trunk also, descend to the wrist. The outer branch [tab. 2. fig. 1. Λ] goes along the *radius*, or wand, and when it is come to the wrist, passes through the transverse ligament, on the outer part, and by and by is subdivided [tab. 2. fig. 1. Ξ] into two branches, of which one goes with a double sprig into the outside of the thumb, the other is spent partly upon the fore-finger, partly on the middle one. But the inner branch [t. 2. fi. 1. Π] reaching along the cubit scatters more propagations, the first [tab. 2. fig. 1. Σ] into the first muscle that extends the fingers, the second [t. 2. fig. 1. Φ] into the second, that extends the fingers; the third [t. 2. fi. 1. Ψ] into the inner muscle, that extends the wrist. But in its progresse [t. 2. fi. 1. Ω] it affords propagations to the three beginnings of the muscles, that take their original from the *ulna*, or greater bone of the cubit. The remainder of it ends in the wrist, [tab. 2. fig. 1. 3 I].

Its propagations.

Its two branches.

The outer.

The inner.

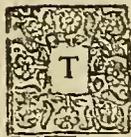
The fifth nerve

The fifth nerve [tab. 1. numb. 32] arising lower than any of the fore-mentioned, out of same net-like complication, and being joined to the fourth, descends through the inside of the arm, between the muscles, that bend, and extend the cubit. This scatters no propagation from itself, but remains intire, till it be come to the inner protuberation of the arm, at whose hinder cavity it is reflected, and is distributed afterward in the same manner with the third nerve, which passes through the fore-side of the same protuberation. For both of them bestow propagations [tab. 1. 33] upon the muscles, which grow out of the inner protuberation of the arm, and keep the inside of the cubit. It issues forth a propagation also [tab. 1. 34.] which being carried through the *radius*, or wand; goes between the muscles, which bend the second, and third joints of the fingers, and so to the palm of the hand, & sends out the first branch, which being parted in two is implanted into the inside of the little finger; then another, which being also cut in two goes into the ring-finger, and at last another that goes to the outer part of the inside of the middle finger. But from this same fifth nerve, and from the outside near to the middle of the length of the *radius*, or wand, there grows out a certain other surcle, [t. 1. 35.] which being divided into three branches is disseminated into the outer part of the middle, the ring-finger, and the little one.

The sixth nerve [tab. 1. numb. 36.] issues out of the lowest part of the net-like complication, and going through the arm-pit, and inside of the upper part of the arm, & of the cubit, under the skin it makes haist to the inner protuberation of the upper-bone of the arm, dispersing many furcles in its way to the neighbouring skin. [t. 1. 37. 37.] But as soon as it has attained to this protuberation, it is cleft into many propagations, some of which lie under the branches of the basillick vein, some lie over, and so being carried under the skin, when they are come down to the wrist, they end [ta. 1. 38.]

CHAP. VIII.

Of the nerves that are distributed through the Crura, or thighs, legs, and feet.



Here are four pairs of nerves, which are propagated through the Crura. They arise from the three lower conjugations of the loins, and the four upper ones of the Os sacrum, or great bone, which after they are gone through forth the common holes of the rack-bones, as well as the nerves, which are distributed through the arm, make a certain complication like the meshing of a net, but far greater than that other. Nor are these nerves of equall bigness, but the first [ta. 1. n. 46.] and the third [ta. 1. 56.] are small, wherefore also they reach but to the thigh; the second [t. 1. 50.] is somewhat thicker, and reaches to the leg; but the fourth [t. 1. 61.] alone is thicker than the three other put together; and is carried down as far as to the utmost ends of the toes.

The first nerve then [ta. 1. 46.] growes out of the higher part of the net-like complication, where the third nerve of the loins is joined with the fourth [ta. 1. 47.] But it is presently carried downward under the rim of the belly, to the thigh; lying upon the outside of the tendon of the first bending muscle of the thigh, to which when it is come, it sends out a propagation [ta. 1. 48.] which runs out through the skin on the forepart of the thigh, as far as to the joint of the knee, and there ends, and offers furcles [ta. 1. 49.] to the first bending muscle of the leg, as also to the second and third, that extend the same.

The second nerve [t. 1. 50.] arises out of the same complication, and below the first, over against the connexion of the third and fourth rack-bones of the loins. This together with the crurall vein, and artery, (which are the outer Iliacall branches) descends through the groin into the thigh, which when it has attained to, presently it issues forth a notable propagation [ta. 1. 51.] from its inside, lying upon the saphena or vein of the inner ankle, on the forepart, all the way it goes under the skin through the inner parts of the crus to the great toe. But as the vein saphena it self distributes some sprigs in the way to the skin next to it, so also this nerve sends out many propagations, of which that is the chief [t. 1. 53.] which it gives to the foreside of the knee. But the trunk it self [t. 1. 54.] when it has sent out this propagation, passes together with the trunk of the crurall vein and artery into the thigh, and is scattered into the muscles seated on the inside of the thigh, especially [t. 1. 55.] into the third bending one of the thigh, and the fourth extending one of the leg, and so afterward it is terminated above the knee.

The third [t. 1. n. 56.] grows out of the complication, under the second, over against the conjunction of the fourth and fifth rack-bones of the loins. This nerve being carried down upon the second bending muscle of the thigh, called *Iliacus internus*, passes through the hole of the share-bone, and affords propagations [t. 1. 57.] to the two muscles, that turn the thigh about, which they call *Obturatores*, the stoppers, to wit, of that said hole, as also to the two muscles that erect the yard, which arise out of the bone of the hip. From thence like the two foregoing nerves, it descends, and distributes little nerves into the skin, that clothes the inner part of the thigh [t. 1. 58.] The remaining part [t. 1. 57.] lies deep, the chief propagation whereof [t. 1. 60.] is spent partly on the second, partly on the third muscle that bend the leg.

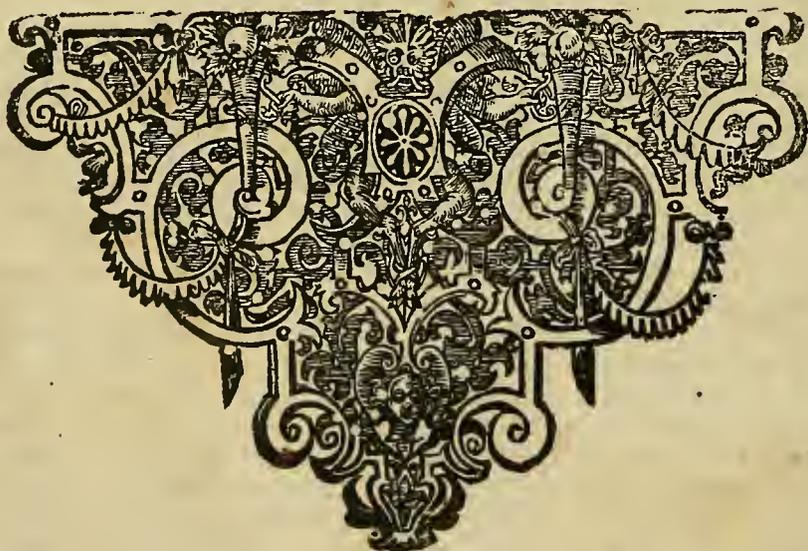
The fourth nerve [t. 1. n. 61.] is made up out of the fore-branches of the four upper pairs of the great bone being united together. By reason whereof it passes the rest, yea and all the nerves of the whole body, not only in thicknesse, but in hardnesse also, as being made of the last, that issue out of the spine, or ridge. This enters into the hinder part of the thigh through the cavity, that is in the hinder part of the hip-bone. But presently it sends forth a notable propagation [t. 1. 62.] from its back-side, which stays a pretty while under the first extending muscle of the thigh, or *Gluteus magnus*, the great buttock-muscle, and from thence is dispersed into the skin that covers the buttocks, and the back-side of the thigh to the middle of its length. Then it sends other propagations [ta. 1. 63.] on both sides, three for the most part to the heads of the third, fourth, and fifth muscles that extend the leg, and to the third bending one of the thigh. After this the trunk of the nerve descends among the muscles seated on the hinder part of the thigh, near to the bone, as far as half the length thereof, and distributes another branch [t. 1. 64.] to that fleshy lump of the fifth bending muscle of the leg, called *Biceps*, which grows to it on the inside,

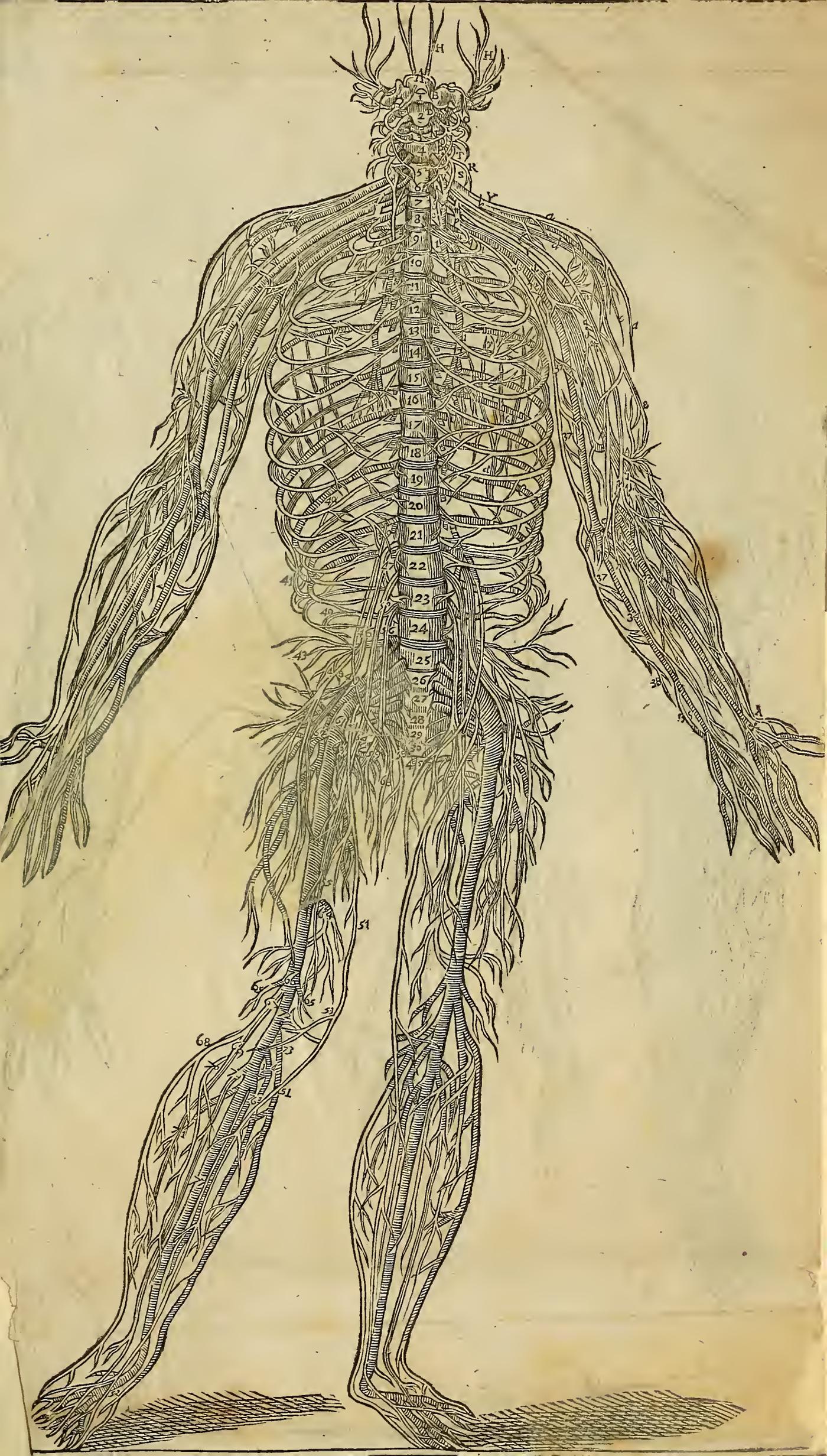
Its division.

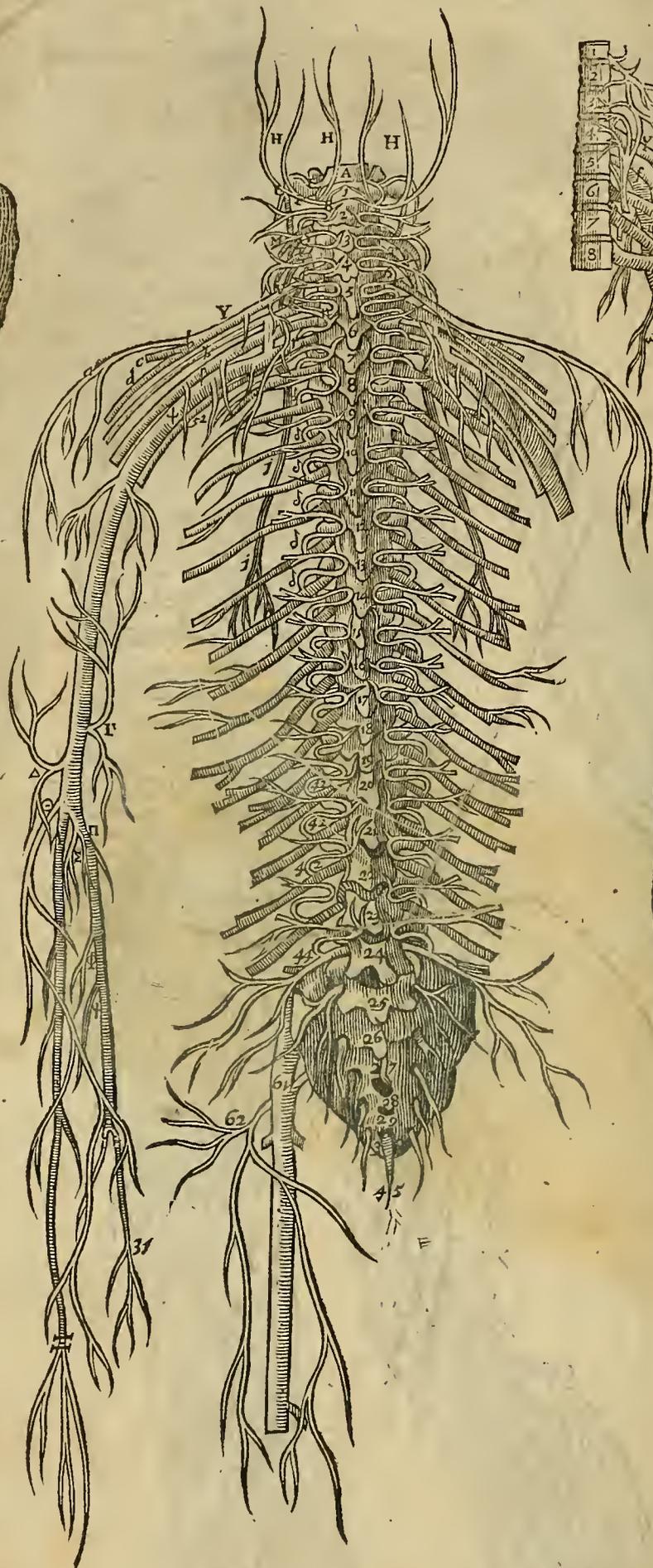
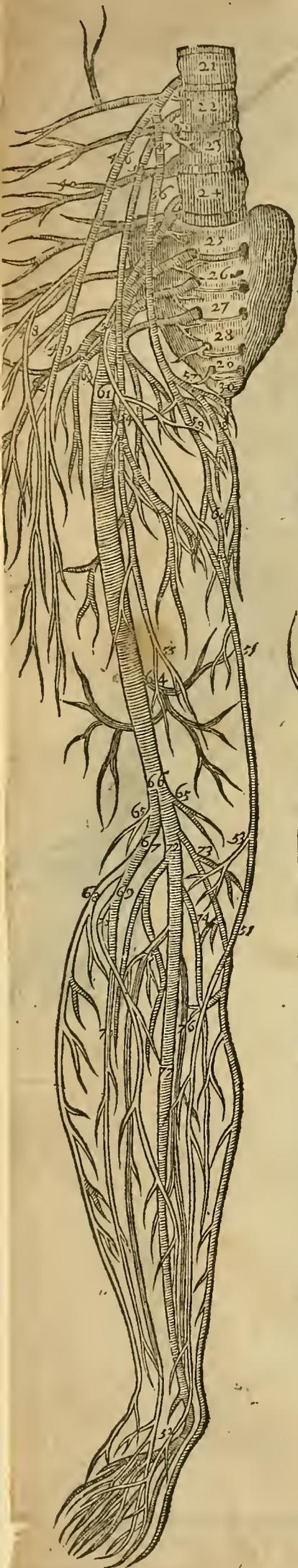
inside, after it has gone beyond the middle of the thigh. From hence also other surcles proceed, which are distributed into the skin on the backside of the thigh. But the trunk it self proceeding farther on, at length attains to the knee betwixt the two heads of the bone of the thigh, and imparts a small branch [t. 1. 65.] on each side into the first extending muscle of the foot, and the sole muscle, called *plantaris*, and by and by is divided, [t. 1. 66.] into the inner cavity of the knee, or in the ham into two unequal branches, which are distributed alone through the leg and foot. For there is not any nerve which runs out through the leg, besides these two branches of the fourth; if you except only that notable propagation, which being derived from the second nerve, as we have said, descends in company of the vein *saphena*, through the inner part of the *crus*. The outer branch [t. 1. 67.] is the smaller, and goes toward that part where the upper *appendix* of the *fibula*, or lesser bone of the leg is joined with the *tibia*, or greater bone thereof, scattering a propagation [t. 1. 68.] in the way, which goes to the outer angle under the skin, distributing in the mean time, many sprigs to the skin. But the branch it self [ta. 1. 69.] passes between the muscles seated on the foreside of the leg, and going through the long ligament of the *tibia* and *fibula*, or two bones of the leg, passes together with the tendons of the muscles that extend the toes, under the transverse ligament, and disperses little branches to the sides of the upper part of the toes. The inner branch [t. 1. 72.] is carried down through the backside of the *crus*, lurking betwixt the muscle of the sole of the foot, and the first of them, that move the foot obliquely, as also the long bending muscles of the toes; and being joined afterward with the branch of the outer, which passes through the ligament, it goes to the sole of the foot, and distributes propagations in both the sides of the lower part of the toes.

FINIS.

AN







An Explanation of the two Tables of the Nerves.



The thirty pairs of the nerves of the marrow of the brain, whilst it is carried through the spine or ridge, are express'd in these two Tables the present & the following one. We have inscribed common characters on both of them; though many also be peculiar to one; after which we have presently set the number of the Table. But the first shews the rack-bones of the spine and the nerves that issue from thence on the foreside; the second on the backside.

III. I. I. 1. as far as to 7. The seven rack-bones of the neck.
c. c. 8 as far as to 19. The twelve rack-bones of the chest.
20 as far as to 24. The five rack-bones of the loins.
25 as far as to 30. The six bones of the os sacrum. These same figures do stand for the pairs of the spinall marrow.

A 14. 1. The seat of the spinall marrow, where it first enters into the rack-bones.

I. 1. The first pair of the neck, whose forwarder propagations is B; the hinder C.

B I. C 2. The second pair, whose fore-propagation is D, its hinder E, from this two branches grow out; the slender one marked with the letter E, the other thick one with F, which is mixed with a branch of the third pair M, about G. But the course thereof to the skin of the crown, and backside of the head is marked with the letter H.

2. 1. D. E 2. F 2. G H

3. 1. I. 1. The third pair of the neck, whose fore-branch I is divided into four propagations. The first K is implanted into the muscles, that bend the neck. The second L is mixt with a twig of the fourth pair Q. The third M is mixt with the thicker propagation of the hinder branch of the second pair F. The fourth N is inserted into the muscles that are joined to the transverse processes of the rack-bones.

N. The hinder branch O.

O 2. The fourth pair of the neck, whose fore-branch P is cleft into three propagations. The first Q joins with the second propagation of the third pair L. The second R goes into the transverse muscle of the neck. The third S.

P. Q. R. S. T 2. The hinder branch T.

5. 1. V 1. The fifth pair of the neck, whose fore-branch V issues out some surcles. The first goes to the muscles that bend the neck, being to be seen in the first table between V, and the number 6.

X 1. Y. The second X making the greatest part of the nerve of the midriffe. The third Y goes to the muscle Deltoides, of which there is a propagation, a, which goes to the skin, that covers the muscles Deltoides, and Biceps. The fourth b, at the neck of the shoulder-blade is cleft into two branches; one of which, c, enters into the muscle Deltoides, at what part it grows out of the Collar-bone: the other, d, is implanted into the same, in the place where

a 1. b 1. c 1. d 1.

it grows out of the spine of the shoulder-blade. The hinder branch, e.

6. 1. f 1. g 1. h 1. i 1. The sixth pair of the neck, whose fore-branch f, when it has propagated that circle g, which with the fourth and fifth pair, S and X, makes the nerve of the midriffe, is joined with the two following, h, and thus it makes up the nerve of the midriffe i, so that this arises out of three surcles S, X, and g. The hinder branch l.

7. 1. m 1. 2. n 1. The seventh pair of the neck, whose fore-branch is m, its hinder one n.

8. 1. o 1. p 1. q 1. r 2. 9 1. t 1. The first pair of the chest, whose fore-branch o, is united, p, with the seventh pair of the neck, and second of the chest, spreading a propagation q, through the upper side of the first rib. The hinder branch r.

9 1. t 1. The second pair of the chest, whose fore-branch sends forth a surcle t, running out through the first space betwixt the ribs, and sending surcles u to the muscles of the chest.

u 1. x 2. The hinder branch x.

10, 11, 12 &c. to 19 inclusively 1. y 1. z 1. a 1. b 1. c 1. d 1. The paires of nerves from the ninth to the twentieth, which have the same series of propagations, and especially to the distances of the ribs. The fore-branches of these (fig. 1.) are scattered into the muscles seated on the fore part of the chest, and partly into their upper region, as y, partly into their lower z, which in women go also to the breasts; and then they send other surcles into the heads of the oblique descending muscles of the abdomen a, and into that which leads the arm from the breast b, another goes to the nipple of the breast c. The hinder branch d.

The first nerve that goes to the arm, which is scattered into the skin of the outside of the arm.

The second nerve that goes to the arm, whose two first propagations n goe to the two heads of the muscle Biceps: then it joins with the third nerve by a surcle f: Thirdly, it carries a propagation to the longer muscle that turns the palm of the hand downward g. But about the bending of the cubit it is divided into two branches, an outer i, and an inner one k. That i descending along the radius or wand, is inserted at the outside of the second joint of the thumb l. This k is by and by subdivided into an outer mu, and an inner branch nu. This nu is again cleft in the region of the cubit into an outer branch o, and an inner one pi.

The third nerve entering the arm p, before it attains to the arm, scatters a sprig betwixt the Pectoral muscle, and Deltoides sigma. By and by having entered the arm, it distributes another, tau, into the second muscle that lends the cubit. After that descending it receives a branch from the second nerve nu; when it is past the bough of the arm, it is distributed into many surcles

1. *Surcles* φ , at length about the palm of the hand it is divided into three branches χ .

2. The fourth nerve entering the arm, which is the greatest of all them that goe to the arm, is not marked with any letters in the second table, but in the third only, left the second should be too much blurred with Letters. This sodainly after it has entred the arm, reaches out small sprigs ω into the muscles, that extend the cubit, then another into the inner skin, upwards and downward Γ , and another into the lower part Δ , and another Θ , which goes as far as to the wrist. After this near to the bought of the arm it is divided into two branches, an outer one Λ , and an inner Π That Λ about the transverse ligament is again divided in two Ξ . This Π reaching all along the cubit sends forth more propagations, the first Σ , the second φ , the third \downarrow . Then another in its progresse Ω . The remainder ends in the wrist ζ .

3. The fifth that enters the arm, which about the inner protuberation of the arm, is disseminated like to the third. Its first surcle $\zeta\zeta$, its second $\zeta\Delta$, its third $\zeta\Xi$.

4. The sixth nerve of the arm, which goes under the skin imparting many sprigs to it $\zeta\Gamma$, $\zeta\Delta$, $\zeta\Xi$. The end of it is $\zeta\Theta$.

5. The five pairs of the nerves of the loins: the first 20 , the second 21 , the third 22 , the fourth 23 , the fifth 24 . A certain branch arising from the first pair of the loins 20 , and descending for the most part with the preparing artery to the testicle.

6. The course of the nerves through the muscles of the Abdomen; from which branches 41 goes to the muscle that leads the arm outward from the breast.

7. The hinder branches of the nerves of the loins.

8. The six pairs of the nerves of the great bone. Of these the first is 25 , the second 26 , the third 27 , the fourth 28 , the fifth 29 , the sixth 30 .

9. A Surcle reacht out from the fore-branch of the first nerve of the great bone to the inside of the hanch bone, and so to the muscles of the abdomen, that arise from that bone. Then another spreading out from the hinder-branch to the muscles seated on the back of os Ilium, or the hanch-bone.

10. The termination of the spinall marrow passing on without a mate, and undivided.

11. The first nerve entering the crus. This arises where the third nerve of the loins meets with the fourth 47 . A branch of this 48 goes to the skin; but 49 it is entangled among the muscles, that are seated on the outside of the thigh.

50.1. The second crurall nerve, a notable propagation whereof 51 runs out in the same course with the vein Saphena to the end of the foot, and there ends about 52 . In the mean time it proffers another notable surcle 53 to the fore-side of the knee. But the remainder of the trunk 54 enters deep into the thigh, and gives out a small branch 55 , but without question the chief.

56.1. The third crurall nerve, whose propagation 57 goes to the muscles called Obturatores, and another 58 to the skin. The remainder 59 lies deep intangled in the muscles whose chief propagation is 60 , which is implanted into the second and third muscles, that bend the Leg.

61.1. The fourth, and that the thickest of all the nerves of the crus, whose first branch is 62 , which is inserted into the skin of the buttocks; another 63 is distributed into the heads of the muscles that arise from the appendix of the Hip: a third 64 is given to the fifth muscle, that bends the leg; and others 65 go into the outer calf-muscle, and that of the sole of the foot. But about the lower heads of the thigh it is divided 66 into two branches, to wit, an outer one, 67 , and an inner 72 .

67.1. The outer branch, a propagation whereof 68 is sent under the skin, that covers the outer part of the leg, and the out side of the foot. But the branch itself 69 goes to the connexion of the lesser bone of the leg with the greater; sending forth another surcle 70 to the forepart of the leg under the skin: the remainder of it 71 reaches along the fibula or lesser bone of leg.

72.1. The inner branch a propagation whereof, 73 goes through the inside of the leg toward the calf, and inside of the foot under the skin: and then another 74 is scattered into the skin, especially that which covers the calf.

75.75.1. Another also 75 , 75 goes into the fore-part of the leg through the ligament that joins the lesser bone of the leg to the greater, and afterward is spent on the upper side of the foot. The last propagation 76 runs out betwixt the inner and outer calf-muscles. The remainder of the trunk goes by the inner ankle to the lower part of the foot, distributing two surcles a peice to the lower part of all the toes.

76.1. The second and third figures of the second Table. These two figures do exhibit the nerves of the arm and leg in a larger form, then the first table does, so that all, which concerns those nerves, may be shew'n more accurately herein. But they have common characters, and the same explanation of the same serves for both.



THE Readers ordinary charity is desired in behalfe of the PRESSE. Such faults, as are more considerable in these three TREATISES, and from which the Translation might possibly have suffered, are here set downe. As for those petty slips, which concerne the misplacing of commas, or the like, they will be as easily observed by the Reader, as they have been committed by the Printer, and are amended even before they are taken notice of.

PAG. 1. line 3. for (*common*) read *cava* or, *ibid.* l. 34. for *κυσινδς* read *κυσινδς*; *ib.* l. 39. read *of the stomach*, p. 3. l. 15. put out (*we have said above that,*) *ib.* l. 24. for (*divided*) read *distributed*, *ib.* l. 55. read *propagation*. l. 56. for (*or the right*) read *and &c.* *ib.* l. 61. for (*Mesenterick branch*) read *Mesentery*, p. 4. l. 17. for (*turn*) *burne*, *ib.* l. 35. read *very well cured*, *ib.* l. 41. read *acute*, *ib.* l. 45. for (*and abundance*) read *an abundance*, p. 5. l. 7. read *Leucophlegmatia*, p. 6. l. 4. read *about the liver*, *ib.* l. 17. for (*a circuit*) *the circuit*, *ib.* l. 19. read *of the midriffe*, p. 8. l. 12. read *to the sinus*, *ib.* l. 47. for *cheek* read *jaw*, *ib.* l. 58. for (*circle*) *surcle*, p. 9. l. 1. read *Cutaneus*, *ib.* l. 4. read *hyoides*, *ib.* l. 11. read *surcles*, as also p. 10. l. 35. p. 11. l. 9. read *Radiens*, pag. 12. line 32. for (*snivell*) read *a mucous matter* *ib.* l. 67. for (*concocted*) *contorted*, pag. 16. line 12. for (*putting*) *pulling*, pag. 18. l. 13. read *Radiens*, p. 23. l. 12. for (*cups*) *chops*, p. 25. l. 36. for (*change*) read *judication*, p. 26. l. 42. for (*of the lower*) *the lower*, p. 28. l. 20. read *the same symptoms*, p. 31. l. 35. put out *wit*, *ib.* l. 39. (*for to*) read *the*, p. 32. l. 21. read *the stomach-arterie*, *ib.* l. 37. for (*o*) read *of*, p. 36. l. 49. read *the outer angle*, p. 38. l. 34. for *returned* read *turned*, *ib.* l. 39. read *many surcles*, p. 41. l. 1. read *slenderer*, p. 43. l. 40. *Splenicus*, *ib.* l. 46. read *the first of the loines*, *ib.* l. 49. *going out*, p. 47. l. 10. *gone forth through*, p. 48. l. 6. *in the inner*, *ib.* l. 22. *into both*, p. 49. l. 4. for *circle* read *surcle*, *ib.* l. 35. *hinder branches*.

F J N J S.

Hhhh

Faint, illegible text, possibly bleed-through from the reverse side of the page. The text is arranged in several lines and appears to be a list or a series of entries, but the characters are too light and blurry to transcribe accurately.

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