The workes of ... Ambrose Parey ... / Translated out of Latine and compared with the French. By Th. Johnson [and in part by George Baker].

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PARE
WORKES
1634





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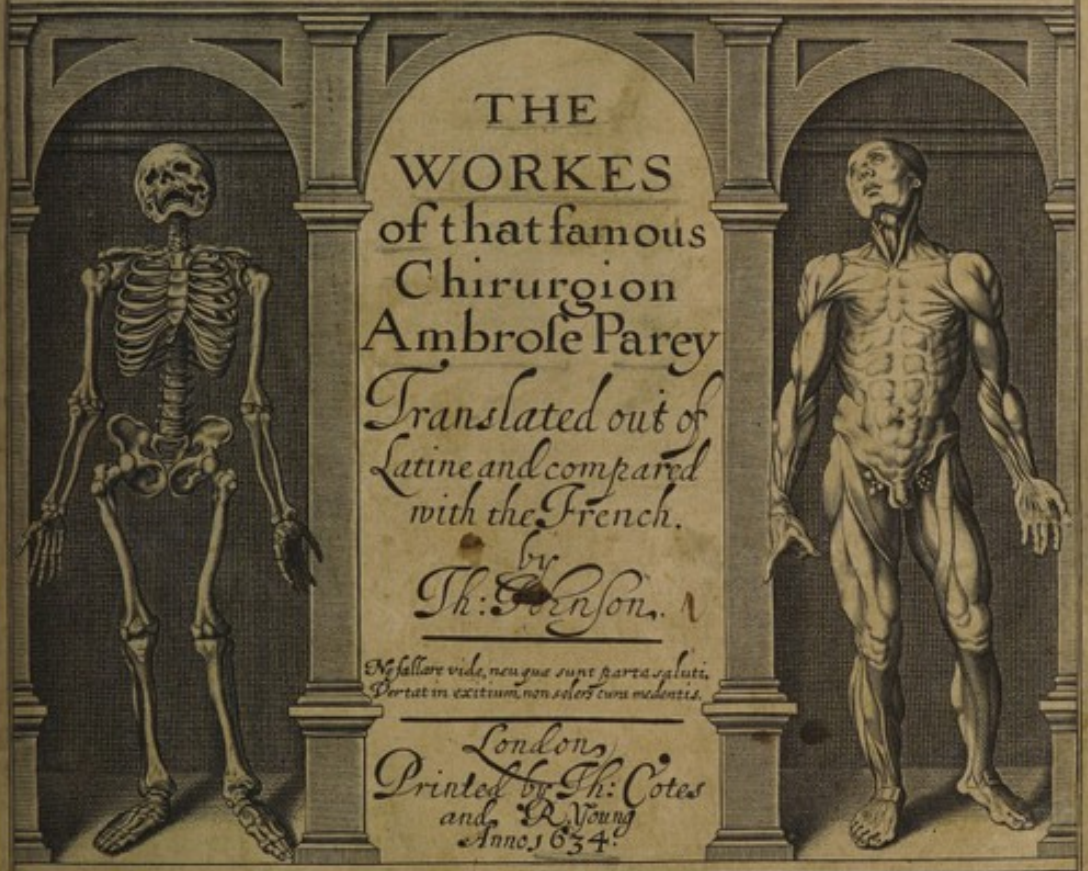

THE WORKES of that famous Chirurgion Ambrose Parey

Translated out of Latine and compared with the French.

by Th: Johnson.

Ne fallare vide, neu quæ sunt parta saluti,
Vertat in exitium, non solers cura medentis.

London,
Printed by Th: Cotes
and R. Young
Anno 1634.



Sam: Sneath Eius Liber Ex dono Richard Fisher
Medico Deficiunt 1700

To The Reader.

I Have here for the publike good taken paines to subject my selfe to common censure, the which I doubt not but to finde 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 feare not Calumniation (though sure to heare of it) and therefore I will not Apologize, but informe 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, hee was a man well versed in the writings of the antient and moderne Physitians, and Surgeons, as you may evidently finde by sundry places alledged in his workes. For his experience, or practice (the chiefe helpe to attaine 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 Guillemeau*, Surgeon to the French King, a man both learned and judicious in his profession, averres, speaking of his owne education and progresse in the Art of Surgery. Iso laid (* saith hee) 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 yeares, 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 Actor. There flourished at these times, and yet doth, *Ambrose Parey*, principall Surgeon to the most Christian King, the Author of this great worke, most renowned for the gracious favour of Kings, Princes and Nobles towards him, for his Authoritie amongst his equals, for his Chirurgical 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 dutifulnesse 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 Citie 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 Latine edition of this Author.

Now for this worke, heare what this same man in the same place affirmeth further: I not content with these meanes, which may seeme 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 foure years space I followed the Spanish Armie in the Low-countries; whereas I did not onely 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 sicke. 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 worke for large rewards, turned into Latine, or such Languages as they understood, which they kept charily, and made great store of; and they esteemed, admired, and embraced this worke alone, above all other workes of Surgery, &c. Our Author also himselfe, not out of a vainglorious ostentation, but a minde conscious of the truth of his assertion, affirmes thus much of this his worke. I have (saith hee) so certainely toucht the marke whereat I aimed, that Antiquity may seeme to have nothing wherein it may exceed us, besides the glory of invention, nor posterity any thing left, but a certaine small hope to adde some things, as it is easie to adde to former inventions. Thus much concerning our Authour, and the excellency of his worke.

Now come I to my translation, the which, as desiring more a publike good, than private praise, I have performed plainly and honestly, laboring to fit it to the capacity of the meanest Artist; 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

moſt wholly perſwaded and incited to take this paines, who knowing the diſability of underſtanding this Author in Latine 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 doe good to ſuch as ſhall implore their aide in their profeſſion.

There are ſome (I know) will blame me for Engliſhing this worke, as laying open the myſteries of a worthy Art, to the unworthy view of the vulgar. To ſuch I could anſwer as * *Ariſtotle* did to *Alexander*: but for the preſent I will give them theſe, which I thinke may ſatisfie any but the purpoſely malicious: the firſt is drawne 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 beene the cuſtome of moſt Writers in all Ages and Countries thus to doe: *Hippocrates*, *Galen*, and the other Greeks, writ in their mother tongue the myſteries of their Art: thus did *Celſus*, *Serenus*, and others in Latine: *Meſue*, *Avicen*, *Serapio*, and others, in Arabicke; as alſo, to goe no further, our Author writ this worke 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 daies, that we muſt bee forced to learne to underſtand two or three tongues, before wee can learne any ſcience, whereas the Antients learned and taught theirs in their mother tongue: ſo that they ſpent a great deale leſſe time about words, and more upon the ſtudy of that Art or Science they intended to learne and follow. Thirdly, I muſt tell you, that, *Ex libris nemo evaſit Artifex*, No man becomes a workeman by booke: ſo that unleſſe they have had ſome inſight in the Art, and be in ſome ſort acquainted both with the termes of Art, as alſo with the knowledge and uſe of the inſtruments thereto belonging, if by reading this, or any other booke of the like nature they become Surgeons, I muſt needs liken them (as *Galen* doth another ſort of men) * To Pilots by booke onely: to whoſe care, I thinke, 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.

Vide Aul. Gel. l. 10. c. 4.

Gal. de ſimp. l. 8. Τῶν ἐν βιβλίοις κυβερνήτων.

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 *Banhine*, which were uſed in the worke of Dr. *Crooke*; and theſe indeed are the better and more complete. Alſo Page 807. I thought it better to give the true figure of the Helmet floured Aconite, mentioned out of *Pliny*, than to reſerve the faigned 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 finde here and there turned into a plaine Parentheſis, eſpecially toward the latter end of the booke, but the matter is not great. Further, I muſt acquaint you that the Apologie and Voyages, being the laſt part of this worke, and not in the Latine, but French editions, were tranſlated into Engliſh out of French by *George Baker*, a Surgeon of this City, ſince that time, as I heare, 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 minde that it is preſented to thee, by him that wiſheth thee all happineſſe,

THOMAS JOHNSON.

THE AVTHORS EPISTLE DEDICATORIE

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

EVen as (most Christian King) we see the members of mans body by a friendly consent are alwayes busied, and stand ready to performe 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-Weale 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 caried away with rashnes and envy, desire different and divers things whereof we have no knowledge. He which doth otherwise, perverts and defiles with hated confusion the order and beauty, on which this Univers consists. Wherfore when I considered with my selfe, that I was a member of this great Mundane body, and that not altogether unprofitable, I endeavored earnestly, that all men should be acquainted with my duty, and that it might be knowne how much I could profit euery man. For God is my witnes, and all good men know, that I have now laboured fifty yeares with all care and paines in the illustration and amplification of Chirurgery; and that I have so certainly touched the marke whereat I aimed, that Antiquity may seeme to have nothing wherein it may exceed us, beside the glory of invention; nor posterity any thing left but a certaine small hope to adde some things, as it is easie to adde to former inventions. In performance whereof, I have beene so prodigall of my selfe, my watchings, faculties and meanes, that I spared neither time, labour, nor cost, wherby 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 the length waxe cold, if they only furnished with the Theoricke and Precepts in Schooles and that with much laboure, should see no manuall operation, nor manifest way of performing the Arte. For which cause I seeking the praise and profit of the French Nation, even with the hinderance of my particular estate, have endeavored to illustrate and increase Chyrurgerie hitherto obscure either by the infelicity of the

former ages, or the envy of the Professors; and not onely with precepts and rules, but being a lover of carved workes I beautified it with 300. formes, or graven figures and apt deliniations, in which whosoever shall attentively looke shall finde five hundred anatomicall, or organicall figures belonging to the Arte, (if they be reckoned particularly). To every of these I have given their names and shewed their use, least they should seeme to have beene 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 beene so arrogant, but intending to publish my worke, I first communicated it with men the most excellent in the Arte of Phisicke, who gave me greater incouragement to perfect and publish it, that it might be in common use: professing they wished nothing more, than that it might be turned into Latine, so by which meanes it should be knowne to forraigne Nations, that there is no kind of Learning which is not delivered with great dexterity of wit in this kingdome over which you rule. And thus much I dare boldly affirme, that there is scarce any, be he never so stately or supercilious, but that he may here find something which may delight him, and by which he may better his knowledge. Therefore I doubted not to consecrate this booke unto your Majestie both as a Patterne and treasury of my labours aswell in respect of my duty, who am yours by nature and education, as that I might manifest to all, your Highnes exceeding bounty towards me, in placing me, (having heretofore enjoyed the office of principall Chirurgeon under 3 Kings your Majesties predecessors) in the same dignity, and that of your owne accord. And moreover I did conjecture that it would fall out, as now it doth, that this my worke caried through the world by the fame of your Majestie name, should neither feare the face nor veiw of any, supported by the favour and Majestie 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 Queene his Mother, refuse to reade it, being he understood it proceeded from him, who having happily passed all his time in private and publik employments, and conversed with all men of all sorts, was judged most worthy to obtaine this favour, as to have the front of this worke adorned and beautified with the splendor of his prefixed name. I encouraged by this hope, desired that my request should passe as by a certaine continuation and succession from a most powerfull, to a most Invincible King; and doe wholy consecrate these my labours taken for my Countryes good unto your sacred Majestie. God grant that your Majestie may have happy successe of all your enterprises aboundantly added to* Nestors *yeares.*

Paris. 8. Feb. Anno Dom. 1579.

Your most Christian Majesties
faithfull Servant

Ambrose Parey.

The Preface.

MOst men derive the Original of Phiſicke from heaven; for thoſe who hold the beſt opinion of the Creation of the world, affirme, 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 floures, endewed with various ſents, taſtes, colours and formes, grew and ſprung forth of the bowells 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 knowledge of thoſe things without the guidance of the divine power. For God the great Creator & 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 Vniverſe. 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 knowledge was not buryed in oblivion with *Adam*: but by the ſame guift of God was given to thoſe whom he had choſen and ordained for Phiſicke, 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 al Nations, but confirmed by *Moſes* in the Scripture. Which thing *Ieſus* the ſonne of *Sirach* the wiſeſt amongſt the Iewes, hath confirmed ſaying; *Honnor the Phyſition with the honnor due unto him, for the moſt High hath created him becauſe of neceſſity: and of the Lord commeth the giſt of healing. The Lord hath created Medicines of the Earth and he that is wiſe will not abhorre them. Give place and honnor to the Phiſition, for God hath created him, let him not goe from thee, for thou haſt need of him.* The *Græcians* who firſt ſeeme more fully and with greater fame to have profeſſed the Arte of Phiſicke, doe in a manner conſent with this opinion, in acknowledging *Apollo* to have beene the Inventor 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 els ſome *Heros*, who incited by an excellent and almoſt divine vnderſtanding

Geneſ. 1. *Eccleſiaſt.* 38. 1.

first taught and put in practise the Medicinall vertues of Herbs; in which sense *Ovid* brings him in speaking thus:

Herbs are of mine invention, and through all
The world, they me the first Phisitian call.

The originall of Phisicke arising from those beginnings shall alwayes be celebrated, as celestiall, and was increased principally after this manner. After *Apollo*, *Æsculapius* his sonne instructed by his father reduced this Arte being as yet rude and vulgar into a litle better and more exquisite forme, 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 knowledge of Plants, and taught *Æsculapius*, (as many report) their faculties, is thought by *Pliny* and some others to have bin the inventor of Phisicke. *Æsculapius* had two sons *Podalirius* and *Machaon* who following their fathers steps & professing Phisicke, 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 Arte much enlarged as hereditary to his posterity: by whose study and diligence, that part of the Arte was invented and annexed, which by a more curious skill searcheth out and cureth those diseases which lye hid within the body. *Hippocrates* the *Coan* the son of *Heraclidas*, borne of the noble race of *Asclepiades*, Prince of the Phisitians that were before him, perfected Phisicke and reduced it into an Arte and wrote divers bookes thereof in Greeke. *Galen* succeeded him six hundred yeares after, who was a man most famous not only for his knowledge in Phisicke, but also in all other sciences, who faithfully interpreting every thing that was obscure and difficult in the writings of *Hippocrates*, enlarged the seience with many volumes. Thus therfore was the beginning, thus the encrease and perfecting the Arte of Phisicke, as much as can be hoped for from mans industry. Although indeed we cannot deny but that Experience hath much profited this Arte, 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 downe, and so by diligent observation and marking of singularities, they established universall and certaine precepts and so brought it into an Arte. For so we find it recorded in ancient Histories, before the invention of Phisicke, that the *Babilonians* & *Assyrians* had a custome amongst them, to lay their sicke 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 counsell 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 sicke man in silence. Also *Strabo* writes that it was a custome in *Græce* that those which were sicke should resort to *Æsculapius* his Temple in *Epidaurum*, that there as they slept, by their dreames they might be admonished by the God

Nic. l. 7, c. 2.

what

what meanes 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 & faſtned 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, & ſo frō thoſe drew the Arte of Phiſicke. Beaſts alſo have added much to this Arte. For one man was not only inſtructed by another, but learned alſo much from brute beaſts, for they by the onely inſtinct of nature have found out divers herbs, & remedies, by which they freed & preſerved themſelves from infirmities, which might preſently be transferred to mans uſe. Wherfore cōſidering that ſuch & ſo many have cōcurred to bring this Arte to perfection, who hereafter dare call in queſtion the excellency therof? cheifly if he reſpect the ſubject therof, Mans body, a thing more noble than all other Mundane thing, and for which the reſt were created. Which thing moved *Herophilus* in times paſt to call Phiſitions *The hands of the Gods*. For as we by putting forth our hand, do helpe any man out of the water or mud into which he is fallen: even ſo we doe ſuſtaine thoſe that are throwne downe from the top of health to the gates of death by violence of diſeaſes, with happy medicines, & as it were by ſome ſpeciall & divine gift deliver them out of the jawes of death. *Homer* the prince of Greek Poets affirmes that one Phiſition is far more worthy than many other men. All Antiquity gave Phiſitions ſuch honor, 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 healthfull medicines, with which (we ſee by dayly experience) Phiſitiōs, as armed with *Mercuries* rod, do bring back thoſe languiſhing ſoules which are even entring the gates of death? Hence it cometh to paſſe that the divine Poets of ancient times, as *Orpheus*, and *Muſæus* & *Heſiode*; & the moſt renowned Philoſophers, *Pythagoras*, *Plato*, *Ariſtotle*, *Theophraſtus*, *Chryſippus*, *Cato Cenſorius*, & *Varro* eſteemed nothing more excellent than to excell in the knowledge of Medicines, & to teſtifie the ſame by written monuments to Poſterity. For what can be more noble or worthy of a generous diſpoſition than to attaine to that by the benefit of Phiſicke, that adorned with the ornaments of dignity thou maieſt have power over other men, & favoured of Princes, Kings & Emperours, mayeſt appoint & preſcribe to them thoſe things which are profitable to preſerve health, & cure their diſeaſes? But if you look for benefit by ſciences; then know that the Profeſſors hereof have beſides ſufficient gain, acquired much honor & many friends. *Hippocrates* comming to *Abdera* to cure *Democritus* of his madnes, not only the men of the City, but alſo the women, children & people of every age, ſexe & ranck went forth to meet him, giving him with a common conſent & 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

In what eſteeme Phiſitions have formerly beene.

phant pompe celebrated playes to his honor, & bountifully ſet upon his head as if he had beene a king, a Crowne of gold weighing a 1000. peices of their golden coine, & 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 *Antonius Muſa* with a golden ſtatue. *Quintus Stertinius* yearly received out of the Emperours Treaſury 12000. 500. peices of gold. In the time of our Grandfathers *Petrus Aponenſis* called *Conciliator* was ſo famous through all *Italy* for his knowledge in Phiſicke, that he could ſcarſe be intreated to come to any man of faſhiō that was ſick, unles he gave him 50. crownes, for every day he was abſent from home: but when he went to cure *Honorius* the Biſhop of *Rome*, he received 400. crownes for every day he was abſent. Our French Chronicles relate in what credit & eſtimation *James Cotterius* the Phiſition was with *Lewis* the 11. King of *France*; for they report he gave him monethly out of his Treaſury 10000 crownes. Phiſick in times paſt hath bin in ſuch eſteem with many famous & noble perſonages, that divers Kings & Princes delighted with the ſtudy therof, & deſirous to attaine glory & credite therby, 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 *Mithridatick* herb or *Scordium*, of *Mithridates* the king of *Pontus* & *Bithinia*; *Achillea* of *Achilles*; *Centorie* of *Chiron* the *Centaure*; *Arthemiſia* of *Arthemiſia* the Queen of *Caria*. *Attalus* king of *Pergamus*, *Salomon* of *Judea*, *Evax* of *Arabia*, and *Juba* the king of *Mauritania*, were not only inflamed with a deſire of the knowledge of plants; but either they have writtē bookes of it, or for the great cōmodity of poſterity, invented by their skil many choiſe Antidots compounded of divers ſimples; neither the deſire of learning this noble ſcience is yet altogether extinct. As may appear by that *indiā* plant *Tobaco*, called by ſome the noble herb, *Catherines* herb & *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 maligne ulcers & wounds, which before was unknown to the *French*. For theſe worthy men underſtood that their glory, thus faſtened & ingrafted into the deepe, & as it were everliving roots of plants, would never decay; but ſhold be propagated to al poſterity in many ſucceeding ages, growing up with their ſprouting & budding ſhouts, ſtalks, floures & fruits. Neither did theſe famous men whil'ſt they adorned this part of phiſick ſuffer the other, which treats of the diſſectiō of mans body, be buried in oblivion, & without their knowledge; as inſtructed with the precepts & learning of the wiſeſt men, how artificiall & 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 wholy to the cōtemplation of

Names given to Plants.

nature

natural things;neglected the use of Anatomie,& being men most desirous to know themselves,to have beene ignorant of the structure of there own bodyes being the habitations of their soules immortall & made to the Image of God:seeing they observed with certaine judgment the different lights of the Sun,Moone and stars;and passed over so many lands, so many seas, so many regions so far remote one from another,by waies so terrible by reason of cold,uncouthnes,darknes,by rocks,by fire & sword,with great labour,charge & danger of life,only that they might satisfie their minds thirsting after the knowledge of things; and to have left untouched a thing truly noble,admirable,and most worthy of knowledge,easie to be attained by any, and to be acquired without any danger of life,or fortunes.

Seeing there be 3 parts of that Phisicke which at this time we professe, *Chirurgery* which by the use of the hand,*Diet* which with a convenient manner of feeding & ordering the body,& *Pharmacy* that by medicines attempt to expell diseases,& preserve health; The prime Phisitions do not without reason contend which of these may be accounted the cheife.Certainly *Herophilus* had *Pharmacy* in such esteem,that he thought medicines were first mixed & administred to the sick by *Apollo*(whom Antiquity thought a great Deity.) And *Pliny* had so good an opinion of Diet,that he exclaimes;The true remedies & Antidotes against diseases are put into the pot & eaten every day by the poore people.Verily al learned men confesse that the manner of curing which is performed by diet,is much more facile & prosperous,than that which is done by medicines;as those things which sought with much labour and cost, are taken with much loathing,and taken are scarse retained,but retained they oft work with much labour & paine:Which things long ago moved *Asclepiades* to exclude the use of medicines, as hurtfull to the stomack. Yet if we will beleeve *Celsus* neither of these parts merit the preheminēce,but both of them give place to Chirurgery.For seing that fortune is very powerfull in diseases, & the same Meats & Medicines are often good & often vaine,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 prevaile with medicines;although the profit be more manifest, yet it is evident that health is often sought in vaine even by these things,& often recovered without them.As it may be perceived by some troubled with sore eies, & others with Quartaine feavers,who having bin long troubled by Phisitiōs 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 phisicke.For who without Chirgery can hope to cure broken, or luxated parts,who wounds & 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* & *Machaon* following their Generall *Agamemnon* to the Trojane wars, yeelded no small

Phisicke is devided into 3 parts.

The excellency of Chirurgery.

ſmal comfort to their fellow Soldiers. Whom notwithſtanding *Homer* affirmes not to have given any helpe in the peſtilence, nor in divers other diſeaſes, but onely were accuſtomed to heale wounds by inſtruments and medicines. And if the difficulty of learning it argue the excellency of the Arte, who can doubt but Chirurgery muſt be the moſt excellent, ſeeing that noue ought to be accounted a Chirurgeon or which can performe his duty, without the knowledge of Diet & *Pharmacy*? But both the other can performe their parts without Chirurgery if we may beleeve *Galen*. But if we conſider the matter more neerly according to truth; we ſhall underſtand thoſe three parts have a certaine common bond, and are very neere of kinred, ſo that the one implores the ayde of the other; neither can the Phiſition doe any thing praiſe worthy without the conſpiracy and joynt conſent of theſe three; therfore in ancient times there was but one performer and uſer of all the three parts. But the multitude of men dayly encreaſing, and on the contrary mans life decreaſing, ſo that it did not ſeeme able to ſuffiſe for to learne and exerciſe all the three, the workmen devided themſelves. Wherfore that which happens to any man either by lot, or counſell, that let him follow, maintaine and onely uſe, as mindful how ſhort his life is, and how long the Arte.

A Catalogue of the VVorkes of AMBROSE PAREY, the King of France his Chiefe *Chyrurgion*, which were set forth in Latine, by *James Guillemeau*.

1. AN *Introduction, or compendious way to Chirurgery.*
2. *Of living creatures and mans excellency.*
3. *Of the Anatomy of mans body.*
4. *Of the vitall parts contained in the Chest.*
5. *Of the Animall parts placed in the head.*
6. *Of the Muscles and Bones, and other extreme parts of the body.*
7. *Of Tumors contrary to nature in generall.*
8. *Of Tumors contrary to nature in particular.*
9. *Of wounds in generall.*
10. *Of the greene and bloudy wounds of each severall part.*
11. *Of wounds made by Gun-shot, and other fiery Engins, and all sorts of weapons.*
12. *Of Contusions and Gangreenes.*
13. *Of Vlcers, Fistulaes, and Hæmorroides.*
14. *Of Ligatures, or Bandages.*
15. *Of Fractures.*
16. *Of Luxations, and Straines.*
17. *Of diverse affects of the parts no agreeable to nature, whose cure commonly is performed by the hand.*
18. *Of the Gout.*
19. *Of the* Lues Venerea, *and those Symptomes that happen by reason thereof.*
20. *Of the small Poxes and Measels and also of Wormes, and the Leprosie.*
21. *Of Poysons, and of the biting of mad dogges, and the stinging and biting of venemous creatures.*
22. *Of the Plague.*
23. *Of the Arts to repaire those things which are defective, either by nature or accident.*
24. *Of the generation of Man.*
25. *Of Monsters and Prodigies.*
26. *Of the Faculties of simple medicines, together with their composition and use.*
27. *Of Distillations.*
28. *A Treatise of reports, and the embalming of dead bodies.*
29. *An Apologie, and Voyages*; being not in the Latine, but translated out of the last French Edition, whom also I have followed in the number of the Bookes, least any should thinke some wanting, finding but 26. in the Latine, and 29. in the French.

AN INTRODVCTION OR COMPENDIOVS VVay to Chyrurgerie.

CHAP. I.

What Chyrurgerie is.

CHYRVRGERIE 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 uuto us. Others have thought good to describe it otherwise, as that; it is that part of Physicke 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 workes, of which we shall hereafter treate. Chyrurgery also is thus defined by the Author of the medicinall Definitions; The quicke motion of anintrepide hand joyned with experience: or an artificiall action by the hands used in Physicke, for some convenient intent. Yet no ne must thinke to attaine to any great perfection in this Art, without the helpe of the other two parts of Physicke; I say of Diet and Pharmacie, and the divers application of proper medicines respecting the condition of the causes, diseases, sypmtomes, and the like, circumstances, which comprehended under the names of things naturall, not naturall, and besides nature (as they commonly call them) wee intend to describe in their proper place. But if any reply, that there be many which doe the workes of Chirurgery, without any knowledge of such like things, who notwithstanding have cured desperate diseases with happy succesſe; 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) speakes against the Empericks. Wherefore seeing wee have set downe Chirurgery to bea diligent operation of the hands, strengthened by the assistanceof Diet and Pharmacie, wee will now shew, what, and of what nature the operations it are.

The definition of Chirurgerie.

What necessary for a Chirurgion.

CHAP. II.

Of Chirurgicall operations.

The nature of a Chirurgion.

FIve things are proper to the dutie of a Chirurgian; 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 joyne those which are separated; and to supply the defects of nature. Thou shalt fare more easily and happily attaine to the knowledge of these things by long use and much exercise, than by much reading of Bookes, or daily hearing of Teachers. For speech how perspicuous and elegant soever it be, cannot so vively expresse any thing, as that which is subjected to the faithfull eyes and hands.

Experience more necessary for a Chirurgion, than Art.

Examples of taking away that which is superfluous.

Wee have examples of taking away that which abounds, in the amputation, or cutting off a finger, if any have sixe on one hand, or any other monstrous member that may grow out: in the lopping off a putrified part inwardly corrupted; in the extraction of a dead child, the secondine, mole or such like bodies out of a womans wombe; in taking downe of all Tumors, as Wens, Warts, Polypus, Cancers, and fleshy excrescenses of the like nature; in the pulling forth of bullets, of peeces of maile, of darts, arrowes, shells, splinters, and of all kind of weapons in what part of the body soever they be. And hee taketh away that which redounds, which plucks away the haires of the eye-lids which trouble the eye 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 tooth, or cuts a naile that runs into the flesh; who cuts away part of the *uvula*, or haires that grow on the eye-lids; who taketh off a Cataract; who cuts the navill or fore-skinne of a child newly borne, or the skinnie caruncles of womens privities.

* Two tunicles of the eyes.

Examples of replacing.

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

Example of separating things joyned together.

But wee may take examples of disjoyning those things which are continued from the fingers growing together, either by some chance, as burning, or by the imbecilitie of the forming facultie: by the disjunction of the membrane called *Hymen*, or any other troubling the necke of the wombe, by the 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 foreskinne; by the devision of a varicous veine, or of a halfe cut nerve or tendon, causing convulsion: by the division of the membrane stopping the auditory passage, the nose, mouth, or fundament, or the stubborne sticking together of the haires of the eye-lids. Referre to this place all the workes done by Cauticks, the Saw, Trepan, Lancet, Cuppingglasses, Incision Knife, Leaches, either for evacuation, derivation or revulsion sake.

Examples of uniting things disjoyned.

The Chirurgion drawes together things separated, which healeth wounds by stitching them, by bolstering, binding, giving rest to, and fit placing the part: which repaires fractures; restores luxated parts; who by binding the vessell, staieth the violent effusion of bloud: who cicatriseth cloven lips, commonly called hare-lips; who reduces to equalitie the cavities of Vleers, and Fistula's.

Examples of suplying defects.

But hee repaires 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 eare, an eye, a nose, one or more teeth; who fils the hollownesse of the palat eaten by the Poxe, with a thinne 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 arme or legge with fit ligaments workemanlike: who fits a doublet bumbasted, or made with iron plates to make the body straight; who fills a shooe too big with corke, or fasens a stocking or socke to a lame mans girdle to helpe his gate. We will treate more fully of all these in our following Worke. But in performing those things with the hands,

we

we cannot but cauſe paine: (for who can without paine cut off an arme, or legge, devide and teare aſunder the necke of the bladder, reſtore bones put out of their places, open ulcers, bind up wounds, and appply cauteries, and doe ſuch like?) notwithſtanding the matter often comes to that paſſe, that unleſſe wee uſe a judicious hand, wee muſt either die, or leade the remnant of our lives in perpetuall miſery. Who therefore can iuſtly abhorre a Chirurgion for this, or accuſe him of crueltie? or deſire they may be ſerved, as in ancient times the Romanes ſerved *Archagatus*, who at the firſt made him free of the Citie, but preſently after, becauſe he did ſomwhat too cruelly burne, cut and performe the other workes of a good Chirurgion, they drew him from his houſe into the Campus Martius and there ſtoned him to death, as wee have read it recorded by *Sextus Cheronæus Plutarche's* Neece by his daughter. Truly it was an inhumane kind of ingratitude, ſo cruelly to murder a man intent to the workes 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 memorie. For my part I very well like that ſaying of *Celſus*; A Chirurgeon muſt have a ſtrong, ſtable, and intrepide hand, and a minde reſolute and mercileſſe, ſo that to heale him he taketh in hand, he be not moved to make more haſte than the thing requires; or to cut leſſe than is needfull; but which doth all things as if he were nothing affected with their cries; not giving heed to the judgement of the vaine common people, who ſpeake ill of Chirurgions becauſe of their ignorance.

Archagatus the Chirurgion.

In præfat. lib. 7.

The properties of a good Chirurgion.

CHAP. III.

Of things Naturall.

THat the Chirurgion may rightly and according to Art, performe the foreſaid workes, he muſt ſet before his eyes certaine Indications of working: Otherwiſe he is like to become an Empericke, whom no Art, no certaine reaſon, but onely a blind temerity of fortune moves to boldneſſe and action. Theſe Indications of actions are drawne from things (as they call them) naturall, not naturall, and beſides nature, and their adjuncts, as it is ſingularly delivered of the Ancients, being men of an excellent underſtanding. Wherefore we will proſecute according to that order, all the ſpeculation of this Art of ours. Firſt therefore things naturall are ſo termed, becauſe they conſtitute and containe the nature of mans body, which wholy depends of the mixture and temperament of the 4. firſt bodies, as it is ſhewed by *Hippocrates* in his Booke *de Natura humana*: wherefore the conſideration thereof belongs to that part of Phyſicke which is named *Phyſiologia*; as the examination of things not naturall to *Diætetice*, or Diet, becauſe by the uſe of ſuch things it indeavours to retaine and keepe health: but *Therapeutice* or the part which cures the diſeaſes, and all the affects beſides nature, challenges the contemplation of thoſe things which are not agreeable to nature. But the things which are called naturall may be reduced to ſeven heads: beſides which there comes into their fellowſhip, thoſe which wee terme annexed.

From whence we muſt draw Indications.

What things are called naturall.

To what part of Phiſicke things not naturall pertaine. To what things beſides nature.

The ſeven principall heads of things naturall are,
- Elements.
- Temperaments.
- Humors.
- Parts or members.
- Faculties.
- Actions.
- Spirits.

To theſe are annexed and ſomewhat neere,
- Age.
- Sexe.
- Colour.
- Compoſure.
- Time or ſeaſon.
- Region.
- Vocation of life.

CHAP. IIII.

Of Elements.

What an Element is.

AN Element (by the definition which is commonly received amongst Physitians) is the least and most simple portion of that thing which it composeth: or that my speech may be the more plaine: the foure first and simple bodies are called Elements; Fire, Aire, Water, and Earth; which accommodate and subject themselves as matter to the promiscuous generation of all things which the Heavens engirt, whether you understand things perfectly, or unperfectly mixed. Such Elements are onely to be conceived in your minde, being it is not granted to any externall sense to handle them in their pure and absolute nature. Which was the cause that *Hippocrates* expressed them not by the names of substances, but of proper qualities; saying, Hot, Cold, Moist, Drie; because some one of these qualities is inherent in every Element, as his proper and essentiall forme, not onely according to the excesse of latitude, but also of the active facultie; to which is adjoyned another simple qualitie, and by that reason principall, but which notwithstanding attaines not to the highest degree of his kinde, as you may understand by *Galen* in his first Booke of Elements. So, for example sake, in the Aire wee observe two qualities, Heat, and Moisture, both principall, and not remitted by the commixture of any contrary quality, for otherwise they were not simple. Therefore thou maist say, what hinders that the principall effects of heat shew not themselves as well in the Aire, as in the Fire? because as we said before, although the Aire have as great a heat according to his nature, extent and degree, no otherwise than Fire hath, yet it is not so great in its active qualitie. The reason is, because that the calfactorie force in the Aire is hindered, and dulled by societie of his companion and adjoyned qualitie, that is, Humidity which abateth the force of heat, as on the contrary, drinesse quickneth it. The Elements therefore are endewed with these qualities.

Elements are understood by reason, not by sense.

Why he expressed the Elements by these names of qualities.

Two principall qualities are in each Element.

Why the Aire heats not so vehemently, as the Fire.

Names of the substances;	Fire	is	Hot and drie.	Names of the qualities.
	Aire		Moist and hot.	
	Water		Cold and moist.	
	Earth		Cold and drie.	

How the Elements may be understood to be mixed in compound bodies.

These foure Elements in the composition of naturall bodies, retaine the qualities they formerly had, but that by their mixture and meeting together of contraries, they are somewhat tempered and abated. But the Elements are so mutually mixed one with another, and all with all, that no simple part may be found; no more than in a masse of the Emplaister *Diacalcitheos* you can shew any *Axungia*, oyle, or litharge by it selfe; all things are so confused and united by the power of heate, 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 foure Elementary substances in one compound body, by the power of mixture, in their dissolution by burning a pile or heape of greene wood. For the flame expresses the Fire, the smoke the Aire, 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 ioyning into one of the first mixed bodies is such, that there is no part sinceere, or without mixture. For if the heat which is predominant in the fire, should remaine in the mixture in its perfect vigor, it would consume the rest by its pernitious neighbourhood; the like may be said of Coldnesse, Moisture, and Drinesse; although of these qualities, two have the title of Active, that is, Heat, and Coldnesse, because they are the more powerfull; the other two Passive, because they may seeme more dull and slow, being compared to the former. The temperaments of all sublunarie bodies arise from the commixture of these substances & elementary qualities, which hath bin the principall cause that moved me to treate of the Elements. But I leave the force and effects of the Elementary

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

qualities

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 foure first bodies) others arise and proceed, which are therefore called the second qualities: as of manytheſe, Heauineſſe, Lightneſſe, variouſly diſtributed by the foure Elements, as the Heat, or Coldneſſe, Moiſtneſſe or Drineſſe, have more power over them. For of the Elements, two are called light, becauſe they naturally affect to move upwards: the other two heavy, by reaſon they are carried downeward by their owne weight. So we thinke the fire the lighteſt, becauſe it holds the higheſt place of this lower world; the Aire which is next to it in ſite, wee account light; for the water which lies next to the Aire, we judge heavy; and the earth the center of the reſt we judge 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 heavy bodies have more of the heavier. This is a brieſe deſcription of the Elements of this fraile world, which are onely to be diſcerned by the underſtanding, to which I thinke good to adjoyne 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 Booke *de Natura humana*, after he had deſcribed the nature of Hot, Cold, Moiſt and Drie, 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 bloud, are ſeed and menſtruous bloud. 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, veines, arteries, and many others manifeſt to the eyes, which wee will deſcribe at large in our Treatiſe of Anatomie.

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.

CHAP. V.

Of Temperaments.

What a Temperament is.

A Temperament is defined a proportionable mixture of hot, cold, moiſt and drie; or, it is a concord of the firſt diſagreeing faculties. That harmony ſprings from the mixture of the foure firſt bodies of the world. This whether Temperamẽt or concord is given to Plants and brute beaſts for the beginning of their life, and ſo conſequently for their * life and forme. But as Plants are inferior in order and dignitie to beaſts, ſo their * life is more baſe and infirme, for they have onely a growing faculty by which they may draw an Alimentarie juyce from the Earth, as from their mothers breaſts, to preſerve them and their life, by which they may grow to a certaine bigneſſe; 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 ſence annexed; by benefit whereof, as by a certaine inward knowledge, 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 ſoule of man farre more perfect and noble than the reſt, ariſeth not from that earthly mixture and temper of the Elements, but acknowledgeth and hath a farre more divine offſpring, as we ſhall teach hereafter.

* *Anima.* What the life performes in Plants.

* *Anima.* What in beaſts.

Mans ſoule comes from above.

They devide a Temperament at the firſt diviſion into two kindes; as one a temperate, another an untemperate. The untemperate is of two ſorts; the one wholy vicious, which hath altogether exceeded the bounds of mediocritie: the other which hath ſomewhat ſtraied from the mediocritie of temper, but notwithſtanding is yet contained within the limits of health: as that which brings no ſuch evident harme to the actions, but that it ſomewhat hinders them, ſo that they cannot ſo well and perfectly performe their duties. But the vicious Temperament doth three manner of wayes corrupt the functions, either by weakning, depraving or aboliſhing them. For ſo ſtupor, or aſtoniſhment, diminiſheth and ſloweth the quickneſſe of motion; convulſion depraves it; the Palſie aboliſheth it, and taketh it away. The temperate Temperament

The manifold diviſion of a Temperament.

A Temperament, *ad Pondus.*

perament is also devided into two kinds; which is either to equallity of weight, or Iustice. It is called a temperature to weight which ariseth from the equall force of exactly concurring qualities, and as placed in a perfect ballance, drawes downe neither to this nor that part. They thinke the example of this Temperament to appeare in the inner skinne of the fingers ends of a man tempered to Iustice. For seeing the most exquisite touch resides there, they ought to be farre from all excesse of contrariety; for otherwise being corrupted by too much heat or cold, moisture or drinesse, they could give no certaine judgement of the tangible qualities. For which thing nature hath excellently provided in the fabricke and coagmentation of the parts of which the skinne consists. For it is composed of hot and moist flesh, and therefore soft, and of a tendon and nerve cold and drie, and therefore hard, which are not onely equally fitted and conjoyned, but wholy 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 judge 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 tinctured with no certaine colour, that it might be the lesse deceived in the judgement of colours. So it was convenient the hearing should not be troubled with any distinct sound, whereby it might more certainly judge of equall and unequall sounds, not distinguished by a ratable proportion; neither was it fit the tongue should have any certaine taste, lest the accesse 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 parility of mixed qualities, yet hath that equalitie which doth fully and aboundantly suffice for to performe all the functions fitly and perfectly which nature doth require, wherefore we can judge no otherwise of it than by the integritie of the Actions. For hence it tooke its name, for as distributive Iustice equally gives to every one rewards, or punishment according to their deserts; so nature having regard to all the parts of the bodie, gives them all that temper which may suffice to performe those duties, for which they are ordained. Let us for an example consider a Bone; no man doubts but that, like as the other fimilar parts of the body proceeds from the mixture of the foure Elements: but nevertheless nature waighing the use of it, and ordaining it to support the rest of the body, would have more of the terrene and drie Element infused into it, that it might be the stronger and firmer to sustaine weight. But a Ligament, seeing it was made for other uses, hath lesse of that earthly drieneesse 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 onely with an equall portion, but also proportion of Elements and qualities; wee call that a temperament to Iustice: and wee say that it is in Plants, Brute beasts, and all naturall bodies, which enjoy that temper and mediocritie, which may be agreeable to their nature. Hereupon by comparison arise eight kindes of intemperate tempers, as

* *Ad pondus, vel ad justitiam.*

A temperament ad justitiam.

The temperament of a bone.

The kindes of intemperate tempers.

Foure simple { Hot / Cold } temperate in { Drineſſe and Moiſture. }
Foure simple { Moiſt / Drie } temperate in { Heat and Cold. }

Foure compounds { Hot and moiſt. / Hot and drie. / Cold and moiſt. / Cold and drie. }

But these temperaments are either of the whole body, or of some part thereof

and that either { principall, as { the Braine. / the Heart. / the Liver. / the Stones. } / or { of the rest of the parts composed of other which have no principality in the body. }

Againe

Againe, such ... peraments are either healthfull, which suffice perfectly to performe their a... ; or unhealthfull, which manifestly hurt them, the signes whereof may be read d... bed by *Galen*. And you must observe that when we say the body, or any part of i... ot, wee understand more hot than is fit for one of that kinde which is tempered t... tice; as when we say a man hath a hot liver, wee meane his liver is hotter, th... man justly tempered should have; for all other tempers, whether of the who... y, or any of the parts thereof, are to be referred to this; and in the cure of dis... we must looke upon it, as the marke, and labour to preserve it by the use of conv... t things, as much as lies in our power. Wherefore because it is very necessary ... ow the distinction of temperaments, I have thought good in this place, briefly t... idle the temperaments of the parts of the body, ages, seasons of the yeare, hu... s, and medicines. Therefore the temperaments of the parts of our body are of this ...ture, not onely by the judgement of the touch of a mans hand which is justly tempered (who is often deceived by flowing heate, which spread from the heart into all the body, imparts a certaine kinde of heate to all the parts,) but also by the rule of their reason, composure and sustance, as

Lib. 2. de Temper. & in Arte medicâ.

What the temperaments of mans body are.

A Bone is the most drie and cold.

A Gristle lesse than it.

A Ligament lesse than a Gristle.

A Tendon is so much drier and colder than the membrane, by how much it in the same temper exceedes a Veine and Arterie. Then follow the harder veines, for the softer are in a middle temper of drinesse and moisture, like as the skinne; although all both soft and hard, are of a cold temper. Wherefore all these parts of their owne nature are cold and without bloud: although the veines and arteries waxe hot, by reason of the heate of the bloud they containe, which notwithstanding also borroweth that heat from the heart, as a part most hot, and softer than the skinne; the liver next followeth the heart, in the order of the hotter parts, which is far softer than the skinne it selfe: for if, according to *Galens* opinion, the heart is somewhat lesse hard than the skinne, and that is farre harder than the liver, as appeares by touching them, it must necessarily follow that the liver much exceedes the skinne in softnesse; I understand the skinne simple, and separated from the flesh lying under it, to which it firmely cleaves. The flesh is more moist and hot than the skinne, by reason of the bloud dispersed in it. The spinall marrow is colder and moister than the skinne; but the braine so much exceeds it in moisture, as it is exceeded by the fat. The lungs are not so moist as the fat, and the spleene, and kidnies, are of the like nature, and nevertheless they are all moister than the skinne.

Ad finem lib. de temper.

According to the diversities of ages, the temperaments both of the whole body, and all its parts, undergoe great mutations; for the bones are farre harder in old men than in children, because our life is, as it were a certaine progresse to drinesse, which when it comes to the height consequently causeth death. Wherefore in this place we must speake 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 bodie of its selfe and owne accord, undergoeth manifest changes; the whole course of life hath foure such ages. The first is childhood, which extends from the birth to the eighteenth yeare of age, and hath a hot and moist temper, because it is next to the hot and moist beginnings of life, seed and bloud: Youth followeth this which is prolonged from the eighteenth, to the twentie fift yeare, and is temperate, and in the midst of all excesses; Mans estate succeedeth youth, which they deny to extend beyond the thirtie fift yeare of age, in its proper temper it is hot and drie: whereby it commeth to passe that then the heate is felt more acride and biting, which in childhood seemed milde; because the progresse of the life to drinesse hath much wasted the native humiditie.

The temperaments of ages.

What an age is.

Then succedes old age ever devided into two parts; the first whereof extends from the thirtie fift, to the fortie ninth yeare; those of this age are called old men (* *but we commonly call them middle aged men.*) The latter is as it were devided by *Galen* into three degrees; the first whereof are those, who having their strength sound and firme undergoe civill affaires and businesses: which things those which are in the second degree

Old age devided into two parts.

* Three degrees of the second part of old age.

gree of old age cannot doe, becauſe of the debilitie of their now decaying ſtrength: but thoſe which are in the laſt degree are afflicted with moſt extreme weakeneſſe and miſerie, and are as much deprived of their ſences and underſtanding, as of the ſtrength of their bodies; whereof aroſe this Proverbe, *Old men twice children.* Thoſe old men of the firſt ranke are pleaſant, and courteous, and thoſe we ſay are beginning to grow old, or in their greene old-age; thoſe of the ſecond ſort delight in nothing, but the boord and bed; but old decrepit men of the laſt order, thinke of nothing elſe, than their graves and monuments. Their firme and ſolid parts are of a cold and drie temperature, by reaſon of the decay of the radicall moiſture, which the inbred heate cauſeth in the continuance of ſo many years. Which things may happen in a ſhort ſpace, by the vehement flame of the ſame natural heate, turned by feavours into a fiery heate. 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 powre forth much moiſture; yet no man will deny but that ſuch a veſſell of its owne terrene nature and matter is moſt drie; ſo old men may plainely be affirmed to be moiſt, by reaſon of their defect of heate, and aboundance of excrements. But this deſcription of ages, is not to be taken ſo ſtrictly, as alwayes to be meaſured by the ſpaces and diſtances of yeares, for there are many which by their owne miſdemeanour, ſeeme elder at fortie, than others doe at fiftie.

Old men have their ſolid parts drie.

A compariſon of the foure ages to the foure ſeaſons of the yeare.

Laſtly, the famous Philoſopher *Pythagoras*, devided man life into foure ages, and by a certaine proportion compared the whole courſe thereof to the foure ſeaſons of the yeare; as childhood to the Spring, in which all things grow and ſprout out, by reaſon of plenty and aboundance of moiſture. And youth to the Summer, becauſe of the vigour and ſtrength which men enjoy at that age. And mans eſtate, or conſtant age to Autumne, for that then after all the dangers of the forepaſſed life, the gifts of diſcreetion and wit acquire a ſeaſonableneſſe, or ripeneſſe, like as the fruits of the earth enjoy at that ſeaſon. And laſtly, he compares old age to the ſterile and fruitleſſe Winter, which can eaſe and conſolate its tediouſneſſe by no other meanes, 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 eightie, or a hundred yeares, it is ſo cold and drie, 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 doting, returne againe to childiſhneſſe, as from the ſtaffe to the ſtart. And thus much of the Temperaments of aiges.

The tempers of the ſeaſons of the yeare.

But now in like manner we will explaine the temperatures of the ſeaſons of the yeare, which are foure, the Spring, Summer, Autumne, Winter. The Spring continues almoſt from the twelth 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 ſelfe, but from an inveterate error of the ancient Philoſophers, who would fit the temperaments of the foure ſeaſons of the yeare, as anſwering in proportion to the temperatures of the foure ages.

How the Spring is temperate.

Aphor. 9. ſect. 3.

Aphor. 20. ſect. 3.

For if the matter come to a juſt triall, all men will ſay the Spring is temperate, as that which is in the midſt of the exceſſe of heate, cold, moiſture and drineſſe; not onely by compariſon becauſe it is hotter than Summer, and colder than Winter; but becauſe it hath that qualitie of its owne proper nature. Wherefore it is ſaid of *Hippocrates*: The Spring is moſt holeſome and leaſt deadly; if ſo be that it keepe its native temper, from which if it decline, or ſucceed a former untemperate ſeaſon, as Autumne, or Winter, it will give occaſion to many diſeaſes deſcribed by *Hippocrates*; not that it breeds them, but becauſe it brings them to light, which before lay hid in the body. Summer is comprehended in the ſpace of almoſt foure moneths; it is of a hot and drie temper, a breader of ſuch diſeaſes as proceed from choler, becauſe that humor at this time is heaped up in many bodies by aduſtion of bloud bred in the Spring; but all ſuch diſeaſes doe ſpeedily runne their courſe. The beginning of Autumne, is from the time the Sunne enters into Libra, and endures the like ſpace of time as the Spring. But when it is dry, it hath great inequalitie of heate and cold; for the mornings and evening being very cold, the noondayes on the contrary are exceeding

Autumne time equall.

ding hot. Wherefore many diſeaſes are in Autumne, and then long and deadly eſpecially if they incline to wards winter: becauſe all dayly and ſodaine changes to heat and cold are dangerous. The winter poſſeſſes the remnant of the yeare, and is cold and moiſt, it encreaſes naturall heat, ſtirs up the appetite, and augments Phlegme. It encreaſes heat by *Antiperiſtaſis*, or contrariety of the encompaſſing aire, which being then cold prohibites the breathing out of heate: whereby it happens that the heat being driven in and hindered from diſſipation, is ſtrengthened by couniting 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 Chronicke or Long which ſpread and encreaſe rather in this winter ſeaſon than in any other part of the yeare. To this diſcourſe of the temper, of the ſeaſons of the yeares, is to be revoked the variety of tempers which happens very 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 judgement of diſeaſes; for if it agree with the diſeaſe, the diſeaſe is made more contumacious, and difficult to cure. Whereupon the Patient and Phiſition will have much trouble; but if on the contrary it reclame and diſſent, the health of the Patient is ſooner to be expected. Neither is it a thing of leſſe conſequence to know the cuſtomes and habits of the places and Countries in which we live, as alſo the inclination of the Heavens and temperature of the Aire; but let vs 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 Aire in proportion, is of a hot and moiſt nature, or rather temperate, as *Galen* teſtifies; for, ſaith he, it is certaine and ſure that the The blood is neither hot, nor moiſt, but temperate as in its firſt compoſure none of the 4 firſt qualities exceeds other by any manifeſt exceſſe, as he repeats it upon the 39. ſentence. Phlegme, 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 aſſimulated to Earth, is cold and dry. This which we have ſpoken in generall of Phlegme and Melancholy, is not alwayes true in every kind of the ſaid humors. For ſalte Phlegme is of a hot and dry temperature, as alſo all kinds of Melancholy which have aroſe, or ſprung by aduſtion from the native and Alimentary, as we will teach in the following Chapter. Now the Temperaments of Medicins have not the ſame forme of judgment, as thoſe things which we have before ſpoken of; as, not from the Elementary quality which conquering in the contention and mixture, obtaines the dominion; but plainly from the effects which taken or applyed they imprint in a temperate body. For ſo we pronounce thoſe things hot, cold, moiſt, or dry, which produce the effects of Heate, Coldnes, Moiſture or Drynes. But we will defer the larger explication of theſe things to that place, where we have peculiarly appointed to treat of Medicines; where we will not ſimply enquire whether they be hot or cold, but what degree of heate and cold, or the like other quallity: in which ſame place we will touch the temperature and all the Nature of taſts, becauſe the certaineſt judgment of medicines is drawne from their taſts. Hitherto of Temperaments, now we muſt ſpeake of Humors whoſe uſe in Phyſicall ſpeculation is no leſſe than that of Temperaments.

How Winter increaſes the native heat.

Aphor. 4 ſect. 3

The temperaments of Humors.

Lib. de natura humana ad ſent. 3 6. Sect. 1

The temperature of the blood.

From whence we judge of the temperature of medicines.

CHAP. VI.

Of Humors.

TO know the nature of *Humors* is a thing notonely neceſſary for Phiſitions, but alſo for Chirurgeons, 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 ſicke or well according to the Condition

The knowledge of the Humors is neceſſary.

Lib. de natura Hum.

dition of the *Humors* in the body. And certainly all putride feavers proceed from the putrifaction of *Humors*. Neither doe any acknowledge any other originall or distinction of the differences of Abscesses or Tumors: neither do ulcerated, brokē or otherwise wounded members hope for the restauration of continuity, from other than from the sweet falling downe of humors to the wounded part. Which is the cause that often in the cure of these affects, the Phisitions are necessarily busied in tempering the Blood, that is, bringing to a mediocrity the 4 humors composing the masse of blood, if they at any time offend in quantity, or quality. For whether if any thing abound, or digresse from the wonted temper in any excesse of heat, cold, viscosity, grossenes, thinnes, or any such like quality, none of the accustomed functions will be well performed. For which cause those cheife helpes to preserve and restore health have beene divinely invented; *Phelebotomy*, or bloodletting which amends the quantity of too much blood; and purging which corrects and drawes away the vicious quality. But now let us begin to speak of the Humors, taking our beginning from the definition.

The helpes of Health.

What an humor is.

The manifold division of Humors.

An Humor (is called by Phisitions) what thing so ever is Liquide and flowing in the body of living Creatures endued with Blood, & that is either natural, or againstnature. The naturall is so called because it is fit to defend, preserve and sustaine the life of a Creature. Quite different is the nature & 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 veines and arteries of a man which is tēperate & perfectly wel; & which is understood by the general name of blood which is let out at the opening of a veine. For blood otherwise taken is an Humor of a certaine kind, distinguished by heate and warmnesse from the other Humors comprehended together with it, in the whole masse 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 eate or drink, are the materialls of blood, which things drawne into the bottome 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 appeare one and like it selfe, yet it consists of parts of a different nature, which not only the variety of meats, but one & the same meate yeelds of it self. We terme this *Chylus* (when it is perfectly concocted in the stomacke). But the * Gate-veine receives it driven from thence into the small guts, and sucked in by the Meseraicke veins, and now having gotten a litle 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 forme 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 performe its office, that is, the faculty of nutrition, must necessarily be purged and clensed from the two excrementitious humors. Of which the bladder of Gall drawes one which we call Yellow Choler, and the Spleen the other which we terme 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 2. kinds of excrements is sent by the veines and Arteries into all patts of the body for their nourishment. Which although then it seeme to be of one simple nature, yet notwithstanding it is truly such, that foure different and vnlike substances may be observed in it, as blood properly so named, Phlegme, Choler and Melancholy, not only distinct in colour, but also in taste, effects and qualities. For as *Galen* notes in his booke *De Natura humana*, Melancholy is acide or soure, choler bitter, Blood sweet, Phlegme 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 certaine proportion, which remaining, health remaines, but violated, diseases follow. For all acknowledge that an *Oedema* is caused by Phlegmatick, a *Scirrhus* by Melancholike, an *Erysipelas* by Cholericke, and a *Phlegmone* by pure and laudable blood. *Galen* teaches by a familiar example of new wine presently taken from the presse, that these 4 substances are contained in that one Masse, and mixture of the blood. In which every one observes

The materiall and efficient causes of blood

What the *Chylus* is: * *Vena porta*

Where the blood is perfected.

The receptacles of Choler and Melancholy.

Foure unlike Humors in the Bloody.

A comparison of blood and new wine.

obſerves 4. diſtinct Eſſences; for the flower of the wine working up ſwims at the top, the dregs fall downe to the bottome, 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 bubling up on the ſuperficies of blood, as it concretes and growes cold, ſhineth with a golden colour; the dregs Melancholy, which by reaſon of its heavines ever ſinketh downward, as it were the Mudd of the blood; the crude and watery portion Phlegme: for as that crude humor, except it be rebellious in quantity, or ſtubborne by its quality, there is hope it may be changed into wine, by the naturall heate of the wine; ſo Phlegme which is blood halfe 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. humours, 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 Maſſe. It may eaſily appeare by the following ſcheme, of what kind they all are, and alſo what the diſtinction of theſe foure humors may be.

Phlegme is blood halfe concocted.

Why it hath no proper receptacle.

NATVRE	CONSISTANCE	COLOVR	TASTE	VSE.
Blood is	*Of Nature aery, hot and moyſt, or rather temperate,*	*Of indifferent conſiſtance, neither too thicke nor too thin,*	*Of Colour red, roſy or Crimſon,*	*Of Taſte ſweete,*	*Of ſuch uſe, that it cheifly ſerves for the nouriſhment of the fleſhy parts, and caried by the veſſels imparts heate to the whole body.*
Phlegme is	*Of Nature watery, cold and moiſt,*	*Of Conſiſtance liquid,*	*Of Colour white*	*Of Taſte ſweet, or rather unſavory, for we commend that water which is vnſavory.*	*Fit to nouriſh the braine and al the other cold and moiſt parts, to temper the heate of the blood, and by its ſlipperines to helpe the motion of the joynts.*
Choler is	*Of Nature fiery, hot and drie,*	*Of Conſiſtance Thin,*	*Of Colour yeallow, or pale,*	*Of Taſte bitter,*	*It provoketh the expulſive faculty of the guts, attenuates the Phlegme cleaving to them, but the Alimentary is fit to nouriſh the parts of like temper with it.*
Melancholy is.	*Of Nature earthly, cold and dry.*	*Of Conſiſtance groſſe and muddy,*	*Of Colour blackiſh*	*Of taſte acide, ſoure or biting.*	*Stirs up the Appetite, nouriſhes the ſpleene and all the parts of like temper to it, as the Bones.*

Bloud hath its neereſt matter from the better portion of the *Chylus*: and being begunne to be laboured in the veines, at length gets forme and perfection in the liver; but it hath its remote matter from meates of good digeſtion and quality, ſeaſonably eaten after moderate exerciſe; but for that, one age is better than another, and one time of the yeare more convenient than another. For bloud is made more copiouſly in the Spring, becauſe that ſeaſon of the yeare comes neereſt to the temper of the bloud, by reaſon of which the bloud is rather to be thought temperate, than hot and moiſt, for that *Galen* makes the Spring temperate, and beſides, at that time bloud-letting is performed with the beſt ſucceſſe: youth is an age very fit for the generation of bloud; or by *Galens* opinion, rather that part of life, that continues from the 25. to the 35. yeare 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 Phlegme is not by the imbecillity of heat, as ſome of the ancients thought; who were perſwaded that choler was cauſed by a raging, bloud by a moderate, and phlegme and melancholy, by a remiſſe heate. But that opinion is full of manifeſt errour: for if it be true that the *Chylus* is laboured and made into bloud 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 weake heate, ſeeinge the whole maſſe of the bloud different in its foure eſſentiall parts, is perfected and made at the ſame time, and by the ſame equall temper of the ſame part, action, and bloud making facultie; therefore from whence have we this varietie of humors? From hence, for that thoſe meates by which wee are nouriſhed, enjoy the like condition that our bodies doe, from the foure Elements, and the foure firſt qualities; for it is certaine, and wee may often obſerve in what kind ſoever they be united or joyned together, they retaine a certain hot portion imitating the Fire, another cold, the water; another dry, the earth, and laſtly, another moiſt like to the Aire. Neither can you name any kinde of nouriſhment, how cold ſoever it be, not Lettuce it ſelfe, in which there is not ſome fiery force of heate. Therefore it is no marvell, if one and the ſame heate working upon the ſame matter of *Chylus*, varying with ſo great diſſimilitude of ſubſtances, doe by its power produce ſo unlike humors, as from the hot, Choler; from the cold, Phlegme; and of the others, ſuch as their affinity of temper will permit.

Lib. 1. de temp.

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

There is no cauſe that any one ſhould thinke that varietie of humors to be cauſed in us, rather by the diverſity of the active heate, than waxe and a flint placed at the ſame time, and in the ſame ſituation of climate and ſoile, this to melt by the heat of the Sunne, and that ſcarſe to waxe warme. Therefore that diverſitie of effects is not to be attributed to the force of the efficient cauſe, that is, of heate, which is one and of one kinde in all of us; but rather to the materiall cauſe, ſeeing it is compoſed of the confluxe, or meeting together of various ſubſtances, gives the heate leave to worke, as it were out of its ſtore, which may make and produce from the hotter part thereof Choler, and of the colder, and more rebellious Phlegme. Yet I will not deny but that more Phlegme, or Choler may be bred in one and the ſame body, according to the quicker, or ſlower provocation of the heate; yet nevertheleſſe it is not conſequent, that the originall of Choler ſhould be from a more acride, and of Phlegme from a more dull heat in the ſame man. Every one of us naturally have a ſimple heate, and of one kinde, which is the worker of diverſe operations, not of it ſelfe, ſeeing it is alwayes the ſame, and like it ſelfe, but by the different fitneſſe, pliableneſſe, or reſiſtance of the matter on which it workes. Wherefore phlegme is generated in the ſame moment of time, in the fire of the ſame part, by the efficiency of the ſame heate, with the reſt of the bloud, of the more cold, liquide, crude, and watery portion of the *Chylus*. Wherby it comes to paſſe, that it ſhewes an expreſſe figure of a certaine rude or unperfect bloud, for which occaſion nature hath made it no peculiar receptacle, but would have it to run friendly with the bloud in the ſame paſſages of the veines, that any neceſſitie happening by famin, or indigency, and in defect of better nouriſhment, it may by a perfecter elaboration quickly aſſume the forme of bloud. Cold & rude nouriſhmēt make this humor to abound principally in winter, and in thoſe which incline to old age, by reaſon of the ſimilitude which phlegme hath with that ſeaſon and age. It makes a man drowſie, dull, fat, and ſwollen up, and haſteneth gray haires. Choler

The heate of the Sunne alone doth melt waxe and harden clay.

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

The effects of Phlegme.

is

is as it were a certaine heate and fury of humors, which generated in the liver, together with the bloud is carried by the veines 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 sweates; It is somewhat probable that the Arteriall bloud is made more thinne, hot, quicke and pallid, than the bloud of the veines, by the commixture of this Alementarie choler. This humor is chiefely bred and expeld in youth, and acrid and bitter meates give matter to it: but great labours of bodie and minde give the occasion. It maketh a man nimble, quicke, ready for all performance, leane, and quicke to anger, and also to concoct meates. The Melancholicke humor, or Melancholy, being the grosser portion of the bloud, is partly sent from the Liver to the Spleene 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 drinesse; it is made of meates of grosse juyce, and by the perturbations of the minde, turned to feare and sadnesse. It is augmented in Autumne, and in the first and crude old age; it makes men sad, harsh, constant, froward, envious and fearefull. All men ought to thinke, that such humors are wont to move at set houres of the day, as by a certaine peculiar motion or tide. Therefore the bloud flowes from the ninth houre of the night, to the third houre of the day; then Choler to the ninth of the day; then Melancholy to the third of the night, the rest of the night that remaines, is under the dominion of Phlegme. Manifest examples hereof appeares in the French-Poxe. From the elaborate and absolute masse of the bloud (as we said before) two kindes of humors, as excrements of the second concoction, are commonly and naturally separated, the one more grosse, the other more thinne. This is called either absolutely choler, or with an adjunct, yellow choler. That is called Melancholy; which drawne by the Spleene in a thinner portion, and elaborate by the heate 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 vessell into the orifice of the ventricle, whereby it may not cause, but whet the appetite, and by its astriction strengthen the actions thereof. But yellow Choler drawne into the bladder of the gall, remaines there so long, till being troublesome, either in quantitie or qualitie, it is excluded into the guts, whereby it may cast forth the excrements residing in them; the expulsive faculty being provoked by its actimony, and by its bitternesse kills the wormes 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 Liver, and not be voided with the excrements, whereby it might alay the grossenesse of the bloud, and serve it for a vehicle; for otherwise the bloud could scarse passe through the capillary veines of the Liver, and passing the sinous and gibbous parts thereof, come to the hollow veine. Part of this serous humor separated together with the bloud which serves for the nourishment of the Reines, and straight carried into the bladder, is turned into that urine which we daily make; the other part therefore carried through all the body together with the bloud, performing the like duty of transportation, is excluded by sweats into which it degenerates. Besides the forenamed, the Arabians have mentioned foure other humors, which they terme Alimentary and secondary, as being the next matter of nourishment, as those foure the bloud containes, the remote. They have given no name to the first kinde, but imagine it to be that humor, which hangs ready to fall like to little drops in the utmost orifices of the veines. They call the second kinde, * Dew; being that humor, which entred 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 fastened. The fourth named *Gluten*, or Glew, is onely the proper and substance-making humidity of the simular parts, not their substance. The distinction of the degrees of nutrition recited by *Galen* in his Bookes of Naturall faculties, answer in proportion to this distinction of humors. The first is, that the bloud flow to the part that requires nourishment; then that being there arrived, it may be agglutinated; then lastly, that having lost its former forme of nourishment, it may be assimulated.

The effects of Choler.

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.

Secundary humors.

* Ros.

Humors against nature.

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 putrifaction, although they were formerly by their owne nature cold. And they are corrupted, either in the veines onely, or within and without the veines; In the veines Bloud and Melancholy; but both without and within the veines, Choler and Phlegme. When bloud is corrupted in its thinner portion, it turnes into choler, when in its thicker, into Melancholy; for the bloud becomes faultie two maner of waies, either by the corruption of its proper substance by putrifactiō, or by admixtion of another substance by infection. The Melancholy humor which is corrupted in the veines, is of three sorts: the 1. is of a Melancholy juice putrifying, and by the force of a strange heate, turned as it were into ashes, by which it becomes adust, acride and biting. The other ariseth from that Choler which resembles the yolkes of egges, which by adustion becomes leeke-coloured, then æruginous, or of a blewish greene, then red, and lastly blacke, which is the very worst kinde of Melancholy, hot, maligne, eating and exulcerating, and which is never seene or voided with safetie. The third comes from Phlegme putrifying in the veines, which first degenerates into salte Phlegme, but straight by the strength of extraneous heate degenerates into Melancholy.

Into what humors the bloud when it corrupts doth degenerate.

The Melancholy humor corrupted, is of three kinds.

- In the veines, and is either
  - Acide and very crude, as which hath had none or very litle impression of heate, but that which it first had in the stomacke.
  - Salt, which is bred by the sweet, putrifying and adust, or mixture of adust and salt particles.
- Phlegme not naturall is bred, either
  - or without the veines, and is of 4. sorts, either
    - Watерish, as is that thinne moisture which distils from the braine by the nostrills.
    - Mucous, as when that waterish is thickened into filth by the helpe of some accidentall or small heate.
    - Glassie, or * *Albuminous*, resembling molten glasse, or rather the white of an egge, and is most cold.
    - *Gypsea*, or Plaister-like, which is concrete into the hardnesse and forme of chalke, as you may see in the joints of the fingers in a knotty goute, or in inveterate distillations upon the Lungs.

* *Albumineo.*

- Choler not naturall is bred, either
  - In the veines, as the * vitelline (like in consistance to the yolke of a raw egge) which the acrimony of strange heate breeds of yellow choler, which same in diseases altogether deadly, degenerates into greene, æruginous, and lastly into a blue, or colourlike that which is dried by woad.
  - Or in the capacitie of the upper belly as the ventricle, and this is of five kinds
    - The first is called *Porracea* or leek-coloured, resembling the juyce of a leeke in greeneness.
    - The 2. *æruginosa*, or æruginous, like in colour to verdigreasse.
    - The 3. blewish, or woad-coloured, like the colour died by woad.
    - The 4. red, differing in this from bloud, whose colour it imitates, that it never cōmeth into knots, or clods like bloud.
    - The 5. very red, generated by the excesse of the former, which causeth burning feavers.

* *Vitellina.*

The

The kinds of such choler, 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 bitternesse, acrimony and biting.

The Signes of a Sanguine Person.

I Thinke it manifest, because the matter and generation of flesh is principally from bloud, that a man of a fleshy, dense, and solid habite of body, and full of a sweete and vaporous juice, is of a Sanguine complexion. And the same party hath a flourishing and roasie colour in his face, tempered as with an equall mixture of white and red; of white, by reason of the skinne lying utmost; of red, because of the bloud spred underneath the skinne; for alwayes such as the humor is, such is the colour in the face. In manners hee is courteous, gentle, easie to be spoken to, not altogether estranged from the love of women, of a lovely countenance and smoothe forehead, seldome angry, but taking all things in good part; for as the inclination of humors is, so also is the disposition of manners. But bloud is thought the mildest of all humors; but the strong heate of the inward parts maketh him to eate and drinke freely. Their dreames are pleasant, they are troubled with diseases arising from bloud, as frequent Phlegmons, and many Sanguine pustles breaking through the skinne, much bleeding, and menstruous fluxes. Wherefore they can well endure bloud-letting, and delight in the moderate use of cold and drie things; and lastly, are offended by hot and moist things. They have a great and strong Pulse, and much urine in quantitie, but milde of qualitie, of an indifferent colour and substance.

Such as the humor is, such is the colour.

The manners and diseases of Sanguine persons.

The Signes of a Cholericke Person.

CHolericke men are of a pale or yellowish colour, of a leane, slender and rough habit of body, with faire veines and large Arteries, and a strong and quicke Pulse: their skinne being touched, feeles hot, dry, hard, rough and harsh, with a pricking and acred exhalation which breathes forth of their whole body. They cast forth much choler by stoole, vomite and urine. They are of a quicke and nimble wit, stout, hardy and sharpe vindicaters of received injuries, liberall even to prodigalitie, and somewhat too desirous of glory. Their sleepe is light, and from which they are quickly waked; their dreames are fiery, burning, quicke and full of furie; they are delighted with meates and drinkes which are somewhat more cold and moist, and are subject to Tertian and burning feavers, the Phrensie, Iaundise, Inflammations, and other cholericke pustules, the Laske, Bloudy fluxe, and bitternesse of the mouth.

Cholericks are not commonly fat.

The manners and diseases of Cholericke persons.

The Signes of a Phlegmaticke Person.

THose in whom Phlegme hath the dominion, are of a whitish coloured face, and sometimes livide and swollen, with their body fat, soft and cold to touch.

They are molested with Phlegmaticke diseases, as *oedematous* tumors, the Dropsie, Quotidians feavers, falling away of the haires, and catarrhes falling downe upon the Lungs, and the *Aspera Arteria*, or Weason; they are of a slow capacitie, dull, slothfull, drousie, they doe dreame of raines, snowes, floods, swimming, and such like, that they often imagine themselves overwhelmed with waters; they vomite up much waterie, and Phlegmaticke matter, or otherwise spit and evacuate it, and have a soft and moist tongue.

And they are troubled with a dogge-like hunger, if it at any time should happen that their insipide Phlegme become acide; and they are slow of digestion, by reason of which they have great store of cold and Phlegmaticke humors, which if they be carried downe into the windings of the cholicke-gut, they cause murmuring and noise, and sometimes the Cholicke.

For much wind is easily caused of such like Phlegmatick excrements wrought upon by

The manners and diseases of Phlegmaticke persons.

From whence noise, or rumbling in the belly proceedes

by a ſmall and weake heate, ſuch as Phlegmaticke perſons have, which by its naturall lightneſſe 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 winde breaking through narrow paſſages.

Signes of a Melancholike perſon.

Diſeaſes familiar to Melancholy perſons.

THe face of Melancholy perſons is ſwart, their countenance cloudy and often cruell, their aſpect is ſad and froward; frequent Schirrhous, or hard ſwellings, tumors of the ſpleene, Hæmorroids, *Varices (or ſwollen veines) Quartaine* feavers, whether continuall or intermitting, *Quintaine*, *Sextaine*, and *Septimane* feavours; and to conclude, all ſuch wandering feavers or agues ſet upon them. But when it happens the Melancholy humor is ſharpened, either by aduſtion, or commixture of Choler, then Tetters, the blacke Morphew, the Cancer ſimple and ulcerated, the Leprous and filthy ſcabbe, ſending forth certaine ſcaly and branlike excreſcenſes, (being vulgarly called Saint *Manis* his evill) and the Leproſie it ſelfe invades them: They have ſmall veines and arteries, becauſe coldneſſe hath dominion over them, whoſe propertie is to ſtraiten, as the qualitie of heate is to dilate. But if at any time their veines ſeeme bigge, that largeneſſe is not by reaſon of the laudable bloud, contained in them, but from much windineſſe; by occaſion whereof it is ſomewhat difficult to let them bloud; not onely becauſe that when the veine is opened, the bloud flowes ſlowly forth, by reaſon of the cold flowneſſe of the humors; but much the rather, for that the veine doth not receive the impreſſion of the Lancet, ſliding this way and that way, by reaſon of the windineſſe contained in it, and becauſe that the harſh drineſſe of the upper skinne, reſiſts the edge of the inſtrument. Their bodies ſeeme cold and hard to the touch, and they are troubled with terrible dreames, for they are obſerved to ſeeme to ſee in the night Devils, Serpents, darke dens and caves, ſepulchers, dead corpſes, and many other ſuch things full of horror, by reaſon of a blacke vapour, deverſly moving and diſturbing the Braine, which alſo wee ſee happens to thoſe, *who feare the water, by reaſon of the biting of a mad dogge. You ſhall finde them froward, fraudulent, parſimonious, and covetous, even to baſeneſſe, ſlow ſpeakers, fearefull, ſad, complainers, carefull, ingenious, lovers of ſolitarineſſe, man-haters, obſtinate maintainers of opinions once conceived, ſlow to anger, but angered not be pacified. But when Melancholy hath exceeded natures and its owne bounds, then by reaſon of putrefaction and inflammation all things appeare full of extreme fury and madneſſe, ſo that they often caſt themſelves headlong downe from ſome high place, or are otherwiſe guilty of their owne death, with feare of which notwithſtanding they are terrified.

From or by what their veines are ſwollen.

Their dreames

*Hydrophobi.

Their manners.

But we muſt note that changes of the native temperament, doe often happen in the courſe of a mans life, ſo that hee which a while agone was Sanguine, may now bee Cholericke, Melancholick, or Phlegmatick; not truly by the changing of the bloud 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 Cholericke if he eate hot and drie meates, (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 labours; and if there be a ſuppreſſion of Cholericke excrements, which before did freely flow, either by nature, or art. But whoſoever feeds upon meates generating groſſe bloud, as Beefe, Veniſon, Hare, old Cheeſe, and all ſalt meates, 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, turmoiles, miſeries, ſtrong and much ſtudy, carefull thoughts and feares; and alſo if he ſit much, wanting exerciſe, for ſo the inward heate as it were defrauded of its nouriſhment, faints, and growes dull, whereupon groſſe and droſſie humors abound in the body. To this alſo the cold and drie condition of the place, in which we live, doth conduce, and the ſuppreſſion of the Melancholy humor accuſtomed to be evacuated by the Hæmorrhoides, courſes, and ſtooles.

From whence the change of the native temper.

How one may become cholericke.

How melancholick.

How Phlegmaticke.

But he acquires a Phlegmaricke temper whoſoever uſeth cold & moiſt nouriſhment, much

much feeding, who before the former meate is gone out of the belly, shall stuffe his paunch with more, who presently after meate runs into violent exercises, who inhabite cold and moist places, who leade their life at ease in all idlenesse; and lastly, who suffer a suppression of the Phlegmaticke humour accustomely evacuated by vomite, cough, or blowing the nose, or any other way either by nature or arte. Certainely it is very convenient to know these things, that we may discerne if any at the present be Phlegmaticke, Melancholicke or of any other temper, whether he be such by nature, or necessity. Having declared those things which concerne the nature of Temperaments, and deferred the description of the parts of the body to our Anatomy, we will begin to speake of the faculties governing this our life, when first we shall have shown by a practicall demonstration of examples, the use and certainty of the aforesaid rules of Temperaments.

CHAP. VII.

Of the Practice of the aforesaid rules of Temperaments.

That we may draw the Theoricke of the Temperaments into practise, it hath seemed good for avoyding of confusion, which might make this our introduction seeme 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, studyes, actions, and forme of life of men that inhabit those Regions scituated so farre distant one from another, may be as a sure rule, by which we may certainely judge of every mans temperature in particuler, as he shall appeare to be nearer, or further off from this, or that region. Those which inhabite the South as the Affricans, Æthiopians, Arabians and Egyptians, are for the most part deformed, leane, dusky coloured and pale, with blacke eyes and great lippes, curled haire, and a small and shrill voyce. Those which inhabite the Northren parts as the Scythians, Muscovites, Polonians and Germaines, have their faces of colour white, mixed with a convenient quantity of blood, their skin soft and delicate, their haire long, hanging downe and spreading abroad, and of a yellowish, or reddish colour; of stature they are commonly tall, & of a well proportioned, fat and compact habite of body, their eyes gray; their voyce strong, loud and bigge. But those who are scituated betweene 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 Goates-eyes, and often hollow eyed, having a cleere shrill and pleasing voyce.

Foure bounds or Regions of the world.

The forces of temperatures in particulars. The temperature of the Southerne people. Of the Northerne.

The Southerne people are exceeded so much by the Northerne in strength and abillity of body, as they surpasse them in witt and the faculties of the minde. Hence is it you may reade in Histories, that the Scythians, Gothes and Vandals vexed Affricke and Spaine with infinite incursions, and most large and famous Empires have beene founded from the North to the South; but few or none from the South to the North. Therefore the Northren people thinking all right and law to consist in Armes, did by Duell onely determine all causes and controversies arising amongst the inhabitants, as wee may gather by the ancient lawes, and customes of the Lumbards, English, Burgonians, Danes and Germaines; and we may see in *Saxo* the Grammarian that such a law was once made by *Frotho* king of Denmarke. The which custome at this day is every where in force amongst the Muskovits. But the Southerne 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, Egyptians, Persians or Iewes. But moved by the goodnes of their wit, they erected Kingdomes and Empires by the onely helpe of Learning and hidden sciences. For seeing by nature they are Melancholicke by reason of the dryenesse of their temperature, they willingly addict themselves to solitarinesse

The Southern people prevaile in wit, the Northerne in strenght.

solitarineſſe and contemplation, being endued with a ſingular ſharpneſſe of wit. Wherefore the Æthiopians, Egyptians, Africans, Iewes, Phœnicians, 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 farre that the Arabians who live onely by ſtealth, and have onely 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 Africane. But the Northerne people, as the Germaines, by reaſon of the aboundance of humours and blood, by which the minde is as it were oppreſt, apply themſelves to workes obvious to the ſenſes, and which may be done by the hand. For their minds oppreſt with the earthly maſſe of their bodies, are eaſily drawne from heaven and the contemplation of Celeſtiall things, to theſe inferior things, as to find out Mines by digging, to buy and caſt mettals, to draw and hammer out workes of Iron, ſteele and braſſe. In which things they have proved ſo excellent, that the glory of the Invention of Guns and Printing belongs to them.

The Southern people learned and religious.

The Northern famous Warriours, and Artificers.

The people who inhabite the middle regions betweene theſe, are neither naturally fit for the more abſtruſe ſciences, as the Southerne people are, nor for Mechanicke workes, as the Northerne, but intermeddle with civil affaires, commerce and Merchandizing. But are endued with ſuch ſtrength of body as may ſuffiſe to avoid and delude the crafts and arts of the Southerne Inhabitants; and with ſuch wiſdome as may be ſufficient to reſtraine 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 yeares by their ſubtile 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 *Gothes*, *Hunnes* and other Northerne people have ſpoiled & overrun the Romane Empire by many incurſions and inroades, but deſtitute of counſell & providence, they could not keepe thoſe things which they had gotten by Armes and valour. Therefore the opinion of all Hiſtorians is agreeing in this, that good lawes, the forme of governing a Commonwealth, all politicke ordinances, the Arts of diſputing and ſpeaking, have had their beginning from the Greeks, Romanes 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 world beſides. Therefore that we may attribute their gifts to each Region, we affirme that, The Southerne people are borne and fit for the ſtudies of learning; the Northerne for warres, and thoſe which be betweene them both for Empire and rule. The Italian is naturally wiſe, the Spaniard grave and conſtant; the French quicke and diligent, for you would ſay he 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 quicke agillity in diſpatching buſines. The Eaſterne people are ſpecially endued with a good, firme and well tempered wit, not keeping their counſels ſecret and hid. For the haſte is of the nature of the Sunne, and that part of the day which is next to the riſing of the Sunne is counted the right-ſide and ſtronger; and verily in all living things the right ſide is alwayes the more ſtrong and vigorous. But the Weſterne people are more tender and effeminate, and more cloſe in their cariage and minde, not eaſily making any one partaker of their ſecrets. For the Weſt is, as it were ſubject to the Moone, becauſe at the change it alwaies inclines to the Weſt, wherby it happens, that it is reputed as nocturnall, ſiniſter and oppoſite to the Eaſt; and the Weſt is leſſe temperate and wholſome. Therefore of the windes none is more wholſome than the Eaſtwinde which blowes from the weſt with a moſt freſh and healthfull gale, yet it ſeldome blowes, and but onely at Sun-ſet.

The endowments of ſuch as inhabite betweene them.

The Northren know how to overcome, but not how to uſe the victory

The aboundance of counſellors and Lawyers from France and Italy.

The manners of the Eaſtern people.

The manners of the Weſtern people.

The Eaſt winde healthfull.

The Northern people great eaters and drinkers.

The Northerne people are good eaters, but much better drinkers, witty when they are a litle moiſtened with wine, and talkers of things both to be ſpoken and concealed, not very conſtant in their promiſes and agreements, but principall keepers and preſervers of ſhamefaſtnes and chaſtity, farre different from the inhabitants of the South, who

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 heate, and which are oppreſt with exceſſive cold, becauſe a ſoft temper of the Heavens ſoftens the Manners and the minde. Wherfore both, as well the Northerne, as Scythians and Germans; and the Southerne, as Africans are cruell; but theſe have this of a certaine naturall ſtoutnes, and ſouldierlike boldnes, and rather of anger, than a wilfull deſire of revenge; becauſe they cannot reſtraine by the power of reaſon the firſt violent motions of their anger by reaſon of the heat of their blood. But thoſe of a certaine inbred and inhumane pravity of manners, wilfully and willingly premeditating they performe the workes of cruelty, becauſe they are of a ſad and melancholy nature. You may have an example of the Northerne cruelty from the Tranſilvanians againſt their ſeditious Captaine *George*, whom they gave to be torne in peeces alive and devoured by his Soldiers, (being kept faſting for three dayes before for that purpoſe) who was then unbowelled, and roſted, and ſo by them eaten up. The Cruelty of *Hannibal* the Captaine of the Carthaginians may ſuffiſe for an inſtance of the Southerne cruelty. He left the Romane Captives wearied with burdens and the lenght 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 Southerne Americans, who dip their children in the blood of their ſlaine enemies, then ſucke their blood, and banquet with their broken and ſqueaſed Limbs.

who are to be counted Barbarous.

The Northerne and Southerne have each their Cruelties.

Valer. Max. lib. 9. cap. 2.

And as the Inhabitants of the South are free from divers Plethoricke diſeaſes, which are cauſed by aboundance of blood, to which the Northerne people are ſubject, as Feavers, Defluxions, Tumors, Madneſſe with laughter which cauſeth thoſe which have it to leape and dance (The people commonly terme it *S. vittus his Evill*) which admits of no remedy but Muſicke: So they are often moleſted with the Frenſie invading with madneſſe and fury; by the heat whereof they are often ſo raviſhed and carried beſides themſelves that they foretell things to come; they are terrified with horrible dreames, and in their fits they ſpeake in ſtrange and forraigne tongues, but they are ſo ſubject to the ſcurfe and all kind of ſcabbs and to the Leproſie as their homebread diſeaſe, that no houſes are ſo frequently mett withall by ſuch as travell through either of the Mauritania's, as Hoſpitalls provided for the Lodging of Lepers.

The diſeaſes of the Southerne people.

Thoſe who inhabit rough and Mountainous places, are more brutiſh, tough & able to endure labour: but ſuch as dwell in plaines, eſpecially if they be mooriſh, or fenniſh are of a tender body, and ſweate much with a litle labour; the truth of which is confirmed by the Hollanders and Frizlanders. But if the plaine be ſuch as is ſcortched by the heate of the Sunne, and blowne upon by much contrariety of windes, it breeds men who are turbulent, not to be tamed, deſirous of ſedition and novelty, ſtubborne, impatient of ſervitude, as may be perceived by the ſole example of the inhabitants of Narbona province of France.

Mountainers.

Thoſe who dwell in poore and barren places are commonly more witty and diligent and moſt patient of labours; the truth of which the famous witts of the Athenians, Ligurians and Romanes, and the plaine country of the Bœotians in Greece, of the Campanians in Italy, and of the reſt of the inhabiters adjoyning to the Ligurian ſea, approves.

CHAP. VIII.

Of the Faculties.

A Faculty is a certaine 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;

What a faculty is.

3. Faculties.

tegrity; the Animall, Vitall and Naturall. The Animall is seated in the proper temperament of the Braine, from whence it is distributed by the Nerves into all parts of the body which have sense and motion. This is of three kinds, for one is Moving, another sensative; the third principall The sensative consists in the five externall senses; sight, hearing, taste, smell and touch. The Moving principally remaines in the Muscles and nerves, as the fit instruments 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 compasse of the Fantasie, although *Aristotle* distinguisheth betweene them.

The Vitall abides in the Hart, from whence heat and life is distributed by the Arteryes to the whole body: this is principally hindered in the diseases of the Brest; as the Principall is, when any disease assailes the Braine; the prime action of the vitall faculty is Pulsation, and that continued agitation of the Heart and Arteryes, which is of threefold use to the body: for by the dilatation of the Heart and Arteryes the vitall spirit is cherished by the benefit of the Aire which is drawne 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 triple use of the Pulse.

The naturall faculty is threefold.

The last is the Naturall faculty which hath chosen its principall seate 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 bredth. The nourishing faculty which as servant to both the other repaires and repayes the continuall effluxe, 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 Phisicke 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 drawes that juice which is fit to nourish the body, that I say which by application may be assimulated to the part. This is that faculty which in such as are hungry drawes downe the meat scarse chawed, and the drinke scarse tasted, into the gnawing and empty stromacke. The Rententive faculty is that which retaines the nourishment once attracted untill it be fully laboured and perfectly concocted; And by that meanes it yeelds no small assistance to the Digestive faculty. For the naturall heat cannot performe the office of concoction, unlesse the meat be embraced by the part, and make some stay therein. For otherwise the meate carryed into the stomacke never acquires the forme of *Chylus*, unlesse it stay detained in the wrincles thereof, as in a rough passage, untill the full time of *Chylification*. The Digestive faculty assimulates the nourishment, being attracted and detained, into the substance of that part whose Faculty it is, by the force of the inbred heate & proper disposition or temper of the part. So the stomacke plainely changes all things which are eat and drunke into *Chylus*, & the Liver turnes the *Chylus* into blood. But the Bones & Nerves convert the red and liquid blood which is brought down unto them by the capillary or small veins, into a white & 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 turnes into flesh. But this Concoction will never satisfie the desire of Nature and the parts, unlesse the nourishment purged from its excrements, put away the filth and drosse, which must never enter into the substance of the part. Wherefore there do not onely two sorts of excrements remaine of the first and second Concoction, the one thicke, 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 onely by reason, being that which vanisheth into Aire by insensible Transpiration. The other is knowne sometimes by sweats, sometimes by a thicke fatry substance staying the shirt; sometimes by the generation of haire and nailes, whose matter is from fuliginous and earthly excrements of the third Concoction. Wherfore the fourth Faculty was necessary which might yeeld no small helpe

Foure other faculties attend upon the nourishing faculty

The necessity of the retentive faculty.

Two excrements of every concoction.

helpe to nourishment; it is called the Expulsive, appointed to expell those superfluous excrements which by no action of heate, can obtaine the forme 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 & veines; Others onely attending the service of those parts in which they remaine, and in some parts all these 4. aswell common as proper, are abiding and resident, as in those parts we now mentioned: some with the 4. proper have onely two cõmon, as the Gall, Spleene, Kidneies and Bladder. Others are content onely with the proper, as the simular and Masculous parts, who if they want any of these 4. faculties, their health is decayed either by want of nourishment, an ulcer, or other vise. The like unnatural affects happen by the deficiency of just and laudable nourishment. But if it happen those faculties do rightly performe their duty, the nourishment is changed into the proper substance of the part, and is truly assimulated, as by these degrees. First it must flow to the part, then be joyned to it, then agglurinated, and lastly as we have said, assimulated. Now we must speake of the Actions which arise from the faculties.

The worke of the expulsive faculty.

By what degrees the nourishment is assimulated.

CHAP. IX.

Of the Actions.

AN Action or Function is an active motion proceeding from a faculty; for as the facultie depends on the Temperament, so the Action on the faculty; and the Act or worke depends upon the Action by a certaine order of consequence. But although that the words Actions and Act or worke are often confounded, yet there is this difference betweene them, as that the Action signifies the motion used in the performance of any thing; but the Act or worke, the thing already done and performed: for example, Nutrition and the Generating of flesh are naturall Actions; but the parts nourished, and a hollow ulcer filled with flesh are the workes of that motion, or action. Wherfore 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 facultie be either defective, or hurt, no Action will be well performed: so unlesse the Instruments keepe their native and due conformitie (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 blamelesse and perfect actions, it is fit a due conformity of the Instrument concurre with the faculty. But Actions are two-fold; for they are either Naturall, or Voluntary. They are termed Naturall, because they are performed not by our will, but by their owne accord and against our will: As are that continuall motion of the Heart, the beating of the Arteryes, 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 veines, or from the Heart and Arteries. Wherfore we may comprehend them under the names of Naturall and Vitall Actions. For we must attribute his Action to each faculty, lest we may seeme to constitute an idle faculty, and no way profitable for use. The unvoluntary vitall actions are the dilatation & contraction of the Heart and Arteryes, 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,

What an Action is.

An Action and an Act are different.

Naturall Actions.

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

Generation is nothing else than a certaine producing, or acquiring of matter, and an introducing of a substantiall forme into that matter; this is performed by the assistance of 2. faculties; of the Altering which doth diversly prepare and dispose the seed and menstruous blood to put on the forme of a Bone, nerve, spleene, flesh and such

Generation what it is.

such like: of the Forming faculty which adornes with figure, site and composition, the matter ordered by so various a preparation.

What Growth is. Growth is an inlarging of the solide parts into all the dimensions, the pristine and ancient forme remaining safe and sound in figure and solidity. For the perfection of every growth is judged onely by the solid parts; for if the body swell into a masse of flesh, or fat, it shall not therefore be said to be growne: but then onely when the solid parts doe in like manner increase, especially the bones, because the growth of the whole body followes their increase, even although at the same time it waxe leane, and pine away.

What Nutrition is. Nutrition is a perfect assimulation 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.

Action voluntary. The voluntary actions which we willingly performe, are so called, because we can at our pleasure hinder, stir up, slow or quicken them. They are three in generall, the sensitive, mooving, and principall Action. The sensative * Soule comprehends all things in fine senses, in Sight, Hearing, Smell, Taste and Touch. Three things must necessarily concurre to the performance of them, the Organe, the *Medium* or meane, and the Object. The principall Organe, or Instrument, is the Animall spirit diffused by the nerves into each severall part of the body, by which such actions are performed. Wherefore for the present we will use the Parts themselves for their Organes. The Meane is a body, which carryes the Object to the Instrument. The Object is a certaine externall quality, which hath power by a fit *Medium* or Meane to stirre up and alter the Organe. This will be more manifest by relating the particular functions of the senses by the necessary concurring of these three.

* *Anima sensitiva.*

How sight is performed. Sight, is an action of the seeing facultie, which is done by the Eye fitly composed of its coates 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 two-fold; for either it is absolutely visible of its selfe, and by its owne Nature, as the Sun, the fire, the Moone and Starres: or desires as it were the helpe of another that it may be actually such, for so by the comming of light the colours, which were visible in power onely, being brought to the Eye doe seeme and appeare such as they actually are. But such Objects cannot arrive at the Eye, but thorough a cleere and illuminate *Medium*, as the Aire, Water, Glasse and all sorts of Crystall.

How hearing. The Hearing hath for its Organe the Eare and Auditory passage, which goes to the stony bone furnished with a Membrane investing it, an Auditory Nerve, and a certaine inward spirit there conteined. The Object is every sound arising from the smitten or broken Aire, and the Collision of two bodyes meeting together. The *Medium* is the encompassing Aire which carryes the sound to the Eare.

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

How the taste taste is performed by the tongue being tempered well and according to nature, and furnished with a nerve spred over its upper part from the third and fourth conjugation

* *Sapor.* of the Braine. The Object is * Taste, of whose nature and kindes we will treate more at large in our Antidotary. The *Medium* by which the Object is so carried to the Organ, that it may affect it, is either externall, or internall: The externall is that spattle which doth as it were anoynt and supple the tongue; the internall is the Spongy flesh of the tongue it selfe, which affected with the quality of the Object doth presently so possesse the nerve that is implanted in it, that the kinde and quality thereof by the force of the spirit may be carryed into the common sense. All parts endued with a nerve

How touching. enjoy the sense of touching, which is cheifly done, when a tractable quality doth

penetrate

penetrate even to the true and nervous skinne, which lyeth under the Cuticle, or ſcarfe-skinne; we have formerly noted, that it is moſt exquiſite in the skinne which inveſts the ends of the fingers. The Object is every tractable qualitie, whether it be of the firſt ranke of qualities, as Heate, Cold, Moiſture, Dryneſſe, or of the ſecond, as Roughneſſe, Smoothneſſe, Heavineſſe, Lightneſſe, Hardneſſe, Softneſſe, Rarity, Denſity, Friability, Vnctuoſity, Groſſeneſſe, Thinneſſe. The *Medium* by whoſe procurement the inſtrument is affected, is either the skinne or the fleſh interwoven with many Nerves.

The next Action, is that Motion, which by a peculiar name wee 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, downeward, to the righthand, 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 ranke of Voluntary Actions, comes Reſpiration, or breathing becauſe it is done by the helpe of the Muſcles; although it be cheifly to temper the heate of the Heart. For wee can make it more quicke, or ſlow as wee pleaſe, which are the conditions of a voluntary Motion. *Of motion.* *How Reſpiration may be, a voluntary motion.*

Laſtly, that wee may have ſomewhat in which wee 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 cheifly inſtituted for the vitall.

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

Imagination is a certaine expreſſing, and apprehenſion which diſcernes and diſtinguiſheth betweene the formes and ſhapes of things ſenſible, or which are knowne by the ſenſes.

Reaſoning is a certaine judiciall æſtimation of conceived or apprehended formes or figures, by a mutuall collating, or comparing them together.

Memory is the ſure ſtorer of all things, and as it were the Treaſurie which the minde often unfolds and opens, the other faculties of the minde being idle and not imployed. But becauſe all the forementioned Actions whether they be Naturall, or Animall and voluntary, are done and performed by the helpe and aſſiſtance of the Spirits; Therefore now wee muſt ſpeake of the Spirits.

CHAP. X.

Of the Spirits.

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 approch 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. *What a ſpirit is.* *Spirits three fold.*

The Animall hath taken his ſeate in the braine; for there it is prepared and made, that from thence conveyed by the Nerves is may impart the power of ſence and Motion to all the reſt of the members. An argument heereof 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 *The Animall ſpirit.*

the joynts grow ſtiffe, the hands numme, and all the other parts are dull, deſtitute of their accuſtomed agillity of motion, and quickneſſe of ſenſe. It is called Animall not becauſe it is the * Life, but the cheife and prime inſtrument thereof; wherfore it hath a moſt ſubtile and Aery ſubſtance: and enjoyes divers names according to the various condition of the Senſoryes or ſeates 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 Auditorie 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.

Why ſo called *Anima.*

How it is made.

This Animall ſpirit is made and laboured in the windings and foldings of the veines and Arteryes of the braine, of an exquiſite ſubtile portion of the vitall brought thither by the *Caroïde Arteriæ*, or ſleepy Arteryes, and ſometimes alſo of the pure aire, or ſweete vapour drawne in by the Noſe in breathing. Hence it is, that with Ligatures we ſtoppe the paſſage of this ſpirit, from the parts we intend to cut off. An Humor which obſtructs or ſtopps its paſſage, doth the like in Apoplexies and Palſies, whereby it happens that the members ſcituate under that place doe languiſh and ſeeme dead, ſometimes deſtitute of motion, ſometimes wanting both ſence and motion.

The Vitall ſpirit.

The Vitall ſpirit is next to it in dignitie and excellency, which hath its cheife manſion in the left ventricle of the Heart, from whence through the Channells of the Arteryes it flowes into the whole body, to nouriſh the heate which reſides fixed in the ſubſtance of each part, which would periſh in ſhort time unleſſe it ſhould be refreſhed by heat flowing thither together with the ſpirit. And becauſe it is the moſt ſubtile next to the Animall, Nature (leſt it ſhould vaniſh away) would have it conteined in the Nervous coat of an Artery, which is five time more thicke, than the Coate of the veines, as *Galen*, out of *Herophilus*, hath recorded.

What the matter of it is.

It is furniſhed with matter from the ſubtile exhalation of the blood, and that aire 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 putrifaction of Humors, or breathing in of peſtilent aire and filthy vapours, which thing is the cauſe of the ſo ſuddaine death of thoſe which are infected with the Plague. This ſpirit is often hindred from entring into ſome part by reaſon of obſtruction, fulneſſe, or great inflammations, whereby it followes that in a ſhort ſpace, by reaſon of the decay of the fixed and inbred heat, the parts doe eaſily fall into a Gangrene and become mortified.

There is ſome doubt of the Naturall ſpirit.

The Naturall ſpirit (if ſuch there be any) hath its ſtation in the Liver and Veines. It is more groſſe and dull than the other, and inferior to them in the dignitie of the Action, and the excellencie of the uſe. The uſe thereof is to helpe the concoction both of the whole body, as alſo of each ſeverall part, and to carry blood and heate to them.

Fixed ſpirits.

Beſides thoſe already mentioned, there are other ſpirits fixed and implanted in the ſimular 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 joyned or rather united to the Native heate, that they can no more be ſeparated from it, than flame from heate; 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 oyly 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 Cheife Inſtruments of life are theſe Spirits together with the native heate. Wherefore this radicall Moiſture being diſſipated and waſted, (which is the ſeate, fodder and nouriſhment of the Spirits and heate) how can they any longer ſubſiſt and remaine? Therefore the conſumption of the naturall heate followeth the decay of this ſweet and ſubſtance-making moiſture, and conſequently death, which happens by the diſſipating and reſolving of naturall heate.

The radicall moiſture.

Naturall death

But

But since then these kinde of Spirits with the naturall heate, is conteined in the substance of each simular 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 simular parts. For because each part hath its proper temper and encrease, it hath also its proper spirit, and also its owne proper fixed and implanted heat, which heere hath its abode, as well as its Originall. Wherefore the spirit and heate which is seated in the bone, is different from that, which is impact into the substance of a Nerve, Veine or such other simular 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.

The vse and necessity of the Spirits.

These being by any chance dissipated or wasted, wee languish, neither is any health to be hoped for, the floure of life withering and decaying by litle and litle. Which thing ought to make us more diligent, to defend them against the continuall effluxe 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 repayring the decayed powers. Which is done by meats of good juyce, easie to be concocted and distributed, good Wines and fragrant smells.

What the remody for the dissipation of the spirits.

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

What the remody for oppression of the spirits is.

The Adjuncts and Associates to things Naturall, are

- Age: of which, by reason of the similitude of the Argument, wee were constrained to speake when we handled the Temperatures.
- Sexe.
- 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 sexe is.

SExe 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, their is litle difference betweene them; but the Female is colder than the Male. Wherefore their spermaticall parts are more cold, soft and moyst, and all there naturall actions lesse vigorous, and more depraved.

The nature of woomen.

Of Eunuches.

The Nature of Eunuches is to be referred to that of woomen, as who may seeme to have degenerated into a womanish nature, by deficiency of heate; their smooth body and soft and shirle voyce doe very much assimulate woomen. Notwithstanding you must consider that there be some Manly woomen, which their manly voyce and chinne covered with a litle hairinesse doe argue; and on the contrary, there are some womanizing, or womanish men, which therefore we terme dainty and effeminate.

Of Hermaphrodites.

The Hermaphrodite as of a doubtfull nature and in the middle of both sexes seemes to participate of both Male and Female.

Colour the bewrayer of the Temperament

The Colour which is predominante in the habite and superficies of the body and lyes next under the skinne, shewes the temperament of what kinde soever it be; for as *Galen* notes *in Comment. ad Aphor.* 2. *sect.* 1. Such a colour appeares in us, as the contained humor hath. Wherefore if a rosie hew colonre the cheekes, it is a signe the body abounds with blood, and that it is carryed abroad by the plenty of Spirits. But if the skinne be dyed with a yellow colour, it argues Choler, is predominante; if with a whitish and pallide hew, Phlegme; with a sable and dusky, 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 soundnesse of the part from whence it flowes; but if sanious or bloody, greene, blackish, or of divers colours, it shewes the weaknes of the solide part, which could not assimulate 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 perfection of the organicall parts consists in 4. things.

The Conformitie, and integrity of the Organicall parts is considered by their figure, greatnesse, number, situation and mutuall connexion. Wee consider the figure, when wee say almost all the externall parts of the body are naturally round, not onely for shew, but for necessitie, that being smooth, and no way cornered, they should be lesse obnoxious to externall injuries; wee speake of Greatnesse, when wee say, some are large and thicke, some lancke and leane. But wee consider their number, when we observe some parts to abound, some to want, or nothing to be defective or wanting. Wee insinuate site and connexion when wee search, whether every thing be in its proper place, and whether they be decently fitted, and well joyned together.

We have handled the varyeties of the foure seasons of the yeare, when we treated of Temperaments. But the consideration of Region (because it hath the same judgment that the Aire) shall be referred to that disquisition, or enquiry which we entend to make of the Aire, amongst the Things not naturall.

Diet

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 scarse seeme possible to fall into Arte, which may prosequute all the differences of Diet and vocations of life. Wherefore if the Calling of Life be laborious, as that of husbandmen, Marriners, and other such trades, it strengthens and dryes the parts of the body. Although those which labour much about Waters, are most commonly troubled with cold and moyst diseases although they almost kill themselves with labour.

Againe, those which deale with Mettalls, as all sorts of Smithes, and those which cast and worke brasse, are more troubled with hotte diseases, as feavers. But if their Calling be such as they sit much, and worke 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 minde, in all riotousnes and excesses of Dyet, doth the same. For from hence the body is made subject to the stone, gravell and Gout.

The commodities of an indifferent Diet.

That calling of life which is performed with moderate labour, clothing and dyet, seemes very fit and convenient to preserve the naturall temper of the body. The Ingenious Chirurgeon may frame more of himselfe that may more particularly conduce to the examination of these things. Therefore, the things naturall, and those which are neere or Neighbouring to them being thus briefly declared, the Order seemes to require that wee make enquiry of Things not Naturall.

CHAP.

CHAP. XII.

Of things not Naturall.

THe things which wee must now treate of, have by the latter Physitions beene termed, Not naturall; becaufe they are not of the number of thofe which enter into the conftitution, or compofure of mans body; as the Elements, Humors, and all fuch things which we formerly comprehended vnder the name of Naturall: Although they be fuch as are neceffary to preferue and defend the body already made and compofed. Wherefore they were called by *Galen* Preferuers, becaufe by the due ufe of them the body is preferued in health. Alfo they may be called doubtfull; and Neuters, for that rightly and fitly ufed they keepe the body healthfull; but inconfiderately, they cauſe diſeaſes. Whereby it comes to paſſe that they may be thought to pertaine to that part of Phificke which is of preferuing health, not becaufe fome of thefe things fhould be abfolutely and of their owne nature wholfome, and others unwholfome, but onely by this, that they are, or prove fo by their convenient, or prepofterous ufe. Therefore we conſider the ufe of fuch like things from 4 conditions, quantitie, quality, occafion, and manner of uſing; if thou fhalt obſerve theſe, thou fhalt attaine and effect this, that thofe things which of themſelves are as it were, doubtfull, fhall bring certaine and undoubted health. For theſe 4. Circumſtances doe ſo farre extend, that in them as in the perfection of Arte, the Rules which may be preſcribed to preſerve health are contained. But *Galen* in another place hath in 4. words comprehended theſe things not Naturall; as things Taken, Applyed, 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 Aire, meate and drinke. Things Applyed are theſe which muſt touch the body, as the Aire now mentioned, affecting the body with a diverſe touch of its qualityes of heat, cold, moyſture or dryneſſe. Expelled are, what things ſoever being unprofitable are generated in the body and require to be expelled. To be Done are labour, reſt, ſleepe, watching and the like. We may more diſtinctly and by expreſſion of proper names revoke all theſe things to ſixe; which are

Why they are called things not naturall.

Galen. 1. ad Glauconem.

1. de ſanitat. tuenda.

Aire,
Meat and Drinke,
Labour and Reſt,
Sleepe and Watching,
Repletion and Inanition, or things to be expelled, or retained and kept,
Perturbations of the Minde.

CHAP. XIII.

Of the Aire.

AIre 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 Aire is wholſome, what unwholſome, 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 ſeeme to burden the Patient by increaſing or adding to the diſeaſe, we may correct it by Arte. So in curing the wounds of the head, eſpecially in Winter, we labour by all the means we may to make the aire warme. For cold is hurtfull to the Braine, Bones, and the wounds of theſe parts; and heat is comfortable and friendly. But alſo the aire being drawne into the body by breathing when it

How neceſſary for life the aire is.

is hotter than ordinarie, doth with a new warmth overheate 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 growes dull, either by suppression of the vapours, or by the inspissation, or thickning of the spirits.

What Aire is hurtfull.

Therefore to conclude, that Aire is to be esteemed healthfull, which is cleere, subtile, and pure, free and open on every side, and which is farre remote from all carrion-like smells of dead carkasses, or the stench of any putrifying thing whatsoever: the which is farre distant from standing pooles, and fennes and caves, sending forth strong and ill vapours; neither too cloudy nor moist by the neareneese of some river.

Such an Aire, I say, if it have a vernall temper, is good against all diseases. That aire which is contrary to this is altogether unhealthfull, as that which is putrid, shut up, and prest, by the straitnesse of neighbouring mountaines, infected with some noysome vapour. And because I cannot prosecute all the conditions of aires, fit for the expelling of all diseases; as which are almost infinite, it shall suffice here to have set downe, what we must understand by this word Aire.

Three things are understood by the name of the aire

Physitions commonly use to understand three things, by the name of Aire; The present state of the Aire; The Region in which wee live; and the season of the yeare. Wee spoke of this last, when wee treated of Temperaments. Wherefore wee will now speake of the two former. The present state of the Aire, one while for some small time, is like the Spring, that is temperate; otherwhiles like the Summer, that is hot and drie; otherwhiles like the Winter, that is cold and moist; and sometimes like the Autumne which is unequall; and this last constitution of the Aire, 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 Aire, are chiefely and principally stirred up by the windes; as which being diffused over all the Aire, shew no small force by their sodaine change. Wherefore we will briefly touch their natures: That which blowes from the East, is called the East-winde, and is of a hot and drie nature, and therefore healthfull. But the Westerne winde is cold and moist, and therefore sickly. The South winde is hot and moist, the Author of putrifaction and putride diseases. The North winde is cold and drie, therefore healthy: wherefore it is thought, if it happen to blow in the dogge-dayes, that it makes the whole yeare healthfull, and purges and takes away the seedes of putrifaction, if any chance to be in the aire. But this description of the foure windes, is then onely thought to be true, if we consider the windes in their owne proper nature, which they borrow from these Regions, from which they first proceede. For otherwise they affect the aire quite contrarie, according to the disposition of the places over which they came, as snowie places, Seaes, Lakes, Rivers, Woods, or sandy plaines, from whence they may borrow new qualities, with which they may afterwards possesse the aire, and so consequently our bodies.

Aphor. 4. sect. 2.

The force of the windes.

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

The West-winde of it selfe unwholesome.

Hence it is we have noted the Westerne winde unwholsome, and breeding diseases, by reason of the proper condition of the Region from whence it came; and such, that is cold and moist; the *Gasconies* finde it, truly to their so great harme, that it seldome blowes with them, but it brings some manifest and great harme, either to their bodies, or fruits of the earth. And yet the *Greekes*, and *Latines* are wont to commend it for healthfulnesse, more than the rest. But also the rising and setting of some more eminent stars, doe often cause such cold windes, that the whole aire is cooled, or infected with some other maligne qualitie. For vapours and exhalations are often raised by the force of the stars, from whence windes, cloudes, stormes, whirlewindes, lightnings, thunders, haile, snow, raine, earthquakes, inundations, and violent raging of the sea, have their original. 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 speake somthing in his book *De aëre & aquis*, where he touches by the way, the description of the neighbouring Regions, and such as hee knew.

What force stars have upon the aire.

From this force of the aire, either hurtfull, or helping in diseases, came that famous observation of *Guido* of Caulias, That wounds of the head are more difficult to cure at Paris, than at Avignion, and the plaine contrarie of wounds of the legges; for the

the aire of Paris compared to that of Avignion is cold and moist, wherefore hurtfull and offensive to the wounds of the head. On the contrary, the same aire, because it obscures the spirits, incrassates the bloud, condensates the humors, and makes them lesse fit for defluxions, makes the wounds of the legges more easie to be healed, by reason it hinders the course of the humors, by whose defluxion the cure is hindered. But it is manifest, that hot and drie places make a greater dissipation of the naturall heate, from whence the weakenesse of the powers; by which same reason the Inhabitants of such places doe not so well endure bloudletting; but more easily suffer purgations, though vehement, by reason of the contumacie of the humor, caused by drinesse. To conclude, the aire 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 subtile than is fit, or corrupted by exhalations from the earth; or by a sodaine and unaccustomed alteration, which any man may prove, who makes a sodaine change out of a quiet aire into a stormy and troubled with many windes. But because, next to the aire, nothing is so necessary to nourish mans body, as meate and drinke, I will now beginne to speake of them both.

How the aire of Paris comes to be ill for wounds of the head, and good for those of the legge.

By what meanes the aire changes our bodies.

CHAP. XIIII.

Of Meate and Drinke.

THat this our Treatise of meate and drinke may be more briefe and plaine, I have thought good to part it into these heads, as to consider the goodnesse and illnesse of both of them, their quantitie, qualitie, custome, delight, order, time, and to accommodate them all to the ages and seasons of the yeare. We judge of the goodnesse and pravity of meates and drinkes, from the condition of the good or vicious humors, or juyce which they beget in us. For evill juyce 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 exceesse. Wherefore it is principally necessary, that those who will preserve their present health, and hinder the accesse of diseases, feede upon things of good nourishment and digestion, as are good wine, the yolkes of egges, good milke, wheaten bread well baked, the flesh of Capons, Pertridge, Thrushes, Larkes, Veale, Mutton, Kid, and such like other, which you may finde mentioned in the Bookes which *Galen* writ *de Alimentorum facultatibus*; where also he examines those which are of evill juice by their manifest qualities, as acrimony, bitternesse, saltnesse, aciditie, harshnesse and such like.

The goodnesse of nourishments.

But unlesse we use a convenient quantitie and measure in our meates, howsoever laudable they be, we shal never reape these fruits of health we hoped for. For they yeild matter of diseases, by the onely exceesse of their quantity; but wee may by this know the force of quantitie on both parts, because often the poisonous quality of meates of ill nourishment doth not hurt, by reason they were not taken into the body into a great quantitie. That measure of quantitie is chiefely to be regarded in diseases: for as *Hippocrates* saith, if any give meate to one sick of a feaver, he gives strength to the well, and increases the disease to the sicke, especially if he doe not use a meane. 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. Section of the Aphorismes of *Hippocrates*; where he teacheth, the sicke must feed more largely in the beginnings of long diseases, wherby they may be inabled to indure the length of the disease, and last to the state thereof. But in sharpe and violent diseases, which presently come to their height, wee 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 quantitie of meate, agreable to their evacuation and transpiration; for men by reason of the strength of their heate, and the more copious dissipation of the triple substance, have greater appetite, than women; altogether by the same reason, that young people, and such

Their quantitie.

The quantitie of meates must be esteemed, according to the nature of the disease, and strength of the Patient.

ſuch as grow, need more frequent and plentifull nouriſhment, than old men; and alſo amongſt young men of the like age, ſome doe rightly require more copious nouriſhment than otherſome; that is, according to the quantitie of their evacuations and cuſtome. Certainly for gluttony, it is ſuch as may be extended to all; but we all ſhould take ſo much meate and drinke, that our powers may be refreſhed and not oppreſſed: for by the decree of *Hippocrates*, theſe be the two compendiary wayes of preſerving health; not to be over-filled with meate, and to be quicke to worke; and thus much of the quantity of meates. Neither muſt theſe who are either ſound, or ſicke, have leſſe regard to the qualities of their meates; and thoſe are either the firſt, as heating, cooling, moiſtening, drying; or the ſecond, attenuating, incraſſating, obſtructing, opening, or ſome other like, working according to the condition of their nature. The manner of our diet is not onely to be framed according 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 drie, to old men, as to thoſe who are cold and drie; if ſo be that vulgar ſaying be true, that, Health delights in the uſe of like things. Yet becauſe old age how greene and new begun howſoever it be, is of it ſelfe as it were, a diſeaſe, it ſeemes to be more convenient, both to truth and for health, that old people ſhould eate meats contrary to their nature, that is, hot, and moiſt, that ſo wee may deferre as much as we can, the cauſes of death, cold and drineſſe, which haſten the deſtruction of that age. For wee muſt reſiſt diſeaſes by the uſe of their contraries, as thoſe things which are contrary to nature. For otherwiſe, as much meate as you give to the ſicke, you adde 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 ſicke of feavers, becauſe a feaver is a drie diſtemperature. Therefore wee muſt diligently prie into the nature of the diſeaſe, that knowing it, wee may endeavour to abate its fury by the uſe of contraries.

The qualities of meate.

Old age is a diſeaſe.

Aphor. 16. ſect. 1.

But if cuſtome (as they ſay) be another nature, the Phyſition muſt have a great care of it, both in ſound and ſicke. For this ſometimes by little and little and inſenſiblely, changes our naturall temperament, and inſtead thereof gives us a borrowed temper. Wherefore if any would preſently or ſodainely change a cuſtome which is ſometimes ill, into a better, truly hee will bring more harme, than good; becauſe all ſodaine changes (according the opinion of *Hipocrates*) are dangerous. Wherefore if neceſſitie require, that we ſhould withdraw any thing from our cuſtome, we muſt doe 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 meate and drinke which is ſomewhat worſe, but more pleaſant and familiar by cuſtome, is to be preferred (in *Hippocrates* opinion) before better, but leſſe pleaſant and accuſtomed. Hence is it, that Countrie-men doe very well digeſt Beefe and Bacon, which commonly they uſe; but will turne into nidorulent vapours, Partridge, Capons, and other meate of good nouriſhment, ſooner than change them into good and laudable *Chylus*. The cauſe of which thing is not onely to be attributed unto the propertie of their ſtronger, and as it were burning heate, but much more to cuſtome, which by a certaine kinde of familiarity, cauſeth that meates of hard digeſtion are eaſily turned into laudable bloud. For the force of cuſtome is ſo great, that accuſtomed meates are more acceptable; whereby it comes to paſſe, that while the ſtomacke delights in them, it more ſtreightly embraces them, and happily digeſts them, without any trouble of loathing, vomiting, or heavineſſe. All the contrary meete and happen in the uſe of meates which are unpleaſant to the taſte and ſtomacke. For the ventricle abhorring thoſe things, makes manifeſt how it is troubled by its acide and nidorulent belchings, loathing, nauſeouſneſſe, vomite, heavineſſe, paine of the head, and trouble of the whole body.

The force of Cuſtome.

Aphor. 91. ſect. 2.

Aphor. 38. ſect. 2.

Accuſtomed meates are more grateſull, and ſo by that meates more nouriſhing.

Wherefore we muſt diligently enquire, what meates the Patient chiefely 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 hee plainely taught, that it is the part of a

good

good and prudent Phyſition to ſubſcribe to, and pleaſe the palate of his patient.

But ſeeing that order is moſt beautifull in all things, it is truly very neceſſary in eating our meate: for how laudable ſoever the meates bee in their quantity and qualitie, how ſoever familiar by uſe, and gratefull by cuſtome, yet unleſſe they be eaten in due order, they will either trouble or moleſt the ſtomacke, or be ill, or ſlowly and difficultly concocted; wherefore we muſt diligently obſerve, what meates muſt be eaten at the firſt, and what at the ſecond courſe; for thoſe meates which be hard to concoct, are not to be eaten before thoſe which are eaſy of digeſtion; neither drie and aſtringent things, before moiſtening and looſing. The order of eating our meats.

But on the contrary, all ſlippery, fat, and liquid things, and which are quickly changed ought to goe before, that ſo the belly may be moiſtened; and then aſtringent things muſt follow, that the ſtomacke, by their helpe, being ſhut, and drawne together, may more ſtraitly comprehend the meate on every ſide, and better performe the Chylification by its proper heate united and joyned together. We muſt begin our meales with moiſt or liquid meat.

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

Whether ought wee in our eating to have leſſe care of the time, than wee have of the order: for the time of eating of ſuch as are healthfull, ought to be certaine and fixt; for at the accuſtomed houre, and when hunger preſſes, any ſound man, and which is at his owne diſpoſure may eate, but exerciſe and accuſtomed labours ought to goe before; for it is fit, according to the precept of *Hippocrates*, that labour preceed meate, whereby the excrements of the third concoction may be evacuated, the native heate encreaſed, and the ſolid parts confirmed and ſtrengthened, which are three commodities of exerciſe very neceſſary to the convenient taking of meate. But in ſicke perſons we can ſcarſe attend, and give heed to theſe circumſtance of time, and accuſtomed houre of feeding; for that Indication of giving meate to the ſicke, is the beſt of all, which is drawne from the motion of the diſeaſe, and the declining of the fit: for if you give meate in feavers, ſpecially the fit then taking the Patient, you nouriſh not him, but the diſeaſe. For the meate then eaten, is corrupted in the ſtomacke, and yeelds fit matter for the diſeaſe. For meate (as we noted before out of *Hippocrates*) is ſtrength to the ſound, and a diſeaſe to the ſicke, unleſſe it be eaten at convenient time, and diligent care be had of the ſtrength of the Patient, and greatneſſe of the diſeaſe. The time of eating. The profit of labour before meate.

But neither is it convenient that the meate ſhould be ſimple, and of one kinde, but of many ſorts, and of divers diſhes dreſſed after different formes, leſt nature by the continuall and hatefull feeding upon the ſame meate, may at the length loath it, and ſo neither ſtraitly containe it, nor well digeſt it; or the ſtomacke accuſtomed to one meate, taking any loathing thereat, may abhorre all other: and as there is no deſire of that we doe not know, ſo the dejected appetite cannot be delighted and ſtirred up, with the pleaſure of any meate which can be offered. For wee muſt not credit thoſe ſuperſtitious, or too nice Phyſitions, who thinke the digeſtion is hindered by the much varietie of meates. We muſt not give meat in a fit of a Fever.

The matter is farre otherwiſe, for by the pleaſure of what things ſoever the ſtomacke allured doth require, it embraces them more ſtraitly, and concocts them more perfectly. And our nature is deſirous of varietie. Variety of meats.

Moreover, ſeeing our body is compoſed of a ſolid, moiſt, and airy ſubſtance, and it may happen, that by ſo many labours, which we are compelled to undergoe, and ſuſtaine in this life, one of theſe may ſuffer a greater diſſipation and loſſe than another; therefore the ſtomacke is neceſſarily compelled to ſeeke more variety, leſt any thing ſhould be wanting to repaire that which is waſted. But alſo the age and ſeaſon of the yeare, yeeld Indications of feeding, for ſome things are convenient for a young man, ſome for an old, ſome in Summer, ſome in Winter. Wherefore wee ought to know what befits each age and ſeaſon. Children need hot, moiſt, and much nouriſhment, which may not onely ſuffice to nouriſh, but encreaſe the body. Where- Why variety of meats is good. Indications of feeding, taken from the age.

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fore we ought to know what befits each age and ſeaſon. Children need hot, moiſt, and much nouriſhment, which may not onely ſuffice to nouriſh, but encreaſe 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 heate is ſmall, they neede little nouriſhment, and are extinguiſhed by much. Wherefore old men eaſily endure to faſt, they ought to be nouriſhed with hot and moiſt meates, by which their ſolid parts, now growing cold and drie, may be heated and moiſtened, as by the ſweet nouriſhment of ſuch like meates. Middle aged men delight in the moderate uſe of contraries to temper the exceſſe of their too acride heate. Young people as temperate are to be preſerved by the uſe of like things.

Indication from the time of the yeare.

The manner of diet in Winter muſt be hot and inclining to drineſſe. Wherefore then we may more plentifully uſe roſt-meates, ſtrong wines and ſpices; becauſe in the Winter ſeaſon we are troubled with the cold and moiſt aire, and at the ſame time, have much heate inwardly; for the inner parts, according to *Hippocrates*, are naturally moſt hot in the Winter and the Spring, but feaverilh in Summer; ſo the heat of Summer is to be tempered by the uſe of cold and moiſt things, and much drinke. In the temperate Spring all things muſt be moderate; but in Autumne, by little and little, we muſt paſſe from our Summer, to our Winter diet.

CHAP. XV.

Of Motion and Reſt.

What motion ſignifies.

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 kinde, which in times paſt was in great uſe and eſteeme, 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 onely of ſome part thereof. The friction is called hard, which is made bythe rough, or ſtrong preſſure of the hands, ſpunges, or a courſe and new linnen cloth: it drawes together, condenſates, bindes and hardens the fleſh, yet if it bee 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 drawes 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 contrarie, as ſoftens, relaxes, and makes the skinne ſmooth and unwrinckled, yet unleſſe it be long continued it doth none of theſe, worthy to be ſpoken of. The indifferent kinds conſiſting in the meane betwixt the other two, increaſeth the fleſh, ſwells or puffes up the habite of the body, becauſe it retaines the bloud and ſpirits which it drawes and ſuffers them not to be diſſipated.

Three kinds of frictions.

Hard.

Gentle.

Indifferent.

The uſe of exerciſes.

The benefit of exercíſe is great, for it increaſes naturall heate, whereby better digeſtion followes, and by that meanes nouriſhment, and the expulſion of the excrements, and laſtly, a quicker motion of the ſpirits, to performe their offices in the bodie, all the wayes and paſſages being cleanſed. Beſides, it ſtrengthens the reſpiration, and the other actions of the body, confirmes the habite, and all the limbes of the body, by the mutuall attrition of the one with the other; whereby it comes to paſſe they are not ſo quickly wearied with labour. Hence we ſee that Country people are not to be tired with labour.

What the fit & teſt time for exerciſe.

If any will reape theſe benefits by exerciſe, it is neceſſary that he take opportunity to beginne his exerciſe, and that he ſeaſonably deſiſt from it, not exerciſing himſelfe violently and without diſcretion; but at certaine times according to reaſon.

Wherefore the beſt time for exerciſe will be before meate (that the appetite may be encreaſed by augmenting the naturall heate) all the excrements being evacuated, leſt nature being hungry and empty, doe draw and infuſe the ill humors contained in the guts, and other parts of the body, into the whole habite, the liver, and other noble

noble parts. Neither is it fit presently, after meate, to runne into exercise, lest the crude humors and meats not well concocted be carried into the veines. The measure and bounds of exercise must be, when the body appeares more full, the face lookes red, sweat beginnes to breake forth, we breathe more strongly and quicke, and begin to grow weary; if any continue exercise longer, stifnesse, and wearinesse assayles his joints, and the body flowing with sweate suffers a losse of the spirituous and humid substance which is not easily repaired; by which it becomes more cold, and leane even to deformitie.

The qualitie of exercise which we require, is in the midst of exercise, so that the exercise must be nether too slow and idle, neither too strong, nor too weake, neither too hasty, nor remisse, but which may move all the members alike. Such exercise is very fit for sound bodies. But if they be distempered, that sort of exercise is to be made choise of, which by the qualitie of its excesse, may correct the distemper of the body, and reduce it to a certaine mediocritie. Wherefore such men as are stuffed with cold, grosse, and viscous humors, shall hold that kinde of exercise most fit for them, which is more laborious, vehement, strong, and longer continued. Yet so, that they doe not enter into it before the first and second concoction, which they may know by the yellownesse of their urine. But let such as abound with thinne and cholericke humors chuse gentle exercises, and such as are free from contention, not expecting the finishing of the second concoction, for the more acride heate of the solid parts delights in such halfe concocted juices, which otherwise it would so burne up, all the glutinous substance thereof being wasted, that they could not be adjoyned, or fastened to the parts. For the repeating, or renewing of exercise, the body should bee so often exercised, as there is a desire to eate. For exercise stirres up and revives the heate which lies buried and hid in the body: For digestion cannot be well performed by a sluggish heate; neither have we any benefit by the meate we eate, unlesse wee use exercise before.

The qualitie of exercise.

For whom strong exercises are convenient.

The last part of exercise begun and performed according to reason, is named * *the ordering of the body*, which is performed by an indifferent rubbing, and drying of the members; that so the sweat breaking forth, the filth of the body, and such excrements lying under the skinne, may be allured and drawne out; and also that the members may be freed from stifnesse and wearinesse. At this time it is commonly used by such as play at tennis.

* Ἀποθεραπεία.

But, as many and great commodities arise from exercise conveniently begunne and performed, so great harme proceeds of idlenesse; for grosse and vicious juyces heaped up in the body commonly produce crudities, obstructions, stones both in the reines and bladder, the Goute, Apoplexie, and a thousand other diseases.

What discommodities proceed from idlenesse.

CHAP. XVI.

Of Sleepe and Watching.

THat this our speech of Sleepe and Watching, which we now intend, may be more plaine, we will briefely declare, what commoditie or discommoditie they bring, what time and what houre is convenient for both, what the manner of lying must bee, and the choise thereof; what the dreames in sleeping, and what paines or heavinesse and cheerefulnesse after sleepe may portend.

Sleepe is nothing else than the rest of the whole body, and the cessation of the Animall facultie from sense and motion. Sleepe is caused, when the substance of the braine is possessed, and after some sort overcome and dulled by a certaine vaporous, sweete and delightsome humidity; or when the spirits almost exhaust by performance of some labour, cannot any longer sustaine the weight of the body, but cause rest by a necessary consequence, by which meanes nature may produce other from the meate by concoction turned into bloud.

What sleepe is.

Sleepe

The uſe of ſleepe.

Sleepe fitly taken much helpes the digeſtion of the parts, becauſe in the time of reſt, the heat, being the worker of all concoction, is carryed backe to them, together with the ſpirits. Neither doth ſleepe only give eaſe to the wearyed members, but alſo leſſens our cares and makes us to forget our labours.

Fit time for ſleepe and the nature of the night.

The night is a fit time to ſleepe and to take our reſt in, as inviting ſleepe by its moiſture, ſilence and darkneſſe. 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 & drawne 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 litle, to that opportunity and benefit which wee looke for from ſleepe, the night ſeaſon ſuffices for the worke of juſt and perfect concoction. Which is one reaſon amongſt many that ſleep on the day time may be hurtfull. For wee are wakened from our ſleepe by the heat and ſpirits called forth to the skinne either by the light, or noiſe on the day time, before that the concoction which was begun be finiſhed. But that ſleepe cannot but be light which comes without neceſſity of ſleeping. Wherefore the concoction being attempted, but not perfected, the ſtomacke is filled with crudities, diſtended with acide or ſoure belchings, and the braine troubled with groſſe vapours and excrementitious humidities. From whence proceeds paine and heavines of the head, and ſtore of cold diſeaſes. But although ſleepe on the night time be wholſome, 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 downewards: but in the meane time the heate which is neuer idle, drawes from them ſome portion or vapour into the veines, principall parts and habite of the body, to become matter for ſome diſeaſe. We muſt meaſure this time, not by the ſpace of houres, but by the finiſhing the worke of concoction, which is performed in ſome, ſooner than in other ſome. Yet that which is longeſt is perfected and done in ſeaven, or eight houres. The ventricle ſubſiding and falling into its ſelfe and its proper coats, and the urine tinctured yeallow, gives perfect judgment thereof. For on the contrary the extenſion of the ſtomacke, acide belching, paine of the head, and heavines of the whole body, ſhew that the concoction is unperfect.

Sleepe on the daystime.

There ought to be a moderation of our nights ſleepe.

How to be knowne.

In ſleeping we muſt have ſpeciall care of our lying downe, for firſt we muſt lye on our right ſide, that ſo the meat may fall into the bottome of our ſtomacke, which being fleſhy and leſſe membranous, is the hotter, and more powerfull to aſſimulate. Then a litle after we muſt turne 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 vnder a Kettle, haſten the concoction. Laſtly, towards morning it will not be unprofitable to turne againe upon our right ſide, that by this ſcituation the mouth of the ſtomacke being opened, the vapoures which ariſe from the elixation of the *Chylus* may have freer paſſage. Lying upon the backe is wholy to be avoided; for from hence the Reines 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 eyes; for ſo the humor will more eaſily flow into the part affected. But thus the worke of concoction is not a litle furthered, becauſe by that forme of lying, not onely the inward heate is contained and gathered together about the ventricle, but the encompaſſing warmeneſſe of the ſoft feathers of the bed, aides and aſſiſts it.

What the forme and ſite of our body ought to be while we ſleep

The harme of lying on our backes.

Upon our bellies.

The conſideration of dreames.

Neither are the Dreames which we have in our ſleepe to be neglected, for by the diligent conſideration of theſe, the affections and ſuperfluous humors which have cheiſe power in the body are marvailouſly knowne. For thoſe who have raging Choler running up and downe their bodyes while they ſleepe, all things to them appeare bright, ſhining, fiery, burning, full of noyſe and contention. Thoſe who abound with Phlegme dreame of floods, ſnowes, ſhowers and inundations and falling from high places. Thoſe who are Melancholy dreame of gapings and gulfes in the earth, thicke and obſcure darkneſſe, ſmokes, caves, and all blacke and diſmall things. But thoſe whoſe bodyes abound in blood dreame of mariages, dances, embracings

bracings 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 sleepe, whether more lively and cheerefull, or more heavy, for by the opinion of *Hippocrates*,

Cum labor à somno est, lethalem collige morbum:
Si non profit somnus, nihil hinc lethale timendum est.

Aphor. 1. Sect. 2.

Paine sleepe ensuing, an ill disease doth show:
But if sleepe profit bring, no harme from thence will flow.

And as sleepe so watching, if it exceede measure, is hurtfull; for it hurts the temperature of the braine, weakens the senses, wastes the spirits, breeds crudities, heavinesse of the head, falling away of the flesh, and leaneneſse over all the body, and to conclude, it makes ulcers more dry, and so consequently rebellious, difficult to heale, and maligne. There are many other things may be spoken of sleepe and watching, but these may suffice a Chirurgion.

CHAP. XVII.

Of Repletion, and Inanition, or Emptinesse.

THere are, to bee short, two sorts of Repletion, or of all exceesse; one is of a simple qualitie, without any defluxion, or societie of any humor, as appeares in distempers without matter: the other is of quantitie and masse, the body being distended with too much meate, or too great quantitie of humors; from whence proceed an infinite number of diseases. They call the Repletion of meates, satietie or fulnesse, and it is of two kinds; the one which is called * Repletion or Fulnesse to the vessels; the other * Repletion to the strength.

The kinds of Repletions or rather of Excesses.

*Repletio { ad vasa / ad vires

Wee judge of satietie to the vessels, by the distention and swelling of the veines and intrailes, as the stomacke. Wee call satietie to the strength, when the body is loaded with more meates, than it can well beare. 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 equall exceesse of all the humors. For if at any time he define a *Plethora* to be an exceesse of bloud onely, then verily by the name of bloud, he understands an equall comprehension of the foure humors; as it is taught in Physicke schooles.

Gal. Meth. 13. cap. 6.

The Repletion which is caused by some one humor, is termed by *Galen* in the place before mentioned, *Cacochymia*, (that is, an evill juyce) whether the Repletion proceede of a Cholericke, Melancholicke, Phlegmaticke, or serous humor.

What Cacochymia.

Now Inanition, or evacuation is no other thing than the expulsion, or effusion, of humors which are troublesome, either in quantitie, or qualitie. Of evacuations, some are universall, which expell superfluous humors from the whole body; such are purging, vomiting, transpiration, sweats, phlebotomie. Some particular which are performed onely to evacuate some part, as the braine by the nose, palate, eyes, eares; the lungs by the weazon; the stomacke by vomite and stoole, the guts by stoole, the liver and the spleene by urine and ordure. These evacuations are sometimes performed by nature, freeing it selfe of that which is troublesome to it; otherwhiles by the Art of the Physitian in imitation of nature.

The kinds of evacuation.

And againe, one of these is good and requisite, when onely the humor which is hurtfull, either in quantitie or qualitie, 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 skinne, as when a cholericke, salt, or serous humor, or some windinesse lying betweene the skinne and the flesh, cause itching. For by scratching the skinne, it gets passage out, which is manifest by the effluxe of a serous matter burning, or causing scabbs and ulcers, if the humor be somewhat grosse, but insensible and not so manifest, if it be windinesse, the skinne by that rubbing being rarefied, and the grosse flatulency attenuated. Wherefore they doe ill who hinder their Patients from scratching, unlesse they scratch so cruelly and hard, that there may bee danger, (by reason of the great heate and paine thereby caused) of some desluxion or falling downe of humors into the part.

Or these evacuations are performed by much matter evacuated frow an opened Bile, or running ulcer, a Fistula, or such like sores. Or by sweats which are very good and healthfull, especially in sharpe diseases, if they proceede from the whole body, and happen on the criticall dayes. By vomit, which often violently drawes these humors from the whole body, even from the utmost joints, which purging medicins could not evacuate, as wee may see in the Palsie, and Sciatica, or Hipgoute. By spitting, as in all who are suppurated either in the sides or lungs. By Salivation, or a Flegmaticke fluxe by the mouth, as in those who are troubled with the French Pockes. By sneesing and blowing the nose; for by these the braine oppresst with moisture, disburdeneth its selfe, whether it be done without, or with the helpe of sternutatories and errhines; wherefore children, and such as have somewhat moist braines purge themselves often this way. By hicket and belching; for by these the windinesse contained in the stomacke, is often expelled. By urine, for by this not onely Feavers, but which is more to bee admired, the French-Pockes hath often beene terminated and cured.

The force of vomits.

Salivation.

The whole body is also purged by urines.

For there have beene some troubled with the Pockes, in whom a fluxe of the vicious and venenate humor could not by unctions of quickfilver be procured, either from the mouth, or belly; yet have beene wonderfully freed by aboundance 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 fluxe, or laske, purgation, sweats, insensible evacuation and transpiration; for so tumors, the matter being brought to suppuration, doe sometimes vanish away and are dissolved, both of their owne accord, as also by dissolving, or discussing medicins. We doe the same by exercise, diet, hot-houses, long sleepe, waking, and shedding of teares. By sucking, as with cupping glasses and horse-leaches in wounds made by venemous bitings.

We must observe three things in every evacuation.

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

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 minde, without the corruption of the ſubject. The knowledge of theſe muſt not be lightly paſſed over by the Chirurgion; for they ſtir up great troubles in the bodies, and yeeld occaſion of many & great diſeaſes; of which things, Ioy, Hope and Love, may give a apparent teſtimony. For by theſe motions the heate 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 roſy and lively colour. For it is likely, that the faculty it ſelfe is ſtirred by the object, by whoſe power the heart it ſelfe is moved. Why the Paſſions of the minde, are called Accidents. Their force.

For it is firſt neceſſary, before wee be moved by any Paſſions, that the ſenſes in their proper ſeates, in which they are ſeldome deceived, apprehend the objects, and ſtrait as meſſengers carrie them to the common ſenſe, which ſends their conceived formes to all the faculties. And then, that each facultie, as a Iudge may a freſh examine the whole matter, how it is, and conceive in the preſented objects ſome ſhew of good, or ill, to bee deſired, or ſhunned. For what man that was well in his wits, did ever fall into a laughter, unleſſe he formerly knew, or ſaw ſomewhat ſaid or done, which might yeeld occaſion of laughter? Therefore Ioy proceeds from the heart, for the thing cauſing mirth or joy, being conceived, the facultie 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 meane time by the force of that dilatation, it ſends forth much heate, and ſpirits together with the bloud into all the body. A great part of which comming to the face, dilates it, the forehead is ſmooth and plaine, the eyes looke bright, the cheekes become red, as died with Vermilion, the lips and mouth are drawen together, and made plaine and ſmoth; ſome have their cheekes dented with two little pits (which from the effects are called laughing cheekes) becauſe of the contraction or curling, which the muſcles ſuffer by reaſon of their fulneſſe of bloud and ſpirits, all which to be briefe is nothing but to laugh. From whence they have their force. The reaſon of Ioy.

Ioy recreates and quickens all the faculties, ſtirres up the ſpirits, helpes concoction, makes the body to bee better likeing, and fattens it, the heate, bloud, 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 minde, this onely is profitable, ſo that it exceed not meaſure; for immoderate and unaccuſtomed joy, carries ſo violently the bloud and ſpirits from the heart, into the habit of the body, that ſodaine and unlookt for death enſues, by a ſpeedy decay of the ſtrength, the laſting fountaine of the vitall humour being exhauſted. Which thing principally happens to thoſe who are leſſe heartie, as women and old-men. The effects of Ioy.

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

Sorrow, or griefe dries the body by a way quite contrary to that of anger, becauſe by this the heart is ſo ſtraitened, the heate being almoſt extinct, that the accuſtomed generation of ſpirits cannot be performed; and if any be generated, they cannot freely paſſe into the members with the bloud; wherefore the vitall facultie is weakened, the lively colour of the face withers and decaies, and the body waſtes away with a lingering conſumption. Sorrow.

Feare in like ſort drawes in and calls backe the ſpirits, and not by little and little as in ſorrow, but ſodainely and violently; hereupon the face growes ſodainely pale, Feare.

the extreame parts cold, all the body trembles or ſhakes, the belly in ſome is looſed, the voice as it were ſtaies in the jawes, the heart beate with a violent pulſation, becauſe it is almoſt oppreſt by the heare, ſtrangled by the plentie of bloud, and ſpirits abondantly ruſhing thither; The haire alſo ſtands upright, becauſe the heate and bloud are retired to the inner parts, and the utmoſt parts are more cold and drie than ſtone; by reaſon whereof the utmoſt skinne and the pores, in which the rootes of the haires are faſtened, are drawne together.

Hippocrat. lib. 4. de morb.

Shame.

Shame is a certaine affection mixed, as it were, of Anger and Feare; therefore if, in that conflict of, as it were, contending paſſions, Feare prevaile over Anger, the face waxeth pale, (the bloud flying backe 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 Feare, the bloud runnes violently to the face, the eyes looke red, and ſometimes they even ſome at the mouth.

Shamefaſtneſſe.

There is another kinde of ſhame, which the Latines call *Verecundia* (wee Shamefaſtneſſe) in which there is a certaine fluxe, and refluxe of the heate, and bloud firſt recoiling to the heart, then preſently rebounding from thence againe. 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 maides and boyes; who if they bluſh for a fault committed unawares, or through careleſneſſe, it is thought an argument of a vertuous and good diſpoſition.

An agonie.

But an agony, which is a mixt paſſion of a ſtrong feare, and vehement anger, involves the heart in the danger of both motions; wherefore by this paſſion, the vitall faculties is brought into very great danger. To theſe ſixe Paſſions of the minde, all other may be revoked, as Hatred and Diſcord to Anger: Mirth and Boaſting, to Ioy; Terrors, Frights and Swoundings, to Feare; Envy, Deſpaire and Mourning, to Sorrow.

By theſe it is evident, how much the paſſions of the minde can prevaile, to alter and overthow the ſtate of the body; and that by no other meanes, than that by the compreſſion and dilatation of the heart, they diffuſe and contract the ſpirits bloud, and heate; from whence happens the diſſipation, or oppreſſions of theſe ſpirits.

Why the firſt ſignes of paſſions of the minde appeare in the face.

The ſignes of theſe Symptomes quickly ſhew themſelves in the face; the heart, by reaſon of the thinneſſe of the skinne in that part, as it were painting forth the notes of its affections. And certainely 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 ſicke, a living from a dead. Wherefore many affirme that the manners, and thoſe things which we keepe ſecret and hid in our hearts, may be underſtood by the face and countenance.

The uſe of paſſions of the minde.

Now wee have declared what commoditie and diſcommoditie may redound to man from theſe forementioned paſſions, and have ſhewed that anger is profitable to none, unleſſe by chance to ſome dull by reaſon of idleneſſe, or oppreſt with ſome cold, clammy and phlegmaticke humor; and feare convenient for none, unleſſe peradventure for ſuch as are brought into manifeſt and extreme danger of their life by ſome extraordinary ſweat, immoderate bleeding, or the like unbridled evacuation, Wherefore it behoves a wiſe Chirurgion to have a care, leſt he inconſiderately put any Patient committed to his charge into any of theſe paſſions, unleſſe there bee ſome neceſſitie thereof, by reaſon of any of the forementioned occaſions.

CHAP. XIX.

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

HAving intreated of things naturall, and not naturall, now it remaines wee speake of things (which are called) against nature, because that they are such as are apt to weaken and corrupt the state of our body. And they bee 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 meates of ill nourishment, and such weapons and hostilely wound the body.

What things against nature are.

What, and how many the causes of diseases be.

The primitive cause.

The Internall have their essence and seate 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 neare to cause one; so humors copiously flowing, or ready to flow into any part, are the antecedent causes of diseases; The conjunct cause is that which actually causes the disease, and is so immediately joined in affinitie to the disease, that the disease being present, it is present, and being absent, it is absent.

Internall antecedent.

Internall conjunct.

Againe, of all such causes, some are borne together with us, as the over-great quantitie, and maligne qualitie of both the seedes, and the menstruous bloud, from diseased Parents are causes of many diseases, and specially of those which are called Hereditary.

Other happen to us after wee bee borne, by our diet and manner of life, a stroke, fall, or such other like. Those which bee bred with us, cannot be wholy 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 Aire, Meate, Drinke, and the like.

But if any will reckon up amongst the internall, inherent, and inevitable causes, the daily, nay hourely dissipation of the radicall moisture, which the naturall heate continually preyes upon; I doe not gainesay 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 onely intend plainely to instruct. Wherefore that wee have written may suffice him.

The congenit, or inevitable cause of death.

CHAP. XX.

Of a Disease.

A Disease is an affect against nature, principally and by it selfe, 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 simular parts dissenting, and changed from their proper and native temper. That digression from the native temper, happens two wayes; either by a simple distemperature from the excesse of one qualitie; and this is fourefold; Hot, Cold, Moist, and Drie; or by a compound distemperature, by the excesse of two qualities, which also is fourefold, Hot and Moist; Hot and Drie, Cold and Moist; Cold and Drie. Againe, every distemper is the fault of one simple and single qualitie, as an inflammation; or hath some vicious humors joyned with it, as a Phlegmon; Againe, a Distemperature is either equall, as in a *Sphacele*; or unequall, as in a *Phlegmon*, beginning, or increasing.

A Distemperature.

Ill Conformity is a fault of the organicall parts, whose composure

Ill conformation.

is thereby depraved. This hath foure kindes; the first is when the figure of the part is faultie, either by nature or accident, or some cavitie abolished, as if a part, which nature would have hollow for some certaine use, doe 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 contrarie to nature. The third is in the number of the parts, increased, or diminished; as if a hand have but foure or else sixe fingers. The fourth is in the site and mutuall connexion of the parts, as if the parts which should be naturally united and continued bee pluckt asunder, as happens in luxations; or the contrary. The third generall kinde of disease, is the solution of continuitie, a disease common, both to the simular and organicall parts, acquiring diversitie of names, acccording to the varietie of the parts in which it resides.

Solution of Continuitie.

CHAP. XXI.

Of a Symptome.

What a Symptome is.

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

Three kindes thereof.

There be three kindes of a Symptome properly taken. The first is, when the action is hurt; I say hurt, because it is either abolished, weakened, or depraved; so blindnesse is a deprivation, or abolishing of the action of seeing; dulnesse of sight, is a diminution, or weakening thereof; and a suffusion, such as happens at the beginning of a Cataract, when they thinke flies, haires, and such like bodies flie too and fro before their eyes, is a depravation of the sight.

The second is a simple affect of the body, and a full fault of the habite 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 livide and blacke by a Gangrene; such is the filthy stench the nose affected with a *Polypus* sends forth; the bitter taste, in such as have the Iaundise; and the rough and rugged skinne 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 quantitie and qualitie, is against nature, as bleeding in a body not full of ill humors, nor Plethoricke; and also the retention of things hurtfull in substance, quantitie and qualitie, as the Courses in women, the urine, and the stone in the bladder.

CHAP. XXII.

Of Indications.

What an Indication is.

THE knowledge and exercise of Indications befits that Chirurgion, whom no blinde rashnesse of fortune, but reason; no chance, but counsell directs in the undertaking and performing the workes of his Art. For an Indication is a certaine safe and short way, which leades the Physition, as by the hand, to the attainement of his purposed end, of preserving the sound, or curing the sicke.

Sec. method. Cap. 7. lib. de opt. secta, Cap. 11.

For *Galen* doth define an Indication to be a certaine insinuation of what is to be done, or a quick & judicious apprehension of that which may profit or hurt. And as Faulconers,

ners, Mariners, Plowmen, Soldiers, & all manner of Artizans, have their peculiar termes and words, which are neither knowne, nor used by the vulgar; so this word Indication is proper and peculiar to Phisitions and Chirurgeons, as a Terme of Arte not vulgar; by consideration of which, as by some signe, 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 these 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 compasse of these are contained all the Indications which are drawne from the nature of the Patient, that is, from his strength, temper, age, sexe, habit, custome, diet.

Things not naturall may be doubted as uncertaine, 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. Wherfore *Galen* when he saith, that Indications are drawn from three things; The disease; The nature of the Patient, and the encompassing aire, by proposing the familiar example of the aire, hee would have us to understand the other things not naturall; because wee may shun, or embrace them more or lesse as we will our selves, but we must, whether we will or no, endure the present state of the aire. Therefore the aire 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. *Lib. 9. Method. cap. 9.*

Indications drawne 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 drawne 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 feaver, 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 fitts of the ague. Other pertaine to the temper, other respect the habite, 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, softnesse, hardnesse, quicke or dull sense, forme, figure, magnitude, site, connexion, principallity, 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 sore eyes, which were convenient for the eares, neither doth a Phlegmon in the jawes and throat admit the same forme 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 neere 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 principallity of a part alwayes insinuates an Indication of astringent things, although the disease require dissolving, as an Obstruction of the Liver; for otherwise unlesse you mixe 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 shewes it is lesse 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 Spleene. If the part be scituate more deepe, or remote, it indicates the medicines must be more vigorous and liquid, that they may send their force so farre. The sensibleneesse, or quicke-sense of the part, gives Iudication of milder medicines, than paradventur the signes, or notes of a great disease require. For the Phisition which applies things equally sharpe to the Horny tunicle of the eye being ulcerated, and to the Legge, must needs be accounted either cruell, or ignorant. Each sexe and Age hath its Indications, for some diseases are curable in youth, which we must not hope to cure in old age; for hoarsenesse and great distillations in very old men, admit no digestion, as *Hippocrates* saith; *Aphor. 40. li. 2.*

What the conditions of the parts affected do indicate.

Indications from the ages.

Nunquam

Nunquam decrepitus 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 Reines, and whatsoever paines molest the bladder, are difficultly healed in old men; and also reason perswades that a Quartaine admits no cure in Winter, and scarse a Quotidian, and ulcers in like manner are more hard to heale in Winter; that hence we may understand certaine Indications to be drawne from time; 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 *Hipocrates* 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 clense the blood.

Neither shalt thou so well prescribe a slender diet in Winter, as in the Spring, for the aire hath its Indications. For experience teaches us, that wounds of the head are farre 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 onely to be used at the beginning and end of diseases, others at the encrease and vigour of the disease. We must not contemne those Indications which are drawn from the vocation of life, and manner of Diet; for you must otherwise deale with the painfull Husbandman (when he is your Patient) which leades his life sparingly and hardly, than with the Citizen who lives daintily and idlely. To this manner of life and Diet may be referred a certaine secret and occult property, by which many are not onely ready to vomite at eating of some meats, but tremble over all their bodyes when they heare them but spoken of. I knew a prime Nobleman of the French Nobility, who was so perplext at the serving in of an Eele to the Table, at the middst of dinner & amongst his friends, that he fell into a swound, all his powers failing him. *Galen* in his booke *de Consuetudine* tells that *Arius* the *Peripatetick* died sodainly, because compelled by the advise of those Physitions he used, he dranke a great draught of cold water in the intollerable heat of a Feaver. For no other reason saith *Galen*, than that, because he knowing he had naturally a cold stomacke from his childhood, perpetually abstained from cold water.

From our Diet.

Hatred arising from secret properties.

Indications taken from things against nature.

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 hollownesse straight or winding, indicate otherwise; the site right, left, upper, lower in an other 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 grosse humors cause and nourish a Feaver. 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 swounding happen in a Feaver, the feaverish burning shall not hinder us from giving wine to the Patient.

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

Wherefore these Indications are the Principallest and most noble which leade us, as by the hand, to doe these things which pertaine 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 Chirurgions, which setting onely one before their eyes, which is drawne from the Essence of the disease, have the report and fame of skillfull Chirurgions, 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 doe 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 gainesay; you may understand this by the example of a *Plethora*, which by the Indication drawne from the Essence of the thing requires Phlebotomy; yet who

is it, that will draw blood from a child of three monethes old? Besides, such an Indication is not artificiall but common to the Chirurgion 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 Arte and peculiar to a Chirurgion, and not knowne to the vulgar. Which the Indications drawn from those fountaines we pointed at before, aboundantly teaches, which, as by certaine limits of circumstances, encompasse the Indication which is taken from the Essence of the disease, lest any should thinke, we must trust to that onely. 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 Chirurgion to know and pronounce. Wherefore hee will not vainly bestow his labour to cure the Nervous part of the *Diaphragma*, or Midriffe being wounded, or the Heart, small Gutts, Lungs, Liver, Stomacke, braine or bladder; and that, I may speake in a word, Empetickes 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 lyes, may be; or what the action, use, site, connexion, from whence speciall and proper Indications are drawne; With which the Chirurgion being provided and instructed shall not onely know by what meanes to finde out a remedye, but also, lest he may seeme to mocke any with vaine promises, he shall discerne what diseases are uncureable, and therefore not to be medled withall.

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

Exherience without reason, is like a blind man without a guide.

But implicite, or intricate diseases require each to be cured in their severall order, except some one of them be desperate, or so urge and presse that the Physition think it necessary after a preposterous order, to begin with it, although often he be forced to make some one of these diseases incureable, 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 necessitie to open the necke of the bladder, (that so we may draw forth the stone therein contained) with a wound which often degenerates into an uncurable Fistula. For that disease which threatens danger of present death is of such moment, that to shun that, it may be counted a smal matter, and commodious for the sicke to bring in other diseases, though uncureable. For if a convulsion happen by pricking a Nerve which we cannot heale by any remedies, then by cutting the Nerve asunder wee 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, wee are forcte for shunning thereof, to attend the wound onely, and in the meane time to let alone the Luxation. Otherwise in implicite 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 veine) and a Phlegmonous tumor round about it; and lastly, a body wholy plethoricke and filled with ill humors; order and reason require this, that using the advise of some learned Physition we prescribe a convenient diet, and by what meanes 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 Leaches that so we may free it from the burden of the conjunct matter; then use Cauteryes to helpe the corruption of the bone, and in the meane time change the circular figure of the ulcer into an ovall, or triangular; then at the length we will undertake the cutting of the *Varix*, and cure the ulcer which remaines according to Arte, and so at the length cicatrize it. In all this whole time the Patient shall neither walke, nor stand, nor sit, but lye quietly, having his Leg orderly and decently rowled up. But

Indications in implicite diseases.

An example of Indications in implicite diseases.

if

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

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 Arte will require, that the medicine 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 than the temper requires, & 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 selfe, shall not be encreased in dryness, but wholy 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.

An artificiall conjecture is of much force in Indications.

To these so many and various Indications, I thinke good to add two other; the One from similitude; the Other of a certaine crafty device, and as the latter Physitions terme it, of a certaine subtile stratageme. We draw Indication from similitude, in diseases which newly spring up and arise, as which cannot be cured by Indications drawne from their contraries, as long as their Essence is unknowne and hid; wherfore they thinke it necessary to cure them by a way and Arte like those diseases, with which they seeme to have an agreeing similitude of Symptomes and Accidents; Our Ancestors did the same in curing the French Pockes, at the first beginning thereof, as long as they assimulated the cure to that of the Leprosie, by reason of that affinity, which both the diseases seeme to have. But we follow crafty devices and subtile counsells, when the Essence of the disease wee meet with is wholy 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 knowne to us, nor of a Physicall contemplation, as the Minde. For then we being destitute of Indications taken from the nature of the thing, are compelled to turne our cogitations to impostures and crafty counsells; and they say this Arte and Craft is of cheife 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 thinke much to recite two Examples. A certaine man troubled with a Melancholike disease, I know not by what errour of opinion, had strongly perswaded himself that he was without a head; the Physitions omitted nothing, by which they might hope to take this madd opinion out of his minde. But when they had in vaine 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 paine and trouble of his head nodding and drawne downe by that weight, he might be admonished of his error.

Indication from similitude.

Indication of a subtile device.

Examples.

It is reported, another molested by the obscurity and darkenesse of the same disease, did verily beleeve, that he had hornes upon his head; neither could he be drawne or diverted from that absurd and monstrous opinion, untill that binding up his eyes, they miserablely bruised and scratched his forehead with the bony roughnesse of the lower parts of an oxes hornes, that so he begun to beleeve by the painefull drawing of the blood that ran downe his face, that those bloody hornes, were forcibly plucked from him. Ingenious Chirurgions in imitation of these examples may in like cases doe the like. For that case requires a man of a quicke apprehension and advice, who may give manifest proofe of his diligence and skill by medicinall stratagems, as who forthwith can politikly device stratagems of divers sorts.

A Physition should be of a quicke apprehension.

But, now comming to the end of this our tract of Indications, we must cheifly and principally observe; That of Indications some are Indicative; which absolutely and of themselves command this to be done; other coindicative, 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 owne nature perswade quite contrary to that the indicative primitively did; or which disswade us from doing that, to performe which the indicative did perswade us; other

Indications indicative.

Coindicative.

Repugnant.

correpugnant,

correpugnant, which give their voyce after the same forme and manner with the repugnant against the indicative, as the coindicative consent to and maintaine them. Let this serve for an example of them all. Correpugnant

A *Plethora*, or plenitude of humors of its owne nature, requires and indicates bloodletting, the Spring-time perswades and coindicates the same, but to this counsell is quite opposite and repugnant, a weake faculty, and childhood is correpugnant.

Wherefore these foure must be diligently waighed 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 disease and strength of the Patient require, than that which the coindicative, or correpugnant shall perswade, becausethey have a weaker and but secundary power of indicating, and not essentiall and primitive. But because the kinds of Indications are so many and divers, therfore that the knowledge of them may be more perspicuous and lesse confused, I have thought good to describe & distinguish them by this following scheme.

A

A Table of Indications.

An Indication is a certaine plaine and compendious way which leades the Chirurgion to a certaine, determinate and proposed end for the cure of the present diseases, of which there are 3. kinds,

The first is drawne from things natural which indicate their preservation by their like: of this kind are many other which are drawne,

either

- From the strength and faculties of the patient. — For whose preservation, oftentimes the proper cure of the disease must be neglected: for where these faile, it is impossible the Chirurgion should performe what he desires and expects.
- From the temperament, as if the Patient shall be —
  - Sanguine,
  - Cholericke,
  - Flegmaticke
  - Melancholicke

  — Of preservation of which the Chirurgion must have care, and if they swarve from equallitie, to reduce them to that which formerly they naturally were.
- From the habite of the body, as the patient shall be
  - Dainty and delicate,
  - Slender and weake.
  - Low of stature.
  - Rare, or else dense and compacte.
- From the native condition of the hurt or affected part, in which we consider, either
  - The substance thereof, as for as much as it is simular 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 quicke, or dull, by reason whereof the eye cannot endure such sharpe & acride medicines, as simple flesh can.
  - Or the forme, figure, magnitude, number, site, connexion, action, use.
- From the Age, for each age yeelds his peculiar Indications, hence you may observe most diseases to be incureable in old men, which are easily cured in yong, others which in youth admit of no cure, unlesse by the change of age and the ensuing temperament.
- From Sexe, for medicines work upon women farre more easily than upon men.
- From the time of the yeare, 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, & sore shinns at Avignion are more difficult to be cured.
- From the times of diseases, for some things in the beginings, others in the encrease, 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 leade their lives sparingly and hardly. Hereunto adde certaine peculiar natures, which by a certaine hidden property are offended at this, or that kinde of meate. For there are some which not onely, cannot concoct Ptisane, Apples, Soles, Partrige, Water and such like, but can scarse behold them without Nauseousnes.

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

- If the Arte, have as it were conspired with the disease by a certaine similitude of qualities to the destruction of the Patient, it must be corrected by its contraries according to Arte.
- 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 drawne from these
  - The greatnesse
  - The complication or commixtion with other, so
    - In implicite, or mixed diseases we may draw Indications from these 3. heades.
    - From that which is most urgent
    - From the cause
    - and From that, without which the disease can not be taken away

    — such are — Bitternesse of paine, a defluxion into a part, a Varix, or bigge swollen veine, a distemperature if they be joyned with a disease.
- Cause of the disease
- Symptomes

— which two oft̄ indicate & require medicines contrary to the disease.

CHAP.

CHAP. XXIII.

Of certaine wonderfull and extravagant wayes of Curing diseases.

AS Monsters sometimes happen in nature, so also in diseases, and in the events and cures of diseases. I understand by monsters certaine marvellous successes in diseases, or certaine wayes of curing them, which swarve from Arte, and happen besides reason, nature, and common use. Monstrous diseases.

Alexander ab Alexandro, and *Peter Gelius* tell, that in Apuliaa part of Italy, they have a certaine kind of Spider very frequent, the natives call it *Tarentula*, *Petrus Rhodius* calls it *Phalangium*; The Inhabitants finde these Spiders in the first heate 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 downe, or certainely if he escape the danger of death, he leades the remnant of his life in madnesse. Experience hath found a remedy by Musicke for this so speedy and deadly a disease; Wherefore as soone as they can they fetch Fidlers and Pipers of divers kinds, who by playing and piping may make Musicke, at the hearing whereof, he which was fallen downe by reason of the venemous bite, rises cheerfully and dances so long to their measures and tunes, untill by the painfull & continued shaking and agitation of the whole body, all the malignity is dissipated by transpiration and sweates. The wonderfull force of the bite of a certaine Spider. Musicke the remidy therof.

Alexander adds that it happened once in his sight, that the Musitions their winde & hands failing them ceased playing, and then the Danser presently fell downe as if hee had beene dead; But by and by the Musicke beginning anew, he rise up againe and continued his dansing till the perfect dissipation of the venome. And that it hath happened besides, that one not so perfectly healed, certaine reliques of the disease yet remaining, when a long time after he heard by chance a noise of Musitions, he presently fell a leaping and dansing, neither could he be made to leave before he was perfectly cured.

Some affirme according to the opinion of *Asclepiades*, that such as are Franticke are much helped with a sweet and Musicall harmony. *Theophrastus* and *Aulus Gellius* say that the paine of the Goute and Sciatica are taken away by Musicke. And the Sacred Scripture testifies, that *David* was wont by the sweet sound of the Harpe to refresh and ease King *Saul* when he was miserablely tormented by his evill spirit. *Herodotus* in *Clio* tells, that *Crœsus* the King of Lydia had a Sonne, which of a long time could not speake, and when hee came to mans estate was accounted dumbe: but when an Enemie with his drawne sword invaded his father (overcome in a great fight, and the City being take in which hee was) not knowing that hee was the King, the young man opened his mouth endeavoring to cry out, and with that striving and forcing of the Spirit hee broke the bonds and hinderances of his tongue, and spoke plainely and Articulately, crying out to the Enemie that hee should not kill King *Crœsus*. So both the Enemie withheld his sword, and the King had his life, and his Sonne had his speech alwayes after. *Plutarch* in his booke, Of the benefit to be received from our Enemies, tells that a Thessalian called *Proteus*, had a certaine inveterate and incurable ulcer in a certaine part of his body, which could not be healed, before hee received a wound in a conflict in the same place, and by that meanes the cure being begun afresh, the wound and ulcer were both healed. Musicke gives ease to paine. A strong perturbation of the minde helps by moving the spirits.

Quintus Fabius Maximus, as *Livye* writes, was long and very sicke of a quartaine Ague, neither could have wished successe from medicines administred according to Arte, untill skirmishing with the *Allobroges* hee shaked off his old feaverish heate, by a new heate and ardent desire of fighting. It was credibley reported to me of late by a Gentleman of the Lord of *Lansackes* Chamber, that there was a Freach Gentleman in Polonia who was greivously tormented with a quartaine Chance sometimes exceeds Arte.

Feaver, who on a time walking upon the banke of the River Wixell to take away the irkesomeneſſe of his fit, was thruſt in jeaſt into the River by a friend of his that met him by chance, by which (although hee could ſwim, as hee alſo knew that thruſt him in) hee conceived ſo great feare, that the Quartaine never troubled him after. King *Henry* the ſecond commanded me to goe from the Campe at Amiens to the City Dorlan, that I might cure thoſe that were hurt in the conflict with the Spaniards, the Captaine S. *Arbin* although at that time he had a fit of a quartaine ague, yet would hee be preſent at the fight, in which being ſhott through the ſide of his necke with a Bullet, hee was ſtrucken with ſuch a terror of death, that the heate of the Feaver was aſſwaged by the cold feare, and he afterwards lived freed from his Ague.

Obſerv. 4. lib. 2. *Franciſcus Valleriola* the famous Phyſition of Arles, tells that *John Berlam* his fellow Citizen troubled with a Palſey of one ſide of his body for many yeares, his houſe taking fire, and the flame comming neere the bed in which he lay, he ſtrucken with a great feare, ſuddenly raiſed himſelfe with all the force hee had, and preſently recovering the ſtrength of his body, leapes out at the window from the top of the houſe, and was preſently cured of his diſeaſe, ſenſe and motion being reſtored to the part, ſo that afterward hee went upright without any ſenſe of paine, who lay unmoveable for many yeares before. Hee tells the like in the ſame place of his coſen *John Sobiratius*; hee was a long time lame at Auignion, by reaſon that the nerves of his hams were ſhrunke and drawne up ſo that hee could not goe; being moved with a vehement and ſuddaine paſſion of anger againſt one of his ſervants whom hee endevored to beate, hee ſo ſtirred his body that forthwith the Nerves of his hams being diſtended, and his knees made plyant hee began to goe and ſtand upright without any ſenſe of paine, when hee had beene crooked about the ſpace of ſix yeares before, and all his life after he remained ſound.

Cap. ult. lib. de cur. rat. per ſanguinis miſſ. *Galen* tells hee was once fetched to ſtanch the bleeding, for one who had an Artery cut nere his ancle, and that by his meanes hee was cured without any danger of an *Aneuriſma* (*i*) a relaxation of a veinous veſſell; and beſides by that accidentall wound hee was freed from moſt greivous paine of his hippe, with which he was tormented for foure yeares before: but although this eaſing of the paine 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 onely by chance, I judged it was not much diſſenting from this argument.

Galen by a dreame cures the *Sciatica.*

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 veine which could not containe the blood being condenſate.

At Paris *Anno* 1572. in *July* a certaine Gentleman being of a modeſt and courteous cariage fell into a continuall Feaver, and by that meanes became Franticke, moved with the violence of which hee caſt himſelfe headlong out of a window two ſtoryes high, and fell firſt upon the ſhoulder of *Vaterra* the Duke of Alenzons Phyſition, and then upon the pavement; with which fall hee cruelly bruized his ribbs and hippe, but was reſtored to his former judgment and reaſon. There were preſent with the Patient beſides *Valterra*, witneſſes of this accident theſe Phyſitions, *Alexis*, *Magnus*, *Duretus*, and *Martinus*. The ſame hapened in the like diſeaſe, and by the like chance to a certaine Gaſcoyne lying at the houſe of *Agrippa* in the Paved ſtreete.

Othomannus Doctor of Phyſicke of Mompelier and the Kings profeſſor, told me that a certaine Carpenter at Broquer a village in Switzerland, being franticke caſt himſelfe headlong out of an high window into a river, and being taken out of the water was preſently reſtored to his underſtanding.

But if we may convert caſualties into counſell and Arte, I would not caſt the Patient

Patient headlong out of a window. But would rather cast them sodainely and thinking of no such thing into a great cesterne filled with cold water, with their heads foremost, neither would I take them out untill they had drunke a good quantitie of water, that by that sodaine fall and strong feare, the matter causing the Frenzy might be carryed from above downewards, from the noble parts to the ignonoble; the possibility of which is manifest by the forerecited examples, as also by the example of such as bit by a mad Dogge, fearing the water are often ducked into it to cure them.

The cause of the last recited cures.

CHAP. XXIIII.

Of Certaine jugling and deceiptfull wayes of Curing.

HEre I determine to treat of those Impostors, who taking upon them the person of a Chirurgion, doe by any meanes either right or wrong put themselves upon the workes of the Arte; but they principally boast themselves amongst the ignorant common sort, of setting bones which are out of joynt and broken, affirming as falsly as impudently that they have the knowledge of those things from their Ancestors; as by a certaine hereditary right; which is a most ridiculous fiction; for our mindes when we are borne, is as a smoth table, upon which nothing is painted. Otherwise what need wee take such labour and paines to acquire and exercise sciences? God hath endued all brute beasts with an inbred knowledge of certaine things necessary for to preserve their life, more than man.

Sciences are not hereditary.

But on the contrary hee hath enriched him with a wit furnished with incredible celerity and judgment, by whose diligent and laborious agitation he subjects all things to his knowledge. 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 Sunne in the field, should know how to ride and governe a great horse, and know how to carry away the credite in tilting, onely because hee was begot by a Gentleman and one famous in the Arte of Warre.

There is another sort of Impostors farre more pernitious and lesse sufferable, boldly and insolently promising to restore to their proper unity and seate, bones which are broken and out of joynt, by the onely murmuring of some conceited charmes, so that they may but have the Patients name and his girdle. In which thing I cannot sufficiently admire the idlenesse of our Country-men so easily crediting so great and pernitious an error; not observing the inviolable law of the ancient Physitions, 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, firmely immoveable with a strong and steddy 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 worke; What therefore is the madnesse of such Impostures to undertake to doe that by words, which can scarse be done by the strong hands of so many Servants, and by many artificiall engines?

A most impudent sort of Impostors.

Three things necessary for the cure of a Luxation.

Of late yeares another kind of Impostures hath sprung up in Germany, they beate into fine powder a stone within there mother tongue they call *Bembruch*, and give it in drinke, to any who have a bone broken, or dislocated, and affirme that it is sufficient to cure them. Through the same Germanie there wander other Impostors who bid to bring to them the Weapons with which any is hurt; they lay it up in a secret place and free from noise, and put and apply medicines to it, as if they had the patient to dresse, and in the meane time they suffer him to go about his busines, & impudently

affirme that the wound heales by litle and litle 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 sence, should seele the effect of any medicine; and lesse probable by much, that the wounded party should receive any benefit from thence. Neither if any should let mee see the truth of such jugdling by the events themselves and my owne eyes, would I therefore beleeve that it were done naturally and by reason, but rather by charmes and Magicke.

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 Physitions, and Chirurgions of the Emperoure *Charles* the fift and *Emanuel Philibert* the Duke of Savoy, who because hee entirely loved the wounded prisoner, caused an assembly of Physitions and Chirurgions to consult of the best meanes for his cure. They all were of one opinion, that the wound was deadly and incureable, because it passed through the midst of his lungs, and besides had cast forth a great quantity of knotted blood into the hollownesse of his brest.

There was found at that time a certaine Spaniard, a notable Knave, and one of those Impostors who would pawne his life, that hee would make him sound; wherefore this Honorable Personage being in this desperate case was committed to his care. First of all hee bid they should give him the Patients shirte, which hee tore into shreds and peeces, which presently framing into a Crosse, hee laid upon the wounds whispering some conceived or coined words, with a low murmure. For all other things hee wished the Patient to rest content, and to use what diet hee pleased, for hee would doe that for him, which truely, he did. For hee eate nothing but a few Prunes, and drunke nothing but small beere, yet for all this the wounded Prince died within two dayes; the Spaniard slipt away, and so scaped hanging. And whilest I opened the body in the sight of the Physitions and Chirurgions to embalme him, the signes and accidents of the wound did evidently and plainly appeare to be as we had pronounced before.

What wounds may be cured onely by lint, or by tents and water.

And there be also other Iugling companions of this tribe, who promise to cure all wounds with linte, or Tents either dry, or macerated in oyle, or water, and bound to the wound, having murmured over some charme or other, who have had sometimes, good successe, as I can witnesse. But the wounds upon which triall was made were simple ones, which onely required union, or closing for to perfect the cure. So verily the bones of beasts when they be broke, grow together by the onely benefit of Nature. But when the affect shall be compound by diversity of Symptomes, as a wound with an ulcer, inflammation, contusion and fracture of a bone, you must hope for no other from Tents or Lints, nor charmes than death. Therefore the common sort who commit themselves to these Impostors to be cured, doe not onely 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-weale.

Witches, Conjurers, Diviners, Soothsayers, Magitians and such like, boast of curing many diseases; but if they doe or performe any thing in this kind, they doe it all by slights, subtilties and forbidden Arts, as Charmes, conjurations, Witcheries, Characters, Knots, Magicall Ligatures, Rings, Images, Poysons, laces tyed acrosse, and other damnable trickes, with which they pollute, pervert and defame the prime and sacred Arte of Physick & that with the danger of mens lives. Who certainly are to be banished by the lawes of our country, especially seeing it is decreed in Deuteron. 18. *Moses* Law. *Let none be found among you that useth witchcraft*, or a regarder of times, or a marker of the flying of Fowles, or a Sorcerer or a Charmer, or that counselleth with Spirits, or a Soothsayer, or that asketh counsell at the dead; for all that doe 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

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our Lord Iesus Christ the Sonne of God, and of his Saints and Apostles in curing diseases beyond nature and all Arte, are of another kind, which we ought to beleeve so firmely 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 deafe, power to goe to those sicke of the Palsey, to drive forth Devills, to cure the Leprosy, to give fruitfullnesse to weomen, to raise the Dead, and performe 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 uncleane Divels and the spirits of diabolicall deceit, and to give us the minde that we may will and be able alwayes to aspire to Heaven and fasten the hope, safety and anchor of all our fortunes in God alone. Amen.

The End of the first Booke.

THE SECOND BOOKE OF LIVING CREATVRES, AND OF THE EXCELLENCY Of Man.

BEfore I come to ſpeake of the Anatomie of mans body; I have thought fit to ſay a little of the nature of brute Beaſts. The diffe-rence of brute beaſts.

There is betweene beaſts a great deale of difference by nature; for of theſe, ſome are hardy and bold, others fearefull; ſome wilde and ſavage, others tame; ſome walking in heards, 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 Horſe hath his hard and ſtrong hoofes, his creſt (as being a generous beaſt) beſet with a thicke and harſh mane, The defence of the magnanimous Lion, are his teeth, his crooked pawes and taile; Bulls are formidable by their hornes; the Boare by his tuskes ſtanding out, as it were naturall hunting ſpeares. The Hare being a timerous creature, is naked and unarmed, but in recompence thereof nature hath made her nimble and ſwift of foot. For what the more noble and couragious beaſts have in armes, is ſupplied in the fearefull by nimbleneſſe and celerity. Infinite are the other endowments of brute beaſts, and ſuch as can hardly be imagined, or deſcribed. For if wee diligently ſearch into their nature, wee ſhall obſerve the impreſſions and ſhadowes of many vertues, as of magnanimitie, prudence, fortitude, clemency, and docillitie: for they entirely love one another, follow thoſe things that are good, ſhunne 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 Aire. They have taught men many things, and are of a moſt exquiſite and quicke ſence; of rare Art in vocall muſicke, prudent and carefull for their young, and faithfull lovers of their native ſoile. They are religiouſly obſervant of the rights of friendſhip and chaſtie. 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 weale-puklicke amongſt themſelves, and know

Some ſhadow of vertue in beaſts.

know how to preſerve their preſent welfare, and to depell the contrary, being in this their owne Counſellors, and not tutored by man. Yea man is beholden to them for the knowledge of many wholeſome 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 *Salomon* ſends us for examples of parſimonie 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 Oxe and Aſſe; for they doe not onely know, but reverence their Maiſters.

Lib. 8. cap. 27. But from whence is the knowledge of theſe medicines, wherewith the Art of Phyſicke is ſo richly adorned, but from brute beaſts, as *Pliny* affirmeth. The infallible vertue of the herbe *Dictamnus*, in drawing darts out of the fleſh, was taught us by the Hart, who wounded with the Huntſmans darts or arrowes, by meanes hereof drawes out the weapons which remaines ſticking in her. Which is likewiſe practiſed by the Goates of Candie, as *Ariſtotle* writeth. The wonderfull effect which *Celandine* hath upon the ſight, was learnt by the practiſe of Swallowes, who have bin obſerved with it to have beſmeared, and ſo ſtrengthened the eyes of their young. Serpents rubbe their eyelids with fennell, and are thought by that meanes to quicken and reſtore the decaying ſight of their eyes. The Tortois doth defend & ſtrengthen her ſelfe againſt the biting of Vipers, by eating of ſavorie. Beares by eating of Piſmires, expell that poiſon that they have contracted by their uſe of Mandrakes. And for correction of that drowzineſſe and ſloth which growes upon them by their long ſleepe in their dens, they eate the herbe *Aron* (i) Cuckopint. But the Art they uſe in the entiſing and catching of Piſmires is very pretty, They goe ſoftly to the holes or hilles 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 foame, which they draw not againe into their mouth, before they feele them full of Piſmires, which are intiſed by the ſweetneſſe of the foame: And having taken this as a purging medicine, they expell by the guts, thoſe ill humors wherewith they were offended. Wee ſee that Dogges give themſelves a vomit, by eating of a kinde of graſſe, which is from thence called Dogge-graſſe. Swine, when they finde themſelves ſicke, will hunt after ſmalt or river lobſters. Stockdoves, Blackbirds, and Partridges, purge themſelves by bay leaves. Pigeons, Turtels, and all ſort of Pullen, disburden themſelves of groſſe humors, by taking of Pellitory of the wall. The bird Ibis (being not much unlike the Storke) taught us the uſe of Cliſters. For when he finds himſelfe oppreſſed with a burden of hurtfull humors, he fills his bill with ſaltwater, and ſo purgeth himſelfe by that part, by which the belly is beſt diſcharged. The invention of the way of removing the Cataract of the eye, wee muſt yeeld unto the Goate, 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 Phlebotomie, we owe unto the Hippotamus or River-horſe, being a kinde of Horſe, and the inhabitant of the river Nilus; who being a great devourer, when hee finds himſelfe ſurcharged with a great deale of bloud, doth by rubbing his thigh againſt the ſharpe ſands on the bankeſide, open a veine, whereby the ſuperfluous bloud is diſcharged, which he ſtoppeth likewiſe when it is fit, by rowling himſelfe in the thicke mudde. The Tortois having chanced to eate any of the fleſh of a Serpent, doth make *origanum* and marjerom her Antidote. The ancients found helpe from brute beaſts, even againſt the dreadfull and none-ſparing force of lightning; for they were of opinion that the wings of an Eagle were never ſtrucke with lightning, and therefore they put about their heads little wreathes of theſe feathers. They were perſwaded the ſame thing of the Seale, or Sea-calfe, and therefore were wont to encompaſſe their bodies with his skinne, as a moſt certaine ſafegard againſt lightning. It were a thing too long, and laborious, to ſpeake 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 onely for the skill of curing diſeaſes, and of preſervation of health, but for our foode, our raiment, and the ornament and beautifying the bodies.

The craftineſſe of Beares.

The bird Ibis the firſt inventer, or ſhewer of Clyſters.

The invention of removing a Cataract.

The invention of Phlebotomie.

A preſervative againſt thunder.

of

Of the Faculty of brute Beasts in Presaging.

THe first knowledge and skill of Prognostication, and observation of weather by the Aire, was first delivered unto us from beasts of the land and water, and from fowle. For we see in daily observation, that it is a signe of change of weather, when Lambes and Rammes doe butt at one another with their hornes, and playing wantonly doe kicke, and keepe up their heeles. The same is thought to bee presaged when the Oxe lickes himselfe against the haire, and on the sodaine fills the Aire with his lowing, and smells to the ground, and when he feedes more greedily than he used to doe. But if the Pismires in great multitudes fetch their prey so hastily, that they runne and tumble one upon another in their narrow pathes, it is thought a signe of raine; As is also the busie working of Moales, and the Cats rubbing and stroaking of her head and necke, and above her eares, with the bottome of her feete. Also when Fishes play and leape a little above the water, it is taken for a signe of raine. But if the Dolphins doe the same in the sea, and in great companies, it is thought to presage a sodaine storme and tempest. Whereby the Marriners forewarned, use all care possible for the safetie of themselves and their shippes, and if they can, cast Anchor. And it is sufficiently knowne what the louder croaking of Frogges than ordinary portends.

What the butting of Rams signifies.

Presages of raine.

The signe at sea of a storme at hand.

But the facultie of birds in this kinde of presaging is wonderfull. If Cranes flie through the aire without noise, it is a signe of faire weather, and of the contrary, if they make a great noise and flie straglingly. As also if Sea-fowle flie farre from the sea, and light on the land. The crie or scritching of Owles portends a change of the present weather, whether foule or faire. *Plutarch* saith, that the loude cawing of the Crow betokens windes and showres, as also when he flappes his side with his wings. Geese, and Duckes, when they dive much, and order, and prune, and picke their feathers with their beakes, and crie to one another, foretell raine; and in like manner Swallowes when they flie so low about the water, that they wet themselves, and their winges. And the Wren, when he is observed to sing more sweetly than usuall, and to hop up and downe. And the Cocke when he chants, or rather crowes presently after the setting of the Sunne. And Gnats, and Fleas, when they bite more than ordinary. If the Herne soare aloft into the aire, it betokeneth faire weather, if on the contrary he flie close by the water, raine. If Pidgeons come late home to the Dove-house, it is a signe of raine. If Bats flie in the evening, they foreshew wet weather. And lastly, the Crocodile layes his egges in that place, which must be the bounds of the overflowing of the river Nilus; And therefore he that first meetes with these egges, tels the rest of the countrie people, and shewes them how high the floud 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 facultie of presaging.

The Crocodile by laying her egges, shewes the bounds of the increase of the river Nilus.

Of the Industry of Fishes.

MAny sea Fishes, when they feele a tempest comming, doe gravell or balast themselves, to the end they may not be tossed up and downe at the pleasure of the waves. Others when the fury of the sea is at the hight, hide themselves in the holes of rockes. But in that they swim against the streame, they doe it, for this cause and reason, that he force of the streame, and the floud 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 advise Cranes flie against he winde, whereas if they should flie downe the winde, their feathers would be displaced and broken, and they would not be able to flie.

How Fishes provide for their safetie against a storme.

How they swimme against the streame.

Of

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

Of what things birds build their neaſts.

THe induſtrie of Birds in the building of their neaſts, is ſuch, that it doth farre exceede the art and skill of all Maſons, and Architects. From whence it is become a Proverbe, *That men know, and can doe all things but make Birds neaſts.* They are built within with wooll, and feathers, and ſuch kinde of ſoft things, which are as a

In what ſhape.

kinde of a pallet for the young ones. Swallowes build their neaſts in a round forme, that they may be the more firme, and leſſe ſubject to be hurt by any thing that ſhall ſtrike againſt them, and likewiſe more capacious. They chuſe their matter out of dirt and chaffe (interlacing it with many ſtrawes) as it were their plaſter, or lime. Thoſe that build in trees, doe make choiſe of the ſoundeſt boughes, as if they meant to have them as a ſure foundation for the building which they ſhould erect thereon.

With what care Sparrowes breed their young.

The Cocke and the Henne doe by turnes ſit over their egges, and likewiſe fetch their meate, interchanging each others labour, neither doe they ever forſake their young, before they are able to get their owne living. I had at my houſe a great number of Sparrowes neaſts in earthen pots, And when the young ones begun to waxe pretty bigge, and to be covered with feathers, I made the whole neaſt 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 feede 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 owne ſhare, according to the exact rule of diſtribution. And often times for experiment, I would make triall with a ſtrange Sparrow of the ſame age, laid neere, or put among the reſt of the young ones, whether the old ones would feede 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 meate. And in like manner Lambes and young Kiddes doe in the fields, in the midſt of a great flocke, runne every one to his owne damme, who being moſt certainely able to diſtinguiſh betweene the legitimate and a baſtard, will not ſuffer her ſelfe to be ſuckt but by her owne young.

Of the induſtry of Spiders.

How the Spiders weave

THe Spider ſpinnes her web with wonderfull artifice, hanging and faſtening it to every tacke or ſtay that is nigh, drawing of his thread, and running upwards, and downewards, and every way. And although the diligence of the chamber maid beates downe, and marres this pendulous and new begunne worke, yet her ſeate and her hold, the Spider keepes ſtill, neither is ſhe, or will ſhe deſiſt from the worke ſhee hath begunne, but in a very ſhort time, weaves a great deale more unto the ruines of her former worke, than can bee unweaved againe with much labour. So that from hence all cloth and linnen Weavers, all imbroiderers, and workers with the needle, (you will eaſily thinke) have learnt their Arts, if either you obſerve the exactneſſe of the weaving, the fineneſſe 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

How they catch their prey.

all, it reſembles a thinne membrane, annointed with a kinde of glew, wherewith when the prey is entangled, the Spider runnes preſently in, and as it were drawes her nets, and infolds, and takes the captive after the manner of huntſmen. If this were not daily ſeene with our eyes, it would be thought fabulous.

Of Bees.

Bees chuſe themſelves a King.

I cannot paſſe in ſilence the great induſtry of Bees. For having eſtabliſhed a kinde of Weale-publique, they make election of a King, who is ſuch a one, as in proceritie of body, and excellencie of feature, exceedeth all the reſt. He is remarkeable by his ſhort wings, his ſtraight legges, his grave gate, and in ſtead of a Diadem or regall Crowne, 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 alwaies ſvironed with a princely retinue,

retinue, the reſt of his traine following after, neither goes he at any time abroad, but upon urgent affaires which concernes the whole ſtate. His progreſſe is forewarned by the voice and ſound of trumpets, and as it were with ſinging, and they all draw nigh. Every one gets as neere to his perſon as he can, and when he is weary with flying, they all beare him up with thir owne bodies.

On what place ſoever he alighteth, there they forthwith pitch their tents. If hee chance to die, they goe not abroad to feede, but ſtand all mourning round about the corps; then carrie him out of the hive, and (as it were) follow his hearſe and bury him; and laſtly, having with ſolemnity performed all the funerall rites and obſequies, they chuſe themſelves another King, for without a King they cannot live. He then taketh care of all things, having his eye every where, whileſt that the reſt intend the performance of the worke. And ſupervifing all, giveth them incouragement, and chaſtiſeth negligence. For their time of going forth for foode, they chuſe a cleare and faire day; for they have a naturall facultie of preſaging of the weather. They are ſuch obſervers of iuſtice and equitie, that never, either with their ſting, or by any other way, doe they moleſt any creature, neither doe they exerciſe and prepare their ſpeares againſt any, but for the ſafegard of themſelves and their hives.

Their pitching their tents.

Their obſequies for their dead King.

Their juſtice.

Of the care of Bees.

THey manage and order their affaires 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 labours, ſo long, till that one (who is appointed to this charge) by one or two hummes, 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 bee faire, then abroad goe they into the fields, and paſtures. Some therefore bring into the hive little faſcicles of flowers on their thighes, others water in their mouth, and others a dewey 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 foode, are the youngeſt and the ſmalleſt. And therefore if the winde chance to riſe any thing high, they expect untill it ceaſe, and that the force and violence thereof bee over. But if it continue violent, then doe they ballaſt themſelves with a little ſtone flying cloſe by the ground, to prevent their being driven too and fro by the force of the winde. They are exceeding diligent in all their buſineſſe, and doe puniſh the ſloth of the lazie oftentimes with death. Some of them are the builders, others poliſh the building, and the reſt bring in their materials.

Their watch.

Their divers imployments.

The building in their arched hives is with wonderfull artifice, being made with two doores, one to come in, and the other to goe out at. They have all things alike, leaſt that the inequalitie, either of their food or labour, ſhould give occaſion of diſſention. Their care is, that their houſes may ſhew both ſtate and handſomeneſſe. Idle droares, borne for nothing but to eate, and conſume the fruits of their labours, 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.

They puniſh ſloth with baniſhment.

Ariſtomachus the Philoſopher doth boaſt, that for fiftie eight yeares together, hee had with grea care beene a nouriſher of Bees, onely that he might the better attaine to the knowledge of their ſtate and condition.

Ariſtomachus a diligent obſerver of Bees.

Of Piſmires, and Ants.

NEither truly s the induſtry, diligence, and experience of the Piſmire leſſe worthy of admiration, than that of the Bees. Inſomuch as that *Salomon* bids the ſluggard to take an example of diligence from the Piſmire. Truly if experience did not witneſſe it, it would ſeeme incredible, that ſo ſmall a creature ſhould be able to ſtore up ſuch abundance of corne, to diſpoſe and manage her affaires in that good order

Lib. 11. C. 30

order that we see she doth. *Plinie* saith, that they have among them the forme of a well governed and well ordered common weale. For how pretty a sight it is to see them, when they seize upon a graine which they have a minde to carrie away, how they set to it, and lift it with head and shoulders. And how least the corne which they carrie to their store-house, should put forth and grow, they bite it at one end. If it be so bigge that they cannot carry it into their little hole, they divide it in the middle. If it be dampish, they lay it out to drie in the Sunne and open aire. When the Moone is at the full, they follow their worke in the night, when shee doth not shine, they take their rest, whereby they shew themselves to have some knowledge of heavenly things *Plinie* affirmeth that they have their set Faires and Markets, whither they come in great companies, and where they use to establish leagues of amitie and friendship one with another. And when one markes them well, would hee not thinke that they were in conference one with another, and that they did discourse among themselves of their businesse? Doe wee not see that the often trampling of their little feete doth weare a path even upon hard flint stones?

Wonderfull care.

There is no thing but may be attained by diligence.

From whence wee may note, what in all kinde of things is the effect of assiduitie. They say also that they performe the rites of buriall one unto another, after the manner of men. What words shall I use (saith *Plutarch*) to expresse 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 seene the markes of all vertue. Their great meetings argue that they maintaine a kinde of friendship.

The formes of all vertues expreſt in Pismires.

Their alacritie in the undergoing of their labours, seemes to shew their fortitude and magnanimity; and lastly, they are eminent examples of temperance, providence, and justice. Their mutuall charitie appeareth in this, that if one of them that is not loaden meets another (in one of their narrow paths) that is, hee will give him the way, that hee may the better goe 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 cells; in one of which they have their conventicles, in the other they lay up their provisions, and in the third they bury the carkasses of their dead. This doth *Plutarch* speake concerning Pismires.

Of Silke-Wormes.

WIth the industry of these creatures, I shall not unfitly joyne that of the Silkewormes, of whose paines and care, both in the making of their neasts, and the spinning of their threed and bottomes (wherewith Kings are so magnificently adorned) Philosophers have written very strange things.

Diligence the mother of wealth.

And who can chuse but wonder at those great endowments of skill and knowledge, 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 onely appeare in this, that hee hath adorned each creature with a peculiar and proper endowment, but in this especially, that on the least creatures of all, hee hath bestowed the greater portion of skill, industry, and ingenuity to supply their defect of bodily strength.

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

The industry of Partridge in preserving their young.

PLutarch writeth; That all kinde of creatures beare a singular love, and have a kinde 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 weake and unable to flie, they teach them to lie upon their backes, and to hide themselves among the cloddes 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

any body comming, and that hee is neere them, they doe with a hundred dodges and ſtoopings of themſelves, as if they were wearie with flying, entiſe 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?

Neither are thoſe things leſſe wonderfull that are reported of Hares, for when they would goe to their ſeate, they ſever their young, and commit them to the truſt of divers places, it may be two acres aſunder one from another, leaſt peradventure, a Huntſman, a dogge, 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 downe, hither and thither, and every way that the dogges may not trace them, nor the Huntſman pricke them, they take a leape or two, and leape into their formes. *How Hares provide for themſelues and their young, for feare of hunters.*

Nor inferior to this is the craft of the Hedghogge, for when the Foxe purſueth him, and is now at his heeles, hee rowles himſelfe up in his prickles like a cheſnut in the outward ſhell, ſo that every part being rounded and encompaſſed with theſe ſharpe and dangerous prickes, hee cannot be hurt. And ſo ſaves himſelfe by this tricke; for his young he provides in this manner.

In the time of Vintage he goes to the vines, and there with his feete hee ſtrikes off the boughs and the grapes, and then rowling his body makes them ſticke upon his prickles, and ſo doth as it were take his burthen upon his backe, and then returnes to his hole; you would thinke that the grapes did move of themſelves; the prey hee devides betweene himſelfe and his young. *The care of the Hedghogge to provide for her young.*

In Florida part of the Weſt Indies they have a beaſt, which for the variety and deformitie of it I cannot paſſe over in ſilence; The natives call it Succarath, the Canibals, Su. It keepes for the moſt part about the rivers, and the ſea-ſhore, and lives by



prey. When hee perceiveth that hee is purſued by the Huntſman, hee gets his young ones upon his backe, and with his taile, which is very long and broad, he covereth them, and ſo flying, provideth both for his owne, and their ſafetie; neither can he be taken by any other way but by pits, which thoſe Savage men uſe to digge in the places neere which he is to runne, into which at unawares hee tumbles headlong. This Picture of him here, I drew out of *Thevets* Coſmographie. *Tom.2.lib.23 cap.1.*

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

THe young Storke provides for the old which is diſabled by age, and if any one of their equalls come to any miſchance, that hee is not able to flie, they will give him their aſſiſtance, and beare him on their backes and wings. And there- *The pietie of Storkes.*

fore this affection and piety towards the old ones, and as it were brotherly love towards their equalls, is commended in the Storke.

The Henne in any kinde of danger gathers her chickins under her wings, and as it were with that guard, defends them as well as shee can. For their sake shee exposeth her selfe to the crueltie of the fiercest beasts, and will flie in the eyes of a dogge, a Wolfe or a Beare, that by chance offers to meddle with her chickins.

The fidelity of Doggs. But who is there that doth not admire the fidelitie and love of dogges towards their Masters, whereby they recompence them for their keeping? A dogge will never forsake his Master, no, if he be never so hardly used. For there is no man can finde a sticke hard enough to drive that dogge cleane away from him which hath once taken a love to him. There is no kinde of creature that doth more certainely and readily remember his master, hee will know the voice of all the household, and of those which frequent the house. There cannot bee a trustier keeper (as *Cicero* himselfe saith) than a Dogge is; I speake not of their faculty of smelling, whereby they follow their Masters by the foote, and finde them, neither doe I speake of those infinite examples of the fidelity of Dogges, which were too long to rehearse.

Doves free from adultery Pidgeons, as well the Cocke as the Henne, although they are all very venereous, yet they know no adultery, yea and the Henne will beare with the frowardnesse of the Cocke, 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 lesse towards their young.

Turtles never couple twise. There is the like mutuall bond of love betweene Turtles, for if one of them die, the surviver never solicites Hymen more, neither will he ever chuse other feate than a dry withered bough.

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

AMong the beasts of the field there is none more vaste, more strong, or more to bee feared, than the Elephant. His strength is sufficiently showne by those towered Castles of armed men, which hee carries, and fiercely rusheth with into the battell. The Romane souldiers being otherwise of undaunted spirit, yet in that battell which they fought against *Antiochus* being terrified with the vastnesse and immanity of these bodies which they had never before seene, presently turned their backes and fled, which notwithstanding, it is a wonderfull thing what stories naturall Philosophers tell of the vertues of the Elephant.

Lib. 8. cap. 1. *Plinie* writeth, that an Elephant commeth very neere to the understanding that men have, and that hee hath a rude kinde of knowledge of language; that his facilitie and obsequiousnesse is wonderfull, that his memory in the performance of his wonted duties, is no lesse wonderfull. And for Religion (*Plutarch* saith) that they pray unto the gods, and sprinckle and purge themselves with salt water, and that with great reverence, they worship the Sunne at his rising, lifting their trunkes up towards heaven, for want of hands. *Plinie* addeth, that they doe with the like reverence worship the Moone and the Starres. For it is related in the Histories of the Arabians, that at a new Moone the Elephants goe by troupes downe unto the rivers, and there wash themselves with water, and being thus purged, kneele downe and worship the Moone, and then returne to the woodes, the eldest going first, and the other following after according to their age.

The religion of the Elephant.

Plutarch reporteth, that it happened once, that among the Elephants which were taught at Rome against the Panegyricke shewes, there was one that was something dull, and not so docile as the rest, which made him be despised by his fellowes, 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 Moone, to be practising and conning what he had learnt of his Maister in the day time. For they were wont to bee taught to make letters, and also to present

Pliny lib. 8. cap. 5.

garlands

garlands to the ſpectators; and other ſuch like trickes. But they can never bee brought to goe aboord a ſhippe, to bee carried over the ſea into any ſtrange land, unleſſe their Maſter give them his word to aſſure them that they ſhall



returne againe to their owne native soile. They never hurt any one that doth not first provoke them. They never gender but in private out of sight, an argument of their modestie.

Of the Lamprey.

LEast that the heat of affection may seeme to lie quenched under the waters, let us by one example, (it were an infinite thing to speake of all) see in what kinde of mutuall love the creatures of the water come short of those of the land. The Lamprey of all the creatures of this kinde doth worthily beare the praise for its pietie towards those of whom it was generated, its affection towards those that are generated of her; for first she breeds egges within her, which in a short time after are spauned. But shee doth not as soone 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 shee brought forth twice, and had a second broode. These she doth not put forth before they are of some bignesse, then she teacheth them to swimme and to play in the water, but suffers them not to goe farre from her, and anon gapes and receives them by her mouth into her bowells againe, suffering them to inhabite there, and to feede in her belly so long as shee thinkes fit.

That Savage, or brute beasts may bee made tame.

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

THevet reporteth, that the Emperour of the Turkes 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 kinde. These they use to leade about the citie 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 keepe themselves from being hurt by these beasts. But in hope of reward and of gifts, they shew them to Embassadours of strange nations, before whom they make these beasts doe a thousand very delightfull trickes, and in the interim, they play their countrey tunes and musicke upon their pipes, and other instruments, and make many sports in hope of gaine.

That Fishes also may be tamed.

BVt 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 Eele. The same things also are reported of the Lamprey. For wee have it recorded, that *Marcus Crassus* had a Lamprey in his Fish-poole, 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, hee mourned for her in blacke, as if shee had beene his daughter. Which when his Collegue, *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.

That men were taught by beasts to polish, and to whet their weapons, and to lie in ambush.

SOuldiers are carefull to keepe their weapons from rust, and therefore they carrie them to the Armorers to be polished. But in ths care, many beasts are nothing inferior unto them; for Boares whet their tuskes against they fight. And the Elephant knowing that one of his teeth is doubled with digging at the rootes of trees to get meate, keepeth the other sharpe, and touches nothing with it, preserving it for his

his combate with the Rhinocerot his enemy; but the craft of the Rhinocerot is very remarkeable, that being in continuall enmity with the Elephant, at the time



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

when hee prepares for the battell, he whets his horne againſt a rocke, 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 knowes 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 hee is inferior unto him, by reaſon of the ſhortneſſe of his feete; he is of a paliſh yellow colour, and full of many ſpots.

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

The providence of the Lion in his going.

THe Lion when hee goes, hath his clawes alwayes clutched, and as it were put up in their ſheathes, not onely becauſe hee would leave no marke of his feete, whereby hee may bee traced and ſo taken, but becauſe by continuall walking, hee ſhould weare off, and blunt the points of his clawes. Bulls when they fight charge one another with their hornes, and like valiant ſouldiers, provoke, and animate one another to the battell.

The Ichneumon ſeemes to imitate the moſt valiant ſouldier in his preparation, and acceſſe to battell, for hee bedawbes himſelfe with mudde, and doth as it were buckle and make tite his armour; eſpecially when hee is to encounter with the Crocodile; who although hee be a vaſte beaſt, is put to flight by this little creature. And this truly hath beene obſerved to bee by the ſingular providence of nature, that the moſt vaſte 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 hogge, and the Lion, at the crowing of a Cocke; although it be reported of the Lion that no feare can make him turne his face. Theſe kinde of feares, terrors, and affrightments, ariſing upon light, and moſt ridiculous occaſions, wee finde as well in the ancient as moderne Hiſtories of our times, to have diſperſed and put to flight mightie legions of ſouldiers, and moſt potent armies.

The greateſt are terrified by the leaſt.

Of Cockes.

Cockes are Kingly and martiall birds.

COckes are kingly birds, and therefore nature hath adorned them with a combe, as with a princely Diadem, and whereſoever they come, their magnanimity and courage makes them Kings. They fight with their beakes and their ſpurres; and with their martiall voice they fright the Lion who is otherwiſe the King of beaſts.

Of Conies.

Conies have taught us an Art of undermining.

COnies have taught us the Art of undermining the earth, whereby the moſt loftie Cities, and ſtructures reaching the very skies, are by taking away their foundation levelled with the ground.

Marcus Varro writes, that in Spaine there was a towne, and that no meane one, which ſtanding on a ſandy ground was ſo undermined by a company of Conies, that all the houſes tumbling and falling downe to the ground, the inhabitants were faine to depart and ſeeke new dwellings.

Of Wolfes.

The deceits and ambuſhes of Wolfes.

MEn have learnt the arts of waging warre from the Woulfes, for they come out by troupes, and lie in ambuſh neere the townes which they have appointed, and then one of them runnes unto the towne and provokes the dogges. And making as if hee runne away incites the dogges to follow him, untill he hath gotten them unto the place where their ambuſh lieth, which on a ſodaine appeareth, and ruſheth out upon them. And ſo they kill and eate all, or as many of the dogges as they are able to catch.

Of

Of the Fox.

IN subtilty and craft the Fox exceedeth all other beasts; when in the chase the Doggs are at his heeles, he berayes and bepisses his taile, and swings it in the face and eyes of the Dogges that follow him, and so blinding them, in the meane time getts ground of them. To fetch the Hens downe from their pearch he hath this devise, hee shakes and swings his taile upwards and downewards, as if hee meant to throw it at them; which they fearing tumble down, & he takes up one of them for his prey. His warinesse when he passeth over a River that is frozen is wonderfull, for he goes softly to the banck, and layes his eare to listen, if he can heare the noyse of the water running under the ice. For if he can, back he goes, and will not venter to passe over. The knowledge of which thing he could never meerely by his subtilty and craft attaine unto, but that of necessity hee must have some faculty of reasoning. ioyned with it, which by discourse and by proving one thing by another arrives at this Conclusion: Whatsoever is liquid and maketh a noyse is in motion, whatsoever liquid is in motion s not concrete and frozen, that which is not concrete and frozen is liquid, whatsoever is liquid will not beare a heavier body, whatsoever will not beare a heavier body, cannot with safety be adventured on; And therefore backe againe must I goe, and not passe over this River.

The craft of the Foxe.

The Foxe reasones to reasson with himselfe.

His Sorites

Of Swine.

SWine, if in the woods, they heare any one of the same Heard with them crying out, they straight make a stand, and marshalling their forces haste all, as if they had beene warned by the sound of a martiall trumpet, to the assistance of their fellowes.

Of the fishes Scarus *and* Anthia.

PLutarch reports of the *Scari*, that when one of them chances to swallow a hooke and be taken, the rest of the same kind come in to his reskue, and shearing the Line with their teeth set him at liberty. But the readines of the *Anthiæ* to the mutuall assistance of one another, is yet more manifest, for by casting the Line upon which the hooke hangeth, on their backe, with the sharpnesse of their fins they cut it asunder, and so set free themselves and their captived fellowes.

The love of Fishes one to another.

Of the Pilot *Fish.*

THere is great kindnesse betweene the *Pilot* Fish and the Whale. For although in bulke of body the Whale so farr exceed him, yet he leades the Whale and goes alwayes before him as his Pilot, to keepe him from running himselfe into any straight or muddy place, whence he might not easily get out. And therefore the Whale alwayes followes him, and very willingly suffers himselfe to be led by him, it being for his owne good. And in like manner he getts into the Whales mouth, and there lodging himselfe sleepes when he sleepes, 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 crosse the seas, put their company in so good order, that no Captaine can put his soldiers 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 a far off, choosing a Captaine whom they are to follow. They have their Serjants to take care of their rankes, and keepe their nightly watches by turnes. *Plutarch* tells us that the Crane, which is appointed to stand Sentinell for all the rest, holds a stone in her foote, to the end that if she chance to give

Cranes order themselves in rankes.

The sentinell Crane.

give way to nature and sleepe, she may be waked by the noise of the falling stone. The leader lifting up his head, and stretching out his long necke, lookes about him farre and wide, and gives warning to the rest, of any danger, that may befall them. The strongest leade the way, that they may the better with the flapping of their wings breake the force of the aire, and this they doe by turnes. And that they may the easilier prevaile against the force and opposition of the winds, they dispose their company into a wedge in the forme of the Greeke letter Δ or a triangle; and being skilfull in the starres they foresee when tempests are comming, and fly downe to the ground to keepe themselves from the injury of the approaching storme.

Of Geese.

THe Geese of Sicilie doe with great wariness take care that by their ceeking and their noyse, they doe not expose themselves to the rapacity of Birds of prey: (for *Plutarch* sayth) that when they are to fly over the hill Taurus, for feare of the Eagles that are there, they hold stones in their mouthes to keepe themselves from gaggling, untill that they come unto a place where they may be secure.

The care of the Geese, that their gagling, doe them no harme.

Of Dragons.

NEither are the Dragons lesse crafty; for thus doe they overcome those vaste and otherwise invincible beasts the *Elephants*. They lye in ambush and suddainly set upon the *Elephants* where they feare no such matter, and involve their leggs with the twines of their taile, in such sort, that they are not able to goe forward; and stop their nosthrils with their heads so that they cannot fetch their breath, they pull out their eyes, and whersoever they find the skin most tender, there they bite and sucke the blood untill they make them fall downe dead. *Pliny* sayth, that there are Dragons found in Æthiopia of ten Cubits long, but that in India there are Dragons of an 100. foot long, that fly so high, that they fetch Birds and take their prey even from the midst of the cloudes.

The craft of Dragons fighting against the Elephant.

Lib. 8. cap. 11. and 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 certaine bagge like the Wattells of a Turkycocke. This when hee listeth he casteth out, and layeth before the little fishes for a baite, and then by litle and litle drawes it up againe untill he catch for food the litle fishes seazing upon it as a prey.

The craft of the Fisherman-fish in taking her prey.

Of the Cuttell Fish.

VVOnderfull is the craft of the Cuttell Fishes, for they carry a bladder at their necke full of a blacke juice or Inke, which they poure forth as soone as they feele themselves taken; that so they may blinde the eyes of the Fishermen, as *Plutarch* saith; and as *Aristotle* witnesseth, they with their long fangs doe not onely hunt and take little Fishes, but oftentimes also Mullets.

The craft of the Cuttell to save her selfe.

Lib. 9. de Hist. animal. Cap. 37.

Of the Armes or weapons of brute beasts.

BRute beasts are naturally so furnished with armes, that they have no neede to get, make or borrow in any other place.

And some of them nevertheless are so furnished with such armes that they captivate those which hold them prisoners; an example of this is the *Torpedo*, which doth not onely hurt by touch, but also by the net being betweene, he breathes such a quality from him, as stupifies the hands of the Fishermen, so that they are forced to let goe their nets, and so let him goe; moreover if it touch a ship it makes it stay. *Thevet* writes, that the *Persian* bay towards *Arabia* nourishes a Fish equall in length and thicknesse

Cosmog. Tom. 1. lib. 10. cap. 10.

thickneſſe to a Carpe, on every ſide encompaſſed with ſharpe and ſtrong pricks, like our Porcupine, with which hee fights againſt all kinds of fiſh. If a man chance but to be lightly hurt either with theſe or his teeth, he will dye within 24. houres.

Of the fiſh Vtelif.

HEe ſaith moreover, that as he was carryed by force of tempeſt through the Atlanticke Ocean, he ſaw this fiſh having as it were a Saw in his forehead of three foot long, and foure fingers broad, armed on each ſide with ſharpe ſpikes; They call it *Vtelif* in their Country ſpeech.

Of the fiſh Caſpilly.

THere is another fiſh to be ſeene in the Arabian Gulfe, which the Arabians call Caſpilly, its two foot long and as many broad, it hath a skin not much unlike a Dogfiſh, but armed with ſpikes, one whereof he carryes in his forehead a foot and halfe broad, in ſharpeneſſe and force of cutting not much ſhort of a graver or chiſſell: with this weapon when ſhe is oppreſt with hunger ſhe aſſailes the firſt fiſh ſhee meets, neither doth ſhe give over before ſhe carry her as a prey, whither ſhe pleaſe, as *Thevet* ſaith he hath ſeene. *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 clawes before, not onely in feeding but alſo in defending themſelves and aſſailing others.

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

BEaſts are apt to learne thoſe things which men deſire, whereby they ſhew themſelves not wholy void of reaſon. For Dogges, Apes and Horſes learne to creepe thorough the Iuglers hoopes, and riſe on their hinder feet as though they would dance. *Plutarch* tells, that a Iugler had a Dog which would repreſent many things upon the ſtage befitting the occaſion and argument of the play; amongſt the reſt, hee exceeded all admiration in that, that taking a ſoporificke medicine, hee excellently feigned himſelfe dead; for firſt as taken with a giddineſſe 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 truely dead he waxt ſtiffe; and moreover ſuffered himſelfe 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 litle and litle, as if hee had been wakened from a ſound ſleepe; then preſently with his head a litle lifted up, hee looked this way and that way to the great admiration of all the beholders, and finally riſe up and went familiarly and cheerfully to him he ſhould; the which ſight the Emperour *Veſpatian* (who was then preſent in *Marcellus* his Theater) never ſaw any which more delighted him.

The wonderfull docility of Dogs.

A ſpectacle full of admiration and mirth

Of the Ape.

AN Ape is a ridiculous Creature, and which makes men much ſport, in imitating their actions. There hath beene ſeen an Ape which would pipe and ſing, and beſides dance and write, and endeavour to performe 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 mild and docile. Wherefore cloathed in a greene coate, and girt over his loines with a girdle, he carried hanging therat a caſe of ſpectacles, a paire of knives & a childs handkercheife. He was commited to the charge of the Maſter Cooke to teach, becauſe he had taken up his lodging in the Chimney corner, he

Gal. lib. 1. de uſu partium.

hee was taught many pretty tricks and feates. If at any time hee swarved from his doctrine and precepts, in a trice the whip was upon his back & loines, 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; & 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 & servingmen, and made cleane 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 chaire he said grace, and cast his eyes up towards heaven, and rouled them this way and that way, and smote his breast with the stumpes of his hands with much lamentation, and imitated prayer by the gnashing, or beating together of his teeth. He would turne up his taile to any that offended him (for his coate scarse covered halfe his buttocks lest he should have filed it) he made much other pastime, alwayes going upright by reason of the cutting away of his hands, unlesse at any time through wearinesse he were forced to sit on his buttocks.

Of Ravenous birds.

The diligence of Faulconers in training up their Hawkes.

BVt let us take a veiw of Faulconers teaching ravenous birds, how with swift wings carried aloft into the Aire, they may seaze upon other Birds and cast them downe dead to the ground; in performance whereof, they often too freely soare up to the clouds so that they carry themselves out of the Faulconers sight, with a desire to sun themselves, neglecting in the meane time their designed prey.

The sight of the Herne and Faulcon,

The *Herne* when she sees her selfe kept under and below the *Falcon* carried up by his strong wings with a merveilous swiftnesse, with her beake, which is long & sharpe, hid under her wings and turned upwards, she receives the *Falcon* blinded with the heat of fight and desire of prey, carelesly flying downe and rushing upon him; so that he often strikes him through the gorge, so that oft times they both fall downe dead to the ground. But if the *Falcon* without harme escape the deceits by Arte & the happy turning of his body, and the *Herne* be not cast downe, the Faulconer calling her backe with never so loud a voyce, yet by setting up her Feathers she dares her to the pretended fight.

Of the Camels.

Camel both tame and wilde.

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 cruell wilde and troublesome by biting and striking such as they meet, no lesse than vntamed horses. There is no neede to house them in the night, for they may be left in the plaine fields in the open and free aire, feeding upon the grasse and trees and cropping the tops of the thistles, neither in the morning doe they any whit the worse undergoe or carry their burdens. They are not put to carry burdens before they be foure yeare old. The Arabians geld them young, that they may enjoy their labour the longer, neither being gelt doe they rage for love or desire of venery. At the putting in of the Spring they endure hunger and thirst for eight dayes; they are so dutifull, that at the becke of the Turkish slaves, or but touched on the necke with a twigge, they presently kneele on the ground to take up their burden, neither doe they lift themselves up before that they finde they have a sufficient load layd upon them. Those which have but one bunch on their backe are of Africke; but such as have two bunches are of Asia, or Scythia. Those kinde of *Camels* that are the bigger are used to carry packes, but the lesser are used to ride upon, as our horses are. They love nothing so well as beanes, and yet they live content with foure handfulls of beanes 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 Captaine over the heards of his *Camels*, giving him a great troope, of African and Christian slaves, that they might be the better looked unto. I have heard it reported (saith *Thevet*) by certaine Arabian, African and Iewish Merchants who were present, at that time when *Sultan Selim* the first of that name, beseiged

The easie and not chargeable keeping of Camels.

Camels know when they have a sufficient loade.

Camels both to carry burdens and to ride upon.

beſeiged Caire in Ægypt (which in former times was called *Memphis*) that there

Mighty troop of Camels.



was

was then in that Emperours army fixtie thousand Cammels, besides a mighty company of Mules.

That Birds have taught us musicall tunes.

To sing like a Nightingale

THe Nightingales are sweet and excellent singers, tuning their notes with infinite quaverings, and diversities of sounds, so pretily and sweetly, that humane industry can scarse equall the sweetnesse thereof, by so many musicall instruments; so that wee say hee sings like a Nightingale, who varies his voice with much varietie. In which thing Birds much excell men, because they have that admirall sweetnesse of singing from nature it selfe without any labour of learning; which men can scarse attaine to in any schoole of musicke, by having their eares a thousand times pluckt by the hand of a curst master.

That Beasts know one anothers voice.

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

BEasts know one another by their voice, so that they may seeme to talke and to laugh together, whilest flattering with their eares, they plucke 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 chirpe to one another, when men understand not the speech of other men, unlesse of the same nation. Wherefore the Scythian tongue is no more profitable to one living in Egypt, than if hee were dumbe; nor the Egyptians understand it no more than if they were deafe: Wherefore an Egyptian is dumbe and deafe to a Scythian. This those which travell well understand how many dangers, how many troubles they undergoe, because they cannot expresse their mindes, 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 feete. Truly the condition of brute beasts is not so miserable, seeing that all of the same kinde wheresoever they bee, may answer each other with a knowne voice. Truly if any should heare a Germane, Briton, Spaniard, Englishman, Polonian, and Greeke, speaking amongst themselves in their native tongues, not understanding any of them, he could scarce discerne, and certainely judge, whether hee heard the voice of men or of beasts.

We are as ill as deafe, when we heare an unknowne language.

That Birds may counterfeit Mans voice.

Parrots are wonderfull imitaters of mans voice.

LInets, Larkes, Pies, Rookes, Dawes, Crowes, Stares, and other such like Birds, speake, sing, whistle, and imitate the voices of men, and other creatures. In this Parrots excell all other, being wondrous skilfull imitaters of mens voices, and very merry, but specially when they have drunke a little wine.

A talking Pie.

Plutarke reports that there was a Barber at Rome, who kept a Pie in his shop, which spoke exceeding well, and that of her owne accord, none teaching her, when she first heard men talking together; shee imitated the voice or crie of all beasts shee heard, as also the sound of Drums, and the noise of Pipes, and Trumpets; to conclude, there was nothing which shee did not endevour to imitate. There have beene Crowes that have spoken and articulately sung songs, and Psalmes, and that of some length. To which purpose the Historie of *Macrobius* is notable; for hee tels that there was one amongst those, who went forth for lucke sake to meete with *Augustus Cæsar*, returning from the warre against *Antonius*, who carried a Crow, which hee had taught plainely to pronounce this salutation; *Salve Cæsar Imperator augustissime*, that is, *God save thee, O most sacred Emperor Cæsar. Cæsar* taken with the noveltie 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 infinite other things recorded by the ancients, *Plato*, *Aristotle* *Pliny*, *Plutarch*, and other Philosophers of great credite, of the docilitie of beasts, and their admirable

Lib. 2. Saturn. cap. 4.

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.

Of the Sympathy and Antipathy of Living creatures amongst themselves.

HAving briefly described the understanding of brute beasts, it seemes not impertinent to set downe some things more worthy of knowledge, happening unto them by reason of Sympathy and antipathy; that is, mutuall agreement and disagreement, which happens not onely to them living, but also dead, by a certaine secret and hidden propertie, through occasion whereof some desire, other shun, and others prosequute one another even to death. In testimony whereof; The Lyon the king of beasts excelling all other in courage and magnanimitie, feares the Cocke, for he is not onely terrified by his presence, but also by his crowing being absent. So an Elephant feares a Hogge; but hee is so affraid of Mice and Ratts, that he will not touch the meat that is given him, if hee smell that it hath beene defiled with such creatures. There is deadly hatred betweene the Elephant and Rhinocerot; yet when the Elephant is furious and angry, hee becoms quiet and calme at the sight of a Ram. A horse is so afraid of a Camel, that he cannot endure his sight. The Dog hates the Wolfe, the Hart flyes the Dogge. The Snake flyes from and feares a naked man, and followes him being clothed. There is deadly hatred between the Aspis and Ichneumon, for he when he hath rowled himselfe in the clay, dryes himselfe in the Sunne, and so being covered over (by doing thus diverse times) as it were with shells, or armour, he enters into Combat, stretching out his taile and presenting his backe, untill he get opportunity to choake his adversary, by leaping and fastening on her jawes, by which stratageme 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 historyes concerning that matter, in his dialogue of Sympathy and Antipathy. There is a great deale of hatred betweene a man and a Wolfe, which is most manifest by this, that if the Wolues first see a man, his voyce is taken away, and his intended cry hindred. If the Weasell intend to set upon the Aspis that most venemous Serpent, shee armes her selfe by eating Rue, as a most certaine Antidote. The Ape feares the Torpedo, as *Erasmus* manifests by a pleasant history in the fore mentioned Dialogue; where also he pretily shewes the deadly hatred betweene the Serpent called Areus and the Toad. The like hate is between the Owle and Crowes, so that the Owle dares not go out, fly abroad, or seeke her food unlesse by night. The water or River fowle are afraid of the *Falcon*; that if they but heare her bells, they had rather be killd with staves and stones, than take wing to fly into the aire. So the Larke yeelds her selfe to be taken by a man, least she fall into the tallents of the Hobby. The Castrill, or Merlin is naturally a terrour to Haukes, so that they both shun his voyce and presence.

The Kites are all at perpetuall enmity with the Crowes, wherefore the Crow alwayes gets away the Kites provision. All kind of Pullen feare the Foxe. The Chicken feares neither a Horse, nor an Elephant, but scarse hatched, it presently runs away at the voyce or sight of a Kite, and hides it selfe under the hens wings. The Lambe and Kid flye from the Wolfe when they first see him, nether doth death give an end to that hatred, but it superviues their funerall. An Experiment whereof (they say) is, that if one drum be headed with Wolves skinnes and another with Sheepes, and beaten up together, you shall scarse heare the sound of the Drum covered with sheepes skins. And besides, if you string one Harpe with strings made of sheepes gutts, and another with strings of Wolues gutts, you cannot bring it to passe, by any Arte, to make them agree and goe in one tune. It is reported from the experiments of many men, that if a Wolues head be hanged up on high in the place where Sheepe are, that they will not touch the grasse how good and fresh soever it be, nor rest quiet in any place, but tumultuously runne up and downe, untill all such kinde of terrour be taken away; The hate

The Lion feares a cocke.

A horse feares a Camell.

Water foule feare the Falcon.

The enmity betweene the Kites and Crowes.

The discord betweene the Lambe and Wolfe is not ended by deal.

How to make cheese that Mice will not gnaw.

betwixt Mice and Weasells appeares by this, that if you mixe never so little of the braines of a Weasell in the rennet, with which you crudle you Cheese, the Mice will never gnaw or touch that cheese. The Linnet doth so hate the bird *Florus*, that both their bloods put into one vessell cannot be mixed together. A Wolues head hung up in a dovehouse, drives away Poll-Cats and Weasells. The Panther and Hyæna burne with so great hatred, that if both their skins be laid one against the other, the Panthers will shed the haire, the haires of the Hyæna remaining entire and not moved; which thing, they say, happens to the feathers of other birds if any one chance to tye them up in a bundle with the Eagles. Let these suffise for some few examples of many, of the Antipathy amongst beasts. But of the Sympathy, and consent of beasts amongst themselves, I thinke needlesse to write any thing, being it is sufficiently knowne to all, that one Iay associates another, and the cruell Beares agree amongst themselves; and beasts of the same species doe wonderfully consent one with another.

That Man excells all beasts.

I Now thinke 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 materiate Philosophers, so take those things I haue written of the endowments of beasts, as though we should thinke, there were no difference betweene man and beast. I had no such meaning, no such intention; but onely that man should not become too stately, or too ingrate in lesse 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 betweene beasts and man, for there is too great a difference betweene them. For mans minde is adorned with religion, justice, prudence, magnanimitie, faith, piety, modesty, clemency, fortitude and other vertues as lights, which shine much more bright in man than in beasts. For they are somerimes all in some one man, each whereof are thought great in beasts.

Man beares Gods image.

For seeing that man is made to the Image of God, it cannot be, how much soever he defile himselfe with the pollution of vices, that he can so obscure that inbred light, but that alwayes some beame of the divine wisedome will be inherent and shine in him. But although by collation to some beasts, hee may seeme a defective and weake Creature; yet no fortitude nor strength of beasts can be so great as to equall the fortitude of man. For God hath engraven in man the character of his divine virtue, by the assistance whereof, he might have all beasts under and obedient to him. And though by that we have formerly said, beasts may seeme to have a certaine shadow of reason, yet that small light is not fit for many and diverse uses, but there is onely given them so much providence, as should be sufficient for them and the preservation of their bodyes. But men have reason given them to crop or gather the fruits of eternall life, (as *Lactantius* saith) whereby it comes to passe, that man onely, amongst so many creatures, hath sense and understanding of divine things. Which *Cicero* thought to be knowne by that, because man onely had a certaine knowledge of God in his mind. Wherfore 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 excells all brute beasts. For first, reason being his guide, he invented things necessary for life, fitly imposed names on the things invented befitting their natures, framed letters and Characters, invented all liberall Arts and handy-crafts, and found meanes to measure the Land and Sea. Hee hath observed and drawne into an Arte the spaces of the Celestiall Globe, the distinctions of the Starres, the changes and orders of dayes and nights, of times and seasons, the risings and settings of Starres, and their power and effects over these lower bodyes. Lastly, he records in writing to perpetuall memory that which concernes his owne nature, or the nature of other things, the precepts and ordinances of life and manners, by which singular gift, we can now conferre with *Socrates*, *Plato*, *Aristotle*, and other Philosophers of ancient times, as if they were living.

Man hath given names to things.

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

BVt as Mans body is by nature naked and unarmed, so is his minde like a smoth table in which nothing is painted, nothing graven; but for helpe of his nakednesse he hath hands, and for supply of his ignorance, reason and speech. And by these three being as it were the ministers of infinite varietie of things, he clothes and defends his body with all things needful: & inriches his minde with the knowledge of Arts & sciences. Now if he had certaine weapons borne with him, he should use them only; if he should be borne skilfull in any Arte, 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 borne wanting and ignorant of all. *Aristotle* very wittily called the hand the instrument of instruments: in imitation of which speech, one may rightly affirme, That Reason is the Arte 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 Arte, yet comprehend and encrease all Arts. Therefore man seeing he hath his minde instructed by Arte, that is, by reason; it is fit he should have his body defended with a weapon, or instrument, that is, the hand, which in agillity and excellency should excell all other instruments. For so Man hath his hands in stead of all weapons, which he may use in warre and peace as the instruments of all Arts; he wants not the Bulls hornes, the Boares tuskes, the horses hoves, nor to conclude, any armes of any other beast. For by the benefit of his hands he can handle other armes farre more profitable and safe, as a Lance, Sword, Speare, halberd; but man also can use at some distance the bow, sling and handgun, when the horne and the hoofe cannot be used but neer at hand. But some may say; A Lion exceeds a man in swiftnes of foot; what then? is man therefore inferiour to him? no for by the meanes of his hands and the guidance of his reason he bridling and riding upon a horse, out runs the Lyon, and being victor followes him to and againe as he himselfe pleases, or vanquished flyes away, and from the horses backe as from a tower wounds the Lyon with what weapons he pleases. To conclude, man is abundantly provided with meanes, to defend himselfe from the violence of all other beasts. For this purpose he doth not onely harnesse himselfe as with brasen walles, but also makes ditches and Bulwarkes; he makes by the ministery of his hands all kind of weapons, weaves himself graments, casts into the water and drawes forth nets to catch fish; and to conclude, he performes all things to his owne contentment, and having that priuiledge granted him by God, he rules over all the earth; all things which lye hid in the bowells of the earth, which goe, or creepe upon the earth, which swim in the sea, and fly through the aire, or are any where shut up in the compasse of the skie, are in mans dominion.

Gal. aap. 4. lib. 1. de usu partium.

As the hand is the instrument of instruments so Reason is the Arte of Arts.

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

How wonderfull God hath shewed himselfe 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, onely for mans sake, that they might serve him. Therefore man is, if we diligently consider all his endowments, a certaine patterne and rule of the divine majesty & (if If I may so say) Artifice. For being made to Gods image, he is as it were his coine, exceeding the capacity of all humane understanding. Which seemed a just reason to the ancient Philosophers, that he should be called *Microcosmos*, or a litle world, because the particles of all things conteined in the compasse of heaven and earth, are contained in his minde and body, that in the meane time I may in silence passe over his soule more great and noble than the whole world.

Men is the end of all mundane things.

Man a litle world, yea almost a great world.

Why Nature hath not given Man the faculty of persaging.

Man is not obnoxious to the Aire and starrs.

THis seemes the reason, that men by the instinct of nature doe not foresee the future seasons and dispositions of the heaven and aire; because, seeing they have received certaine sparks of prudence from God, by whose care and guidance they are led to the knowledge of things by no deceiptfull but certaine 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 Aire is wet, stormy and darke, and on the contrary in a cleare and faire season to a sincere and grave meditation of things sublime & full of doubt. But beasts accommodating themselves to that disposition of the aire which is present & at hand, are lively, or sad, not from any judgment as men, but according to the temper and cõplexion of their bodies following the inclinations of the aire, and of the humors one while diffused, another while contracted. Neither ought we to blame man, because he

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

can imitate the voyce of beasts, but rather much commend him, that he can infinitely wrest and vary one thing, that is his voyce; for men can barke like Foxes and doggs, grunt like hogs; whet and grinde their teeth like boares; roare like Lyons; bellow like Bulls; neigh like horses; knacke their teeth like Apes; houle like Wolues; bray like Asses; bleate like Goats and Sheepe; mourne like Beares, Pigeons and Turtles; Keeke and gaggle like geese; hisse like Serpents; cry like Storkes, caw like a Crow, and crow like a Cocke, clocke like Hennes; chatter as Swallowes and Pyes; sing like Nightingales; croake like Frogs; imitate the singing of Waspes and Humming of Bees; Mew like Catts. The singing of Birds scarse seemes to merit

The power of Musicke.

the name of Musicall, compared to the harmony of men fitted and tuned with infinite variety of voyces. For with this they possesse the eares 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 humanitie, they owe it all to man. For he tames Lyons, Elephants, Beares, Tigers, Leapards, Panthers and such other like.

Of the Crocodile.

A tame Crocodile.

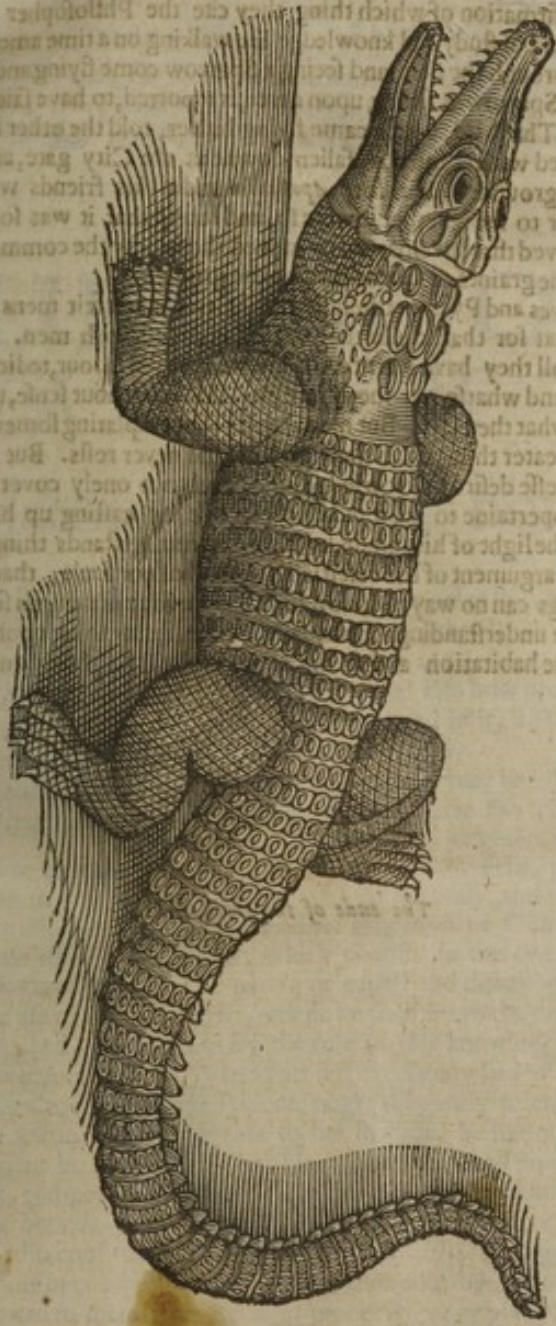
PLutarch reports of the *Crocodile* (whose figure is here deliniated) that being tamed, and taught by man, hee doth not onely heare mans voyce, and answeres to his call, but suffers himselfe to be handled, and opening his throate, lets his teeth be scratched and wiped with a towell. How small a part of Physicke is that, which beasts are taught by nature? Certainely nothing in comparison of man, who by the study and practise of a few yeares can learne at his fingers ends all the parts of Physicke: and practise them not onely for his owne, but also for the common good of all men. But why cannot beasts attaine unto the knowledge of Physicke so well as men? I thinke, because so great an Arte as Physicke is, cannot be attained unto by the dull capacities of Beasts.

In what sense we said Elephants had religion.

But for that I have written of the Religion of Elephants, if I must speake according to the truth of the matter, wee 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 wholy following their foode, know not how to meditate on celestiall things? Now for that they behold and turne themselves to the Moone by night, and to the Sunne in the morning, they doe not that as worshipping, or for that they conceive any excellency or divinitie in the Sunne; but because nature so requiring and leading them, they feele their bodyes to rejoyce in that light, and their entralls and humors to move and stirre

them

them to it. Therefore when we attributed religion to Elephants, we said it rather popularly, than truely, and more that we might exhort men to the worship of God,



than that we thought Elephants had any knowledge of divine worship implanted in their mindes.

That man may attaine unto the knowledge of all voyces and tongues.

THe docility of mans wit is so great, and the facillity of the body obeying that divine gift of wit such, that he is not onely able to learne to understand and speak

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

the tongues of diverſe nations differing in ſo many peculiar languages; and not only to imitate and counterfeit the voyces of all beaſts though ſo much different from man, which many flattering and jugling companions, followers of other mens tables, will doe; 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 knowledge. He walking on a time amongſt a company of his friends thorough the field, and ſeeing a Sparrow come flying and chirping much to diverſe other Sparrowes 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 Aſſe laided with corne was fallen downe at the City gate, and had ſhed the wheat upon the ground. Wherefore *Apollonius* and all his friends which 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 Sparrowes moved thereto by the comming of the other, were eating up the graines of Corne ſhed on the ground.

But for Crowes and Pyes 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 doe it without ſenſe, underſtanding or any reaſon for what they ſay. But man alwaies contemplating ſomewhat more high,

The unquenchable deſire of learning in man.

ſtill thinkes of greater things than theſe preſent, and never reſts. But burning with an infinite and endleſſe deſire of knowledge, hee doth not onely covet to know theſe things which appertaine to food and clothing, but by caſting up his eyes towards heaven, and by the light of his minde, he learnes and underſtands things divine. Which is ſo certaine an argument of the celeſtiall originall of our ſoule, that hee 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 upon the deſcription of the body, the habitation and fit inſtrument of all the functions of that divine minde.

The ende of the ſecond Booke.

THE

THE THIRD BOOKE TREATING OF THE Anatomy of Mans body.

IFollowing custome and the manner of such as before me have written of Anatomy, will first, (that I may make the mindes 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 bee observed in it, before I come to the particular description of mans body.

The necessitie of the knowledge of Anatomy.

Furthermore, how Anatomy may bee defined, and the manner of the definition of the parts. For the first, the knowledge of Anatomy seemes in my judgement very necessary to those that desire to excell, or attaine to perfection of Physicke; 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 Physition 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, unlesse he shall know the nature and composure of the body, and understand as by the rule of this knowledge, how much it swerves from the nature thereof? Wherefore it is excellently said of *Hippocrates*; that the Physition called to cure the sicke Patient, ought diligently to consider, whether those things that are in him, or appeare to be in him, be like or unlike, that is, whether the Patient be like himselfe and his owne nature in all his parts and functions, temperature, composure and union; that hee 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 hee saith; hee 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 seates or places. Moreover seeing that healing doth not onely consist in the knowledge 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, doe require unlike medicines, according to *Galens* opinion: I prethe tell mee, who can performe this, which is ignorant of the description of the whole and the parts thereof, taught by Anatomie? We may say the like of the Apothecarie, who ignorant of the scituation of the parts in the body, cannot apply Emplaisters, Ointments, Cataplasmes, Fomentations, Epithemes, bagges to the fit places, as to the sutures of the skull, to the Heart, Liver, Stomacke,

suivio lib. de Offic. medici.

Lib. de ossibus.

1. de loc. affect. cap. 3. Meth.

Stomacke, Spleene, Reines, Wombe or Bladder. For example, let us imagine the Liver to be troubled with a hot distemperature, but on the contrary the stomacke 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 stomacke) if hot things to be applied to the stomacke by the Physitions prescription, be by the Apothecarie making no difference, applied both to the stomacke and neighbouring Liver (which may chance if hee be ignorant that the stomacke 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 stomacke) will not he much offend by encreasing the hot distemper of the liver, and not thereby giving ease, or helpe to the disease? Shall not by this his ignorance, the Patient be frustrated of his desire, the Physition of his intent, and the medicine of its effect? By these examples I thinke it most manifest, that the Anatomicall knowledge of the parts of the body is exceeding necessary to all Physitions, Chirurgions, and Apothecaries, who will practise Physicke with any praise to the glory of God, and the benefit and good of man, for whose sake wee have writ these things, and illustrated them by figures, subjecting the parts to the eye, and fitly put them in their proper places,

Why when the liver is hot, the stomacke is commonly cold.

The knowledge of Anatomy, is commodious foure manner of wayes.

But Anatomy is commodious foure manner of wayes; the first is, because thus we are led to the knowledge of God the Creator, as by the effect to the cause; for as we reade in Saint *Paul*, The invisible things of God are made manifest by the visible. The second is, That by meanes hereof wee know the nature of mans body, and the parts thereof, whereby wee may more easily and certainely judge and determine of sicknesse and health. The third is, that by the knowledge of the body and its parts, and together therewith its affections and diseases, wee 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.

There is a threefold method.

Now we must declare in what order Anatomie may be fitly delivered; but first we must observe there is a threefold Methode; The first is called of Composition, being very commodious for the teaching of Arts, which *Aristotle* hath used in his Workes of Logicke, 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 Bookes of Anatomicall Administrations, and of the use of the parts. The third of Definition, which sheweth the nature and essence of things, as appeares by *Galen* in his Booke *De Arte parva*. And because this order doth also prosecute the divisions, therefore it is commonly accustomed to bee comprehended in the compasse of the second.

The Authors intent.

Therefore I will follow this in my Anatomicall Treatise, deviding mans body into its parts, which I will not onely subject to the eye in the way of knowing them, but also to the minde in the faithfull understanding them. For I will adjoyne those things that are delivered of them by *Galen* in his Booke of Anatom. Administrations, with those which hee hath taught in his Bookes of the use of the parts. For there hee 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 hee shewes why, and for what use they are made. Having briefely handled these things, wee must declare what Anatomy is; that as *Cicero* saith out of *Platoes Phædro*, it may be understood of what we dispute. And because we attaine that by definition (which is a short and plaine speech, consisting of the *Genus* and difference of the things defined, being the essentiall parts, by which the nature and essence of the thing, is briefly and plainely explained) first we define Anatomy, then presently explaine the particular parts of the definition.

What Anatomie is.

Wherefore Anatomy, (if you have regard to the name) is a perfect and absolute devision, or artificiall resolution of mans body into its parts, as well generall as particular, as well compound as simple. Neither may this definition seeme illegitimate, specially amongst Physitions and Chirurgions. For seeing they are Artizans humiliated to the sense, they may use the proper and common qualities of things for their essentiall differences and formes. As on the contrary, Philosophers may refuse all definitions as spurious, which consist not of the next *Genus* and the most proper, and essentiall

How a definition differs from a description.

sentiall differences. But seeing that, through the imbecilitie of our understanding, such differences are unknowne 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 wee may more truly call a description, because for the matter and essentiall forme of the thing, it presents us onely the matter adorned with certaine accidents. This appeares 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 selfe from all other rash and unartificiall dissections. We must know an artificiall 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 artificiall; and thus much may suffice for the parts of the definition in generall.

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 appeare that mans body is the subject of Physicke, not as it is mans, or consists of matter and forme, but as it is partaker of health and sicknesse. The Subject of Physicke.

Wee understand nothing else by a part, according to *Galen*, than some certaine body, which is not wholy disioyned, nor wholy united with other bodies of their kindes; but so that, according to his opinion, the whole being composed therewith, with which in some sort it is united, and in some kinde 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 grissle, bone, ligament, membrane, tendon, nerve, veine, arterie, musculous flesh; some adde fibers, fat, marrow, the nailes and haires; other omit them as excrements; but wee must note that such parts are called simple, rather in the judgement of the sense, than of reason. For if any will more diligently consider the nature, they shall finde none absolutely simple, because they are nourished, have life and sense, either manifest or obscure, which happens not without a nerve, veine, and artery. *Gal lib. 1. de usu part. lib. 1. Meth.* The similar parts are 9.

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 involue the bowels. And the bones, by this benefit of the animall sense expell the noxious and excrementitious humors from themselves into the spaces betweene them and the *Periosteum*, which as indued with a more quicke sense, admonisheth us, according to its office and dutie, of that danger which is ready to seaze upon the bones, unlesse it be prevented. Wherefore wee 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 kindes. Those parts are called compound which are made or composed by the mediation, or immediately of these simple, which they terme otherwise organicall or instrumentall; as an arme, legge, hand, foote, and others of this kinde. How the bones come to feele. The compound, or organicall parts.

And here wee must observe, that the parts are called simple and similar, because they cannot be devided into any particles but of the same kinde; but the compound are called dissimular from the quite contrary reason. They are called instrumentall and organicall, because they can performe such actions of themselves, as serves for the preservation of themselves and the whole; as the eye of it selfe, without the assistance of any other part, seeth, and by this faculty defends the whole body, as also it selfe. Wherefore it is called an instrument or organe, but not any particle of it, as the coates, which cannot of it selfe performe that act. Whereby wee must understand, that in each instrumentall part we must diligently observe foure proper parts. One by which the action is properly performed, as the Crystalline humour in the eye, Foure particles to be observed in each organicall part.

eye; another without which the action cannot be performed, as the nerve & 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 performes 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 nailes, because by the benefit of these parts, the action is more happily performed. Fourthly, by the veines, arteries and skin, for that by their benifite and use, the rest, and so consequently the action it selfe is preserved.

Foure sorts of instrumentall parts.

But we must consider, that the instrumentall parts have a fourefold order. They as said to be of the first order, which are first and immediately composed of the simple, are onely the authors of some one action, of which kinde are the muscles and vessels. They are of the second which consist of these first simple, and others besides, as the fingers. They are counted of the third rancke, 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 soule. 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 remaines, that wee understand, that in each part, whether simple or compound, nine things are to bee considered, as substance, quantitie or magnitude, figure, composition, number, connexion, (by which name, we also understand the orginall and insertion) temperature, action, and use; that by the consideration of these things, every one may exercise the art of Physicke, 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 wee must note, that of the organicall parts, there be three, by whose power the body is governed; which for that cause they call regent and principall; because they governe all the rest; they are the liver, heart, and braine. But they are called principall, not onely because they are necessary for life (for the stomacke, winde-pipe, lungs, reines, bladder, and such like parts perhaps are equally as necessary for life) but because from each of these three, some force, power, and facultie, 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 veines through all the body; from the heart the vitall force diffused by the arteries, imparts life to the whole body; from the braine by the nerves a power or facultie is carried through all the parts of the body, which gives them sense and motion.

Lib. de Arte medica.

Galen would have the Testicles to be of this kinde, not for the necessitie of the individuall, or peculiar body, but for the prefervation of the *Species* or kind. And moreover in his book *de Semine* comparing the Testicles with the heart, he 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 wee may live well and pleasantly, but with this simply live, as we see by the example of Eunuches, and such as are gelt, by which the Testicles seeme rightly to be accounted amongst the principall parts; for nature seeing it desired, that this its worke should be immortall, for the attaining of that immortality which it intends, frames those parts, like as prudent founders of a Citie, who doe not onely procure to furnish their citie with many inhabitants, so long as they are in building it, but also that it may remaine in the same state and condition for ever, or at least for many ages. And yet notwithstanding of so many citi built in the first memory of man, there remaines none, whose fame and state, together with the builders name is not decaied and perished. But this humane worke of nature, stands yet secure for this many thousand of yeares, 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

The use and function of the parts serving for generation.

in

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 incited, desire to propagate their kinds for ever. For seeing that nature understands all these her workes considered particularly by themselves, are fraile and mortall, it hath done what it could to recompence that fatall necessitie of dying, by a perpetuall succession of individuals.

Hitherto we may seeme to have aboundantly shewed what necessitie of knowledge in Anatomy belongs to all Artizans in Physicke, and also what order is to be observed in the same. And lastly, how it is defined, and the reason of the parts of the definition. Wherefore it remaines that wee prosecute what wee have taken in hand; which is, that wee 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 knowledge of Anatomy may be perfected by the sight of the eye, and touching and handling each part with the hand, yet nevertheless the labour of describing Anatomy is not unprofitable. For by reading, such as have often exercised themselves in the dissecting of mens bodies may refresh and helpe their memories, and such as have not, may make plaine and easie the way to the understanding of dissections.

Chap. 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 soule be not understood, for whose cause the body enjoyes that forme (which wee see) and devision into divers instruments; Therefore I thought good in few words to touch that distinction of the faculties of the soule, for the better understanding of the partition of the body which wee intend. Wherefore the soule, 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 devided into the principall, sensitive, and motive; Againe, the principall is distinguished into the imaginative, reasonable, and memorative. And the sensitive into Seeing, Hearing, Smelling, Tasting, and Touching. But the motive into progressiv: and apprehensive. And the vitall is devided into the dilative, and contractive faultie of the heart and arteries, which we know or understand by the pulsificke faultie. But the naturall is parted into the nutritive, auctive, and generative faculties; which three performe their parts by the helpe and ministerie of five other faculties, which are, the Attractive, Retentive, Concoctive, Assimulative, and Expulsive.

What the soule is, and with how many faculties it is endewed.

After the selfesame manner, the organ or instrument of the soule, to wit, Mans body, at the first division is distinguished into three parts, which from their office they call Animall, vitall, and naturall. These againe, according to the subdivision of the subalternall faculties, are devided particularly into other parts; so that any one may know the organe of each facultie, by the propertie of the function. For while other Anatomists devide mans body into foure universall and chiefe parts, they distinguish from the three first, those which they call the Extremities; neither doe they teach to whatrancke of the three prime parts each extremitie should be reduced. From whence many difficulties happen in reading the writings of Anatomists; for shunning whereof, we will prosecute, as wee have said, that distinction of mans body, which we have touched before.

All the parts of mans body are distinguished into three.

Wherefore, as wee said before, mans body is devided into three principall and generall parts, Animall, Vitall, and Naturall. By the Animall parts, wee understand not onely the parts pertaining to the head, which are bounded with the crowne of the head, the coler-bones, and the first *Vertebra* of the breast, but also the extremities,

What parts are here called Animall.

ties, becauſe they are organs and inſtruments of the motive faculty; *Hippocrates* ſeemes to have confirmed the ſame, where hee writes; Thoſe who have a thicke and great head, have alſo great bones, nerves, and limbs. And in another place hee ſaith, thoſe who have great heads, and when they ſtoope ſhew a long necke, ſuch have all their parts large, but chiefly the animal. Not for that *Hippocrates* would therefore have the head the beginning and cauſe of the magnitude and greatneſſe of the bones, and the reſt of the members; but that he might ſhew the equallity, and private care or government of nature, being moſt juſt and exact in the fabricke of mans body, as if ſhe hath well framed the head, it ſhould not be unlike, that ſhee idlely or careleſly neglected the other parts which are leſſe ſeene. I thought good to dilate this paſſage, leaſt any might abuſe that authoritie of *Hippocrates*, and gather from thence, that not onely the bones, membranes, ligaments, griſtles, and all the other animall parts, but alſo the veines 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 wee have a farre other meaning.

Lib. 6. Epidem.

What parts are called vitall.

By the vitall parts, we underſtand onely the heart, arteries, lungs, winde-pipe, and other particles annexed to theſe. But by the naturall, wee would have all thoſe parts underſtood which are contained in the whole compaſſe of the *Peritonæum* or Rim of the body, and the proceſſes of the *Erythroides*, the ſecond coate of the Teſticles. For as much as belongs to all the other parts, which we call containing; they muſt bereckoned in the number of the animall, which notwithſtanding, we muſt thus devide into principall, ſenſitive, and motive; and againe, each of theſe in the manner folowing. For firſt the principall is devided into the imaginative, which is the firſt and upper part of the braine, with its two ventricles and other annexed particles; into the reaſoning, which is a part of the braine, lying under the former, and as it were the toppe thereof with its third ventricle. Into the memorative, which is the *cerebellum* or afterbraine, with a ventricle hollowed in its ſubſtance. Secondly, the ſenſitive is parted into the viſive, which is in the eyes; the audirive, in the eares; the ſmelling, in the noſe; the taſting, in the tongue and palate; the tactive, or touching which is in the body, but moſt exquiſite in the ſkinne which inveſts the palmes of the hands. Thirdly, the motive, is devided into the progreſſive, which intimates the legges, 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 o fibers together, of the pulſificke; or if you pleaſe you may devide them into parts erving for reſpiration, as are the lungs, and weazon, and parts ſerving for vitall moion, as are the heart and arteries, furniſhed with theſe fibers; which we formerly mentioned. The deviſion of the naturall parts remaines, which is into the nouriſhing, audive and generative, which againe are diſtributed into attractive, univerſall, and particular; retentive, concoctive, diſtributive, aſſimulative, & expulſive. The attractive, is the gullet and upper orifice of the ventricule; the retentive, as the *Pylorus* or lowerpaſſage of the ſtomacke; the concoctive, as the body of the ventricle, or its inner coate; the diſtributive, as the three ſmall guts; the expulſive, as the three great guts: we may ſay the ſame of the liver, for that drawes by the meſaraicke and gate veines, retaines by the narrow orifices of the veines diſperſed through the ſubſtance thereof; it concocts by its proper fleſh; diſtributes by the hollow veine, expels by the ſpleene, bladder of the gall and kidneies. We alſo ſee the parts in the teſticles devided into as many functions; for they draw by the preparing veſſels; retaine by the various crooked paſſages; in the ſame veſſels they concoct the ſeed by the power of their proper ſubſtance and facultie; they diſtribute by the ejaculatories, at the glandules called *Proſtatæ*, and the hornes of the wombe, ſupplying the place of proſtates; Laſtly, they expell or caſt forth by the proſtates, hornes, and adjoyning parts. For as much as belongs to the particular attraction, retention, concoction, diſtribution, aſſimulation of each part, that depends of the particular temper, and as they terme it, occulte propertie of each ſimilar and ſimple part. Neither doe theſe particular actions differ from the univerſall, but that the generall are performed by the aſſiſtance of the three ſorts

The deviſion of the animall parts.

The deviſion of the vitall parts.

The deviſion of the naturall parts.

of

of fibers, but the speciall by the severall occult propertie of their flesh, arising from their temperature, which we may call a specificke propertie. Now in the composition of mans body, nature principally aimes at three things. The first is, to create parts necessary for life, as are the heart, braine, and liver. The second, to bring forth other for the better and more commodious living, as the eyes, nose, eares, armes 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, breast and lower belly) and the limbs or joints. In which by the head we doe not understand all the Animall parts, but onely those which are from the crowne of the head to the first *vertebra* of the necke, or to the first of the backe, if according to the opinion of *Galen Lib. de ossibus*, where he makes mention of *Enarthrosis* and *Arthrodia*, we reckon the necke amongst the parts of the head. By the brest, whatsoever is contained from the coller bones to the ends of the true and bastard, or short ribbs, and the midriffe. By the lower belly, the rest of the trunke of the body, from the ends of the ribbs to the share-bones; by the limbs, we understand the armes and legges. We will follow this division in this our Anatomicall discourse, because wee 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 vulgar division of mans body.

Nature would not have this lower belly bony, because the ventricle might bee more easily dilated by meate and drinke, children might grow the better, and the body be more flexible. It is convenient we beginne our Anatomicall administration from this, because it is more subject to putrifaction 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 goe any further, if the Anatomicall administration must be performed in publike, the body bring first handsomely placed, and all the instruments necessary for dissection made ready, the belly must be devided into its parts, of which some containe, and other some are contained.

Why the belly is not bony.

They are called containing, which make all that capacity which is terminated by the *Peritonæum* or Rim of the belly. The vpper part whereof is bounded by *Galen* within the compasse of the direct muscles, and by a generall name is called *Epigastrium*, or the vpper part of the lower belly. That againe is devided into three parts, that is, into that which is above the navell, and which carries the name of the whole, into that which is about the navell, and is called the umbilicall or middle part; and lastly, into that which is below the navell, called the *Hypogastrium*, or the lower part of the lower belly.

The devision of the lower belly.

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 compasse of the midriffe, and the short ribbs. In the vmbilicall the two Lumbares (some call them *Latera* sides) which on both sides from the lowest parts of the breast, are drawne to the flankes, or hanch-bones; in the *Hypogastrium*, the two *Ilia*, or flankes, bounded with the hanch and share-bones. Neither am I ignorant, the *Ilia* or flankes, which the Greekes call Λαγόνες signifie all the emptie parts, from the ends of the ribs, even to the hanch-bones, whereupon they also call them Κενεῶνες as if you should say, empty spaces, because they are not encompassed with any bone. Yet I thought good that this doctrine of deviding 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*, flankes. 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 diverse lie in sundrie places; for the greater portion of the liver lies under the right *Hypochondrium*; under the left almost all the ventricle and spleene. Vnder the *Epigastrium* the lower orifice of the ventricle, 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 flancke, the

The *Hypochondria*.

blinde gut; in the middle part thereof the collicke and emptie guts. In the upper part of the left side lies the left kidney, in the middle part, the rest of the emptie and collike guts. Vnder the region of the navell, lies the girdle or upper part of the kall, the collike gut thrusting it selfe also through that way. Vnder the *Ilia* or flankes, the right and left, lie the greater part of the gut Ileon, the hornes of the wombe in women bigge with child, and the spermaticke vessels in men and women. Vnder the *Hypogastrium* in the lower part lies the right, or straight gut, the bladder, wombe, and the rest of the kall.

A most certaine note of the part affected, by the place where the paine is.

If we know, and well understand these things, wee shall more easily discerne the parts affect by the place of the paine, 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 onely the forefaid parts, containing, and contained, but also of the whole body, and many other things which may seeme to conduce to the knowledge of the mentioned parts. The Figures are these.

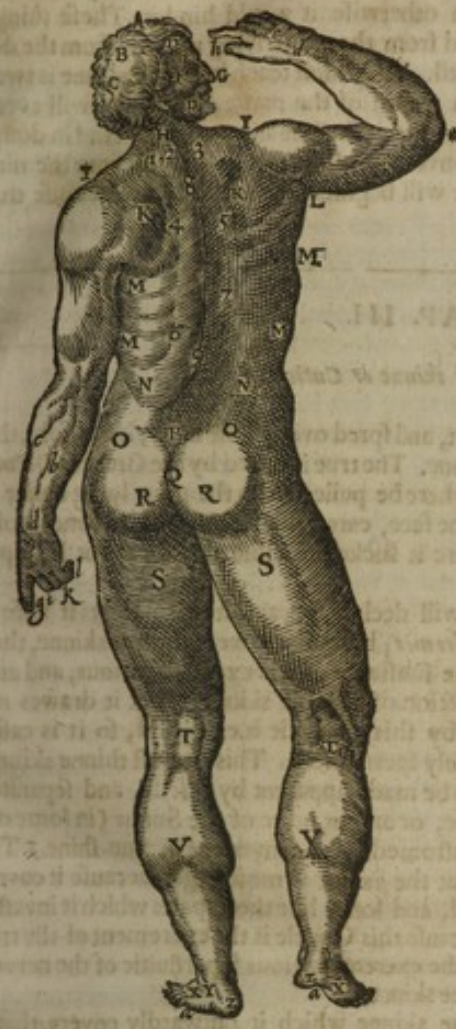
The Figure shewing the foreparts of the body.



A The hairy Scalp, cald τριχωτὸς.
b the forehead cald *Front.* μέτωπον.
c the temples cald *tēpora*, κρόταφοι.
From b to d The compasse 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 eybrow which is immoveable, *Palpebra.*
g The cheek-ball cald *mala*, μῆλα.
h The chek-puf cald *bucca*, γνάθος.
i The ridge of the nose cald *Nasus externus*, ῥὶν.
k The nosthrils cald *nares*, μυκτῆρες.
l The outward eare, *auris externa.*
m The mouth made of the two lips, *Os.*
n The chin called *mentum*, γένειον.
o The necke, *collum* αὐχὴν and τράχηλος.
From o. to e. the pillar of the necke, *truncus*, and ὅλμος.
pp The hollow of the necke, called *iuguli*, σφαγὰς.
qq The patel bones, *claves* κλεῖδες.
r The chest *pectus*, στέρνον.
s The right brest.
ss The left brest: to this Region we apply cordiall *Epithemations* moist and drie.
tt The nipples of the brests, *Papillæ* θηλὸν.
u The trench of the heart which the Ancients called καρδία. The Latines *scrobiculus Cordis.* This part is annointed for the mouth of the stomacke.
From u to E, the lower belly, γαστήρ.
χ. The *Epigastrium* or upper part of the lower belly.
yy. The *Hypocondria* or *Præcordia.*
* The outward Liver-remedies are applied to this place.
Z. The region of the navill, callep *umbilicalis*, or the middle part of the lower belly.
A. The navill *umbilicus.* The roote of the belly ὄμφαλος.
BB. The side, *Latera*, πλευρὰς. and in our Author, *Lumbi seu Lumbaris regio.*
C. *Hypogastrium*, the water-course, *Aqualiculus*, the lower part of the lower beelley, ἤτρον.
DD. The flankes called *Ilia* and κινεῶνες.
E. The Groine called *pubes* or *pecten*, κτεὶς κτῆβη.
FF. The Leske cald *inguen*, where those tumors are cald *Bubones.*
G. the yard with the foreskinne, *penis cum præputio.*
H. the stones or testicles, with the cod or *scrotum.*
II. the shoulders *humeri*, ἐπωμίδες.
KK. the armes *Brachia*, βραχίονα.
L. the bowt of the arme, called *Gibber*, ἀκὼν.
M. the outside of the lower part of the arme cald *cubitus* πῆχυς.
N. the wrest called *Brachiale* κάρπος.
O. the after-wrest *postbrachiale*, μετάκαρπιον.
P. the Palme called *Palma* or *volo manus*, θέναρ.
φ the backe of the hand *Dorsum manus*, ὀπισθέναρ.
QQ. the fore ann middle part of the thigh, where wee apply cuppingglasses to bring downe womens courses, μηρὸν.
RR. the knee, *genus* γόνυ.
SS. the leg, *Tibia* κνήμη.
TT. the calfe of the leg *sura*, γαστροκνήμιον.
VV. the instep, *tarsus.*
XX. the top of the foote *Dorsum pedis*, στῆθος ποδός.
YY. the inner Ankles, σφυρὰ. ZZ. the outward anckles. αα the toes of the feete, β the place under the inward anckle, where the veine called *Saphena* is opened.

The

The Figure of the backe parts of a man.



A The forepart of the head, *ſinciput*, βρεγμα.
B. the top or crowne of the head *vertex*, κορυφη.
C. the hinder-part of the head, *occiput*, κοτις ὀπισθία.
From D. to D. the face, *Facies*. πρόσωπον.
E. the eyebrowes *ſupercilia*, ὀφρύς.
F. the upper eye-lid, βλέφαρον.
* The tip of the noſe cald *globulus naſi*.
H. the backe part of the neeke, cald *cervix*, αὐχήν. and the nuke or nape of the necke. There is a hollowneſſe at the top of this *cervix*, where wee apply Seatons.
I. the backe part of the ſhoulder top, called *axilla*, ὦμος.
KK. the ſhoulder blades *ſcapulæ*, ὠμοπλάται.
1,2,3. On this place wee ſet cupping glaſſes.
4,5,6,7. the backe *dorſum*, νῶτον.
8,9. the ridge, *ſpina dorſi*, ῥάχις.
L the arme hole, *ala*, μασχάλη.
* the elbow, *Gibber brachij*.
M M M M. the ſides, *Latera*.
N N the loines *Lumbi*, or the region of the kidneyes, ὀσφύς.
O O. the place of the hips, *coxendices*, where wee 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 Rumpe or *Coccyx*.
RR. the buttocks *Nates*, κλάσεις.
SS. the backe parts of the thigh, *Femora*.
TT. the ham, *Poples*, ἰγνύς.
VV. the calfe of the leg, *ſura*.
XX. the foote or *parua pes*, πούς.
YY. the utter ancle, *Malleolus externus*.
ZZ. the heele, *calx* or *calcaneus*, πτέρνα.
aa the ſole of the foote *Planta pedis*, πέλμα τοῦ ποδός.
b the inſide of the lower part of the arme called *Vlna*, πῆχυς.
c. the outſide of the ſame, *Cubitus* πῆχυς.
dd the wreſt, *Carpus*
ee the backe part of the hand, *dorſum manus*. f. the foreſinger *index* δείκτης. h, the thumb, *pollex*, ἀντίχειρ.
i. the middle finger, *medius*, μέσος.
k the rig-finger *Annularis*, *medicus*, ἐπικαρδία.
l. the little finger, *Auricularis*, *minimus*, ἐλάχιστος.

CHAP. II.

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

THE containing parts of the *Epigaſtrium* are the *Epidermis* or thinne outward skinne, the true skinne, the fleſhie or fatty Pannicle, the eight muſcles of the *Epigaſtrium* with their common coate, the Rim of the belly, the five vertebra's of the loines, all the holy-bone, the hanch-bone, ſhare-bone, the white line, and midriffe. 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 wee may keepe it, till ſuch time, as occaſion ſhall offer it ſelf, to ſhew the vmbilicall veſſels lying in that place, which are one veine, two arteries, & the *vrachus* (if it be there.) Which being done, you muſt draw a ſtraight line from the cheſt, over the breaſt-blade, even to the ſhare-bone, which may divide the common containing parts, even to the white line. The containing parts of the lower belly.

Then presently it will be convenient to draw two other lines acrosse, or overthwart, of the like depth on each hand, from the circumference of the navell, even to the sides, that so on each part wee may draw the skinne more commodiously from the parts lying vnder it; the sight of which otherwise it would hinder. These things being done, the skinne must bee devided from the parts lying under it from the designed circumference left about the navell. Wee must teach how the skinne is twofold, the true and false, and render a reason of the name, which we will every where doe, as farre as the thing will suffer, and it shall lie in our power. And in doing or examining these things, it will be convenient diligently to inquire into the nine things mentioned in the preface. Wee will beginne with the skinne, because that part is first obvious to our senses.

CHAP. III.

Of the vtmost skinne or Cuticle.

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

THe skinne being the first part, and spred over all the body, is twofold, that is, the true, and bastard skinne. The true is called by the Greekes *Derma*, which may almost every where be pulled from the parts lying under it, which it invests; except in the face, eares, the palmes of the hands, soles of the feete, fingers, and privities, where it stickes so close that it cannot be separated.

The matter of the Cuticle.

The bastard (which first of all wee will declare, because it first presents it selfe to our sight) is by the Greekes called *Epidermis*; because it covers the true skinne, they terme it commonly the Cuticle. The substance of it is excrementitious, and as it were a certaine drie flouring, or production of the true skinne. That it drawes not its substance from the seede is apparent by this, that as it is easily lost, so it is easily repaired, which happens not in parts truly spermaticall. This vtmost thinne skinne, or cuticle, may two manner of wayes be made apparent by it selfe, and separated from the other, as by burning with fire, or ardent heate of the Sunne (in some delicate bodies, and such as are not accustomed to be conversant in Sun-shine.) The quantitie in thicknesse is very small; but the extent is most large, because it covers all the skinne; the figure of it is round, and long, like those parts which it invests. The composure of it is obscure; yet because this Cuticle is the excrement of the true skinne, wee say it hath its matter from the excrementitious superfluitie of the nerves, veines, arteries, and substance of the true skinne.

Thequantitie.

The figure.

The composure.

The number.

It is in number one, like as the true skinne which it outwardly covers, that it might be a *medium* betweene the object, and fixed facultie of touching, diffused over all the true skinne which every where lies under it. For the temperature, by the common consent of Physitions, it is in the midst of all excesse; for that seeing it is the *medium* betweene the object and facultie, if it should be hotter, colder, moister, or drier, it would deceive the facultie by exhibiting all objects, not as they are of themselves, but as it should be; no otherwise than as to such as looke through red or greene spectacles, all things appeare red, or greene. 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 seemes to be given by the singular indulgence of nature, to be a muniment and ornament, to the true skinne. This providence of nature, the industrie of some Artizans (or rather *Curtizans*) doth imitate, who for to seeme more beautifull, doe 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 vaine. Also you must note that this thinne skinne, or cuticle being lost, may everie where be regenerated, unlesse in the place which is covered with a scarre. For here the true skinne being deficient, both the matter and former facultie of the cuticle is wanting.

The temperature.

The use

Why the cuticle cannot be restored in scars.

Chap. IIII.

Of the true skinne.

THe true skinne called by the Greekes *Derma*, is of a ſpermaticke ſubſtance, wherefore being once loſt, it cannot be reſtored as formerly it was. For in place thereof comes a ſcarre, which is nothing elſe but fleſh dried beyond meaſure. It is of ſufficient thickneſſe, as appeares by the ſeparating from the fleſh. The ſubſtance Magnitude.

But for the extent thereof it encompaſſes the whole body, if you except the eyes, eares, noſe, privities, fundament, mouth, the ends of the fingers where the nailes 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, veines, arteries, and of a proper fleſh and ſubſtance of its kinde, which wee have ſaid to bee ſpermaticall, which ariſeth from the proceſſe of the ſecundine, which leade the ſpermaticke 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 skinne. Which alſo the ſimilitude of them both, that is, the skinne and membrane *Chorion* do argue. For as the *Chorion* is double, without ſenſe, encompaſſing the whole infant, lightly faſtened to the firſt coate which is called *Amnios*; ſo the skinne is double, and of it ſelfe inſenſible (for otherwiſe the nerves were added in vaine from the parts lying under it) ingirting the whole body, lightly cleaving to the fleſhie Pannicle. But if any object that the Cuticle is no part of the true skinne, ſeeing it is wholy different from it, and eaſily to be ſeparated from it, and wholly void of ſenſe: I will anſwer, theſe arguments doe not prevaile. For that the true skinne is more craſſe, thicke, ſenſible, vivide, and fleſhie, is not of it ſelfe, 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 lie fit and open to receive a thouſand externall injuries, which encompaſſe us on every ſide, as the violent and contrary acceſſe of the foure firſt qualities. Compoſure. The skinne of it ſelfe is void of ſenſe.

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, veines, and arteries, with thoſe ſubjacent parts put forth into the skinne inveſting them, that there may be a certaine communion of all the parts of the body amongſt themſelves. The number. Connexion.

It is cold and drie in its proper temper in reſpect of its proper fleſh and ſubſtance, for it is a ſpermaticall part. Yet if any conſider the ſinewes, veines, arteries, and fleſhie threds which are mixed in its body, it will ſeeme temperate, and placed as it were in the midſt of contrarie qualities, as which hath growne up from the like portion of hote, cold, moiſt, and drie bodies. The vſe of the skinne is to keepe ſafe and ſound the continuitie of the whole body, and all the parts thereof, from the violent aſſault of all externall dangers, for which cauſe it is every where indewed with ſenſe, in ſome parts more exact, in others more dull, according to the dignitie and neceſſitie of the parts which it ingirts, that they might all be admoniſhed of their ſafetie and preſervation. Laſtly, it is penetrated with many pores, as breathing places, as we may ſee by the flowing out of ſweate, that ſo the arteries in their *diaſtole* might draw the encompaſſing aire into the body, for the tempering and nouriſhing of the fixed inbred heate, and in the *Syſtole* expell the fuliginous excrement, which in Winter ſuppreſt by the cold aire encompaſſing us, makes the skinne blacke and rough. Wee have an argument and example of breathing through theſe, by drawing the aire in by tranſpiration, in women troubled with the mother, who without reſpiration live onely for ſome pretty ſpace by tranſpiration. Temperature. Vſe. The reaſon why the skin is blacker and rougher in Winter.

Chap. V.

Of the fleshie Pannicle.

After the true skinne, followes 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 wayes the word is taken. Then wherefore it hath the name of the fleshie Pannicle. A membrane therefore is a simple part, broade 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 coate, which is, when it covers and defends some part. This is called the fleshie Pannicle; because in some parts it degenerates into flesh, and becomes musculous, as in a man from the coller bones, to the haire of the head, in which part it is therefore called the broad muscle, where as in other places it is a simple membrane, here and there intangled with the fat lying under it, from whence it may seeme to take or borrow the name of the fatty Pannicle. But in beasts (whence it tooke that name, because in those a fleshie substance maketh a great part of this Pannicle) it appeares manifestly fleshie and musculous over all the body, as you may see in Horses, and Oxen; that by that meanes 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 fleshie Pannicle in its proper body, is of a nervous or membranous substance, as that which hath its originall from the coate *Amnios*, (which is next to the infant) dilated neare to the navell and stretched forth for the generation of this Pannicle; in which thing I thinke good to note, that as the membranes *Chorion* and *Amnios* mutually interwoven with small nervous fibers, encompasse and invest the child, as long as it is contained in the wombe; so the skinne and fleshie Pannicle knit together by such like bands, engirt the whole body.

What a membrane is.

Why it is sometimes called a coate, sometimes the fleshie and fattie Pannicle.

Why beasts have this pannicle wholy, fleshie or musculous.

The substance

Therefore the fleshie Pannicle is equall in magnitude and like in figure to the true skinne, but that it lies under it, and is contained in it, in some places mixt with the fat, in others encreased by the flesh interwoven with it, and in other some is onely a simple membrane.

The magnitude and figure.

Number.

The composition of it is such, as the sight of it presents to our eye, that is, of veines, 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 wee shall presently shew; It is situated betweene the skinne and fat, or common coate of the muscles, annexed to these and the other parts lying under it, by the veines, nerves, and arteries ascending from these inward parts, and implanting themselves into the substance thereof, and then into the true skinne.

Composure.

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

The temperature.

The use.

Chap. VI.

Of the Fat.

The fat is rather an excrement than a part.

The substance

The efficient cause of fat.

The fat comming neare the condition of an excrement, rather than of a part (as we said, when we treated of the simular parts) is of an oily substance, bred of the aiery and vaporous portion of the bloud, which sweating through the pores of the coates, or mouthes of the vessels, becomes concreate about the membranes, and nerves, and cold bodies, and turnes into fat by the coldnesse of the place. Whereby we may know that cold, or a more remisse heate, is the efficient cause of fat, which is manifest by contemplation not onely of creatures of diverse kindes, but also by those of the same species and sexe, if so be that the one be colder than the other.

By

By which we may understand that the fat is the more or lesse 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 certaine membranes, nervous fibers, veines and arteryes. The greatest part of it lyes betweene the fleshy pannicle and the common coate of the Muscles, * Otherwise it is diffused over all the body, in some places more, in some lesse, yet it is alwaies about the nervous bodyes, to which it delights to cleave. Most Anatomists enquire whether the fat lye above or beneath the fleshy pannicle. But me-thinkes this question is both impertinent and idle; being we often see the fat to be on both sides. It is of a middle temper betweene heat and cold, being it ariseth of the more aery portion of the blood; although it may seeme cold in respect of the efficient cause, that is, of cold by which it concreats. For the rest, moisture is predominant in the fat. The use therof 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 warme. Although it doe this last rather by accident, than of its owne 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 bellyes are at that time the hotter. I know some learned Phisitions of our time stiffly maintained, that the fat was hot, neither did they acknowledge any other efficient cause thereof, than temperate heat and not cold. But I thinke it best to leave the more subtle agitation of these questions to naturall Philosophers. But we must note, that at the joints which are more usually moved, there is another sort of fat, farre 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 drynesse, and make them slippery & so fitter for motion, in imitation whereof they usually grease hard bodyes, which must be in frequent motion, as coach wheeles and axeltrees. And there is another kind of fat, which is called *Sevum*, seame, 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 midriffe, where there are many windings of arteryes and veines, and it is also about the reines, Loines, and *basis* of the heart. The fat is wasted by long fasting; is dryed and hardened by vehement exercise and immoderate heate. Hence it is that it is much more compact in the palmes of the hands, and soles of the feet, about the eyes and heart, so that it resembles the flesh in densitie and hardnesse; because by the continuall motion and strong heat of these parts, the thinner portion being dissipated & diffused, the more Grosse & terrestriall remaine.

The quantity.

The composure.

The site.

* I was present at the opening a body, Feb. 1630. in which the fat, in the lower part of the lower belly was in thicknesse above 8, inches, upon the breast betweene 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 encreased by report, and the place mistaken some saying the *Omentum* or Call was so thicke, which was false, for it did not much exceed the quantity of that part, in other fat men.

The Temper.

The use.

The solidest fat, or seame.

In what parts and for what cause the fat is more dense.

CHAP. VII.

Of the common coate of the Muscles.

NExt under the fat, appeares a certaine coate, spred over all the Muscles, and called the common coate 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 selfe to, as that which encompasses the Muscles of the *Epigastrium*, is of equall largnesse with the same Muscles. The figure of it is round. It is composed of veines, nerves, arteryes and its peculiar flesh consisting of three sorts of fibers; the beginning of it is from the *Periostium*, 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 coate. But this membrane arising from the *Periostium* (as every membrane which is below the head takes its originall from the *Periostium* either primarily, by the interposition of no *Medium*, or secondarily) is stretched over the Muscles by their tendons. But if any object, that this membrance plucked from the belly of the Muscle, may seeme to

The substance

The quantity

The Composure.

The Original

to end in a ligament. I will answer, that it is the condition of every nervous part, so to binde or fasten it selfe to another part of his owne kinde as to a stay, so that it can scarse be pluckt from thence. We see the proofe hereof, in the *Peritonæum* or *Rim* in the *Epigastrium* or lower part of the lower belly. That which covers the Muscles of the *Epigastrium* is but one, unlesse you had rather part it in two, the right and the left distinguished by the interposition of the *Linea Alba*, or white Line. It is scituate betwixt the fat and Muscles; for it is fastened above and below to these parts with fibers, which in smallnesse and fitnesse exceed the Spiders web. But by its vessells, it participates with the three principall parts, and is of a cold and dry temper. The use of it is, to containe the Muscles in their naturall vnion, and to keepe them as much as in it lyes, from putrifaction, which may happen to them from *pus* or matter, which is often cast forth of the simular parts into the empty spaces and distances of the Muscles. Wherefore going about to separate the fat of the *Epigastrium* (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 coates of all those muscles.

The number.

The site.

The use.

What the white line is.

Chap. VIII.

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

What a Muscle is.

A Muscle is the instrument of voluntary motion; and simple voluntary motion is performed six manner of wayes, upwards, downewards, 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 Hauke. We have some parts, which have motion without a Muscle, but that motion is not voluntary; such parts be the heart, stomacke, gutts, both the bladders (that is, that of the Gall and that of the urine) and diverse other which have the motions of attraction, expulsion and retention, by the meanes of the three sorts of fibers; for they draw by the right, expell by the transverse, and retaine 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, forme or figure, holes or openings, magnitude, colour, site, kind of fibers, their conjugation or connexion, heads, bellyes, tendons? opposition in action and office. Some in substance are nervous, venous, arterious, because they have manifest nerves, veines and arteryes, as the Midriffe, the Intercostall and Epigastricke Muscles and many more, and that for their difference from other Muscles, into which neither nerve nor veine, or Arteryes are manifestly inserted, although secretly they admit them all for sense and motion, life and nourishment, such are the Muscles of the wrest, 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, armes and Leggs; 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 in certaine 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 Midriffe, as that which is composed of two coates, the one in compassing the ribbs and the *Peritonæum*, hath flesh in the midst betweene the two membranes. And moreover some Muscles have their originall from one onely bone, as these which bend and extend

How the circular motion is performed.

From whence the differences of muscles are drawne.

Differences of muscles from their substance.

Differences of Muscles from their original.

the

the Cubite, others arise of many bones as the oblique descending, the Dorsall and many Muscles of the necke, with 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 favour I thinke otherwise. Because by the Anatomicall and received axiome, A Muscle is there thought to take his beginnings 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 brest-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, Armes and Legs; others into a gristle, as those of the Throtle, eyelids, nose and the obliqueascendant muscles of the *Epigastrium*; some into a bone and gristle both, as the right muscles of the *Epigastrium* and the Midriffe; some into the skin, as the muscles of the lips; others into the Coates as the muscles of the eyes; others into Ligaments, as the muscles of the yeard. But these differences following may be drawne 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 arme, and the shoulder, which arising from many spondiles 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 bottome of the shoulder blades, are extended and inserted into some eight or nine of the upper ribbs, to helpe 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 ribbs. Others have their originall from many bones, and end in gristles of the seven ribbs, as those two which lye under the *Sternon*. Moreover also these differences of muscles may be drawne from the originall and insertion, that some proceed from bones and are inserted into the next bone, to helpe and strengthen the motion thereof, as the three muscles of the Hip; others arise from an upper bone & 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 meale. From their forme or figure, because some are like Mice, other like Lizards which have their Leggs cut off, for that they imitate in their belly, body or tendon, the belly or taile of such creatures, & from whence the names of *Musculus* and *Lacertus* are derived. Such are those which bend the wrest, and which are fastened to the bone of the Leg, & which extend the foot; Others are triangular, as that which lifts up the arme, called *Epomis* or *Deltoides*, and that which drawes the arme to the breast, called the Pectorall muscle. Others quadrangular as the Rhomboides, or Lozenge muscle of the shoulder blade and the two hindesum-muscles serving for respiration, and two of the wrests which turne down the hand; Others consist of more than foure angles, as the oblique descending, and that muscle with joynes it selfe to it from the shoulder blade; others are round and broad, as the Midriffe, others circular as the *Sphincter* muscle of the fundament and bladder; others are of a pyramidall figure, as the seaventh muscle of the eye, which compasses the opticke nerve in beasts but not in men. Others have a semicirculer forme, as that which shuts up the eye seated at the lesser corner thereof. Others resemble a Monks cowle, 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 Hippe; others keepe an equall breadth or bignesse in all places, as the intercostall muscles and these of the wrest; 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 Midriffe which hath three holes, as also the oblique and transverse of the *Epigastrium*, that so they may give passage forth to the preparing spermaticke vessells, and to the ejaculatory vessells, the Coate *Erythroides* associating and strengthening them; others are not perforated. From their magnitude for

Where a muscle hath its original.

Differences of muscles from their insertion

Differences of muscles taken from their figure.

Differences from their perforations.

From their magnitude,

for some are most large, as the two muscles of the Hipp, others very small, as the eight small muscles of the necke, 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 comming from the midst of their belly; others are livide, as the three greater muscles of the calfe of the leg, which colour they have by the admixtion of the white, or tendinous nervy coate with the red flesh, for this coat by its thickneſſe darkning the colour of the flesh, so that it cannot shew its redneſſe and fresh colour, makes it seeme of that livide colour. From their scituation, for some are superficiary, as those which appeare under the skin and fat; others deepe in and hid, as the smooth and foure twin muscles; some are stretched out and as it were spred over in a streight and plaine passage, as the muscles of the thigh which move the legge, 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 concourse of the fibers make a streight or acute angle.

From their Colour.

From their site.

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

From their fibers.

From their coherence and connexion, or their texture of nervous fibers; for some have fibers somewhat more distant and remote immediately at their originall, 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 taile being slender, as happens in most of the muscles of the arme and leg, in which the dense masse of flesh interwoven with fibers, disioynes the fibers in so great a distance; in othersome the fibers are more distant in the taile, as in the greater Saw-muscle arising from the bottome of the shoulder blade; in others they are equally distant through the whole muscle, as in the muscles of the wrest and betweene the ribbs.

From thire connexion.

From their head; for in some it is fleshy interwoven with few fibers, as in the muscles of the buttocks; in others it is wholy nervous, as in the most-broad-muscle common to the arme and shoulder blade, and in the three muscles of the thigh proceeding from the tuberosity of the hucle bone; in some it is nervous and fleshy as in the internall and externall muscle of the arme. Besides some have one head, others two, as the bender of the elbow and the externall of the legge, others three as the Threeheaded muscle of the thigh. But wee 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 Midriffe, as you may know by the insertion of the Nerve, because it enters the muscle by its head.

From their head.

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 Midriffe. Others just at their head, as those which put forth the Calfe of the leg; in others it is somewhat further off, as in those which draw backe the arme, and which bend the legge; in others the belly extends even from the head to the taile, as in the intercostall muscles and these of the wrest; in others it is produced even to their insertion, as in those of the palmes 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 roote of the lower processe of the shoulder blade.

From their belly.

Moreover the differences of muscels are drawne 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 wrest; others have them in part, and want them in part, as the Midriffe; for the Midriffe wants a Tendon at the ends of the shorter ribs, but hath two at the first *Vertebra* of the Loines in which it is terminated;

From their Tendons.

Others

Others have a Tendon indeede. 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 thicke and round, as in the benders of the fingers; in others they are lesse round, but more broad than thicke, such is the Tendon arising from the twin muscles and *Soleus* of the legge: others have short Tendons, as the muscles which turne downe the hand; othersome long, as those of the palmes 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.

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 devided 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 Calfe of the leg, and those which bend the cubit and legge. All tendons have their originall, when the nerves and ligaments dispersed through the fleshy substance of a muscle, are by litle and litle drawne and meet together, untill at last carried to the joynt they are there fastened 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 onely 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 performe both, as the pectorall muscle, which moves, the Arme obliquely upward and downeward, as the upper and lower fibers are contracted; and also out right, if all the fibers be contracted together, which also happens to the *Delteides* and *Trapezius*. I have thought it good to handle particularly these differences of muscles, because that by understanding them the prognosticke will be more certaine; and also the application of remedies to each part; and if any occasion be either to make incision, or suture, we may be more certaine, whether the part affected be more, or lesse nervous.

From their Action.

From their function.

Chap. IX.

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 taile. The simple are ligaments, a nerve, flesh, a veine, artery and coate. 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 taile, we understand a Tendon consisting partly of a nerve, partly of a ligament promiscuously comming forth from the belly of the muscle. For asmuch as belongs to the simple, which are sixe in number, three are called proper, and three common. The proper are a Ligament from a bone, a nerve proceeding from the Braine, or spinall marrow, and flesh compact by the concretion of blood. The Common are, a veine from the Liver or trunke arising from thence; an artery proceeding from the Heart, a Coate produced by the nervous & 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 containes 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 selfe against the heat of the Sunne; and is as a garment against the cold; and as a cushion in all falls and bruises, and as a buckler or defence against wounding weapons. The veine nourishes the muscle, the arterie gives it life, the coate preserves the

The compound & simple parts of a muscle.

What use each simple particle hath in a muscle.

the harmony of all the parts thereof, leſt they ſhould be any wayes diſioyned or corrupted by purulent abſceſſes breaking into the empty or void ſpaces of the muſcles, as we ſee it happens in a Gangrene, where the corruption hath invaded this membrane by the breaking out of the more acride matter or filth.

Chap. X.

A more particular inquiſition into each part of a muſcle.

The nature of a Ligament.

HAving gone thus farre, it remaines, 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) wherby it comes to paſſe that a ligament is void of ſenſe, unleſſe it receive a nerve from ſome other place; (For ſo the Ligaments which compoſe & ſtrengthen the Tongue and yeard, 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 joynt or connexion; (for theſe three be the principal uſes of a Ligament) then diffuſing it ſelf into the membranes and muſcles to ſtrengthen theſe parts. A nerve to ſpeake properly, is alſo a ſimple parte of our body, bred and nouriſhed by a groſſe and Phlegmaticke humor, ſuch as the braine, the originall of all the nerves, and alſo the Spinall marrow endewed 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 onely of feeling, as the membranes, veines, arteries, guts and all the entrailes. A nerve is covered with a double cover from the two membranes of the braine, 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*. Wee 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 leſſe 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 kind; but of theſe threds ſome are ſtraight for attraction, others oblique for retention of that which is convenient for the creature, and laſtly ſome tranſverſe for the expulſion of 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 ſhortened in length. But when they are extended all together as it were with an unanimous conſent, the whole member is wrinkled as contracted into it ſelfe, as on the contrary it is extended when they are relaxed. Some of theſe are beſtowed upon the animall parts, to performe voluntary motions; others upon the vitall to performe 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 ſimular part is performed by the helpe of the foreſaid fibers or threds, but rather by the heat implanted in them, or by the ſhunning of Emptineſſe, 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 ſelfe into the ſpaces betweene the fibers, ſo to inveſt them for the uſes formerly mentioned. This is as it were a certaine wall and Bulwarke againſt the injuries of heat and cold, againſt all falls and bruiſes, as it were a certaine ſoft pillow or cuſhion yeelding to any violent impreſſion. There be three ſorts of fleſh; one more ruddy, as the muſculous 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, ſtomacke, weaſond, guts, bladder, wombe. The third is belonging to the entrails, or the proper ſubſtance of each entrail, as that which remaines of the Liver (the veines, arteries and coate being taken away) of the bladder

The threefold uſe of a Ligament.

What a nerve is.

What wee meane by the nervous and Ligamentous fibers.

By what power the ſimular parts principally draw, or attract.

What and of how many ſorts the fleſh is.

bladder of the Gall, braine, kidneys, milt: Some adde a fourth sort of flesh which is spongy, and that they say is proper to the tongue alone.

A veine is the vessel, pipe or channel of the blood, or bloody matter; it hath a spermaticke substance, consists of one coate composed of 3 sorts of fibers. What a veine is.

An Artery is also the receptacle of blood but that spirituous and yellowish, consisting in like manner of a spermaticke 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 thicke and dense than the utmost, interwoven with transverse fibers; and it doth not onely conteine blood and spirit, but also a serous humor, which wee may beleeve because there bee two emulgent Arteryes, aswell as veines. What an artery is.

But the inner coat of an Artery is therefore more thick, because it may containe blood which is more hot, subtle and spirituous; for the spirit, seeing it is naturally more thin and light and in perpetuall motion, would quickly flye away, unlesse it were held in a stronger hold. There is other reason for a veine, as that which containes blood grosse, ponderous and slow of motion. Wherefore if it had acquired a dense and grosse coate, it could scarse bee distributed to the neighbouring parts; God the maker of the universe, foreseeing this, made the coats of the vessels contrary to the consistance of the bodyes contained in them. The *Anastomosis* of the veines and Arteryes, that is to say, the application of the mouthes of the one to the other, is very remarkeable, 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 veine and artery that meet together at the Ioint and bending of the Arme, which I haue sometimes shewed in the Physicke schooles, at such time as I there dissected Anatomyes. Why an Artery is more thicke and dense than a veine. The mutuall *Anastomesis* of the veines and arteryes. Where it is manifest.

But the action or function of a muscle is either to move, or confirme the parte according to our will, into which it is implanted; which it doth when it drawes it selfe towards its originall, that is to say, it's head. But wee define the head by the insertion of the nerve, which wee understand by the manner of the working of the Muscle. From whence a muscle hath its beginning or head.

Chap. XI.

Of the Muscles of the Epigastrium, *or lower belly.*

NOw seeing that wee haue 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 remaines that wee come to the particular explication of each Muscle, begining with those of the lower belly, as those which we first meet withall in dissection.

These are 8 in number, 4 oblique, 2 on each side, two right or direct one, on the right, another on the left side; and in like manner 2 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. Eight muscles of the *Epigastrium*.

We may adde to this number the 2 little Supplying or Assisting muscles, which are of a *Pyramidal* forme 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 passe, that they are called the Oblique descendant and Ascendant Muscles. Those oblique which wee first meet with, are the descendant, whose substance is partly sanguine, partly spermaticke; 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 expresse the muscles by the name of fleshes; their greatnes is indifferent betweene the large and the small muscles; their figure 3 square. They are composed of the fore-mentioned parts, they are two The oblique descendant. Their substance. Their greatnesse and figure. Their composition and site.

in number; their site is oblique taking their beginning, from the touching of the great saw Muscle and from the sixt and seaventh true ribbes, or rather from the spaces between the sixe lower ribbes, and rather on the forepart of the muscles than of the ribbes themselues, from whence shunning the *Vertebra's* of the loines, 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 onely 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 bee an infinite labour and trouble to set downe at large the severall opinions of all Authors of Anatomy, I haue thought it sufficient for me to touch them lightly by the way. Their connexion is with the oblique ascendant lying vnder 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 & 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 els to unite them firmely. Yet each of these privately and properly drawes the hip in an oblique manner towards the *Cartilago Scutiformis* or brest-blade. Then follow the oblique ascendant, who haue the same substance, quantity, figure, composure, number and temper the descendant have. They are scituate 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 seeme to admit above and below, being fleshy even to the fourth, and then becomming membranous they take their way to the white line, with a double *aponeurósis*, which passes through the right Muscles above and below, as wee may plainely see from the navill downewards. In their fleshy part they draw their originall from the spine of the Haunch bones a little lower than the descendent end in their fleshy parte. But for their membranous parts, they arise before from the share bone, but behinde from the spondiles of the Holy bone, and *Vertebra's* of the loines obliquely ascending vpwards to the white line, into which they are terminated by an *aponeurósis* or membranous tendon (which seemes to penetrate the right Muscle vpwards and downewards, especially vnder the navil) but by their fleshy part at the ends of all the bastard ribbes, which they seeme 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 *Epigastrium*, that is, to presse down the Guts. Their action is (if they performe it together) to draw downe the chest, and dilate the brest; 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, & because they have right or streight fibers.

Their connexion. Their temperament. Their action. The oblique ascendant. Their site and connexion. Their Action The right muscles of the *Epigastrium*.

Wee will say nothing (to shunne prolixitie, which in all other places wee will avoid) of their substance and other conditions, which they have common with the fore mentioned Muscles. They are scituate in the eminentest or extuberating region of the belly, bounding the *Epigastrium* taken in generall, (or the superficiary belly,) they are devided by the manifest intercourse of the white line, even to the Navell, in which place they seeme 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* & the ends of the sixt seventh and eight ribbs; but they end in the share bone where they make a common tendon sufficiently strong and short. *Sylvius*, *Vesalius* and *Columbus* thinke they arise from the share bone, because they cannot be inserted into that bone, because it is immoveable. You may perceive in these Muscles certaine nervous & transverse intersections, often times three in number for the strength of these Muscles (of which *Galen* makes no mention, although they may be seene in Apes.) And also in the inner side of these muscles you may see foure veines and as many arteryes, of which some creepe upwards, others run downwards. The upper called the Mamillary descend from the Axillarie by the side and lower partes of the *Sternon*, the slenderer portions thereof being distributed

Their site. Originall.

by

by the way, to the *Mediastinum*, and about the fourth and fift rib to the Dugges, from whence they take their name.

That which remaines breaking out by the sides of the Brest-blade inserts it selfe into those muscles creeping along, euen almost to the navell; in which place they are manifestly united (that is the veines with the veines, and arteries with the arteryes) with the Epigastricke, which ascend from the vpper part of the Iliackes on each side under the said muscles untill they meet with these 4 mamillary vessels. That you may finde this concourse of the veines and arteryes about the navill, you must follow both the upper and the lower somewhat deepe into the flesh, pressing the blood on both sides from above downewards, and from below upward; untill you shall finde the exosculation of these vessels, which will appeare by this, that the blood will flow from this into that and from that into this; otherwise you can scarce perceiue it, by reason of the smallnes of such vessels which want blood. But that by the benefit of such concourse of the vessels, the matters may be communicated and transported both from the wombe to the dugs, and againe from the dugs to the wombe, appeares in Nurses, who want their courses, when the milke comes into their dugs, and on the contrary lose their milke when their courses flow plentifully. Otherwise to what purpose should there be such concourse betweene the vessels of the pappes and wombe, for there are veines and arteries diffused to the sides of the wombe from the roote of the Epigastrickes; for indeed the Epigastrickes which in their ascent meete with the mamillary, goe not to the wombe, though they be next to them, and arise from the same truncke with the Hypogastricke veine of the wombe. The Action of these muscles is, to move or drawe neere together the parts of the Hypogastrium to the *præcordia* or Hypochondryes. Their use, in *Columbus* opinion is, to draw the Brest downewards 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 thicke and common tendon of the right Muscles, whereupon they are called *Succenturiati*, or assisters.

The meeting together of the Epigastrick and mamillary veines and arteryes.

Their action.

Their use.

Some (moved with I know not what reason) would haue these two small Muscles to help the erection of the yeard. *Columbus* thinkes they should not be separated from the right, and that they only are the fleshy beginnings of the right. But on the contrary *Fallopius* manifestly proves them different and separate from the right and shewes their vse. The Transverse remaine to be spoken of, so called by reason of their fibers which make right angles with the fibers of the right Muscles.

The Pyramidal or assisting muscles.

The transverse muscles of the *Epigastrium*.

They haue a quadrangular figure scituate vpon the greatest part of the *Peritonæum*, to which they sticke so close that they scarse can be separated. They take their originall from the production of the loines, the Eminency of the Haunch-bone, the transverse productions of the *vertebra's* of the loynes 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 doe.

Their figure and site.

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

Their Action.

But all the 8 recited Muscles, besides their proper use, haue another common, that is, they stand for a defence or Bulwarke for all the parts lying under them, and serve for the expulsion both of the excrements, infant, and vapoures, and also for the strengthening of the voice, as experience shewes in those who sound Trumpets and Cornets.

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

Therefore these Muscles doe equally on every side presse the Belly; But the Midriffe, the intercostall Muscles assisting it, doth drive from above downewards, from which conspiring contention followes the excretion of the excrements by the fundament; but unlesse the Midriffe should assiste, these Muscles would presse the excrements no more downewards, than vpward to the mouth.

Although to this excretion of the excrements, it is not sufficient that the Epigastricke, Midriffe and intercostall Muscles presse the belly, but the Muscles of the throtle must be also shut. For the mouth being open the excrements never goe well forth; because the vapours that passe out of the

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

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

mouth, which being restrained and driven to the Midriffe, by stretching it powerfully thrusts downe the excrement. Wherefore Apothecaryes when they give glisters, bid the Patient to open his mouth, that the glister may easilyer goe up, which otherwise would scarsely go up, the mouth being shut, because so we should have no place empty in us, into which the glyster might be admitted.

The first Figure of the Lower belly.

FIG. I

FIG. II.



AABCD. The upper, lower and laterall parts of the *Peritonæum*.

EE. The white Line from the Gristle of the Breast-bone, called the Brest-blade, to the Commissure or meeting of the Share-bones.

F. The Gristle of the Breast-bone *Cartilago ensi-formis* or the Breast-blade.

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

HH. The productions of the *Peritonæum* which contain the Seminarie Vessels on either side.

**. The hole which giveth way to the Seminarie Vessels of Men.

II. A Veine and an Arterie from the *Epigastricke*, which being carried upward under the right Muscles, doe here hang down, and are distributed into the lower part of the *Abdomen*.

KK. A Veine and an Arterie from the internall Mammarie proceeding from under the Bone of the Breast, are carried downeward thorough the right Muscles and 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 seene.

3, 4. The *Anastomosis* or inoculation of the foresaid Vessels, making the consent of the *Abdomen* and the Nose, & of the Wombe with the Breasts, as some think.

LL. Branches of Veines running into the sides of the *Peritonæum*.

N. The place of the Haunch Bone bared, to which the Oblique and the Transverse Muscles doe grow.

Of the white line, and Peritonæum *or Rim of the belly.*

What the white line is

The white line is nothing els, than the bound and extremities of the Muscles of the *Epigastrium* distinguishing the belly in the middest into two parts, the right and left. It is called white, both of its owne colour, and also for that no fleshy part lyes vnder it, or is placed above it. It is broader above the navill, but narrower below, because the right muscles doe there grow into one. Now we must treat of the Coat or membrane, *Peritonæum* or Rim of the belly; it is so called, because it is stretched over all the lower belly, and particularly over all the parts conteined in the ventricle, to which also it freely lends a common coat: It hath a spermaticke substance as all other membranes have; the quantity of it in thicknes 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 aboue the Navil, that so it may conteine the extension of the stomacke, often stretched beyond measure with meat and drinke. On the contrary women have it so thick and strong below their navell that it seemes double, that so they may more easily endure the distention of their wombe caused by the child conteined in it. But above the navell men and women have the *Peritonæum* of an equall strength, for the selfe same reason. The longitude and latitude of it is knowne by the circumscription of the belly.

What the *Peritonæum* is.

The substance and quantity.

The

The figure is round and some what long; it puts forth some productions, like finger stalles, both for the leading and strengthening the spermaticke vessells 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. The figure.

It is composed of slender, membranous and nervous fibers, certaine smalle branches of veines and arteries concurring with them, which it receiues for life and nourishment from the adherent parts. The compositon.

This membtane is one in number, and besides every where one and equall, although *Galen* would haue it perforated in that place where the spermaticke vessels descend to the Testicles; But in truth we must not thinke that a hole, but rather a production as we said before. The number. *Lib. de sem.*

The latter Anatomists haue obserued, the Coate *Peritonæum* is doubled below the Navell, and that by the spaces of these reduplications the vmbilicall arteryes ascend to the Navell.

It is scituate nere the naturall parts and compasses them about, and joined by the coat, which it giues them, as also on the sides, it is ioyned to the *vertebra's* of the loines, from whose ligaments, (or rather periostium) it takes the originall: on the lower part it cleaves to the share bone, and on the upper to the midriffe whose lower parte it wholy invests; on the fore or outer parte it stickes so close to the transverse muscles, that it cannot bee pluckt from them but by force, by reason of the complication and adhæsion of the fibers thereof with the fibers of the proper membrane of these muscles, which membrane in *Galens* opinion proceeds from this Peritonæum, that so it is no marvaile that we may more easily breake, than separate these two coats. It is of temperature cold and dry, as all other membranes are. The site and connexion. *Lib. 5. Meth.*

It hath many uses, the first whereof is, to invest and cover all the parts of the lower belly, specially the kall, least it should be squeesed by great compressures and violent attempts into the empty spaces of the muscles, as it sometimes happens in the wounds of the *Epigastrium*, unles the lips of the ulcer bee very well united: for then appeares a tumor about the wound by the Guts and kall thrusting without the *Peritonæum* into those spaces of the muscles; from whence proceeds cruell paine. Vse.

Another vse is to further the casting forth of the excrements by pressing the ventricle and guts on the foreside, as the Midriffe doth above, as one should doe it by both their hands joyned together.

The third use is, it prohibites the repletion of the parts with flatulency after the expulsion of the excrements, by straitening and pressing them downe.

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

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

Chap. XIII.

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

After the conteining parts, follow the conteined, 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 spermaticke, the quantity of it for thicknesse is diverse in diverse 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 veines, arteries, fat and a membrane, which sliding downe from the gibbous part of the ventricle, and the flat part of the Gut *Duodenum* and spleen over the Gutts, is turned backe from the lower belly to the top of the Colon. It is one as wee said covering the Gutts. It hath its cheefe con- The substance magnitude, figure. The composition.

The connexion.

nexion with the first *Vertebra's* of the loines, from which place in beasts it seemes to take a coate, as in men from the hollow part of the spleene 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 Colliche 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 Colliche Gut. From the vessells of which parts it borrowes his, as also the nerves, if it have any.

Lib. Anatom. administ.

The temper.

The temper of it in leane bodyes is cold and dry, because their Kall is without fat; but in fat bodyes it is cold and moiste by reason of the fat.

The use twofold.

The use of it is twofold: The first is to heat and moisten the Guts, and help their concoction, although it doe it by accident, as that which through the density of the fatte hinders the cold aire from piercing in, and also forbiddes 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 heate both of the ventricle and the neighbouring parts, as it is written by *Galen*. Moreover wee must observe, that in a rupture or relaxation of the *Peritonæum* the Kall falls downe into the *scrotum*, from whence comes that rupture wee call, *Epiplocele*. But in weomen that are somewhat more fat it thrusts it selfe betweene the bladder and the neeke of the wombe, and by its compression hinders, that the seed comes not with full force into the wombe, 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 remaine cold and raw, by reason of the forementioned causes.

Lib. 4. de usu partium.

A cause of frustrating conception.

The second figure of the lower belly.

FIG. I



FIG. II

A, A, B, B. The inner face of the *Peritonæum* cut into foure parts, and so turned backward.

B. The upper *B* shewes the implantation of the *Vmbilicall* Veine into the Liver.

C. The Navell separated from the *Peritonæum*.

From *D* to the upper *B.* the *Vmbilicall* Veine.

E, E. The fore part of the stomack blowne up, neither covered by the liver nor the Kall.

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

G. Vessels disseminated thorow the *Peritonæum*.

* The Brest-blade.

H. The bottome of the Bladder of Vrine.

I. The connexion of the *Peritonæum* to the bottome of the Bladder.

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

M. N. Vessels and Sinnewes embracing the bottome of the Stomacke. *O.* The meeting of the Vessels of both sides, so that *M, N*, and *O*, shew the seame which *Aristotle* mentions 3. *hist.* and 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 alongst the bottom of the stomack. *Q Q Q Q.* Certain branches of the Vessels distributed to the upper membrane of the *Omentum*, & compassed with Fat. *a, a.* The two *Vmbilical* arteries, going down by the sides of the bladder to a branch of the great arterie. *b.* The Ligament of the Bladder which is shewed for the *Vrachus*.

CHAP.

Chap. XIIII.

Of the Ventricle or Stomacke.

NOw we must speake of the Stomacke, the receptacle of the food necessarie for the whole body, the seate of appetite, by reason of the nerves dispersed into its upper orifice, and so into its whole substance. The substance thereof is rather spermaticke than sanguine, because that for one fleshie membrane, it hath two nervous; The quantitie or magnitude of the ventricle is diverse, according to the various magnitude of bodies, and gluttony of men. The figure of it is round and somewhat long, like a Bagpipe. The stomacke is composed of two proper coates, and one common from the *Peritonæum*, together with veines, sinewes, and arteries; the innermost of its proper coates 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 passe that the affections of one part may easily be communicated to the other by sympathy, or consent. This coate hath its originall from the membranes of the braine 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 drawne from that, which they commonly bring from the nerves of the sixt conjugation; why in wounds of the head, the stomacke doth so soone suffer by consent with the braine. The exterior, or outer is more fleshie and thicke, woven with oblique fibers, to retaine and expell. It drawes it originall from the *Pericranium*, which as soone as it comes to the guller, takes unto it certaine fleshie fibers. There be nerves sent into the stomacke from the sixt conjugation of the braine, as it shall be shewed in its proper place. Veines and arteries are spread into it from the *Gastrica*, the *Gastrepiploides*, the *Coronaria* and splenicke, from the second, third, and fourth distribution of the *vena Porta*, or gate-veine; and the third of the descendent artery to the naturall parts, as soone as it passes forth of the midriffe.

What the ventricle is.

The substance.

The magnitude.

The figure.

The compoasure.

The cause of the consent of the mouth and stomacke.

It is one in number. The greater part of it is situated on the left side betweene the spleene, the hollownesse of the liver, and the guts, that assisted by the heate of such neighbouring parts, it may more cheerefully performe the concoction of the meate. Neither am I ignorant that *Galen* hath written, that a great part of the stomacke lies on the left side. But inspection it selfe, and reason makes me derogate from *Galens* authority, for because there is more emptie space on the left side, by reason the spleene is lesse 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 braine by its nerves; with the liver and spleene by its veines; with the heart by its arteries; and with all the naturall parts by its common membrane.

The number.

Lib. 4. de Vsu partium.

The connexion.

The temper of the ventricle in men of good habite, is temperate, because it is almost composed of the equall commixture of sanguine and spermaticke parts; or according to *Galens* opinion, it is cold of its selfe, and by the parts composing it; and hot by the vicinitie of the bowels. But in some it is hotter, in others colder, according to the diverse temper and complexion of diverse bodies. That stomacke is to bee thought well tempered, that powerfully drawes downe the meate and drinke, and embraces and retaines them so drawne, untill by concoction and elixation, they shall be turned into a juyce like creame (which the Greekes call *Chyles*;) and lastly, which doth strongly send from it, and repell the excrements of this first concoction.

The temper.

Lib. 9. Meth.

The stomacke is knowne to be hotter by this, that it better concocts and digests course and hard meates, as beefe, hard egges, and the like, than soft meates easie of digestion, which it corrupts and turnes into belchings. For so a young chickin, is sooner burnt than well rosted at a great fire. The stomacke which is colder, desires much meate, but is slow in concocting them, especially if they be cold and hard of digestion, which for that cause quickly turne sowre. The action of a well conditioned stomacke, is twofold, one common, another proper. The common is to attenuate mixe and digest the meates taken in at the mouth, for the nutrition of it selfe and

Notes of a hot stomacke.

The action twofold.

and the whole body, after the liver hath performed its dutie, which before it be done, the ventricle onely enjoyes the sweet pleasure of the *Chylus*, and comforts its selfe against the heate and impuritie of the adjacent parts, wherefore it is called the worke-house of concoction. Its first action is to attract, retaine, and assimulate to it selfe that which is convenient; but to expell whatsoever shall be contrary, either in quantitie, or qualitie, or in the whole substance.

The two orifices of the stomacke.

It hath two orifices, one above, which they commonly call the stomacke and heart, the other lower, which is called the *Pylorus*, or lower mouth of the stomacke. The upper bends to the left side neere the backe bone; it is farre more large and capacious than the lower, that so it may more commodiously receive meates halfe chewed, hard and grosse, which Gluttons cast downe with great greedinesse; it hath an exquisite sense of feeling, because it is the seate of the appetite, by reason of the nerves incompassing this orifice, with their mutuall embracings; whereby it happens that the ventricle in that part is endued with a quicke sense, that perceiving the want and emptinesse of meate, it may stirre up the creature to seeke foode. For albeit nature hath bestowed foure faculties on other parts, yet they are not sensible of their wants, but are onely nourished by the continuall sucking of the veines, as plants by juice drawne from the earth.

The site.

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 loines; for in this place the gullet perforates the midriffe, and makes this upper orifice. The lower orifice bends rather to the right side of the body, under the cavitie of the liver. It is farre straiter than the upper, lest any thing should passe away before it bee well attenuated and concocted; and it doth that by the helpe or assistance of, as it were a certaine ring, like to the sphincter muscle of the fundament, which some have thought a glandule made by the transposition of the inner and fleshie membrane of the ventricle into that which is the outer of the guts. I know *Columbus* laughes at this glandulous ring, but any one that lookes more attentively shall perceive that the *Pylorus* is glandulous. The stomacke in its lower and inner side, hath many folds and wrinckles, which serve to hold and containe the meates, untill they be perfectly concocted. In the ventricle wee observe parts gibbous and hollow; the hollow is next to the liver and midriffe; the gibbous is towards the guts. Now we must note, that the ventricle when it is much resolved or loosed, may slide downe even to the navell neare the bladder, the which wee have observed in some bodies dissected after their death.

The glandulous ring of the *Pylorus*.

The falling downe of the stomacke.

The third and fourth Figure.



The first figure shewes the foreside of the stomacke and gullet.

A. sheweth the orifice of the gullet cut frō the throate.

B. the straight and direct course of the gullet from A. to B.

C. how the gullet above the first racke 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

monds, set close to the gullet in the end of the throate, called also *Paristmia, Antiades, Tonsillæ* and *Salviares glandulæ*. FF. Another glandulous body in the midst of the gullet, about the fifth racke 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. vlt. lib.* 9. write, that those Glandules are filled with a certaine moisture, with which the gullet is moistened, that the meates may slide downe more easily into the stomacke, as through a slippery passage. No otherwise than the *Glandulæ prostatæ*, filled with a kind of grosse and oily moisture, smooth the passage of the urine, that so it may flow through it, with a more free and lesse troubled course. G. the connexion of the gullet with the stomack, where the upper orifice of the stomack is fashioned. H. the lower orifice of the stomacke called *Pylorus*. I. K. the upper part of the stomacke at I. the lower at K. LL. the foreside of the stomacke. P. the gut called *Duodenum*. T. V. the right and left nerves of the sixth paire encompassing about the gullet and the uppermost left orifice of the stomacke.

The second Figure sheweth the backe 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 stomacke to the left hand. M. N. O. the backeside of the stomacke. M. sheweth the prominence of the left side. N. of the right. O sheweth the docke or impression, where it resteth upon the racke 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 stomacke, and so running out to the liver.

Chap. XV.

Of the Guts.

THe Guts the instruments of distribution and expulsion, are of the same substance and composure with the stomacke, but that the site of the coates of the stomacke is contrarie to those of the guts. For that which is the innermost coate of the stomacke is the outermost of the guts, and so on the contrary. The figure of the guts is round, hollow and capacious, some more, some lesse according to the diverse bignesse. Their substance. Figure.

But for the quantitie of the guts, some are small, some great, more or lesse, according to the varietie of bodies. But they are sixe in number, for there be three small; the *Duodenum*, the *Iejunum*, or emptie gut, and the *Ilion*. Three great, the Blind, the Collicke, 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 stomacke, without any turning, or winding; of which greatnesse it is found in great bodied men, such as were more frequenly to be met withall in *Galens* 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 veine, comming out of the liver, as also to the artery and nerve which runne into it. For seeing that this gut may sometimes rise to the top of the liver, it would possesse 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 bee nothing to hinder the easie and fit distribution of the perfectly concocted *Chylus* to the liver. Their number. The *Duodenum*.

The second is called *Iejunum*, or the empty gut, not because it is absolutely so, but because it containes little in comparison of the other. There is a triple cause of this emptines, the first the multitude of the meseraick veines and arteryes which are about it, whereupon there is a greater and quicker distribution of the *Chylus*. The second is the vicinity or neighbourhood of the liver strongly drawing the *Chylus* conteined in it; the third is the flowing downe of the cholericke humor from the bladder of The *Iejunum*.

of the Gall into it, which ever and anon by its acrimony cleanſes away the filth, and by continuall flowing ſollicites it to expulſion. The third is called *Ileon* becauſe it lyes betweene the *Ilia* or flankes, 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 *Cæcum* 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 downe into the *Scrotum* in the rupture, or relaxation of the Rim of the Belly; for that production in the lower belly ſtrongly ſtickes to the *Peritonæum* or Rim, which hinders ſuch falling downe. But *Galen* ſeemes by ſuch a blind gut to haue meant this long and narrow production, and certainely ſo thinkes the common ſort of Anatomiſts, but here *Veſalius* juſtly reprehended *Galen*. Wherefore *Sylvius* that he might free *Galen* of this fault, would haue us by the blind gut to underſtand the beginning of the collicke gut. The fiſt is called *Colon* (or collicke gut) becauſe it is greater and more capacious than the reſt. The ſixt and laſt, the Right gut, by reaſon of the rightnes or ſtraightnes of the paſſage. This in beaſts eſpecially, hath a certaine fatneſſe in it to make the paſſage ſlippery, and leſt the gut ſhould be exulcerated in the paſſage, by the ſharpeneſſe of hard and acrid excrements.

Ileon.

Cæcum.

Colon.

Rectum.

Their ſite.

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

The Blind bends to the right hand, a little below the kidney, above the firſt and fourth *Vertebra* of the loines. The Colon or Collicke gut is crooked and bent, in the forme 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 ſtomacke above the ſmall guts, even to the hollo wneſſe of the ſpleene; from whence ſliding under the left kidney, with ſome turnings, it is terminated upon the *Vertebra's* of the loines.

The diſtinction betweene the collicke and the ſtone in the kidnies.

By all which turnings and windings of the collicke gut, it is eaſie to diſtinguiſh the paine of the ſtone of the kidneies, which remaines fixt in one certaine place, from the collicke 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.

Their connexion.

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 joyned to the principall parts by their nerves, veines, and arteries.

But a more proper connexion is that, where the *Duodenum* on the upper part of it, is joyned with the *Pylorus*; but on the lower part, to the *Ieiunum*, and the parts lying under it, by the coate of the *Peritonæum*. The *Ieiunum*, or emptie gut, is ioyned to the *Duodenum* and *Ileon*. The *Ileum* with the emprie and blind guts. The blind with the *Ileon* and *Colon*, and with the right ſide of the backe bone where it is tied more ſtraitly. The *Colon* with the blind and right guts, and in his middle part, with the kidneies and the gibbous part of the ſtomacke; whereby it comes to paſſe, that being diſtended with wind in the collike, it overturnes and preſſes the ſtomacke, and ſo cauſes vomiting.

Why vomiting happens in the collicke.

The *Sphincter* muſcles of the fundament.

Laſtly, the right gut is annexed with the collicke gut and fundament. At the end whereof there is a muſcle faſtened, 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 will, leſt man borne 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 goe from them againſt their wills. There is a body ſituate

Gal. lib. 5. de uſu partium. cap. 14.

at

at the end of the right gut, of a middle substance betweene the skinne and flesh, as it were arising from the mixture of them both, like the extremities of the lippes, of the same use with the *Sphincter*, but that it is not altogether so powerfull. But there are also certaine veines situate about it called the Hæmorrhoidall, of which we will speake 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 hippe-bones, which inserted above the *Sphincter* pull up the fundament falling downe, wherefore they are called *Levatores Ani*, or the lifters up of the fundament. Wherefore when as either they are too weake, or resolved, or the fundament oppressed with the weight of flegmaticke, salt, cholleticke and sharpe humors, the gut is scarse restored into its place, that there is neede of the helpe of the fingers for that purpose. *Levatores Ani.*

The guts follow the temper of the stomacke. Their action is the distribution of the *Chylus* by the meseraicke veines (which of dutie 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 worke of concoction, begun in the stomacke, 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 action of the guts.

The fifth figure of the lower belly.



A. The brest 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 veine.

FF. the stomack fild full of meate.

G. a part of the spleene.

H. the blind gut of the late writers, for the Ancients tooke the toppe of the *colon* for it.

I. the beginning of the great or thicke guts.

I. and so to K. sheweth the passages of the collicke gut from the right kidney to the liver. And so the collicke and the stone on this side are in one place, and therefore hardly distinguished.

K. to L. the same colljcke gut lieth under the whole bottome of the stomacke, which is the reason that those which are troubled with the collicke cast so much.

L. to M. The passage of the *Colon* from the spleene to the share bone, by the left kidney, a way, which maketh the paine of the stone and the Collick 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 sunken or fallen side of the *Colon* at P. and his Chambers or Cells at Q. R.S.T. The lesser guts, especially lying under the Navil. *a. a.* The two umbilicall arteryes. *b.* The bottome of the bladder. * The connexion of the bladder and the *Peritonæum*.

But

Their fibers. But we muſt note, that for the compoſure of the guts, they have onely tranſverſe fibers, for expulſions ſake, unleſſe that at the beginning of the *Colon*, and the end of the right gut, you may ſee certaine right fibers added to the tranſverſe to ſtrengthen them, leſt theſe guts ſhould chance to be broken and torne by the paſſage of hard excrements, and the laborious endevour of expulſion (ſpecially in brute beaſts.)

How the guts become fit to retaine. But if any aske, how they have retention, being they want oblique fibers, he may know that the *faeces* are retained in the right gut, by the force of the *Sphincter* muſcle, but oft times in the blind, by their hardneſſe and abundance, whereby they ſticke in the paſſage; but in the reſt, by reaſon of their conformation into many windings

Their length. and turnings. The length of the guts, is ſeven times more than the length of the whole body; to this length they have windings, leaſt the nouriſhment ſhould quickly ſlide away, and leaſt men ſhould bee withdrawne by gluttony from action and contemplation. For ſo wee ſee it comes to paſſe in moſt beaſts, which have one Gut, ſtretched ſtraight out from the ſtomacke to the fundament; as in the Lynx and ſuch other beaſts of inſatiable gluttony, alwayes, like plants, regarding their food.

Chap. XVI.

Of the Meſentery.

The ſubſtance magnitude. AFter the Guts followes the Meſentery, being partly of a fatty and partly of a ſpermaticke ſubſtance. The greatneſſe of it is apparent enough, although in ſome it be bigger, and in ſome leſſer according to the greatneſſe of the body. It is of a round figure and not very thicke. It is com-

Figure. Compoſure. poſed of a double coate ariſing from the beginning and roote of the *peritonæum*. In the midſt thereof it admits nerves from the Coſtall of the ſixt conjugation, veines from the *Vena Porta* or Gate veine; Arteries from the deſcendant artery, over and beſides a great quantity of fat and many glandulous bodyes, to prop vp the diviſion of the veſſels ſpred over it, as alſo to moiſten their ſubſtance. It is in num-

Number. ber one, ſcituate in the middle of the guts, from whence it tooke its name. Yet ſome divide it into two parts, to wit, into the *Meſeræum*, that is, the portion interwoven with the ſmall guts, and into the *Meſocolon* which is joined with the Great. It hath

The connexion. connexion by its veſſells with the principall parts, by its whole ſubſtance with the guts, and in ſome ſort with the kidneies, from whoſe region it ſeemes to take its coats.

The temper. It is of a cold and moiſt temper, if you have reſpect to his fatty ſubſtance; but if to the reſt of the parts, cold and drye.

The action and uſe. The action and uſe of it is, to bind and hold together the guts, each in his place, leaſt they ſhould raſhly be folded together; and by the Meſeraicke veines (which they terme the hands of the Liver) carry the *Chylus* to the liver.

All the meſeraicke veines come from the liver. In which you muſt note, that all the Meſeraicke veines come from the liver, as we underſtand by the diſſection of bodyes; although ſome have affirmed, that there bee ſome veines ſerving for the nouriſhment of the guts, no wayes appertaining to the Liver, but which end in certaine Glandulous bodyes, diſperſed through the Meſentery, of whoſe uſe we will treat hereafter.

Chap. XVII.

Of the Glandules in generall, and of the Pancreas, *or ſweet bread.*

Subſtance of the glandules. A Glandule is a ſimple part of the body, ſometimes of a ſpongye and ſoft ſubſtance, ſometimes of a denſe and hard. Of the ſoft Glandules are the *Tonſillæ*, or Almonds, like in ſubſtance to blanched Almonds; the *Thymus*,

Quantities and figure. *Pancreas*, *Teſticles*, *Proſtata*. But the denſe and hard are the *Parotides* and other like. The Glandules differ amongſt themſelues in quantity and figure, for ſome are greater than other ſome, and ſome are round and others plaine, as the *Thymus* and *Pancreas*.

Others

Others are compounded of veines, nerves, arteries, and their proper flesh, as the Almonds of the eares, the milkie glandules in the brests and the testicles. Others want nerves, at least which may be seene, as the *Parotides*, the axillarie, or those under the armeholes and others. The number of glandules is uncertaine, by reason of the infinite multitude and variety of sporting nature. You shall finde them alwayes in these places, where the great divisions of vessels are made; as in the middle ventricule of the braine, in the upper part of the Chest, in the Mesentery and other lik places. Composition. Number.

Although othersome be seated in such places, as nature thinkes needfull to generate and cast forth of them a profitable humor to the creature; as the almonds at the roots of the tongue, the kernells in the dugs, the spermatick vessels in the *scrotum* and at the sides of the wombe; or where nature hath decreed to make emunctoryes for the principall parts, as behind the eares, under the armeholes, and in the groines. 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 Philitions say the blood *retrudescere*, (*i*) to become raw againe in the dugs, when it takes upon it the forme of milke. But of these some have action, as the almonds, which poure our spattle usefull for the whole mouth, the dugs milke, the Testicles seed; others, use onely as those which are made to preserve, vnderprop and fill vp 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-veine, to serve as a bulwarke, both to it and the divisions thereof, whilst it fills up the emptie spaces, betweene the vessels themselves, and so hinders, that they be not pluckt asunder, nor hurt by any violent motion, as a fall, or the like. Connexion. Temper. Action and use. The substence of the *Pancreas*. The site.

Chap. XVIII.

Of the Liver.

Having gone thus farre, order of dissection now requires, that we should treate of the distribution of the gate veine; but because it cannot well be understood unlesse all the nature of the liver from whence it arises, be well knowne, therefore putting it off to a more fit place, we will now speake of the Liver. Wherefore the liver (according to *Galens* opinion, *lib. de form. fatus*) is the first of all the parts of the body, which is finished in conformation, it is the shoppe and Author of the bloud, and the originall of the veines; the substance of it, is like the concrete mudde of the bloud, the quantitie of it is diverse, not onely in bodies of different, but also of the same species; as in men amongst themselves, of whom one will bee gluttonous and fearefull, another bold, and temperate, or sober; for hee shall have a greater liver than this, because it must receive and concoct a greater quantitie of *Chylus*: yet the liver is great in all men, because they have need of a great quantitie of bloud for the repairing of so many spirits & the substantificke moisture, which are resolved and dissipated in every moment by action and contemplation. But there may bee a a twofold reason given, why such as are fearefull have a larger liver. The first, is because in those the vitall facultie (in which the heate of courage and anger resides) which is in the heart, is weake; and therefore the defect of it must be supplied by the strength of the naturall facultie. 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*, coldnesse increases the appetite; by which it comes to passe that they have a greater quantitie of *Chylus*, by which plenty the liver is nourished, and growes larger. Some beasts, as Dogges, 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 chearish the upper and hollow region of the ventricle, with embracing to helpe forward the worke of concoction. Therefore the liver is almost content with one Lobe, although it is alwayes rent with a small division, that the umbilicall veine pearcing into the roots and substance of it, may have a free passage; but also oftentimes there is as it were a certaine small lobe of the liver, laid under that umbilicall veine, as a cushion. What the liver is. Its substance and quantity. Why cowards have great livers.

The figure. The figure of the liver is gibbous; rising up and smooth towards the Midriffe; towards the stomacke is the *sinous* or hollow side of it somewhat unequall, and rough by reason of the distance of the Lobes, the originall of the hollow veine, and the site of the bladder of the Gall.

The compositure. The vessels. The composition of the liver is of veines, nerves, arteryes, the coate and proper substance thereof which we call the grosse and concreet blood, or *Parenchyma*. Veines and arteryes come to it from the navell, but nerves immediatly from these which are diffused over the stomack according to *Hippocrates*; yet they penetrate not very deep into its substance, for it seemes not to stand in needeof such exact sense, but they are distributed upon the coate and surface thereof, because this part made for distribution over the whole body, keepes to it selfe no acrid or maligne humor, for the perception of which it should neede a nerve, although the coate investing it, sends many nervous fibers into its substance, as is apparent by the taking away of the coate from a boiled liver; we must thinke the same of the other entrals. The coate of the liver is from the *Peritonæum*, waxing small from the umbilicall veine, when it divides it selfe for the generation of the gate and hollow veines, as is observed by *Galen, lib. de format. Fœtus*. The liver is onely one, situate in the greater part on the right side, but with the lesser part on the left, quite contrary to the stomacke. Its chiefe connexion is with the stomacke, and guts, by the veines and membranes of the *Peritonæum*; by the howllow veine and artery, with the heart; by the nerve with the braine, 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 veines and hot bloud; but such as have it cold, have small veines, and a discoloured hew. The Action of the Liver is the conversion of the *Chylus* into bloud, the worke of the second concoction. For although the *Chylus* entring into the meseraicke veines, receive some resemblance of bloud, yet it acquires not the forme and perfection of bloud, before it be elaborate, and fully concoct in the liver. It is bound and tied with three strong ligaments, two on the sides in the midst of the bastard ribs, to beare up its sides, and the third more high and strong, descending from the breast-blade, to sustaine its proper part, which with its weight would presse the lower orifice of the stomacke, and so cause a falling or drawing downe of the sternon and coller bone. And thus much may suffice for its proper ligaments, for we before mentioned its common, the veines, arteries, nerves, and coate of the *Peritonæum*, by which it is knit to the loines, and other naturall parts. But wee must note, that besides these three proper ligaments, the liver is also bound with others to the bastard ribs, os *Sylvius* observes in his Anatomicall observations, and *Hollerius* in his Practise, *Cap. de Pleuritide*.

The number and site. The connexion. The temper. The action. The ligaments

Chap. XIX.

Of the bladder of the Gall.

The substance, greatnesse, and figure thereof The composition. Number and connexion. Temper. Action.

NOw wee must come to the bladder of the Gall, which is of a nervous substance, and of the bignesse of a small peare; it is of figure round, with the bottome more large, but the sides and mouth more narrow and straite. It is compoſed of a double coate, one proper, consisting of three sorts of fibers, the other from the *peritonæum*. It hath a veine from the *Porta* or gate veine, and an artery from that which is diffused into the liver, and a nerve from the sixt 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 stomack also, by another passage; & to conclude to all the parts by its veines, nerves, arteries, and common coate. It is of a cold temper, as every nervous part is. The action of it is to separate from the liver the cholericke humor, and that excrementitious, but yet naturall by the helpe of the right fibers, for the purifying of the bloud, and by the oblique fibers, so long to keepe it being drawne, untill it begin to become troublesome in quantitie, qualitie, or its whole substance, and then by the transverse fibers, to put it downe into the *Duodenum* to provoke the expulsive facultie of the guts. I know *Fallopius* denies the texture of so many fibers, to be the minister of such action to the gall. But *Vesalius* seemes sufficiently to have answered

him

him. The bladder of the gall hath divers channels, for comming with a narrow necke, even to the beginning of the gate veine, it is divided into two passages, the one whereof suffering no division is carried into the *Duodenum*, vnlesse that in some it send another branch into the bottome of the stomack, as is observed by *Galen*; which men have a miserable and wretched life, being subject to cholericke vomitings, especially when their stomackes are empty, with great paines of their stomacke and head, as is also observed by *Galen Cap.* 74. *Artis Med.* The other comming out of the body of the liver devides it selfe into two or three passages, againe entering the substance of the liver, is divided with infinite branches, accompanying so many branches of the gate veine through the substance of the liver, that so the blood unlesse it be most elaborate and pure, may not rise into the hollow veine, all which things Dissection doth manifestly teach.

The channels of the gall.

Lib. 2. *de temp per.*

The sixth Figure of the bladder of the Gall.

FIG. II



M. The *Pylorus* joyned to the *Duodenum*.
N. the *Duodenũ* joyned to the *Pylorus*
P. shewes the bottome of the bladder of the gall.
QQ. the holes of the bladder of gall disperssed through the liver, betwixt the rootes of the hollow and gate veines. R. the roote of the gate veine in the liver. S. the root of the hollow veine in the liver.
a. the concourse or meeting of the passages of choller into one branch. *b.* the necke of the bladder into which the passage is inserted. *c.* the passage of the gall into the *Duodenum*. *d.* the *Duodenum* opened, to manifest the insertion of the *porus biliarii*. *e.* an arterie 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 ribbe branch of the sixth paire. *gg.* the cysticke twins from the gate veine.

CHAP. XX.

Of the Spleene or Milt.

BVt because we cannot well shew the distribution of the gate veine, unlesse the spleene be first taken away, and removed from its seate: therefore before we go any further, I have thought good to treate of the spleene. Therefore the spleene is of a soft, rare, and spongious substance (whereby it might more easily receive and drinke up the dreggs of the blood from the liver) and of a flesh more blacke than the liver. For it resembles the colour of its muddy blood, from which it is generated. It is of an indifferent greatnesse; but bigger in some, than in othersome, according to the diverse temper and complexion of men. It hath, as it were, a triangular figure, gibbous on that part, it stickes to the ribbes and midriffe, but hollow on that part next the stomacke. It is composed of a coate, the proper flesh, a veine, artery, and nerve. The membrane comes from the *peritonæum*, the proper flesh from the *faeces* or dregges of blood, or rather of the naturall melancholy humor, with which it is nourished. The fourth branch of the *vena porta*, or gate veine, lends it a veine; the first branch of the great descendant artery presently after the first entrance without the Midriffe, lends it an arterie. But it receives a nerve from the left cosiall, from the sixt conjugation on the inner part, by the rootes of the ribs; & we may manifestly see this nerve, not only disperssing it selfe through the coate of the liver, but also penetrating with its vessels the proper flesh thereof, after the selfesame manner, as we see it is in the heart and lungs. It is one in number, situate on the left side, betweene the stomacke and the bastard ribs, or rather the midriffe which descends to their rootes. For it oft times cleaves to the midriffe on its gibbous part, by a coate from the *peritonæum*, as also on the hollow part to the stomacke, both by certaine veines which sends it into the ventricle, as also by the kall. It hath connexion, either primarily, or secundarily, with all the parts of the body, by these its vessels.

The substance.

Magnitude.

Figure.

Composition.

Number, and site.

Connexion.

Temper and use.

It is of a cold and drie temper; the action and use of it is to separate the melancholicke 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 heate, which they carrie in full force with them from the heart, that grosse bloud puts off its grossenesse, which the spleene sends away by passages fit for that purpose, retaining the subtler portion for its nourishment. The passages by which it purges it selfe from the grossenesse of the melancholy bloud, are a veine ascending from it into the stomacke to stirre up the appetite by its soureneſſe, and strengthen the substance thereof by its astriction; and also another veine, which sometimes from the spleene branch, sometimes from the gate veine, plainely under its orifice, descends to the fundament, there to make the Hæmorrhoidall veines.

Chap. XXI.

Of the Vena Porta, *or Gate-veine, and the distribution thereof.*

The substance and figure.

THe gate-veine, as also all the other veines, is of a spermaticke substance, of a manifest largeneſſe, of a round and hollow figure, like to a pipe or quill. It is composed of its proper coate, and one common from the *peritonæum*. It is onely one, and that situate in the simous or hollow part of the liver, from whence it breakes forth (or rather out of the umbilicall veine) into the midst of all the guts, with which it hath connexion, as also with the stomacke, spleen, *sphincter* of the fundament and *Peritonæum*, by the coat which it receives from thence. It is of a cold and dry temper. The Action of it is, to sucke the *Chylus* 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 stomacke, spleen and guts.

Composition. Number and Site.

Temper and Action.

Division thereof into 6 branches of which 4 simple.

This Gate veine comming out of the simous part of the liver, is divided into sixe branches, that is 4 simple and two compound, againe divided into many other branches. The first of the simple ascends from the fore part of the truncke to the bladder of the Gall by the passage of the Choller (and are marked with *g.g.*) with a like arterye for life and nourishment, and this distribution is knowne by the name of the *Cystica gemella* or Cysticke twins. The second is called the *Gastrica* or stomack veine arising in like manner from the fore part of the truncke, is carried to the *Pylorus* and the simous or backe part of the stomacke next to it.

1 *Cystica gemella.*

2 *Gastrica.*

3 *Gastrepiploïs.*

The third is called *Gastrepiploïs*, the stomacke and kall veine, which comming from the right side of the gate veine goes to the gibbous part of the stomacke next to the *Pylorus* and the right side of the kall.

4 *Intestinalis.*

The fourth going forth from behind and on the right hand of the gate veine, ascends above the roote of the Meseraicke branch, even to the beginning of the gut *Ieiunum*, along the gut *Duodenum*, from whence it is called *Intestinalis*, or the gut-veine. And these are the foure simple branches. Now we will speake of the compound.

Two compound.

1 *Ramus splenis* ascending forch.

1 *Coronalis.*

The first is the spleenicke, which is divided after the following manner. For in its first beginning and upper part, it sends forth the *Coronalis*, or crowne veine of the stomacke, which by the backe part of the stomacke ascends into the upper and hollow part thereof; to which place, as soone as it arrives, it is divided againe 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 backe parts of the stomacke. These engirt and on every side incompasse the body of the ventricle, for which cause they are named the crowne veines.

2 *Hæmorrhoidal. interna.*

I have sometime observed this comming forth of the truncke, a little above the orifice of the splenicke branch. But this same splenicke branch on its lower part, produces the branch of the Hæmorroidall veines, which descending to the fundament above the left side of the loines, diffuses a good portion thereof into the least part of the collicke gut, and the right gut, at the end whereof it is often seene to be divided into five Hæmorrhoidall veines, sometimes more, sometimes lesse.

Sylvius

Sylvius writes that the Hæmorrhoidall branch descends from the mesentericke, and truly we have sometimes observed it to have beene so. Yet it is more sutable to reason, that it should descend from the splenicke, not onely for that we have seene with our eyes that it is so, but also becausе it is appointed by nature for the evacuation of the excrementitious melancholike humor. But this same splenick branch out of the middle almost of its upper part produces the third branch going to the gibbous part of the stomacke, and the kall; they terme it the greater, middle and left *Gastrepiplois*. But on the lower part towards the spleene it produces the simple *Epiploïs*, or kall-veine, 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.

3. *Gastrepiplois major sinistra.*

4. *Epiploïca sinistra.*

5. *Vas breve seu venosum.*

Wee have oftentimes and almost alwayes observed, that this veinie vessell, which *Galen* calls *vas breve*, comes from the very body of the spleene, and is terminated in the midst of the stomacke on the left side, but never peirces both the coates thereof. Wherefore it is somewhat difficult to find, how the melancholy juyce can that way be powred, or sent into the capacitie of the stomacke. Now the splenicke branch, when it hath produced out of it those five forementioned branches, is wasted and dispersed into the substance and body of the spleene:

Lib. 4. de usu partium.

Then followes another compound branch of the *vena porta*, called the mesentericke, 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 collicke-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 *Ieiunum* or empty gut. It is called Mesentericke becausе it is diffused over all the Mesentery; as the splenicke is in the spleen. And thus much wee have to say of the division of the gate veine, 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 finde 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 judgement is the same of other divisions of the vessels. Yet wee have set downe that which wee have most frequently observed.

2 *Ramus mesentericus*, divided into three parts.

CHAP. XXII.

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

THose things being thus finished and considered, the guts should be pulled aaway, but seeing that if we should do so, we should disturbe and loose 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 veines come from the liver, so all arteries proceede from the heart. This presently at the beginning is divided into two branches, the greater whereof descends downewards to the naturall parts upon the spine of the backe, taking its beginning at the fifth *vertebra* thereof, from whence it goes into the following arteries. The first called the intercostall, runnes 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.

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

1 *Arteria intercostalis.*

This in going this progresse makes 7. litle branchings, distributed after the forementioned manner, and going forth of the truncke of the descendant over against each of the intercostal 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 arterye. The third being of a large proportion, arising from the upper part of the artery presently after it hath passed the midriffe, is divided into two notable branches, whereof on goes to the stomacke, spleene, kall, to the hollow part of the liver

2 *Phrenica.*

3. *Coliaca.*

liver and the gall; the other is sent forth to the mesentery and guts after the same manner, as wee said of the meseraicke veines, wherefore it is called the *Cœliaca*, or stomacke arterie. But wee must note, all their mouthes penetrate even to the innermost coate of the guts, that by that meanes they may the better and more easily attract the *Chylus* contained in them.

4. *Emulgent.* The fourth is carried to the reines, where it is named the reinall or emulgent, because it suckes fit matter from the whole masse of bloud.

5. *Spermatica.* The fifth is sent to the testicles with the preparing spermaticke veines, whence also it is named the spermaticke artery, which arises on the right side, from the very trunke of the descendant artery; that it may associate the spermaticke veine of the same side, they runne one above another, beneathe the hollow veine, wherefore wee must have a great care whilest wee labour to lay it open, that wee doe not hurt and breake it.

The seventh Figure of the lower belly.



A.A. the midriffe turned backe 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 bee better seene.

C. the least ligament of the liver.

D. the umbilicall veine.

E. the hollownesse in the liver, which giveth way to the stomacke.

F. the left orifice of the stomacke.

GG. certaine knubs, or knots, and impressions in the hollow part of the liver.

H. the bladder of gall.

I. the gare-veine, cut off, and branches which goe to the bladder of gall.

K. a nerve of the liver comming from the stomachicall nerve.

L. an artery common to the liver and bladder of gall.

M. a nerve common also to them both, comming from the right *costall* nerve of the ribs.

N. the passage of the gall to the guts cut off.

OO. the hollow of the fore parts of the spleene.

P. they line where the vessels of the spleene are implanted. Q. the trunke of the hollow veine. R. the trunke of the great artery. S. the *Cœliacall* artery cut off. T. V. the kidneies yet wrapped in their membrane. X. Y. the fatty veines called *vena adiposa*. *a.b.* the emulgent veines with the arteries under them. *cc. dd.* the ureter from either kidney to the bladder. *e.f.* the spermaticall veines to the testicles, the right from the hollow veine, the left from the emulgent. *g.g.* veines comming from the spermaticall to the *peritonæum*. *h. i.* the spermaticall arteries. *k.* the lower mesentericall artery. *l.* the ascending of the great arterie above the hollow veine, and the division of it, and the hollow veine into two trunkes. *m.* the arterie of the loines 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 leade the seed from the testicles, is here reflected. *r. ſ.* the *scrotum*, or cod, that is, the skinne that invests the yard and testicles. *t.* the fleshie pannicle or membrane which is under the cod. *u.* the coate which is proper to the testicles with his vessels. *x.* a part of the yard excoriated or flayed, and hanging downe.

The

The sixth going from the fore and upper part of this descendant arterie, descends with the Hæmorroidall veines to the fundament; presently from his beginning, sending forth certaine branches alongst the collicke gut, which by *anastomosis* are united with other branches of the *Cœliacall* arteries; for whosoever shall looke more attentively, he shall often observe that veines are so united amongst themselves, and also arteries, and sometimes also the veines with the arteries. For an *anastomosis* is a communion and communicating of the vessels amongst themselves, by the application of their mouthes, that so by mutuall supplies they may ease each others defects. But they call this the lower meseraicke arterie. *Hæmorrhoidalis seu meseraica inferior.*

The seventh proceeding from the truncke with so many branches as there be *vertebra'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. 7 Lumbaris.

The eight maketh the Iliacke arteries, until such time as it departs from the *Peritonæum* where the Crurall Arteryes take their originall. This Iliacke Artery sends many divarications towards the Holy bone where it takes its beginning, and to the places lying nere the Holy bone, which because they run the same course as the Iliacke veins, for brevities sake, we will let passe further mention of them, till we come to treate of the Iliacke veines. 8 Iliaca.

Chap. XXIII.

Of the distribution of the Nerves to the naturall parts.

It remaines, that before the bowels be taken away, we shew the nerves sent to the entrailes and naturall parts, that as wise and provident men we may seeme to have omitted nothing. First we must know that these nerves are of the sixt conjugation, which descend as well to the stomacke all alongst the Gullet and the sides thereof, as those at the roots of the ribbes 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 veines and arteryes, but specially of the arteryes. Wherefore if you have a mind to follow this distribution of the nerves, you must chiefely looke for it in those places, in which the artery is distributed amongst the Guts above the loynes. 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 litle nerves, for the performance of the third duty of the nerves, which is in the discerning and 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 downe dead; but we have this benefit by this sense, that as soone as any thing troubles and vellicates the bowels, we being admonished thereof may looke for helpe in time. Their magnitude and use.

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

Chap. XXIIII.

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 foure fingers from the end, with a sharp knife betweene the two ligatures. Then you must shew its proper coats, and fibers, and that common one which

which it hath from the *Peritonæum*. This being done, you muſt in like manner binde the truncke of the gate veine as neere 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 Cæliacke Arterye at the left kidney, and in the lower Meſentericke, which deſcends to the Right gut with the Hæmorrhoidall veines. This being done, pul 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 backe 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.

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

Becauſe the reſt of the naturall parts, do almoſt all depend upon the deſcendent Hollow veine, therefore before we goe any further, we will ſhew its originall and diſtribution. We ſaid before that all veines proceeded from the Liver, but yet in divers places. For the gate veine goes out of the hollow part, and the Hollow veine 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 vitall and animall parts, and the extremities of theſe parts, as we ſhall ſhew in their place. The greater deſcending from the backe part of the Liver above the *Vertebræ* of the loines to the parts beneath, goes in the manner following. The firſt diviſion thereof is to the membranes of the reines, which come from the *Peritonæum*. Wherefore there it produces the *Venæ adipoſæ*, or fatty veines, ſo called becauſe they bring forth a great quantity of fat in thoſe places; Of theſe fatty veynes, there is a diverſe originall, for the right doth oftentimes ariſe from the right emulgent becauſe it is higher; but the leſſe comes from the very truncke of the hollow veine, becauſe the emulgent on that ſide is lower, and you ſhall ſcarſe ſee it happen otherwiſe.

The diviſion of the greater branch of the hollow veine.

1. *Adipoſæ.*

2. *Emulgent.*

The ſecond being the Kidney or Emulgent veines, go to the Reines, Which at their entrance, or a little before, is devided into two branches, like as the Artery is, the one higher, the other lower; and theſe againe into many other through the ſubſtance of the Kidneys, as you may learne better by ocular inſpection, than by booke. They are thick and broad that the ſerous humor may without impediment have freer paſſage. Their originall is different, for the right Emulgent, often times comes forth of the Hollow veine ſomewhat higher than the left; that ſeeing their office and duty is to purge the maſſe of blood from the chollericke 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 bin placed the one juſt oppoſit 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 therof. But we muſt remember that in diſſecting of bodies, I have oft times found in ſuch as have beene troubled with the ſtone, ſeven Emulgent veines and ſo many arteries; foure from the left ſide comming from diverſe places, of which the laſt came from the Iliacke; three from the right hand likewiſe in diverſe places.

3 *Spermatica.*

The third diviſion is called the ſpermaticke or ſeed veine, it goes to the Teſticles; the originall thereof is thus, that the right ariſes on the fore part of the trunck of the hollow veine; but the left moſt commonly from the emulgent. Beſides you ſhall ſometimes finde that theſe have companions with them, to the right emulgent; but to the left another from the hollow veine, in ſome but on one ſide, in others on both. But alſo I have ſometimes obſerved the left emulgent to proceed from the ſpermaticke or ſeed veine.

4. *Lumbaris.*

The forth becauſe it goes to the loynes, is called *Lumbaris*; which in his originall and inſertion is wholy like the Artery of the loines. But there are 4 *Lumbares* or Loine veines

veines on each side, that is, one in each of the 4 spaces of the 5 *Vertebras* of the loines.

The fift division makes the Iliacæ, until passing through the *Peritonæum*, they take the name of Crurall veines; 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 originall from the end of the Trunck. And then the same Iliacæ are devided 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.

5 Iliacæ, which are divided into.
1 Musculosæ.
2 Sacræ.

Thirdly the *Iliacæ* are divided into the *Hypogastricæ* so called, because they are distributed to all the parts of the *Hypogastrium*, or lower part of the lower belly, as to the right Gut, the muscles therof, the musculous skin, (in which place they often make the externall Hæmorrhoidall, ordained for the purging of such blood as offends in quantity, as those other [that is, the inward Hæmorrhoidall] which descend to the right Gut from the Gate veine by the spleenicke branch, serves for cleansing of that which offends in qualitie) to the bladder and the necke thereof even to the end of the yard, to the wombe, and even to the necke of the wombe and utmust parts of the privities; from whence it is likely, the courses breake forth in weomen with child and virgins. But this same veine also sends a portion of it without the *Epigastrium* by that perforation which is common to the share and haunch bones, which strengthened by meeting of the other internall Crurall veine descends even to the Hamme, but in the meane 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*. Fiftly, these *Iliacæ* produce the *Pudendæ* or veines of the privities because they go in women to their privityes, and into men to the Cods, where they enter that fleshy coat filled with veines, and goe to the skin of the yeard, they take there beginning under the *Hypogastricæ*.

3 *Hypogastricæ*, which produce the Hæmorrhoidales externæ.
4 *Epigastricæ*.
5 *Pudendæ*.

Chap. XXVI.

Of the Kidneyes or Reines.

NOw follow the Kidneyes, which that they may bee more easily seene, (after that you have diligently obserued their scituation) you shall dispoile of there 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 Kidneyes is fleshy, dense and solid, least they should be hurt by the sharpnes 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 lyes next the hollow veine, and on this side they receive the emulgent veines and Arteryes, and send forth the ureters; there gibbous part lyes towards the loines. They are composed of a coate comming from the *Peritonæum*, their owne 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 sixt conjugation is diffused to each Kidney on his side into the coat of the kidney it selfe, although others thinke it alwayes accompanies the veine and artery.

Their substance. Magnitude. Figure. Composition.

But *Fallopius* that most diligent Author of Anatomye hath observed, that this nerve is not only oftentimes divaricated into the coat of the kidneyes, but also pierces into their substance. They are two in number that if the one of them should by chance be hurt, the other might supply those necessityes of nature, for which the Kidneys are made. They lye vpon the loynes at the sides of the great vessels, on which they depend by their proper veines and arteries; and they sticke to them, as it were by a certaine second coate, lest that they might be shaken by any violent motions. Wherfore

Number. Site.

fore we may say that the Kidneyes have two coates, one proper adhering to their substance, the other as it were comming from the *Peritonæum* on that part they sticke to it. The right Kidney is almost alwayes the higher, for those reasons I gave, speaking of the originall of the Emulgent vessels. *Columbus* seemes to thinke the contrary, but such like controversies may be quickly decided by the Eye. They have connexion with the principall vessels by the veines, nerves and arteries, by the coates with the loines and 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 clense the Masse of the blood from the greater part of the serous and cholericke humor. I said the greater part, because it is needfull that some portion thereof should go with the alimentary blood to the sollid parts, to serve in steed of a vehicle lest otherwise it should be too thicke.

Connexion.

Temper.
Action.

Besides you must note that in each kidney there is a cavitye bounded by a certaine membrane, incompassed by the division of the emulgent veines and arteryes, through which the urine is strained partly by the expulsive faculty of the kidneies, partly by the attractive of the ureters, which run through the substance of the kidneyes on the hollow side, no otherwise than the *Porus cholagogus* through the body of the Liver.

Their straines.

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

FIG. I.

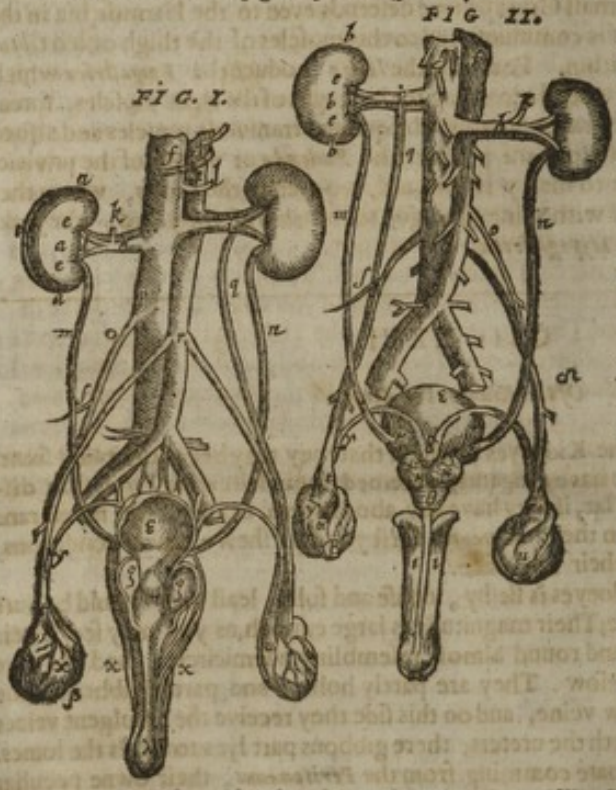


FIG II.

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

*a.a.a.*1. The forepart of the right kidney.

*b.b.b.*2. The backe part of the left kidney.

*c.*1. the outside.

*d.d.*1.2. The inner side.

*e.e.*1.2. The two cavities wherinto the emulgent vessels are inserted.

*f.f.*1.2. The trunke of the hollow veine.

*g.g.*1.2. The trunke of the great artery.

*h.i.*12. The emulgent veine and artery.

*k.k.*1.2. The right fatty veine.

*l.*1. The left fatty veine.

**.*1. The Cœliacall artery.

*m.n.*1.2. The ureters.

*o.p.q.*1.2. The right spermaticke veine which ariseth neere *p.* the left neere *q.*

r.i. The place where the Arteryes of seed arise. *s.*1.2. Small branches distributed from the spermaticall veines to the *Peritonæum*. *t.*1.2. The spiry varicous body, called *Varicosum vas pyramidale*. *u.*1.2. The *Parastatæ*, or *Epididymis*. *x.*1. The testicle yet covered with its coate. *y.*1.2. The place where the leading vessell called *vas deferens* doth arise. *α.*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 vessel 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 backe parts. *ζζ.*1. The small bladder of the seed opened. *η.η.*2. The Glandules called *Glandulæ Prostatæ*. *θ.*2. The sphincter muscle of the bladder. *ιι.*1.2. The two bodyes which make the substance of the yard. *κ.κ.*1. The vessels which goe unto the yard

and

and necke of the bladder. A. 1. The passage which is common to the urine and seed, cut open. A. 2. The implantation of the ureters into the bladder.

Chap. XXVII.

Of the spermaticke Vessells.

NOw we should have spoken of the ureters, because as wee sayd before, they are passages derived from the Kidneyes to carry the urine to the bladder. But because they cannot be distinguished and shewed unles by the corrupting and vitiating the site of the spermaticke vessels; therefore I have thought it better to passe 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 & manyfest) 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 veines and arteryes. 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 weomen, because these have their Testicles hanging without their belly, but weomen have them lying hid within their belly. Their figure and composure is wholy 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 swolne veines, even to the Testicles. That the spermaticke matter in that one tracte, which yet is no other than blood, may be prepared to concoction, or rather be turned into seed in these vessells, by the irradiation of the faculty of the Testicles. These vessells are sixe in number, foure preparing, and two ejaculatory, of which we will speake hereafter. Therefore on each side there be two preparing vessels, that is, a veine and an artery, arising as we told you when we spoke of the distribution of the hollow veine. They are inserted into the Testicles through that coate which some call *Epididymis*, others *Darton*. Their site is oblique above the loines and flankes, whilest they runne downe betweene the ends of the share and hanch 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 spermaticke matter: their magnitude and figure equall, and resemble a small pullets Egge somewhat flatted; Their composure is of veines, arteries, coats and their proper flesh. Their veines and arteries proceed from the spermaticke vessels, their nerves from the sixth conjugation, by the roots of the ribbes 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 coate, which consists of the fleshy Pannicle in that place receiving a great number of vessells, through which occasion it is so called. The proper coats are first the *Erythroris* arising from the processe of the *Peritonæum*, going into the *Scrotum* together with the spermaticke vessels which it involues and covers; this appeares 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

Their substance. Magnitude and figure. Composition. The Coat *Erythroris*. The *Epididymis*, or *Dartos*.

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 entrailes. But you muſt obſerve that the *Erythroïs* 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, ſpongeous, cavernous and ſoft, ſo that they cannot ſafely be joyned to the ſpermaticke veſſels which are hard and ſtrong. Wherefore Nature that it might joyne extremes by a fit *Medium*, or meane, formed this coate *Epididymis*. This is ſcarſe apparent in weomen by reaſon of its ſmallneſſe. The two forementioned common coats, adhere or ſticke together by their veſſels not only amongſt themſelves, but alſo with the *Erythroïs*. 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 wee ſaid before) aſſumes fleſh from the flanks. Their compoſition is like that of other muſcles. They are two, one each ſide on. They are ſituate from the ends of the flanks, even to the ſtones. They have connexion with the proceſſe 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 Kidneies; for ſome have but one Kidney. They lye hid in the *Scrotum* at the very roots of the ſhare bone, connexed to the principall parts of their veſſels, with the necke 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 more large and compact. Thoſe on the contrary that have them cold are ſlow to venery, neither doe they beget many children, and thoſe they get are rather female than male, their priuities have litle haire upon them, and their teſticles are ſmall, ſoft and flat.

The Cremaſter muſcles.

Temper.

Action.

The action of the teſticles is to generate ſeed, to corroborate all the parts of the body, and by a certaine manly irradiation to breed or encreaſe a true maſculine courage. This you may know by Eunuches or ſuch as are Gelt, who are of a womaniſh nature, and are oftentimes more tender and weake than weomen. As *Hippocrates*, teaches by the example of the Scythians, *lib. de Aëre, locis et aquis.*

Chap. XXIX.

Of the varicous bodyes or Paraſtat's, *and of the ejaculatory veſſels and the glandulous or* Proſtates.

Their ſubſtance.

THe varicous *Paraſtata* are nervous and white bodyes, like as the nerves, round and cloſe woven amongſt themſelves, they are ſtretched even from the top to the bottome of the teſticles, from whence preſently by their departure they produce the *Vaſa ejaculatoria*, or trading veſſels. But unleſſe we doe very well diſtinguiſh their names, wee ſhall ſcarſe ſhun confuſion. For that which I call *Paraſtata*, 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 coate 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 be moſt perfectly laboured and concocted in theſe veſſels by the power and force of the teſticles. For in the firſt windings, the blood lookes 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 ſtraitneſſe, or obliquity, which it deſires to make more perfect and elaborate by any

Here the Author ſpeakes otherwiſe than *Galen*.

Action.

new

new concoction; this we may learne by the foldings of the *Rete mirable*, the windings of the Guts, the wrinckles in the bottome of the ſtomacke, the ſtraitneſſe of the *Pylorus*, the capillary veines diſperſed through the body of the Liver; certainly nature hath intended ſome ſuch thing in the making of the ſpermaticke veſſels. Their quantity is viſible, and figure round tending ſomewhat to ſharpneſſe. They are compoſed of veines, nerves and arteryes (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 be two in number, one to each teſticle. But theſe varicous bodyes are called *Paraſtata*, Aſſiſters, becauſe they ſuperficially aſſiſt, and are knit to the teſticles according to their length, or long-wayes. Out of the *Paraſtata* 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 ſeeme not to be perforated by any manifeſt paſſage, unleſſe by chance in ſuch as have had a long *Gonnorrhœa*. They have like temper as the *Paraſtats*, betweene which and the Proſtates they are ſeated, immediatly knit with them both; as both in the coat and the other veſſels with the parts from whence they take them.

Their quantity, figure and compoſure.

Their temper and number.

Vaſa ejaculatoria the ejaculatory or leading veſſels.

But we muſt note, that ſuch like veſſels comming out of the *paraſtats* aſcend from the botom 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 backe, they forſake the preparing, that ſo they may run to the bottome of the ſhare-bone, into the midſt of two glandulous bodies which they call *proſtats* ſcituate at the neck of the bladder, that there meeting together they may grow into one paſſage.

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 unnaturall Caruncle, then eſpecially when it is ſwolne 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 Proſtats and ſo to the necke of the bladder, ſo to be caſt forth at the common paſſage. But if any aske whether that common paſſage made by the two leading veſſels betweene the two glandulous bodyes be obvious to ſenſe or no? We anſwer it is not manifeſt, though reaſon compell us to confeſſe that that way is perforated by reaſon of the ſpermaticke, groſſe and viſcous matter carryed that way. But peradventure the reaſon why that paſſage cannot be ſeene is, becauſe in a dead carcaſſe all ſmall paſſages are cloſed and hid, the heat and ſpirits being gone, and the great appeare much leſſe, by reaſon all the perforations fade, and fall into themſelves. Yet certainely theſe paſſage muſt needs be very ſtraite, even in a living man, ſeeing that in a dead they will not admit the point of a needle. Wherefore we need not feare, leaſt in ſearching, whileſt we thruſt the *Catheter* into the bladder, it penetrate into the common paſſage of the leading veſſels which runnes within the Caruncle, unleſſe peradventure by ſome chance, as a *Gonnorrhœa*, or ſome great *Phlegmon*, it be much dilated beſides nature. For I have ſometimes ſeene ſuch paſſages ſo open, that they would receive the head of a Spatherne; which thing ſhould admoniſh us, that in ſearching we take great care, that we doe 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 ſtraite paſſages by the power of the imaginative faculty in the Act of generation.

Their number and action.

This Caruncle muſt be obſerved and diſtinguiſhed from a *Hyſterarcoſis* or fleſhy exceſcence.

After the leading veſſels follow the *Proſtata*, being glandulous bodyes of the ſame ſubſtance and temper that other Glandules are. Their quantity is large enough, their figure round, and ſomewhat long, ſending forth on each ſide a ſoft production of an indifferent length. They are compoſed of veines, nerves, arteries, a coate (which they have from the neighbouring parts) and laſtly their proper fleſh, which they have

The *Proſtata*. Their quantity and figure.

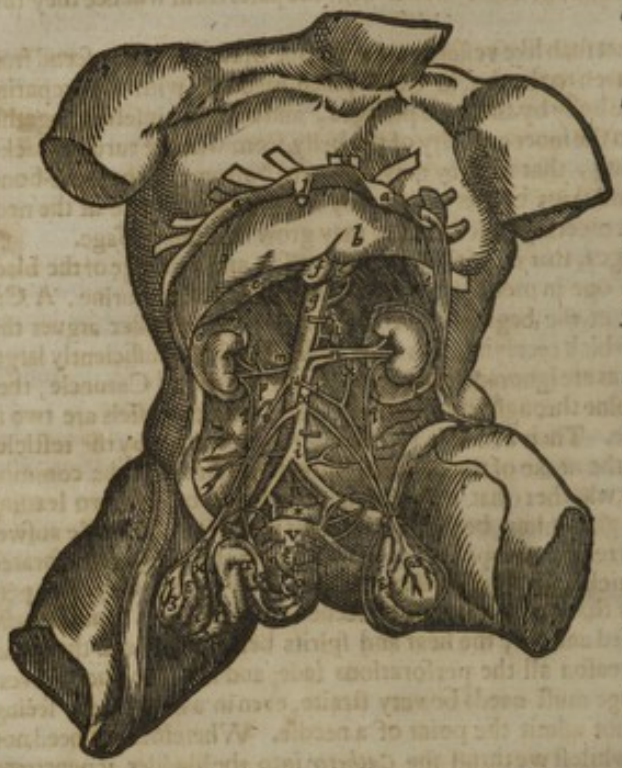
Number and site. from their first conformation. They are two in number, scituate at the roote of the necke of the bladder, somewhat straitly bound, or tyed to the same, to the leading vessels, and the parts annexed to them. But alwaies observe, that every part which enjoyes nourishment, life and sense, either first or last hath connexion with the principall parts of the body, by the intercourse of the vessels which they receive from thence.

An anatomis call axiome.

Their use. The use of the Prostats is, to receive in their proper body the seed laboured in the testicles, and to containe it there, untill it be troublesome either in quantity or quality or both. Besides they containe a certaine oily and viscide humor in their glandulous body, that continually distilling into the passage of the urine, it may preserve it from the acrimony and sharpnesse thereof. But wee have observed also on each side other Glandules, which *Rondeletius* calls *Appendices glandulosæ*, Glandulous dependances to arise from these Prostats, in which also their is seed reserved.

Rond. in method. med. ad morbos.

The 10. *figure, wherein those things shewed in the former figure, are more exactly set forth.*



aa A part of the Midriffe 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*.
d e The right and left ligaments of the Liver.
f The trunke of the gate veine.
g The trunke of the hollow veine.
h i The fatty veines both left and right.
i The ascent of the great artery above the hollow veine, and the division thereof.
k The *Caliacall* artery.
m n The emulgent vessels.
o o p p The fat tunicles or coates torne from both the kidneys.
q q The ureters that goe unto the bladder. *t u*. The right spermaticall veine which ariseth neare to *u*. *x y*. The double originall of the left spermaticall veine. *x*. from the emulgent, *y* from the hollow veine. *α* The originall of the spermaticall arteries *β* Certaine branches from the spermaticke arteries which runne 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 spirie bodden bodies entrance into the testicle, it is called *Corpus varicosum pyramidale*. *ε* The *Parastata*. *ζ* The stone or testicle covered with his inmost coate. *η* The descent of the leading vessell called *Vas deferens*. *θ γ*. The Bladder. * The right gut. *ξ* The glandules called *prostatæ* into which the leading vessels are inserted. *ι* The muscle of the bladder: *κ λ μ* Two bodies of the yard, *ε* and *τ* and *υ* his vessels. *φ χ*. The coat of the Testicle. *ψ ω* The muscle of the Testicle *ϟ*. his vessels *ω*.

Chap.

CHAP. XXX.

Of the Vreters.

NOw it seemes fit to speak of the *Vreters*, bladder, and parts belonging to the bladder. Therefore the Vreters are of a spermaticke, 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 veines and arteries; the other common from the *Peritonæum*; besides they have veines, nerves and arteryes from the Neighbouring parts. The substance magnitude figure and, composure of the vreters,

They be two in number on each side one; They are scituate between the Kidneyes (out of whose hollow part they proceed) and the bladder. But the manner how the Vreters insert or enter themselves into the bladder, and the *Porus Cholagogus* into the *Duodenum*, exceedes admiration; for the ureters are not directly but obliquely implanted neere the orifice of the bladder & 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 falne into the capacity of the bladder cannot bee forced or driven backe, no not so much as the aire blowne into it can come this way out, as we see in swines bladders blowne vp and filled with aire. Number and site,

For wee see it is the Aire contained in these which fills them thus, neither canne it bee presled forth but with extraordinary force.

For as this skinne or coat turned in by the force of the humor giues way, so it [illegible]eing pressed out by the body conteined within, thrusts its whole body into [illegible] passage as a stopple; like to this is the insertion of the *Porus Cholagogus* into the [illegible]uts.

The ureters have connexion with the above mentioned parts, with the muscles of the loines; upon which they runne from the Kidneyes to the bladder.

Wherefore nothing hinders, but that the stone sliding through the ureters into the bladder, may stupify 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 bee 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 habite of body. It is of a round figure and as it were Pyramidall. Figure,

It is composed of two coats, one proper which is very thicke 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. Composition,

The other common Coat comming from the *Peritonæum* hath veines and arteryes on each side one, from the *Hypogastrick* vessels above the holy-bone, also it hath nerves on each side from the sixt conjugation mixt with the nerves of the holy-bone.

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

It is but one and that scituate in men in the lower belly upon the right Gut and below the share bone, but in women between the wombe and that bone, to which it cleaves with its membranous ligaments, as it doth to the yard by its neck, and to

Temper, use or action.

the right gut by its common coate and proper veſſels. It is of a cold and dry temper.

The uſe and action thereof is by the fibers continually to draw the urine, and containe it as long as neede requires, and then to expell it by the necke, partly by compreſſion either of it ſelfe, or rather of the muſcles of the *Epigaſtrium* and Midriffe, becauſe this motion, ſeeing it is voluntary cannot be performed unleſſe by a muſcle which the bladder wants; partly alſo 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 fils is dilated, but as it is emptied, it is contracted like a purſe. You may eaſily obſerve this Muſcle in a Sowes bladder, it is ſtretched from the orifice of the bladder and beginning of the urinarye paſſage even to the privities even in women; but in men it is terminated in the *Perinæum*, as ſoone as it hath left the right Gut.

Their ſphincter of the bladder.

Beſides, this muſcle is thus farre ſtretched forth, that the urine by its compreſſion ſhould be wholy preſſed out of the bladder, which by too long ſtay would by its acrimony doe ſome harme. This is the common opinion of Anatomiſts concerning the Sphincter of the bladder, which never-the-leſſe *Fallopius* allowes not of. For (ſaith hee) if this muſcle ſhould bee ſcituate beneath the glandulous bodyes, the ſeed in copulation could never be caſt forth without ſome ſmall quantity of urine. Wherefore he thinkes that this muſcle is ſcituate above the *Proſtats*, and that it is nothing els but the beginning of the necke of the bladder, which becoms more fleſhy whileſt it is woven with tranſverſe fibers.

The eleventh figure of the bladder and yarde.



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, 4, 5, 7, 9. The nut of the yard called *glans penis*.

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

F 4, 5. The mutuall connexion of the bodyes 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 yarde all along his length.

H. I. 1. 2. The firſt paire of Muſcles of the yarde, which in the firſt figure doe yet grow to it, but in the ſecond they hang from their originall. K. L. 1. 2. The ſecond paire 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. O O, A Membrane which

which is over the holes of the ſhare bone. P 2. A rounde Ligament from the meeting of the ſhare bones unto the head of the thgh. Q.3,7.8. The body of the bladder. R R,3,7. The *Proſtatæ*, into which ſeede when it is perfectly laboured, is led. SS,3,8. Portions of the ureters. T T*3, Portions of the veſſels which leade downe the ſeed. V V,7,8, The umbilicall arteries. X7,8, The ligament of the bladder cald *Vrachus*. Y,7,8. The navel or *umbilicus*. Z,7,8. The umbilicall veine. *aa*7, The veine and artery of the yard. *b* 5. The artery diſtributed through the body of the yard.

The necke of the bladder.

For the necke of the bladder it differs nothing in ſubſtance, compoſure, number, and temper from the bladder, but onely in quantity, which is neither ſo large, nor round in figure, but ſomwhat long together with the yarde repreſenting the ſhape of the letter S. It is placed in men at the end of the right Gut and *Perinæum*, riſing upwards even to the roots of the yarde, and with it bending it ſelf downwards; in weomen it is ſhort, broad, and ſtreight, ending at the orifice of the necke of the wombe betweene the nervous bodyes of the *Nymphæ*.

The connexion and uſe thereof.

In men it hath connexion with the bladder, the ejaculatory veſſels, the right gut and yarde, but in weomen onely with the necke of the wombe and privities. The uſe of it is in men to caſt forth ſeed and urine, in weomen onely urine. But wee muſt note that the ſhare bones muſt be divided and pulled aſunder, in that part where they are joyned, that ſo you may the more exactly obſerve the ſcituation of theſe parts. Beſides you muſt note that by the *Perinæum* we underſtand nothing elſe, in men and weomen, than that ſpace which is from the fundament to the privities in which the ſeame is called *Taurus*.

CHAP. XXXII.

Of the yarde.

The ſubſtance quantity and figure of the yarde.

NOw followes the declaration of the Privy parts of men and weomen, and firſt wee will treat of mens. The yard is of a ligamentous ſubſtance becauſe it hath its originall from bones, it is of an indifferent magnitude in all dimenſions, yet in ſome bigger, in ſome leſſe; the figure of it is round, but yet ſome what flatted above and beneath.

Compoſure.

It is compoſed of a double coat, Nerves, veines, arteryes, two ligaments, the paſſage of the urine, and foure muſcles. It hath its coats both from the true skin; as alſo from the fleſhy pannicle, but the veines and Arteryes from theſe of the lower part of the lower belly which runne on the lower part of the Holy-bone into the yard, as the ſeminary veſſels runne on the upper part.

The ligaments.

The ligaments of the yard proceed on both ſides from the ſides and lower commiſſure of the ſhare-bones; wherefore the yard is immediatly at his root furniſhed with a double ligament, but theſe two preſently runne into one ſpungy one. The paſſage of the urine ſcituate in the lower part of the yarde comes from the neck of the bladder betweene the two ligaments.

The muſcles.

For the foure muſcles, the two ſide ones compoſeing or making a great part of the yard, proceed from the inward extuberancy of the Hip-bone, and preſently they are dilated from their originall, and then grow leſſe againe. The two other lower ariſe from the muſcles of the fundament and accompany the urinary paſſage the length of the *perinæum* untill they enter the yard; but theſe two muſcles cleave ſo cloſe together, that they may ſeeme one haveing a triangular forme.

Their Action.

The action of theſe foure muſcles in the act of generation is they open and dilate this common paſſage of urine and ſeed, that the ſeede may be forcibly or violently caſt into the feild of nature; and beſides they then keepe the yarde ſo ſtiffe, that it cannot bend to either ſide.

The yard is in number one, and ſcituate upon the lower parts of the ſhare bone that it

might bee more ſtiffe in erection. It hath connexion with the ſhare-bone and neighbouring parts; by the particles of which it is compoſed. It is of a cold and dry temper. The action of it is to caſt the ſeed into the wombe, for preſervation of mankinde.

The Nut, The *Præputium*, or foreskin.

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 skin which covers that head is called *Præputium* that is, the foreskin. The fleſh of this *Glandule* is of a middle nature between the Glandulous fleſh and true skin. But you muſt note that the Ligaments of the yarde are ſpongy contrary to the condition of others, and filled with groſſe and blacke blood. But all theſe ſtirred up by the delight of deſired pleaſure and provoked with a venereall fire, ſwell up and erect the yard.

Chap. XXXIII.

Of the ſpermaticke veſſels and teſticles in weomen.

In what the ſperematicke veſſels in weomen differ from thoſe in men.

Now we ſhould treat of the Privy parts in weomen but becauſe they depend upon the necke and proper body of the wombe, we will firſt ſpeake of the wombe, hauing firſt declared what difference there is betweene the ſpermaticke veſſels and teſticles of men and weomen. Wherefore we muſt know that the ſpermatick veſſels in weomen do nothing differ from thoſe in men in ſubſtance, figure, compoſure, number, connexion, temper, originall and uſe, but only in magnitude and diſtribution; for weomen have them more large and ſhort.

Why they are larger but ſhorter then mens.

It was fit they ſhould be more large, becauſe they ſhould not onely convey the matter fit for generation of young and nouriſhment of the teſticles, but alſo ſufficient for the nouriſhment of the wombe and child; but ſhorter becauſe they end at the teſticles and wombe within the belly in weomen. Where you muſt note that the preparing ſpermaticke veſſels, a litle before they come to the Teſticles, are divided into two unequall branches, of which the leſſer bended, after the ſame manner as wee 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 onely into the coats but alſo into the leading veſſels. But the bigger branch deſcends on each ſide by the upper part of the wombe betweene the proper coate and the common, from the *Peritonæum* where it is devided into divers branches. By this difference of the ſpermaticke veſſels you may eaſily underſtand why weomen caſt forth leſſe ſeed than men.

In what their teſticles differ from mens.

For their Teſticles, they differ litle 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 vp to their juſt magnitude. Their compoſure is more ſimple, for they want the *ſcrotum* or cod, the fleſhy coate, 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 wants the *Erythroides*; yet it is certaine that beſides their peculiar coat *Dartos*, they have another from the *peritonæum*, which is the *Erythroides*, or as *Fallopius* calls it the *Elythroides*, that is as much as the *vaginalis* or ſheath. But I thinke that this error hath ſprung from the miſunderſtanding that place in *Galen* where he writes, that womens teſticles want the *Epididymis*. For we muſt not underſtand that to be ſpoken of the coate, but of the varicous paraſtars (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*; weomen have them lying hide in their belly, nere the bottome at the ſides of the wombe, but yet ſo as they touch not the body of the wombe.

Lib. 14. de uſu part.

Site.

Connexion.

But theſe teſticles are tyed to the wombe both by a coate from the *Peritonæum*, as alſo by the leading veſſels deſcending to the hornes of the wombe, but to the reſt of the body by the veſſels and the nerves ariſing from the holy bone and

Coſtall

costall nerves. They are of a colder Temper than mans. The ejaculatorie, or leading vessels in women differ thus from mens, they are large at the beginning, and of a veinie consistance, or substance, so that you can scarse discerne them from the coate *Peritonæum*, then presently they become nervous, and waxe so slender, that they may seeme broken or torne, though it be not so; but when they come nearer to the hornes of the wombe, they are againe 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 Parastats. They are seated betweene the testicles and wombe, for they proceede out of the head of the testicle, than presently armed with a coate from the *Peritonæum*, they are implanted into the wombe by its hornes.

Temper. Their ejaculatory vessels.

Why they have more intricate windings. Their site.

The twelfth Figure, of the Wombe.



A. The bottome of the wombe laid open without any membrane.

BB. The necke of the wombe turned upward.

CD. a part of the bottome of the wombe like the nut of the yard, swelling into the upper part of the necke of the wombe, in the middle whereof the orifice appeareth.

EE. a membrane knitting the wombe to the *Peritonæum*, and holding togethe vessels thereof.

F. the left testicle.

G. the spermaticall veine and artery.

H. a part of the spermaticall vessels reaching unto the bottome of the wombe.

I. one part of the vessels comming to the testicles

* a vessell leading the seede unto the wombe.

K. the coate of the testicle with the implication of the vessels. L. the cavitie of the bladder opened. M. the insertion of the Vreters into the bladder. N. the Vreters cut from the kidneies. O. the insertion of the necke of the bladder into the lap or privitie.

The second Figure.

aa. The spermaticall veine and artery. *bb.* branches distributed to the *Peritonæum* from the spermaticall vessels. *c.* the bottome of the wombe. *d.* the necke of the wombe. *e.* certaine vessels running through the inside of the wombe, and the necke thereof. *ff*, vessels reaching to the bottome of the wombe produced from the spermaticall vessell. *gg.* the leading vessell of seede called *Tuba* the Trumpet. *hh.* a branch of the spermaticall vessell compassing the trumpet. *ii.* the testicles. *kk.* the lower ligaments of the wombe, which some call the Cremasteres or hanging muscles of the wombe. *l.* the lap or privitie into which the Cremasteres doe end. *m.* a portion of the necke of the bladder.

The third Figure.

aa. the ſpermaticall veſſels. *bb.* a branch from theſe ſpermaticall veſſels to the bottome of the wombe. *cc.* the body or bottome of the wombe. *d.* the necke of the ſame, *e.* the necke of the bladder ending into the necke of the wombe. *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 hornes at double *kk*. *ii.* the other branch ending in the necke, by which women with child avoid their ſeede. *kk.* the hornes of the wombe.

The fourth Figure.

AB. The boſome of the bottome of the wombe, at whoſe ſides are the hornes. CD. a line like a ſuture or ſeame, a little diſtinguiſhing that boſome. EE. the ſubſtance of the bottome of the wombe, or the thickneſſe of his inner coate. F. a protuberation or ſwelling of the wombe in the middle of the boſome. G. the orifice of the bottome of the wombe. HH. the coate or ſecond cover of the bottome of the wombe, comming from the *Peritonæum*. IIII. a portion of the membranes which tie the wombe. KK. the beginning of the necke of the wombe. L. the necke of the bladder inſerted into the necke of the wombe. *m.* the *Clitoris* in the toppe of the privity. *n.* the inequalitie of the privitie where the *Hymen* is placed. *o.* the hole or paſſage of the privitie in the cleft. *p.* the skinny caruncle of the privitie.

Chap. XXXIIII.

Of the Wombe.

Wherein the privy parts in woomen differ from thoſe in men.

THe Wombe is a part proper onely to women, given by nature in ſtead of the *Scrotum*, as the necke 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 finde that they differ not much in number, but onely 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 heate in women, which could not drive and thruſt forth thoſe parts as in men. The wombe is of a nervous and membranous ſubſtance, that it may be more eaſily dilated and contracted, as neede ſhall require.

The ſubſtance and magnitude of the wombe.

The magnitude thereof is diverſe, according to the diverſitie 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 menſtruous; therefore the quantititie cannot be rightly defined.

Figure.

The figure of the wombe is abſolutely like that of the bladder, if you conſider it without the productions, which *Herophilus* called hornes, by reaſon of the ſimilitude they have with the hornes of Oxen at their firſt comming forth. It conſiſts of ſimple and compound parts. The ſimple are the veines, arteries, nerves, and coates. The veines and arteries are foure in number, two from the preparing ſpermaticke veſſels, the two other aſcend thither from the *Hypogaſtricke*, after this manner.

The hornes of the wombe.

Compoſure. The veines and Arteryes.

Firſt, theſe veſſels before they aſcend on each ſide to the wombe, divide themſelves into two branches, from which otherſome goe to the lower part of the wombe, otherſome to the necke thereof, by which the menſtruous bloud, if it abound from the conception, may be purged.

Nerves.

Nerves come on both ſides to the wombe, both from the ſixt conjugation, deſcending by the length of the backe bone, as alſo from the holy bone, which preſently united and joyned together, aſcend and are diſtributed through the wombe, like the veines and arteries.

The Coats.

The utmoſt or common coate of the wombe, proceeds from the *Peritonæum*, on that 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 for the attraction of both ſeedes; the tranſverſe without to expell, if occaſion be; the oblique in the midſt for the due retention thereof.

The

The wombe admits no diuision, unleſſe into the right and left ſide, by an obſcure line or ſeame, ſuch as we ſee in the *Scrotum*, but ſcarſe ſo manifeſt; neither muſt we after the maner of the ancients, or imagine any other cels in the womb. 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 dugges. If any chance to bring forth more, it is beſides nature, and ſomewhat monſtrous, becauſe nature hath made no proviſion of nouriſhment for them. No cels in the wombe.

Nature hath placed the wombe at the bottome of the belly, becauſe that place ſeemes moſt fit to receive ſeede, to carrie and bring forth the young. It is placed betweene the bladder and right gut, and is bound to theſe parts much more ſtraitly, by the necke, than by the body thereof; but alſo beſides it is tied with two moſt ſtrong ligaments on the ſides, and upper parts of the ſharebone, on which it ſeemes to hang; but by its common coate from the *Peritonæum*, chiefly thicke in that place, it is tied to the hollow bone, and the bones of the hanch and loines. The ſite.

By reaſon of this ſtrait connexion, a woman with child feeling the painefull drawings backe, and as it were conuulſions of thoſe ligaments, knowes her ſelfe with child. It is of a cold and moiſt temper, rather by accident, than of it ſelfe. The action thereof is to containe both the ſeedes, and to chearish, preſerve, and nouriſh it, ſo contained, untill the time appointed by nature; and alſo beſides, to receive, and euacuate the menſtruous bloud. The compound parts of the wombe are, the proper body and necke thereof. That body is extended in women bigge with child, even to the navell, in ſome higher, in ſome lower. The temper and action.

In the inner ſide the *Cotyledones* come into our conſideration, which are nothing elſe than the orifices and mouthes of the veines, ending in that place. They ſcarſe appeare in women, unleſſe preſently after child-bearing, or their menſtruall purgation; but they are apparent in ſheepe, Goates, and Kine, at all times like wheat cornes, unleſſe when they are with young, for then they are of the bigneſſe of haſell nuts: but then alſo they ſwell up in women, and are like a rude piece of fleſh of a finger and a halfe thicke; which begirt all the naturall parts of the infant ſhut up in the wombe; out of which reſpect this ſhapeleſſe fleſh, according to the opinion of ſome, is reckoned amongſt the number of coates inveſting the infant, and called *Chorion*, becauſe, as in beaſts, the *Chorion* is interwoven with veines, and arteries, whence the umbilicall veſſels proceede; ſo in women this fleſhie lumpe is woven with veines, and arteries, whence ſuch veſſels have their originall. Which thing, how true and agreeable to reaſon it is, let other men judge. The *Cotyledones*. *Columbus* juſtly reproved.

There is one thing whereof I would admoniſh thee, that as the growth of the *Cotelidones* in beaſts, are not called by the name of *Chorion*, but are onely ſaid to be the dependants thereof, ſo in women ſuch ſwollen *Cotelidones* merit not the name of *Chorion*, but rather of the dependances thereof,

This body ends in a certaine ſtraitneſſe which is met withall, in following it towards the privities, in women who have borne no children, or have remained barren ſome certaine time; for in ſuch as are lately delivered, you can ſee nothing but a cavitie and no ſtraitnſſe at all. This ſtraitneſſe wee call the proper orifice of the wombe, which is moſt exactly ſhut after the conception, eſpecially untill the membrane, or coats incompaſſing the child be finiſhed, and ſtrong enough to containe the ſeede, that it flow not forth, nor be corrupted by entrance of the aire; for it is opened to ſend forth the ſeede, and in ſome the courſes and ſerous humors, which are heaped up in the wombe in the time of their being with child. The orifice of the wombe. The proper orifice of the wombe is not always exactly ſhut in women with child.

From this orifice the necke 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 comming forth of the child, and after be reſtored to its former ſoundneſſe and integritie. In proceſſe of age it growes harder, both by uſe of venery, and alſo by reaſon of age, by which the whole body in all parts thereof becomes drie and hard. But in growing, and young women, it is more tractable and flexible for the neceſſitie of nature. The necke of the wombe.

The

Its magnitude. Composition.

The magnitude is sufficiently large in all dimensions, though divers, by reason of the infinite varietie 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 *Hypogastricke* veines, by the branches ascending to the wombe. This necke on the inside is wrinckled with many crests, like the upper part of a dogges mouth, so in copulation to cause greater pleasure by that inequalitie, and also to shorten the act.

Number and site.

It is onely one, and that situate betweene the necke 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 owne orifice; but by the vessels to all the parts from whence they are sent.

Temper.

It is of a cold and drie temper, and the way to admit the seede into the wombe, to exclude the infant out of the wombe, as also the menstruall evacuation. But it is worth observation, 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*, *Fallopius*, *Wierus*, and many other learned men of our time think otherwise, and say, that in Virgins a litle above the passage of the urine, may be found and seene such a nervous membrane, placed overtwhart as it were in the middle way of this necke, and perforated for the passage of the courses. But you may finde this false by experience; it is likely the Ancients fell into this error through this occasion, because that in some a good quantitie of bloud breakes forth of these places at the first copulation.

No *Hymen*.

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

But it is more probable, that this happens by the violent attrition of certaine vessels lying in the inward superficies of the necke of the wombe, not being able to endure without breaking so great extention as that nervous necke undergoes at the first coition. For a maide which is marriageable, and hath her genitall parts proportionable in quantitie and bignesse to a mans, shall finde no such effusion of bloud, as we shall shew more at large in our Booke of Generation.

This necke ends at the privities, where its proper orifice is, which privy parts we must treate of, as being the productions and *appendices* of this necke. This *Pudendum*, or privitie, is of a middle substance, betweene the flesh and a nerve; the magnitude is sufficiently large, the figure round, hollow, long. It is composed of veines, arteries, nerves, descending to the necke of the wombe, and a double coate proceeding from the true skinne and fleshie pannicle; both these coates are there firmely united by the flesh comming betweene them; whereupon it is said, that this part consists of a musculous coate. It is one in number, situate above the *Perinæum*. It hath connexion with the fundament, the necke of the wombe and bladder by both their peculiar orifices.

It hath a middle temper, betweene hot, and cold, moist and drie. It hath the same use as a mans *Præputium* or fore-skinne, that is, that together with the *Numphæ* it may hinder the entrance of the aire, by which the wombe may be in danger to take cold.

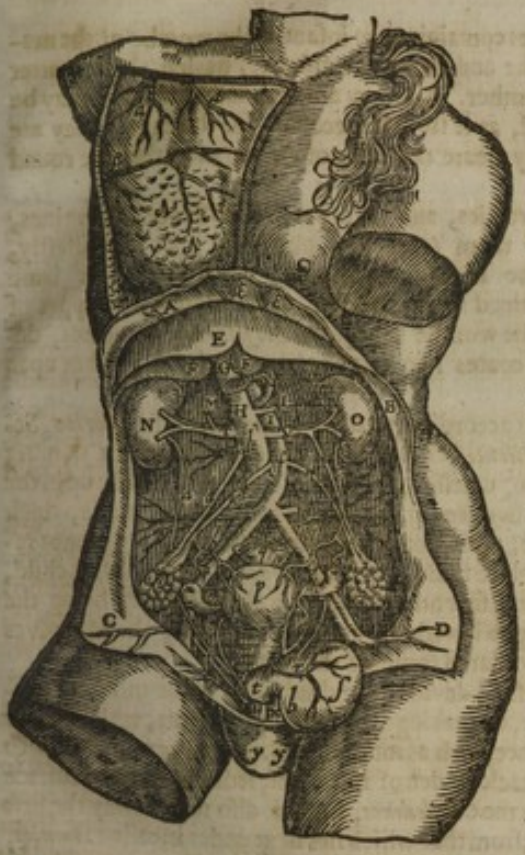
Alæ. πτερυγώματα.

The lips of the privities called by the Greekes πτερυγώματα, by the Latines *Alæ*, containe all that region which is invested with haires; and because we have falne into mention of these *Nymphæ*, you must know that they are as it were productions of the musculous skinne, which descend on both sides, from the upper part of the sharebone downewards, even to the orifice of the necke of the bladder, oft times growing to so great a bignesse, that they will stand out like a mans yard. Wherefore in some they must be cut off in their young yeares, yet with a great deale of caution, lest if they be cut too rashly, so great an effusion of bloud may follow, that it may cause, either death to the woman, or barrennesse of the wombe by reason of the refrigeration by the too great effusion of bloud. The latter Anatomists, as *Columbus* and *Fallopius* 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 joynes together those wings wee formerly mentioned. *Columbus* cals it *Tentigo*, *Fallopius 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, reade the Authors which I cited.

Cleitoris, tentigo

The

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



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

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

G. The trunke of the gate veine.

H. the hollow veine.

I. the great artery.

K. the rootes of the *Cœliacall* artery which accompanieth the gate veine.

L.M. the fatty veine going to the coate of the kidneies.

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

T.V. the emulgent veines and arteries.

aa. the right ureter at the loweſt *a*, cut from a part which neere to *b*, ſticketh yet to the bladder, becauſe the bottome of the bladder is drawne to the left-ſide.

c. the left ureter inſerted into the bladder neere to *r*.

dd. the ſpermaticke veine which goeth to the left teſticle marked with *i*.

ee. the ſpermaticke veine which goeth to the left teſticle with *i*, alſo.

f. the trunke of the great arterie from whence the ſpermaticall arteries doe proceed. *g.h.* the ſpermaticall arteries. *ii.* the two teſticles. *ll*, a branch which from the ſpermaticke veſſels reacheth unto the bottome of the wombe. *mm.* the leading veſſell of the ſeede which *Falopius* calleth the *tuba* or trumpet, becauſe it is crooked and reflected. *n.* a branch of the ſpermaticke veſſel, compaſſing the leading veſſell. *oo.* a veſſell like a worme which paſſeth to the wombe, ſome call it *Cremaſter*. *p.* the bottome of the wombe called *fundus vteri*. *q.* a part of the right gut. *r.ſ.* the bottome of the bladder whereto is inſerted the left ureter, and a veine led from the necke of the wombe neere unto *r*. *t.* the necke of the bladder. *u.* the ſame inſerted into the privitie or lap. *x.* a part of the necke of the wombe above the privity. *yy.* certaine skinnie Caruncles of the privities, in the midſt of which is the ſlit, and on both ſides appeare little hillocks.

The Figures belonging to the Dugges and Breaſts.

αα. The veines of the Dugs which come from thoſe, which deſcending from the top of the ſhoulder, are offered to the skinne. *β.* the veines of the dugges derived from thoſe which through the arme-hole are led into the hand *γ.* the body of the Dugge or Breaſt. *δδ.* the kernels and fat betweene them. *εε.* the veſſels of the Dugges deſcending from the lower part of the necke called *iugulum*, under the breaſt bone.

Chap. XXXV.

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

Their substance, magnitude, figure, and composure.

THe membranes or coates containing the infant in the wombe of the mother, are of a ſpermaticke and nervous ſubſtance, having their matter from the ſeede 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 bredth, eſpecially neare the time of deliverance, they are round in figure like the wombe.

Their compoſition is of veines, arteries, and their proper ſubſtance. The veines, 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 pappes of the nurſes after it is borne. For thus the wombe brings the *Cotyledones*, or veines, degenerating into them, through the coates like certaine paps to the infant ſhut up in them.

Their number.

Theſe coates are three in number according to *Galen*; one called the *Chorion*, Secundine, or afterbirth; the other *Allantoides*; the third *Amnios*. I find this number of coates in beaſts, but not in women, unleſſe peradventure any will reckon up in the number of the coats, the *Cotyledones* ſwollen up, and grown into a fleſhie maſſe, which many skilfull in Anatomy doe write, which opinion notwithſtanding we cannot receive as true. I could never in any place finde the *Allantoides* in women with child, neither in the infant borne in the ſixth, ſeventh, eight, or in the full time, being the ninth moneth, although I have ſought it with all poſſible diligence, the Midwives being ſet apart, which might have violated ſome of the coates.

But thus I went about this buſineſſe, I devided 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 dexteritie as was poſſible, wee did not onely draw away that receptacle or den of the infant, from the inward ſurface of the wombe, to which it ſtucke by the *Cotyledones*, but we alſo tooke away the firſt membrane which we called *Chorion*, from that which lies next under it, called *Amnios*, without any rending or tearing; for thus we powred forth no moiſture, whereby it might be ſaid, that any coate, made for the containing of that humor, was rent, or torne. And then we diligently looked, having many witneſſes and ſpectators preſent, if in any place there did appeare any diſtinction of theſe two 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 tooke the *Amnios* filled with moiſture on the upper ſide, and having opened it, two ſervants ſo holding the apertion, that no moiſture might flow out of it into the circumference of the *Chorion* or womb; then preſently with ſpunges we drew out by little and little all the humiditie contained in it, the infant yet contained in it, which was fit to come forth, that ſo the coate *Amnios* being freed of this moiſture, we might ſee whether there were any other humor contained in any other coate beſides. But having done this with ſingular diligence and fidelity, we could ſee no other humor, nor no other ſeparation of the membranes beſides.

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

So that, from that time I have confidently held this opinion, that the infant in the wombe, is onely wrapped in two coates, the *Chorion* and *Amnios*. But yet not ſatisfied by this experience, that I might yet be more certaine concerning this *Allantoides*, having paſſed through the two former coates, I came to the infant, and I put a quill into its bladder, and blew it up as forceably as I could, ſo to trie, if by that blowing I might force the aire into that coate which we queſtioned, as ſome have written. But neither thus could I drive any aire from hence, through the navell into the controverted coate, but rather I found it to flie out of the bladder by the privities. Wherefore I am certainely perſwaded that there is no *Allantoides*. Moreover I could never finde

finde not ſee in the navell that paſſage called the *urachus*, which they affirme to be the beginning and originall of the coate *Allantoides*. But if it be granted that there is no ſuch coate as the *Allantoides*, what diſcommoditie will ariſe hereof? ſpecially ſeeing the ſweate and urine of the infant may eaſily and without any diſcommoditie be received, collected and contained in the ſame coate, by reaſon of the ſmall difference which is betweene them. But if any object that the urine by its ſharpeneſſe and touching will hurt the infant; I will anſwer, there can be no ſo great ſharpeneſſe in the urine of ſo ſmall an infant, and that, if that there be any, it is tempered by the admixture of the gentle vapour 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 breakes the ties, by which it is bound to the wombe;) wee ſhall finde no humour more fit for this purpoſe than this ſerous, as which by its thickneſſe is much more fit to beare up a weight, than the thinne and to liquide ſweate. For ſo we ſee the ſea or ſalt water carries greater weights without danger of drowning, than freſh rivers doe. Wherefore I conclude that there is no neede, that the urine ſhould be kept and contained in one coate, and the ſweate in another. The Ancients who have writ otherwiſe, have written from obſervations made in beaſts. Wherefore we make but onely two coats the *Chorion* and *Amnios*, the one of which ſeeing it containes the other, they both ſo encompaſſe the child, that they veſt it on every ſide.

Fallopius in ſome ſort ſeemes to be of this opinion; for he onely makes two coates; the *Chorion* and *Amnios*, but hee thinkes the infant makes the water into a certaine part of the *Chorion*, as you may perceive by reading of his Obſervations. Both theſe coates are tied betweene themſelves by the intercourſe of moſt ſlender nervous fibers, and ſmall veſſels penetrating from the outer *Chorion* to the inner *Amnios*. Wherefore unleſſe you warily handle theſe coates you may eaſily teare the *Amnios* in ſeparating it. They are of the ſame temper with other membranes. Their uſe is differens, for the *Chorion* is made both for the preſervation of the veſſels, which it receives from the wombe for the generating of the umbilicall veines and arteries, as alſo, to keepe whole and ſafe the parts which it inveſts. Their temper and uſe.

But the *Amnios* is to receive and containe the excrementitious and ſerous humors, which the child ſhut up in the wombe is accuſtomed to evacuate. But this coate is very thinne and ſoft, but ſtrong and ſmooth, leſt by its touch it might hurt the infant, whereupon it is called the Lamb-kinne coate.

Chap. XXXVI.

Of the Navell.

THe Navell followes theſe coates; 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 farre our, but onely ſwelling in certaine places, reſembling a knot, onely lifted up on one ſide; it ariſes and takes its originall from a fleſhie maſſe 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 roote it is therefore ſaid to be. For even as a tree by the roote, ſucks nouriſhment from the earth, ſo the infant in the wombe drawes its nouriſhment by the navell. The greatneſſe of it in breadth and thickneſſe, equall the bigneſſe of the little finger. But it is a foote and a halfe long, ſo that children are brought forth with it, encompaſſing their middle, necke, armes, or legges. The figure of it is round. It is compoſed of two arteries, one veine and two coates. It hath theſe veſſels from that great multitude of capillary veines and arteries, which are ſeene diſperſed over the *Chorion*. Wherefore the veine entring 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 veines. But the arteries, caried by themſelves the length of the navell, caſt themſelves into the *Iliaca*, which they

What the navell is.

Their Navell is the Center of the body.

The figure and compoſure.

Lib. de format. fœtus in utero.

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 coates from the *Chorion*.

But seeing they are mutually woven and conjoyned without any *medium*, and are of a sufficient strength and thickneſſe over all the navell, they may seeme to make the infants externall skinne and fleshie pannicle. I know very many reckon two umbilicall veines, as also arteries, and the *urachus* by, or through which the urine flowes into the coate *Allantoides*. But because this is not to be found in women, but onely in beasts, I willingly omit it, because I doe 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 thinke proper to brute beasts, are to be found in women, I will willingly confesse, and that to his credit, from whom I have reaped such benefit.

There is onely one veine in a childs navill, but no *Vrachus*.

The other things that may be required concerning the navell as of its number, site, connexion, temper, and use, may easily appeare by that we have spoken before. For we hove apparently set downe 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 roote, by reason of the continuation of the vessels thereof, with the preparing spermaticke vessels, made by God for that purpose, to whom be honour and glory for ever and ever. Amen.

The End of the third Booke.

THE

THE FOURTH BOOKE TREATING OF THE Vitall parts contained in the Cheſt.

The Preface.

HAving finiſhed the firſt Booke 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 meane the veines and arteries) may bee diſpatched after the ſame order and manner, without interpoſition of any other matter.

And beſides alſo that we may the more exactly and cheare-fully ſhew the reſt of the parts which remaine, 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 containe, 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 devided, and the nature of theſe parts.*

THe *Thorax* or Cheſt is the middle belly, terminated or bounded above with the coller-bones, below with the midriffe, before with the *Sternũ* or breſt, behind, with the twelve *Vertebra's* of the backe 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 leſſe needfull for the preſervation of the native heate, diffuſed by the vitall ſpirits, and ſhut up in the heart, as in the fountaine therof, againſt internal injuries, than the other forementioned parts againſt externall. For if the cheſt ſhould have bin all bony, verily it had beene 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 griſtlely, and partly fleſhie. 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 fabricke of things, which is, that it might conjoine the parts much diſagreeing in their compoſure, as the lower belly, altogether fleſhie, and the head all bony, by a *medium* partaker both of the bony and fleſhie ſubſtance; which courſe wee ſee it hath obſerved in the connexion of the fire and water, by the interpoſition of the aire; of the earth and aire, by the water placed betweene them.

The containing parts of the Cheſt.

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

The number of the bones of the *Sternum*.

The Chest is divided into three parts, the upper, lower, and middle: the collar bones containe the upper, the midriffe the lower, and the *Sternon* the middle. The *Sternon* in *Galens* opinion, is compoted of seven bones, I beleeve by reason of the great stature of the people that lived then. Now in our times you shall oft finde it compact of three, foure, or five bones, although we will 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 *Sternon*, have them larger, that they might be sufficient to receive the ribbes. This is the common opinion of the *Sternon*. Yet *Fallopius* hath described it farre otherwise, wherefore let those who desire to know more hereof, looke in his observations.

Cartilago scutiformis, the brest-blade.

At the lower part of the *Sternon* there is a gristle, called commonly *Furcula*, and *Malum granatum*, or the Pomegranate, because it resembles that fruite; others call it *Cartilago scutiformis*, that is, the brest-blade.

It is placed there to be as it were a bulwarke or defence to the mouth of the stomacke, endued with most exquisite sense; and also that it should doe the like to that part of the midriffe, which the liver beares up in that place, situate above the orifice of the ventricule by the ligament comming betweene, descending from the lower part of the same gristle into the upper part of the liuer.

The common people thinke that this gristle sometimes fals downe. But it so adheares, and is united to the bones of the *Sternon*, that the falling thereof may seeme to be without any danger, although oft times it may bee so moistened with watery and serous humidities, with which the orifice of the stomacke abounds, that as it were soaked and drunke with these, it may be so relaxed, that it may seeme to be out of its place; in which case it may be pressed and forced by the hand, into the former place and seate, as also by applying outwardly, and taking inwardly astringent and drying medicines to exhaust the superfluous humiditie.

This gristle 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 Ensiformis* or the swordlike gristle. 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 gristle, we will shew both what a gristle is, and how many differences thereof there be, that henceforward as often as wee shall have occasion to speake of a gristle, you may understand what it is.

What a Gristle is.

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

The differences thereof.

The difference of these are almost the same with bones, that is from their consistence, substance, greatnesse, number, site, figure, connexion, action, and use. Omitting the other for brevitie 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 eyelids called *Tarsi*, of the *Epiglottis* and throatle. And others which adhere to bones, either adhere by the interposition of no *medium*, as those which come betweene the bones of the *Sternon*, the collar bones, the share and hanch bones and others; or by a ligament comming betweene, as those which are at the ends of the bastard ribs to the *Sternon* by the meanes of a ligament, that by those ligaments being softer than a gristle, the motions of the chest, may be more quickly and safely performed. The gristles which depend on bones, doe not onely yeeld strength to the bones, but to themselves, and the parts contained in them, against such things as may breake 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 smoothnesse was necessary for performance of their duties; and for this use serve the gristles which are at the joynts, 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

violent aſſaults, by ſomewhat yeelding to their impreſſion, no otherwiſe than ſoft things oppoſed againſt cannon ſhot. Wee 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 skinnes, the fleſhie pannicle, the fat, the breaſts, the common coate of the muſcles, the muſcles of that place, the forementioned bones, the coate inveſting the ribbes and the *Diaphragma* or midriffe. The parts contained are the *Mediaſtinum*, the *pericardium* or purſe of the heart, the heart, the lungs & their veſſels. Of the containing parts, ſome are common to all the body, & the moſt part thereof, as both the skins, the fleſhie pannicle and fat. Of which being we have ſpoken in our firſt Booke, there is no neede now further to inſiſt upon; Others are proper to the cheſt, as its muſcles, of which we will ſpeake in their place, the breſts, the forementioned bones, the membrane inveſting the ribs, and the *Diaphragma* or midriffe.

Wee will treate of all theſe in order, after we have firſt ſhewed you the way, how you may ſeparate the skinne from the reſt of the cheſt. Putting your knife downe even to the perfect diviſion of the skinne, you muſt draw a ſtraite line from the upper part of the lower belley, even to the chinne; then draw another ſtraight line, overtwhart at the collar bones even to the ſhoulder-blades; and in the places beneath the collar-bones: (if you deſire to ſhunne prolixitie) you may at once ſeparate both the skinnes, the fleſhie panicle, the fat, and common coate of the muſcles; becauſe theſe parts were ſhewed and ſpoken of in the diſſection of the lower belley.

Yet you muſt reſerve the breſts in diſſecting of the bodies of women; wherefore from the upper parts of the breaſts, as artificially as you can, ſeparate onely the skin from the parts lying under it, that ſo you may ſhew the Pannicle which there becommeth fleſhie and muſculous, and is ſo ſpred over the necke, and parts of the face, even to the rootes of the haires.

Chap. III.

Of the Breaſts or Dugges.

Their ſubſtance.

THe Breaſts, as wee ſaid, when we ſpoke of the nature of glandules, are of a glandulous ſubſtance, white, rare, or ſpongious, in maides, and women that doe not give ſucke, they are more ſolid and not ſo large.

Magnitude, Figure.

Wherefore the bigneſſe of the Dugges is different: although of a ſufficient magnitude in all. Their figure is round, ſomewhat long, and in ſome ſort Pyramidall.

Compoſure.

Their compoſure is of the skinne, the fleſhie pannicle, glandules, fat, nerves, veines, and arteries, deſcending to them from the *Axillaris* under the *Sternon* betwixt the fourth and fifth, and ſometimes the fixth of the true ribbes.

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

Which glandules have nerves and which have none.

Wee will ſpeake no more of the nature of glandules, or kernels, as having treated of them before; onely we will add this, that ſome of the glandules have nerves, as thoſe of the breſts, which they receive from the parts lying under them, that is, from the intercoſtall, by which it comes to paſſe that they have moſt exquiſit ſenſe.

Others want a nerve, as those which serve onely for division of the vessels, and which have no action; but onely 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.

Their Connexion. Wherefore they have connexion with the mentioned parts with their body, but by their vessels with all other parts, but especially with the wombe by the reliques of the mamillary veines and arteryes, which descend downe at the sides of the brest-blade; in which place these veines insinuating themselves through the substance of the muscles, are a litle above the navill conjoined with the *Epigastricks*, whose originall is in some sort opposite to the *Hypogastrickes*, which send forth branches to the wombe. 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 seene to descend to the wombe from the *Epigastrick*.

How the brests and wombe communicate each with other.

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

* *Recrementosum.*

Their action and use.

By this you may know that some Glandules have action, others use, and some both. At the top of the dugs there are certaine billockes, or eminencies called teats or nipples, by sucking of which the child is nourished through certaine small and crooked passages; which though they appeare manifest to the sight, whilest you presse out the milke by pressing the dug, yet when the milke is pressed out they doe not appeare, nor so much as admit the point of a needle, by reason of the crooked wayes, made by nature in those passages, for this use, that the milke being perfectly made should not flow out of its owne accord against the nurses will. For so the seed is retained and kept for a certaine time in the Prostats.

The Nipples.

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 arme, and serve for respiration, and which first offer themselves to our sight.

But for that they cannot be fitly shewed, unlesse wee hurt the muscles of the shoulder blade and necke, therefore I thinke it better, to deferre the explanation of these muscles untill such time as I have shewed the rest of the contained and containing parts, not onely 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 wee first meet with, and so prosequuting the rest even to the muscles of the feet, as they shall seeme to offer themselves more fitly to dissection, that so, as much as lyes in us, we may shunne confusion.

Wherefore returned to our proposed taske, after the foresaid muscles come the Collar bones, the *Sternon* and ribs.

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

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 *Lib. 1. de Locis affectis.* 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 certaine other parts; the other obscure, yet which may suffice to discerne the helping and hurting tactile qualityes, 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 canne scarce be discerned by the eyes, unlesse (as *Galen* saith) by plucking such coats away from the parts.

But

But it is no marvaile if nature would have these parts in like manner to have such small veines, contrary to the lungs and most part of the Muscles, onely to yeild 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 lesse. Why the bones have such small veins.

Wherefore they need not so much blood for their nourishment, as the hot and soft parts; and besides the lesser bones have neither veines, nor arteries, but draw fit nourishment, onely by the force of the attractive faculty implanted in them.

The differences of bones are taken from many things, as from their *Apophyses*, *Epiphyses*, gristles, necks, heads, solidity, cavity, eminencies, marrow, consistence, bignes, number, figure, site. Wee 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 collar bones. Whence the difference of bones may be taken.

The Clavicles are two very hard and solid bones, without any great or notable cavity, scituate 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 *Clavicula* Clavicles (from the Greeke κλεὶς, which signifies a key or any other bar or fastning of a doore.) They carry the shape of a Surgeons Levatory. The Clavicles or collar bones

But you must note that the Clavicles seemes to be fastned to the *sternon* by the mediation of a gristlely bone. Moreover the space and cavity contained within the Collar bones is called by the Latines *Ingulum*, by the French the upper *furcula*, because the jugular veines passe that way; it sticks to the upper processe of the shoulder by a Gristle which *Galen* calls the small gristle bone, although it be nothing else but a production of the *Os lunati*. *Lib. 11. de usu part. Cap. 31.*

For the *sternon*, which we said is framed of diverse bones, as sometimes 3, somtimes 4, 5, 6, 7, and sometimes 8, you must note they are very spongy and full of pores, and of a farre 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 are 24. in number, on each side 12, seaven 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 fastened 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 onely knit to the *vertebra's*, wherefore that part of the *vertebra's* is called the root of the ribs. The Ribs.

The exteriour or fore-part of the Bastard or short ribs is gristely, that they should not be broken, and that they might be the easier lifted up in the distension of the stomack 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 signe of being double, or hollow to receive the veines and arteryes, which nourish their bony substance; they are fashoned like a bow; their use is the same with the *sternon*, and besides to carry and strengthen the muscles serving for respiration. Their consistance.

Chap. V.

The Anatomicall Administration of the Sternon.

THe Coate investing the ribs, which the common Anatomists call *Pleura*, is the last of the containing parts of the Chest, which because it lies hid in the inner part therof, it cannot be showne unlesse by pulling asunder of the Sternon; wherefore wee 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 the originall and insertion of the pectorall muscles, of the *Mastoides*, of the two muscles of the bone *Hyois*, of the Muscles *subclavii* and *intercartialginei*,

tilaginei, ought first of all to separate all the pectorall muscles from 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 seperate the *sternon* with his knife and bend it up to the clavicles, and there cut it, reserving together with it the foure muscles, that is, the two *Mastoides* and the two moving the bone *Hyois*, because they either wholy 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 arme; that so the containing parts of the chest may not onely lye open to veiw and be easily shewed, but also the muscles may bee 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 seene and the distribution of the veines and arteries; the two small subclavian muscles one on each side must bee shewne 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 gristle 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 pectorall 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.

What the membrane investing the Ribs is.

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 coate from it selfe.

Its originall.

It hath its originall from the *Periostium*, (or as others will have it from the *picranium*,) investing the *vertebra's* of the Chest at the roots of the ribs. Wherefore it stickes very fast to the ribs, scarce to be separated, as also to all the parts bounding the Chest, and contained in it.

Vesalius reprehends *Galen*, because he said, that this was double on both sides; ye *Columbus* defends *Galen*, and verily it is seene 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 bee way for the veines, arteryes and nerves.

Whether, as there is a two-fold pleurisie, so also a double *Pleura*

Some have made it two fold, and divided it into the internall and externall; as those which have made two sorts of pleurisyes, the true and bastard; placing the externall above the Ribs and intercostall muscles; but the internall under the Ribs, muscles, *Diaphragma* and *sternon*.

But we to shun ambiguity, intend only to prosequute those things which are manifest to the eyes; wherefore we say that the ribs are lined on the inside with a double coate; one which immediatly and firmely stickes to them on every side called the *Periostium*, which is common to them and other bones.

The Magnitude and figure.

The other which lyes upon that *Periostium* and on the inside invests all the ribs, whence it is called the *subcostalis tunica*. The substance, temper and composure are the same, as in other membranes. The magnitude in length, as also the figure is the same with the compasse of the inner part of the chest; the thicknesse 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 Greekes call the ribs πλεύραι,) and in like manner which happens

betwixt

betwixt the *Periostium* and this *Pleura*, is called either a true or bastard Pleurisye.

Chap. VII.

Of the Mediastinum

NOw wee must speake 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 selfe to our sight. The *Mediastinum* is of the same substance, thicknes, composure, 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 small thicknes, receiving veines, nerves and arteryes 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 hollownesse of the chest to the *sternon*, and then at right angles it is reflected to the bodyes of the *vertebra's*, whence the *Pleura* hath its originall.

In that reflection there is so much distance between each membrane, as may bee sufficient to receive 2 fingers. For otherwise, seeing that they cannot penetrate through the hart, it was fit each side of the *Pleura* should turne to the *Pericardium*, that so they might arive at the appointed place without offence. Nether yet is that space void and empty, but woven with many small nervous fibers; *Columbus* adds, that, that place is often filled with a certaine humor besides nature, which you may draw out, or evacuate by opening the *sternon*.

Yet I would gladly learne of *Columbus*, by what signes we may know that such an humor is conteined 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 *Pelura*; the bottome that part of the *pleura* which is next the Midriffe, 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 figure.

The use thereof is to separate the vitall parts, as it were into 2 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. The use.

And it hath another use which is to prop and hold up the *Pericardium*; that it fall not uppon the heart with its waight, but tossed with the motions of the heart and Chest, it may move to this or that side.

Chap. VIII.

Of the Diaphragma *or Midriffe.*

ALthough the Midriffe may seeme 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. What the midriffe is.

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 veines and arteries distributed through it, turne into a muscle, whose middle is nervous and membranous, but the extremityes 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 & second *vertebra's* of the loines, for it ends in them by 2 tendons manifest enough. It is one in number, interposed with an oblique site betwixt the naturall and vitall parts. Its substance, composition &c.

It

Connexion. It hath connexion with the lower part of the *sternon* and short ribs, and the two first *vertebra's* of the loines, but by its coats and vessels with the parts from whence it received them.

Quantity. The extent thereof is equall to the compasse of the lower part of the Chest. The length of it is from the brest blade even to the first and second *vertebra* of the loines. The thicknes is diverse, for it is farthicker in its fleshy extremity, than in its nervous originall.

Action. The Action thereof is to helpe the expulsion of the Excrements by the mutuall assistance of the *Epigastrick* muscles, but the chiefe 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 Braine, by reason of the large nerves on each side one which come to it directly & primarily from the third, fourth and fifth *vertebra* of the neck. This muscle differs from other muscles, specially in figure. It is preforated in three places, to giue way or passage to the ascendent Hollow-veine, 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 pale red, their quantity is sufficiently large; for most commonly they are divided into 4 lobes disioined with a manifest and visible division, on each side two, whereby they may be the more easily opened and contracted, and the aire may the better enter.

Besides also in large bodyes, 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 beare up the hollow veine ascending from the midriffe to the heart.

In little men who have a shorter Chest, because the Heart is so neere as to touch the *Diaphragma*, this Lobe is not seene, yet it is alwayes found in Dogges.

Figure. The Lungs represent the figure or shape of an Oxes foot, or hoof, for like it they are 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 paire of bellowes.

Composition. They are compounded of a coate comming from the *Pleura*, which on each side receives sufficient number of nerves from the sixth conjugation; and also of the *Vena arteriosa* comming 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 *Aspera arteria* or Weazon comming from the throat, and lastly its owne flesh, which is nothing else than the concretion of cholerick blood poured out like foame about the divisions of the foresaid vessels, as we have said of other parts.

The body of the Lungs is one in number, unlesse 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 & left side doe almost involve all the heart, that so they may defend it against the hardnes of the bones which are about it; they are tyed to the heart, cheifly 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 certaine thin membranous productions which descend from thence to the Lungs, otherwaies they are tyed to the ribs by the *Pleura*.

The sticking of the lungs to the Ribs.

Their nourishment. The nourishment of the Lungs is unlike to the nourishment of other parts of the body; for you cannot find a part equally rare, light and full of aire, 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 composure of cholerick blood, or their use, which is to prepare and alter the aire that it hurt not the heart by its coldnes. The Lungs is the instrument of voice and breathing by the Weazon or windpipe. For the Lobes are the instruments of voice, and the ligaments, of respiration. But the

Larinx

Larinx or Throtle is the chiefe 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 Pallate 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 certaine quill to play withall.

But as long as one holds his breath, he cannot ſpeak; for then the muſcles of the *Larinx*, Ribs, the *Diaphragma* and the *Epigaſtrick* muſcles are preſſed downe, 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 immoveable, they might be more obſequious and ready to follow the motion of the cheſt, for when it is ſtraitened, the Lungs are ſtraitened 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 Aire, at ſuch times as they have much, or ſuddaine neceſſity, as in running a race.

And laſtly, that in Pleurifies and other purulent abſceſſes of the Cheſt the *Pus* or matter poured forth into the capacity of the Cheſt may be ſuckt in by the rare ſubſtance of the Lungs, and by that meanes the ſooner ſent forth and expectorated.

The uſe of reſpiration is to coole and temper the rageing heat of the Heart. For it is cooled in drawing in the breath by the coole aire, and in ſending out thereof by avoiding the hot fuliginous vapour. Therefore the Cheſt performes two contrary motions, for whileſt it is dilated it drawes in the encompaſſing aire, and when it is depreſſed it expels the fuliginous vapour of the Heart; which any one may eaſily perceive by the example of a paire of Smithes bellowes. The uſe of Reſpiration, or breathing.

Chap. X.

Of the Pericardium *or purſe of the Heart.*

THe *Pericardium* is as it were the houſe of the Heart, which ariſeing at the *baſis* thereof (either the ligaments of the *vertebra's* ſituate there or els the veſſels of the heart yeilding it matter) is of a nervous, thick and denſe ſubſtance without any fibers. It retaines the figure of the Heart, and leaves an empty ſpace for the heart to performe its proper motions. Wherefore the bignes of the *Pericardium* exceeds that of the heart. Whence it hath its matter.

It conſiſts of a double coate, one proper of which wee have ſpoken, another common coming from the *pleura*; and alſo of veines, arteries and nerves; the veſſels partly comming from the mamillary, partly from the *Diaphragma*, chiefly there where it touches it; the nerves come on each ſide from the ſixt conjugation.

It is onely 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 certaine naturall moyſture contained in it, unles 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 ſeemes not very likely; becauſe it growes and is heaped up in ſo great quantity in liveing bodyes, that it hinders the motion of the heart, and cauſes ſuch palpitation or violent beating thereof; that it often ſuffocates a man. Vſe.

For this Palpitation happens alſo to hearty and ſtout men, whoſe harts are hot, but blood thin and wateriſh by reaſon of ſome infirmity of the ſtomack or Liver; and this humour may be generated of vapours which on every ſide exhale into the *pericardium* from the blood boileing in the ventricules of the heart, where kept in by the denſity thereof, they turne into yellowiſh moiſture, as we ſee it happens in an Alembeck. From whence the matter of the watery humor conteined in the *Pericardium*.

Nature would have the *pericardium* of a denſe and hard conſiſtence, that by the force thereof The Conſiſtence.

thereof the heart might bee kept in better ſtate; for if the *Pericardium* had beene bony, it would have made the heart like iron by the continuall attrition; on the contrary, if it had beene ſoft and fungous, it would have made it ſpongy and ſoft like the Lungs.

Chap. XXX.

Of the Heart.

What the heart is, and of what ſubſtance.

THe Heart the chiefe manſion of the Soule, the organe of the vitall faculty, the beginning of life, the fountaine of the vitall ſpirits, & ſo conſequently the continuall nouriſher of the vitall heate, the firſt living and laſt dying, which becauſe it muſt have a naturall motion of it ſelf, was made of a denſe ſolide 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 veine into the receptacles thereof, and the breath or aire from the lungs by the *Arteria venoſa*; it hath the tranſverſe without, which paſſe through the right at right angles, to contract the Heart, and ſo drive the vitall ſpirits into the great Artery *Aorta*, and the cholericke blood to the Lungs by the *vena arterioſa*, for their nouriſhment; It hath the oblique in the midſt to containe the Aire and blood drawne thither by the forementioned veſſels untill they be ſufficiently elaborate by the heart.

All theſe fibers doe their parts by contracting themſelues towards their originall, as the right from the point of the heart towards the *baſis*, whereby it comes to paſſe 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 lookes towards the *vertebra's*, which chiefly appeares in the point thereof.

The magnitude

It is of an indifferent bignes, but yet in ſome bigger, in ſome leſſe according to the diverſe temper of Cold or hot men, as wee 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 Entrailes. For the blood being there a litle more dryed, than that which is concrete for the making of the Liver, turnes 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 veines and arteryes, which it receives either on the right ſide from the hollow veine, or on the left from the *baſis* at the entranc of the Artery *Aorta*.

The Nerves,

You cannot by your Eye diſcerne that the Heart hath any other Nerves than thoſe which come to it with the *Pleura*.

Yet I have plainely enough obſerved others in certaine 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 Entraile, where otherwiſe it doth not concrete unleſſe by cold or a remiſſe heat, which thing is chiefly worth admiration.

Number and ſite.

The Heart is one alone, ſcituate moſt commonly upon the fourth *Vertebra* of the Cheſt, which is in the midſt of the Cheſt. Yet ſome thinke that it inclines ſomewhat to the left ſide becauſe we there feele 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 arteryes, 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,

armed, and besides it is here on every side covered as it were with the hands of the Lungs.

It hath connexion with the fore mentioned *Vertebra's*, but by the parts composeing it, with those parts from whence it hath them; with the Lungs by the *Vena arteriosa*, and the *Arteria venosa*, and lastly with all the parts of the body by the Arteries which it sends to them all. Connexion.

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 els than a certaine middle substance between aire 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 *Valvulæ* or valves, the vessels and their mouthes, their distribution into the lungs, the wall or partition, and the two productions or Eares of the heart; which because they are doubtfull, whether they may be reckoned amongst the externall or internall parts of the heart, I will here handle in the first place. Temper and action. What the vitall spirit is.

Therefore these *Auriculæ* or Eares are of a soft and nervous substance, compact of three sorts of fibers, that so by their softnesse they might the more easily follow the motions of the heart, and so breake the violence of the matters entring 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 overwhelme 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 aire, and then by litle and litle draw it forth for the use or necessity of the heart. But if any enquire, if such matters may be drawne into the heart by the only force of the *Diastole ad fugam vacui*, for avoiding of emptinesse; I will answere that that drawing in, or attraction is caused by the heat of the heart; which continually drawes these matters to it no otherwise than a fire drawes the adjacent Aire, and the flame of a candle the tallow which is about the weake for nourishments sake. Whilest the heart is dilated it drawes the aire, whilest it is drawne togeather or contracted, it expells it. This motion of the heart is absolutely naturall, as the motion of the Lungs is animall. Some adde 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 *vena 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. The *Auriculæ Cordis*, or eares of the heart.

These eares differ in quantity, for the right is far more capacious than the left because it was made to receive a greater aboundance of matter. They are two in number, on each side one, scituate at the *Basis* of the heart; The greater at the entrance of the hollow veine into the heart, the lesse at the entrance of the *veinosa* 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 bee stayes or props to the *Arteria venosa* and great Arterye, which could not sustaine so rapid and violent a motion as that of the Heart by reason of their tendernesse of substance. Their magnitude and number. Their use.

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 pearcing through. The partition betweene the ventricules of the Heart.

The right of these ventricles is the bigger and incompassed 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 veine, and for distributing of it, partly by the *vena arteriosa* into the Lungs Why the right ventricule is more capacious and lesse compact.

for their nourishment, partly into the left ventricle, by sweating through the wall or partition, to yeild matter for the generation of the vitall spirits.

Why the right ventricle is more capacious and less compact.

Therefore becaus 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 becaus the blood which was to bee received in the right ventricle was more thicke, it was not so needfull, that the flesh to containe it should be so compact; but on the contrary the arterious blood and vitall spirit have need of a more dense receptacle, for feare of wasting and lest they should vanish into aire; and also lesse roome that so the heat being united might become the stronger, and more powerfully set upon the elaboration of the blood and spirits.

The action of the right ventricle.

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 mitification, or quallifying of the Aire. Which works were necessary, if the Physicall Axiome bee true; That like is nourished by like, as the rare and spongious lungs with more subtle blood; the substance of the heart grosse and dense, with the veinous blood as it flowes from the Liver, that is grosse.

And it hath its Cororall veines from the Hollow veine, that it might thence drawe as much as should be sufficient.

The action of the left ventricle.

But the left ventricle is for the perfecting of the vitall spirit, and the preservation of the native heat.

Of the Orifices and Valves of the Heart.

The uses of the foure orifices of the Heart.

THere be foure Orifices of the heart, two in the right, & as many in the left ventricle; the greater of the two former gives passage to the veine, or the blood carried by the hollow veine to the heart; the lesser opens a passage to the *vena arteriosa* or the cholerick blood carryed 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 egresse and regresse, to the *Arteria venosa*, or to the aire and fuliginous vapours. And becaus it was convenient that the matters should bee 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 becaus 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, fixe in the right ventricle, that there might bee 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.

Number.

Motion.

These valves differ many wayes; 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 againe; 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 comming back againe 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 certaine fleshy knots ending towards the point of the heart. The latter are wholy membranous.

Fiftly 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 prohibite the comming back are fixe 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 contrary wise are shut in the *systole*, that they may containe 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 backe into the Heart. But you shall observe that nature hath placed onely two valves at the Orifice of the *Arteria Venosa*, becaus it was needfull that this Orifice should bee alwayes open, either wholy, or certainely a third parte thereof; that

Why there be onely two valves at the Arteria venosa

the

the Aire might continually be drawne into the heart by this orifice in inſpiration, and ſent forth by exſpiration in the contraction of the heart. Whereby we may gather this, that there is but one third part of that Aire we draw into the heart in breathing, ſent forth againe in the forme of vapour in exſpiration, becauſe nature would have but one third part of the orifice to ly open for its paſſage out. Therefore the exſpiration or breathing out, and the *ſyſtole* of the heart and arteryes, is ſhorter than the inſpiration, ſo that we may truely ſay, that the inſpiration, or drawing the breath in, is equally ſo long as the exſpiration is together with the reſt, which is in the middeſt between the two motions.

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 ſpeake of their diſtribution. The *Vena arterioſa*, or the arterious veine, and the *arteria venoſa* or the *veinous arterie* 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 croſſe wayes over the other, the veine alwaies riding over the arterye, as you may underſtand better by the ſight of your eyes, than by reading of bookes. Theſe branches at their entrance of the lungs are divided into two other large branches, and each of them goe to his peculiar Lobe of the lungs; and theſe againe runne almoſt into infinite other branches, diſperſed in three places over the Lungs.

The Artery alwayes lyes under the veine.

Theſe veſſels have acquired their names by reaſon of that tranſmutation of conſiſtence, whereby the compoſure of a veine degenerates into an arterye, and that of an arterye into a veine, 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 veine which in its body ſhould imitate an arterye, and an arterye which ſhould repreſent a veine: 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 ſubtility penetrate through, and flow away by reaſon of the rarity of the veinous texture: and ſo nature ſhould never have attained her conceived end, that is, to nouriſh the Lungs, by reaſon of the continuall motion of their contraction and dilatation.

A twofold reaſon why the veine was made Arterious, or like an Artery.

For nouriſhment cannot be aſſimulated to the part, unleſſe it be put and cleave to it. Wherefor it was fit, that nature ſhould make the body of this veine ſolid, that it might be immoveable, unſhaken and ſtubborne (in reſpect of a veine which by its ſoftneſſe 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 bee drawne by its *Diaſtole*, nor driven back into the heart by its *ſyſtole*. But the arterye hath the conſiſtence of a veine, that by that veinous ſoftneſſe according to the neceſſity of nature it might be the more readily contracted and dilated, to bring the Aire in and carry the vapours forth of the heart. Here wee meet with a difficulty, which is, by what way the blood is carried out of the right into the left ventricle of the heart.

Why the Artery was made like a veine.

Galen thinkes that there be certaine 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 carried to the lungs by the *vena arterioſa*, and there attenuated; and carried from thence together with the aire by the *Arteria venoſa* to the left ventricle of the heart; this he writes truely very probablely. *Botallus* in his treatiſe *De Catarrho* hath found out a third way, to wit a veine, which he calls *Arteriarum nutrix*, that is, The nurſe of the Arteryes, which creepes a litle above the Coronall to the right eare of the Heart, and then goes into the left eare thereof. But yet I am very much afraid, that this veine obſerved by *Botallus*, is that veſſell obſerved by *Fallopius*, whereby the *Vena arterialis* is joined to the *Aorta*, & by which all the vitall blood is carryed for the forming and nouriſhment of the lungs

By what way blood may paſſe out of the right into the left ventricle.

The veine called the nurſe of the Arteries

Fall. p. in his obſer. Arteriarum.

Gal. lib. 15 de vſu part. cap. 6. whileſt the infant is yet in the wombe. Of which alſo *Galen* makes mention, but it had lain hid from his time to this day, but that *Fallopius* raiſed up the memory of it againe.

Chap. XIII.

The diſtribution of the aſcendent Hollow veine.

Gal. lib. de form. fœtus. THe Hollow veine riſeing 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 bignes. For the greater, by the hind part of the Liver upon the back bone and by the way, receives certaine other branches from the ſubſtance of the Liver which entred not into the great trunck with the reſt. You may often ſee this deſcendent branch even to the backe bone upon which it lyes in this its deſcent, covered with the ſubſtance of the liver, ſo that it may ſeeme that branch proceeds not from that common trunck together with the aſcendant, although indeed it alwayes doth. But the leſſer branch aſcends to the upper parts, and is diſtributed after this manner following. For firſt ariſeing into the midriffe it beſtowes two ſmall veines upon it, on each ſide one, which from that part are called *Phrenicæ*. But from thence when it arrives at the right Eare of the Heart, it makes the *Coronales*, the Coronall or Crowne veines, which compaſſe the *baſis* of the heart in manner of a Crowne. Thirdly entring ſomewhat more deeply into its right Eare, in its greater part it produces the *vena arterioſa*. Fourthly lifted up above the heart, on the right ſide it produces the veine *Azygos* or *ſine pari* (that is, without a fellow) which deſcending to the fourth rib, (reckoning from above downewards) nouriſheth the intercoſtall muſcles and alſo the membranes of the 8 lower ribs, on both ſides, ſending a branch into each of the muſcles at the lower part of the rib, which may bee ſufficient for their nouriſhment. Beſides alſo oftentimes, eſpecially in little men, this veine *Azygos* nouriſhes all the ſpaces between all the ribs by the like branches, which it ſends in the ſame manner to the foure 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 veine after it hath nouriſhed the ſpaces between the lower ribs, in its remainder deſcends under the *Diaphragma* and is joined on the left ſide to the Emulgent vein; by which it is manifeſt how an Abſceſſe, may be critically evacuated by the urine, in a pleuriſye. But this ſame *Azygos* is more depreſſed on the right ſide, and meets with the *Venæ lumbares*, but eſpecially with one of them, which goes downe to the thigh, whereby *Fallopius* gathers that it is very convenient in the beginnings of Pleuriſyes to open the *vena poplitis*, the veine 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 ſeene to come from the *Axillares*, which *Sylvius* calls the *ſubclavia*. Sixtly it brings forth the *Mammaria* 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 comming from the *Subclavia*: They are ſometimes found to proceed by a certaine common orifice from the hollow veine, before it be divided into the *Subclavian* branches, but it is rather in beaſts than in men; theſe veines deſcending by the ſides of the *ſternon* yeild nouriſhment to the 2 inner muſcles of the cheſt, to the 7 intercoſtall muſcles of the true ribs, to the *ſternon* it ſelfe and to its ligaments and griſtles, as alſo to the *Mediaſtinum* and the upper part of the right muſcles, and the adjacent parts. Seaventhly it produces the *Cervicalis* which on both ſides through the holes of the productions of the *Vertebra's* of the necke, aſcends to the head, ſending many ſmall branches into the ſpinall marrow through the holes by which the nerves paſſe, and alſo into the membranes, ligaments, griſtles, bones, and neighbouring muſcles. Eightly the *Muſculoſa* or muſculous, which alſo ariſeing out of the *Subclavia* is devided into two other branches; the one whereof goeth upon the breſt to the paps, nouriſhing the foremoſt muſcles; wherefore in a baſtard pleuriſie Cupping glaſſes may be fitly applied in this place.

The greater deſcendent branch of the hollow veine.

The upper branch of the hollow veine is the leſſe.

Venæ phrenicæ, Coronales.

Vena Arterioſa

Vena Azygos, or ſine pari.

This *Azygos* ſometimes two

How the matter of a pleuriſie may be evacuated by vrine.

Intercoſtalis.

Mammaria.

Cervicalis.

Muſculoſa.

In what place cupping glaſſes may be fitly applyed in a baſtard Pleuriſie.

The

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 wee will treat in their place. The twelfth and laſt is the *Iugularis* 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 ſcituate upon the *œſophagus*, 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 ſlippe to the organe of hearing by the hole called *Cæcum* (or the blind) alſo enters the *Cranium* and is ſpent in the thicker *meninx* nere* to the hole of the third and fourth conjugation of nerves. The externall Iugular veine 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 ſcituate at the ſides of the neck, into which as alſo into the skin it ſends certaine branches for nouriſhment.

Axillaris. Humeralis. Iugularis interna & externa.

Into what parts the *Iugularis interna* goes.

Into what parts the *Iugularis externa* goes.

The Figure of the hollow veine whole and freed from the reſt of the body.



A, The trunke of the hollow veine. the lower

AA, At this place of the Liver, is ſeated the left part of the veine, and diſtributeth branches to the left ſide.

B, Sheweth how the trunke of the hollow veine in the cheſt (to give way to the heart) is curved or bowed to the right hand.

Betwix A. and B. that part of the hollow veine which is betwixt the gibbous ſide of the Liver and the Midriffe.

C. the left midriffe veine called *Phrenica ſiniſtra*, from which ſurcles doe run in a man unto the purſſe of the hearr, for the midriffe and it doe grow together.

D, The orifice of the hollow veine which groweth unto the heart.

E, the crown-veine called *coronaria*, which like a crowne compaſſeth the baſis of the heart, and ſprinkleth his ſurcles on the outſide therof as far as to the cone or point.

FF, The trunke of the veine, *Azygos* or *non paril*, deſcending along the right ſide of the racke-

bones unto the loynes. *GG*, the lower intercoſtall veines, to the branches of the veine *Azygos*, which go unto the diſtances betwixt the ribs, & afford ſurcles unto the muſcles which lye upon the ribs & the racke-bones, & the membranes of the cheſt. *H*, the diviſion of the hollow vein into two ſubclavian trunks neare the Iugulum under the breſt-bone. *II*, the ſubclavian branch tending on either ſide unto the arme; called by ſome *Axillaris*. *K*, the upper intercoſtall veine which commonly ſendeth three ſlips unto the diſtances of the upper ribs, unto which the firſt intercoſtall veine ſent no branches. *LL*, the deſcending mammary veine: this deſcendeth under the breſt-bone unto the right muſcles of the *Abdomen*, & affoordeth ſurcles 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 coniunction of the mammary with the Epigaſtricke vein aſcending about the navill under the right muſcles. *N*, the veine of the necke called *Ceruicalis*, aſcending toward the Scull, which alloweth ſurcles to thoſe muſcles that lye upon the neck. *O*, the veine called *Muſcula*, which is propagated with many ſurcles into the muſcles that occupy the lower parts of the necke and the upper parts of the cheſt. *P*, *Thoracica* ſuperior, the upper cheſt veine which goeth to the muſcles lying uppon the cheſt, to the skinne of that place and to the dugges. *Q*, the double *Scapularis* diſtributed into the hollow part of the ſhoulderblade and the neighbour muſcles: ſo alſo betwixt *P* and *R*, ſometimes ſmall veines doe reach unto the glandules that are in the arme-holes. *R*, *Thoracica inferior* running downward along the ſides of the cheſt, and eſpecially diſtributed into the muſcle of the arme called *Latiſsimus*. *S*, the inner Iugular veine which entreth into the Scull after it hath beſtowed ſome ſurcles uppon the rough artery. *T*, the externall Iugular veine. *V*. the diviſion of this veine under the root of the eare. *X*. a branch of the externall Iugular which goeth into the inſide of the mouth, and is diverſly divided into the parts therein contained. *Y*. the exterior branch diſtributed neare the *Fauces* into the muſcles of the chops and the whole skinne of the head. *Z*. a portion of the branch, *γ*, reaching unto the face. *a*, *a*. the veine of the fore-head. *a*. a portion of it creeping through the temples *a*.* a propagation that goeth unto the skin of the Nowle or *Occiput*. *a a*. the veine called *Cephalica*, or the externall veine of the arme which others call *Humeraria*. *b*. *Muſcula ſuperior*, a propagation of the *Cephalica* veine which goeth unto the backward muſcles of the necke. Betwixt *b*. and *d*. on the backeſide 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 veine from the *Cephalica* which attaineth unto the top of the ſhoulder, and is conſumed into the muſcle that elevateth or lifteth up the arme and into his skin. *e*, *e*. a ſmall veine from the *Cephalica* diſperſed through the skin and the muſcles of the arme. *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 arme. *h*. the ſecond branch which goeth to make the *median* veine. *i*. *i*. the third branch running obliquely above the wand and the outſide of the arme. *k*. from this branch certaine circles are divided into the skin, the chiefe 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 ſurcles 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 arterye. *r*, a branch of this veine beſtowed upon the skin of the arme. *t*, a branch of the *Baſilica* which together with the branch of the *Cephalica* marked with *h*, makes the *mediana* or middle veine marked with *a*. *u*, a branch of the *Baſilica* going to the inner head of the arme. *xx*, a branch iſſuing out of the former that creepeth along unto the wriſt and toward the little finger conjoining it ſelfe with a branch of the *Cephalica*. *γ*, A veine running out unto the skinne at the outſide of the cubit. Vpper *ζ*. A propagation iſſuing out of a branch of the *Baſilica* marked with *t*. Lower *z*. A branch of the *Baſilica* *x*, goeing to the in-ſide of the Arme. *a*. The *Median* or common veine, *β*, The partition of the Median veine above the wriſt: This diviſion ſhould have beene made above *γ*. *γ*. The Externall branch

of

of the partition which goeth to the outſide of the head. ♂, From which iſſueth a ſmall branch to the inſide. ♀, The internall branch under ♀, which toward the middle and the ring finger is eſpecially diſpoſed. ♃, The veine of the thumbe diſperſed into the mountenet or hillock, which is conjoyned with the branch noted with ♃. ☾, the trunke of the hollow veine from which iſſue branches unto the parts ſeated under the liver. ☿, The fatty veine called *Adipoſa ſiniſtra*, which goeth unto the fat of the kidnies. ☉, The two Emulgents which leade wheyey bloud unto the kidnies. ♌♍, the two ſpermaticall veines leading the matter of the ſeede unto the teſticles. ♈, the beginning of the bodden veſſell called *vas varicoſum*. ♎, the veines of the loynes called *Lumbares* which are ſent in the knots or knees to the rackebones, to the marrow of the backe, to the muſcles that lies upon the loines, and to the *Peritonæum*. ♏, the bifurcation of the hollow veine into the Iliacke branches, which biſurcation is not unlike ♐. ♑, *Muſcula ſuperior*, a tranſverſe branch going to the muſcles of the *Abdomen*, and to the *Peritonæum*. ♒♒, the diviſion of the left Iliacke veine, into an inner branch at ♒, and an utter at ♓. ♓, *Muſcula media* the utter propagation of the branch ♒, diſtributed through the muſcles of the *coxa* and the skin of the buttockes. ♒, An inner propagation of the ſame branch ♒ which goeth unto the holes of the holy bone. ♃, the veine called *Sacra*, which goeth to the upper holes of the holy bone. ☌♄, the veine *Hypogaſtrica* diſtributed to the bladder, to the muſcles of the fundament, and the neck of the womb. ♂, A veine ariſing from the utter branch marked with ♂ which is ioyned with ſome branches of the internall veine, neare the holes or perforations of the ſhare bone. ♀♀, A veine which when it hath paſſed the ſhare bone diſtributeth one branch into the cup of the *coxendix* and to the muſcles of that place. ♂, Another ſmall branch which runneth under the skinne at the inſide of the thigh. ☌, The congreſſe or meeting of the foreſaid veine, with a branch marked with char. 2. and diſtributed into the legge. ♉, The *Epigaſtricke* veine, a propagation of the utter branch ♂ perforating the *Peritonæum*, whereto as alſo to the muſcles of the *Abdomen*, and the skinne it offereth branches, the chiefe branch of this veine is joyned with the deſcending mammary above the navell at *M*. ♎, *Pudenda* an inner propagation of the branch ♂, running overthwart unto the privities. ☉, *Saphæna* or the ancle veine or the inner branch of the crurall trunke, which creepeth through the inſide of the legge under the skinne unto the tops of the toes. ♌, the firſt interior propagation of the *Saphæna* offered to the groine. ♍, The utter propagation thereof divided to the foreſide or outſide of the thigh. ♎, The ſecond propagation of the *Saphæna* going to the firſt muſcle of the legge. ♏, The third propagation of the *Saphæna* going to the skinne of the whirle-bone, and unto the hamme. ♐, The fourth propagation of the *Saphæna* diſperſing his muſcles forward and backward. ♑, Branches from this unto the foreſide of the inner ankle, to the upper part of the foote, and to all the toes. ♒, *Iſchias minor* called alſo *muſcula interior*, the utter branch of the crurall trunke divided into the muſcles of the *coxendix*, and to the skinne of that place. 1,2, And this alſo may be called *muſcula*. 1, the exterior and leſſer which paſſeth into foure muſcles of the legge: 2, the interior greater and deeper unto the muſcles of the thigh. 3,4. The veine called *Poplitea*, made of two crurall veines divided under the knee. 5, From this a ſurcle is reached upward unto the skinne of the thigh. 6. But the greater part runnes by the bent of the knee under the skinne as farre as the heele. 7, Alſo to the skinne of the outward ankle. 8, The veine called *Suralis* or calfe veine, becauſe it runneth unto the muſcles that make the calfe of the legge. 9, The diviſion of the Surall veine into an exterior trunke 9, and an interior 14. 10, 11, The diviſion of the exterior trunke under the knee into an externall branch, which along the brace attaineth unto the muſcles of the foot 11, and in internall. 12,13,12,13, Which deſcending along the outſide of the legge to the upper part of the foote is cloven into divers branches, and in the backe of the foot mixeth it ſelfe with *Poplitea*, or the hamme veine 20. 14, The interior branch of the Surall veine which runneth into the backſide of the leg. 15, A branch hereof deſcending to the inſide of the heele and the great toe, and is divided into divers ſurcles. 17, *Iſchias maior* iſſuing out of the internall trunke at 14, and running through the muſcles of the calfe. 18, A propagation hereof derived unto the upper part of the foot, & affoording two ſurcles to every toe. 19, the remainder

of the inner trunke 14, behind the inner ankle, approcheth to the bottome of the foote and is consumed into all the toes. 20, the commixtion of the veine *Poplitea* with the surall or calfe-branch at 13.

Where the external Iugular veine may be fitly opened in inflammations of the parts of the mouth.

But when it arives to the basis of the lower part of the head, it is divided into more branches, one wherof 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 squinancies, and other inflammations of the mouth) and to the coate 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 backe part of the scull, it comes obliquely to the upper part of the suture *lambdoides*, where these branches meeting together, passe into the reduplication of the *Dura mater*, deviding the forepart of the braine, that so joined and united, they may make the *torcular*; the third ascendent is distributed upon the backe part and *basis* of the lower jaw, to the lippes, the sides of the nose, and the muscles thereof: and in like manner to the greater corner of the eyes, to the forehead and other parts of the face, and at length by meeting together of many branches, it makes in the forehead the veine which is called *vena recta* or *vena frontis*, that is, the forehead veine. The fourth, ascending by the glandules behind the eares, after it hath sent forth many branches to them, is divided into two others, one whereof passing before, and the other behind the eare, are at length spent in the skinne of the head. The fifth and last wandring over all the lower part of the head, going to the backe part thereof, makes the *vena pupis*, which extended the length of the head by the sagitall suture, at the length goeth so farre, that it meets with the *vena frontis*, which meeting is the cause, that a veine opened in the forehead, is good in griefes of the hinder parts of the head, and so on the contrary. But wee 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 the head, so that the *vena pupis* being opened may make revulsion of the matter which causeth the internall paines of the head.

Vena recta.

Vena pupis.

Chap. XIIII.

The distribution of the nerves, or sinewes of the sixth coniugation.

Three paire of nerves of the sixt coniugation.

BEcause the Distribution of the arteries cannot be well shewed, unlesse wee violate those nerves which are carried over the Chest, therefore before we shew the distribution of the arteries, we will as briefely as we can, prosecute the distribution of these nerves.

Now the sixth conjugation brings forth three paire of nerves; for passing out of the skull, as it comes downe to the Chest, it by the way sends forth some branches to certaine muscles of the necke, and to the three ascendant muscles of the *Larinx* on each side of the *Sternon* and upon the clavicles. Then the remainder descending into the Chest, is divided on each side into these three paire. The first paire makes the *Ramus costalis*. The second, the *Ramus recurrens*. The third paire, 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 joyning themselves to these which proceede from each of the *Vertebra's* of the spine, they are carried to all the naturall parts.

Ramus Costalis

Recurrens.

The *Recurrens*, or recurrent is also called, because as it were starting up from the chest, it runs upwards againe, but these two Recurrent nerves doe not run backe from the same place; but the right from below the artery, called by some the axillarie, 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 the *Cartilago scutiformis*, and *Thyroydes* into the proper muscles, which open and shut the *Larinx*.

An anatomical Axiome.

By how much the nerves are nearer the originall, to wit, the braine, or spinall marrow,

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 runne backe againe upwards, that ſo they might be the ſtronger to performe the motions of the muſcles of the *Larinx*. But the *Stomachicus* or ſtomacke branch is ſo called, becauſe it deſcends to the ſtomacke 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 coate thereof, into the *Pericardium* and heart; and then comming into the upper orifice of the ſtomacke, it is ſpent in many branches, which folded after divers manners and wayes, chiefely makes that mouth or ſtomacke, which is the ſeate of the Animall apetite (as they terme it) and hunger, and the judger of things convenient or hurtfull for the ſtomacke. But from thence they are diverſely diſſeminated over all the body of the ventricle.

Why nature would have the vocall nerves recurrent.

Ramus ſtomachicus.

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 ſtomacke 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 joine it ſelfe to the nerve of that ſide. To which purpoſe the right is carried above the gullet, the left below it, ſo that theſe two ſtomaticke become foure, and againe theſe foure preſently become two.

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 unequall branches. The greater whereof deſcends to the lower parts, being diſtributed, as we formerly mentioned in the third Booke, and 22. Chapter. The leſſer aſcending to the upper parts, is againe divided into two other unequall branches, the leſſer of which aſcending towards the left ſide, ſends forth no artery from it, untill it arive at the firſt rib of the Cheſt, where it produces the ſubclavian artery, which is diſtributed after the manner following.

The left branch of the aſcendant artery is leſſe then the right.

The diſtribution of the left ſubclavian artery into the,

Firſt, it produces the intercoſtall, and by it imparts life to the three intercoſtall muſcles of the foure upper ribs, and to the neighbouring places.

1 *Intercoſtalis.*

Secondly, it brings forth the Mammillary branch, which is diſtributed as the Mammillary veine is.

2 *Mammaria.*

Thirdly, the *Cervicalis*, which aſcends along the necke by the tranſverſe productions to the *Dura mater*, being diſtributed as the *vena cervicalis* is.

3. *Cervicalis.*

Fourthly, paſſing out of the Cheſt, from the backe part of the Cheſt, it ſends forth the *muſculoſa*, whereby it gives life to the hinde muſcles of the necke, even to the backe part of the head.

4 *Muſculoſa.*

Fifthly, having wholy left the Cheſt, it ſends forth the two *Humerariæ*, or ſhoulder arteries, the one whereof goes to the muſcles of the hollow part of the ſhoulder blade, the other to the joint of the arme and the muſcles ſituate there, and the gibbous part of the ſhoulder blade.

5 *Humeraria duplex.*

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 veine, the remnant of it makes the *Axillaris* of that ſide.

6 *Thoracica duplex.*

The diſtribution of the right ſubclavian Artery.

The other greater branch likewiſe aſcending by the right ſide, even to the firſt ribbe 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 ſleepy arteries, which aſcending undivided with a nerve of the 8th conjugation and the internall jugular veine, 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

The *Carotides*, or ſleepy arteries.

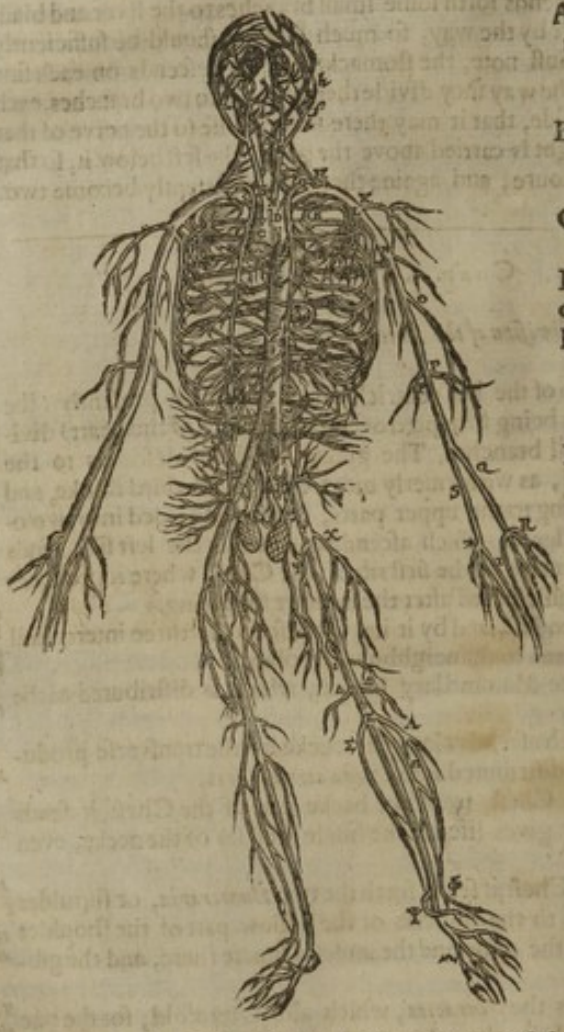
Their diviſion.

The diſtribution of the internall branch of the ſleepy arteries.

ter is sent to the *Pharinx*, *Larinx* and tongue; then entring into the head by the long hole, and the backe part of the upper jaw, it sends many branches to the nose, eyes, the inside of the temporall 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 braine abundantly diffused over the *tenuis meninx* or *Pia mater*, and the membrane or *Plexus Choroides*. The externall or lesser branch of the sleepy arteries goes to the cheekes, the temples, and behind the eares; lastly, it sends a branch into the long muscle of the necke, with which the internall Iugular veine insinuates it selfe into the *Dura mater*, entring by the hole of the nerves of the sixth conjugation.

To what parts the externall branch of the sleepy artery arrives.

The Figure of the Arteries.



A. The orifice of the great Arterie, or the beginning thereof, where it issueth out of the heart.

B. *Coronaria*, so called, because like a crowne it compasseth the basis of the heart.

C. The division of the great arterie into two trunkes V *i*.

D. the left subclavian climbing obliquely upward unto the ribs.

E. the upper intercostall artery, or a branch which bestoweth foure propagations unto the distances of the lower rib.

F. the necke arterie which through the transverse processes of the rackebones of the necke, attaineth to the scull, bestowing surcles unto the marrow and his neighbour muscles.

G. the left Mammary artery running under the breastbone, and to the navell It distributeth surcles to the *Mediastinum*, the muscles of the brest, and of the *Abdomen*.

H. *Muscula*, or a branch attaining to the backeward muscles of the necke.

I. the *Scapular* arteris which goe unto the hollownesse 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 Cheft. M. *Thoracica inferior*, which passing along the sides of the Cheft, attaineth to the *broad* muscles of the arme.]. the axillarie artery running out into the arme and affording branches unto the mucles thereof. O. A branch reaching to the outside of the cubit lying deepe. PP. Braches to the ioynt of the cubit with the arme. Q. the upper branch of the artery running along the *Radius* and offering surcles to the thumbe, the fore-finger and the middle finger. *k* A surcle creeping unto the outside of the hand and led betwixt the first bone of the thumbe and that of the after-wrist, supporteth the fore-figer where wee

use

uſe to feele the pulſe. S. the lower branch of the artery running along the *Vlna* and communicating ſurcles 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 trunke of the great artery aſcending to the *Iugulam*, and the diviſion thereof in that place into X, Y, Z. X, the left *Carotis* or ſleepy artery. Y, *Subclavian dextra* is divided into branches, as the right is divided. Z. *Carotis dextra*, called alſo *Apoplectica* and *Lithargica*. 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 eares. c, the inner branch going to the throttle, the choppes and the tongue. d, the diviſion hereof at the baſis of the ſcull, 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 roote of the eare. g, the fore-branch hereof creeping up the temples. h, the backe branch running on the backeſide of the eare under the skinne. i, the trunke of the great artery, deſcending unto the ſpondels of the backe. kkk, the lower *Intercoſtall* arteries which goe unto the diſtances of the eight lower ribbes, from which are offered ſurcles to the marrow, and to the muſcles that grow to the backe 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 trunke of the *Cœliacall* artery is taken away, leſt the multitude of letters in ſo ſmall a Table ſhould breed obſcuritie. ϑ, ϑ, the right and left emulgents running from the *Aorta* or great artery unto the kidneies. ιι, χχ, the ſpermaticall arteries on either ſide going to the teſticles. λ, the lower Meſenterticall artery on the left below μ, running eſpecially into the Collicke gut on that ſide. μμ, the arteries called *Lumbares* which runne overthwart and like knees, affording ſurcles to the muſcles that grow to the loynes, and to the *Peritonæum*. μ, the lower; *Muſcula ſuperior* running into the ſides of the *Abdomen* and the muſcles. νν, the byfurcation of the great artery into two *Iliacke* trunkes, and at the ſides, but ſomewhat inward are branches which make thoſe that are called *Sacræ*. T, the diviſion of the left *Iliacke* trunke into an inner branch at ξ and an utter at ο. ξ, the inner *Iliacke* 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 necke of the womb. ρρ, the umbilicall artery. σ, the remainder of the branch ξ, aſſuming an addition from the utter branch neere ο, and ſo falling through the hole of the ſhare bone into the legge. τ, *Epigaſtrica*, it aſcendeth upward unto the right muſcle of the *Abdomen*, and about the navell is ioyned with the mammary artery. υ, *Pudenda*, it creepeth overthwart the ſhare bone. φ, the *Crurall* trunke without the *Peritonæum*. 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 arterie with the branches. Γ, *Poplitæa*, going to the muſcles on the backſide of the thigh. ΔΔ, which communicateth ſmall branches to the ioynt of the knee, and the muſcles that make the calfe of the legge. Θ, the diviſion of the *Crurall* artery under the hamme into three branches. Λ, *Tibiæa exterior*, it accompanieth the brace-bone, and is conſumed into the muſcles. Ξ the chiefe part of the *crural* artery. Σ, the upper & backer *Tibiæa*. Πφ, the lower and backer *Tibiæa* running unto the upper ſide of the foote at φ. Υ, A propagation of the crurall artery going to the inner and upper ſide of the foote, and ſprinkling a branch unto the ankle. Ω, A propagation unto the lower part of the foote which affordeth ſurcles to each toe.

But we muſt note that there be more veines in a mans body, than arteries, and beſides that the veines are farre 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 kinde. Therefore you may often finde veines without arteries, but never arteries without veines.

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 veine for the uſe of the ſame part.

Chap. XVI.

Of the Thymus.

What the *Thymus* is.

The use.

The magnitude.

THe *Thymus* is a glandule of a ſoft, rare, and ſpongeous ſubſtance, of large bigneſſe, ſituate in the furtheſt and higheſt part of the Cheſt, amongſt the diviſions of the ſubclavian or Iugular veines 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 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 appeares very large in beaſts and young men, but in ſuch as have attained to full growth it is much leſſe, and ſcarſe to be ſeene.

Chap. XVII.

Of the Aſpera Arteria, *the rough Arterie or Weazon.*

The ſubſtance

THe *Aſpera Arteria* or Weazon ſeeing it is the inſtrument of voice and reſpiration, is of a griſtly, ligamentous, and wholy various ſubſtance. For if it had beene one rough, and continued body with the *Larinx* or throttle, it could be neither dilated, nor compreſſed; opened, nor ſhut, neither could it order the voice according to our deſire.

Compoſure.

It is compoſed of veines from the internall Iugular, 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 *Peritonæum*; the internall, which is the ſtronger and woven with right fibers, from the inner coate of the mouth, the which is common with the inner coate of the *œſophagus* or gullet. And alſo it conſiſts of round griſtles, yet not drawne into a perfect circle, compoſed in manner of a channell, and mutually joined together in order, by the ligaments that proceede from their ſides and ends.

Why the back part of the weazon is ligamentous.

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 ſoftneſſe of a ligament, might then give place, when wee ſwallow harder and greater gobbets of meate. 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 meanes both to it, and theſe circles to be drawne out in length; otherſome bring theſe griſtles into a perfect circle, which alſo yeeld them meanes of dilatation. Theſe ligaments cover the inner ſuperficies, but the griſtles are placed without, to reſiſt the incurſion of externall injuries. But wee muſt note, that by this communion of the inner coates of the weazon and gullet, wee reape this benefit in the commodiouſneſſe of the action, that one of theſe parts being depreſſed, the other is lifted up, like a rope running in a wheele or pully. For thus whileſt the gullet is depreſt to ſwallow any thing, the weazon is lifted up; and on the contrary when the ſtomacke riſes up in vomiting, the weazon is depreſt. It is onely one, and that ſeated betweene the *Larinx* (from which it takes its beginning) and the lunges in which it ends; firſt dividing it ſelfe into two large branches, the right and the left, and beſides each of theſe entring into the ſubſtance of the lungs, is againe 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.

Why the forepart is griſtlely.

The number and ſite.

The diviſion of the weazon through the Lobes of the Lungs.

All theſe branches are griſtlely even to the ends. They are ſituate betweene the ends of the *Arteria venoſa*, and the *Vena arterioſa*, that the entrance of the aire 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

takes them. The temperament thereof is cold and drie. The action is to carry the aire to, and vapours from the lungs; that by dilating, but this by pressing the grisles together. The temper and action.

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 into two trunkes, the descending C. the ascending D.

E. the left axillarie, or subclavian arterie.

F. the right axillarie or subclavian artery.

G. the right *Carotis* or fleepie artery.

H. the left *Carotis*.

I. the trunke 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 the left into the left side of the lungs; which branches are againe subdivided into many other.

M. The head of the Rough Artery called the *Larinx* or *Throttle*.

N. N. Certaine 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. Q Q. The right Recurrent Nerve. R. A revolution of small branches of the left nerve unto the descending trunke of the great Artery. S S. The left Recurrent Nerve.

Chap. XVIII.

Of the Gullet.

THe *OEsophagus*, or Gullet which is the passage of the meat and drinke, is of a middle substance betweene the flesh and finewes, because it consists of one nervous membrane and another fleshy. The nervous is placed the innermost, and is continued to the inner Coate of the mouth even to the Lipps (whereby it comes to passe,) that the Lipps 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 quicke and forcible in hungry people, that they have scarse time to chaw it, before they find it, to be pluckt downe, as it were with a hand. The fleshy Coate placed without is woven with transverse fibers, to hasten the The substance. Attractive force thereof. The compo- sure.

the going of the meat into the ſtomacke, and for expulſion in vomiting and breaking of winde. Theſe two coats are continued with the two coats of the ſtomacke, and have the like ſite. Beſides, the Gullet hath theſe parts compoſing it, as a veine from the Gate and Hollow aſcendent veine, a nerve from the ſixt conjugation, an Artery from that which creepes alongſt the bottome of the ſtomacke with the *vena Gaſtrica*, or elſe from the Arteryes aſcending the hollow part therof; 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 leſſe according to the variety of bodyes. The figure of it is round, that ſo it might be more large to ſwallow meat, and leſſe ſubject to offence. It is placed betweene the backe bone and the weazon from the roots of the tongue even to the ſtomacke. But as it diſcends alongſt the backe bone, when it comes to the fourth *Vertebra* of the Cheſt, it turnes to the right ſide, to give way to the great Artery *Aorta* and the deſcendent Artery, then it turnes to the left ſide to the ſtomacke, or mouth of the ventricle. Nature hath faſtened it to the *Diaphragma* with ſtrong membranous tyes, leſt that, if it had laine upon the Artery it ſhould have hindred the paſſage of the vitall ſpirit to the lower parts. It is onely 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 downe the meat, and to caſt forth ſuch things by vomit as trouble the ſtomacke. Here you muſt note, that whileſt we ſwallow downe, the Gullet is drawne downewards, and the weazon upwards, which is the cauſe that wee cannot ſup and blow, ſwallow and breathe together at the ſame inſtant; which wee muſt thinke to happen by Gods ſingular providence; to whoſe name be glory for everlaſting, Amen.

The magnitude. The figure, Site.

Temper and action.

Why we cannot ſup and blow at one time.

The End of the fourth Booke.

THE

THE FIFTH BOOKE OF THE ANIMALL parts contained in the Head.

CHAP. I.

A Generall description of the Head.

HAving hitherto declared two generall parts of mans body, that is, the Naturall and vitall, 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 Pallace and habitation of reason and wisedome, from whence as from a fountaine 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 governe and moderate the whole body, and performe all actions according to the præscript of nature. By the head we understand all that which is contained from the Crowne of the head to the first *vertebra* of the neck.

What the head is.

Why seated in the highest place.

The best figure of the head is round, lightly flatted on each side, *extuberating* something to the fore and hinde part thereof. For from hence is taken an argument of the goodnesse of the senses; on the contrary, those which are exactly round, or acuminate, and sharp towards the top, are not thought good. The head is devided into the face, forehead, temples, the forepart, the crowne and hinde part.

The figure.

The division thereof.

By the face we understand, whatsoever is contained between the Eye-browes and the lower part of the chin. By the forehead, all the space from the eye-browes even to the Coronall future. By the temples, whatsoever is hollowed from the lesser Corner of the eye, even to the eares. By the forepart of the head, whatsoever runnes in length from the top of the forehead, or the Coronall future, even to the future *lambdoides*, and on each side to the *Ossa petrosa*, the stony bones, or scaly futures. By the Crowne we signifie a certaine point exquisitely in the midst of the Sagittall future, which is sufficiently knowne. By the *Occiput* or hindepart of the head, that which is terminated by the future *lambdoides*, and the first *vertebra* of the neck.

Of all these parts there be some simple, some compound, besides some are containing

The containing parts of the head,

taining, some contained. Of the containing some are common to all the parts of the head, as the skinne, the fleshy pannicle and *pericranium*; others are proper to certaine parts, as the fleshy panicle 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 braine.

The parts conteined.

The parts contained are the substance of the braine, the foure ventricules, and the bodyes 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.

Wee must now speak of the containing parts beginning with the skinne; for the order of teaching requires that we take our *Exordium* from the more simple. but first we will say some thing of the haires.

What the haire is.

The haire is nothing els than an excrement generated and formed of the more grosse and terrene portion of the superfluities of the third concoction, which could not be wasted by insensible transpiration.

The use thereof.

The benefite of it is, that consuming the grosse and fuliginous or sooty excrements of the braine it becomes a cover and ornament for the head.

This haire of the head and eye-browes have their originall from the first conformation of the infant in the wombe, the rest of the haires of the body arise and grow forth as the body growes and becomes more dry, of which sort are the haires which cover the Chin, armeholes, groines and other parts of our bodyes.

Chap. II.

Of the musculous skinne of the Head, (commonly called the hairy scalpe) and of the Pericranium.

What the hairy scalpe is. Its connexion.

THe skinne which covers the Scull, and is covered with the haire, is farre more fleshy, thick, hard and dry than any other part of the body, especially which wants haire. The skinne 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 growne 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 nosethrilles and corners of the Eyes, whereupon it is there called gristlely.

It hath connexion with the *Pericranium* because joined to it, it receives nerves from the first and second *vertebra* of the necke, and from the third conjugation of the braine which are disseminated through all its substance, whereby it comes to passe, that the wounds, contusions, and impostumes that happen in or upon this skinne, are not to be neglected.

* Our Author with *Fallopius* and *Laurentius* confoundes the *pericranium* and *periosteum*: but *Vesalius Bauhinus* and *Bartholinus* distinguish them making the *pericranium* thin and soft, and the *periosteum* most thin and nervous, and of most exquisite sense.

The * *Pericranium* (but I suppose it should be the *Periostium*) 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 tearmed the *Periostium*: And as the *Pericranium* takes its originall from the *Crassa meninx* propagating it selfe by certaine strings or threds sent forth by the sutures and holes of the skull, so all other membranes of the body have their originall either from this *Pericranium*, or the *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 selfe, even to the Holy bone.

Why the wounds thereof must not be neglected.

The *Pericranium* and *periosteum* of the same nature.

Whence all the membranes proceed

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 litle Toe hurt when they sneese, or cough, perceive an increase of their paine, by the passage thereof to the braine.

Why when any membranous part is hurt in any part of the body, the head is affected by consent.

The use of the *Pericranium*.

The vse 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 *Periostium* doth the like in other bones. Besides it sustaines and fastens by the sutures the *Crassa meninx* to the skull; least it should fall by reason of its weight upon the *Pia mater*, and so

ſo hurt it, and hinder the pulſation of the braine and arteryes 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 thinke 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 5 in number. Three are true and legitimate, two falſe and ſpurious. The Coronal, the firſt of the true ſutures, is ſeated in the forepart of the head, deſcending downewards overthwart the forepart of the head to the midſt of the temples; it is ſo called, becauſe *Corollæ*, that is, wreaths, crownes or garlands, are ſet upon that place. Their uſe and number.

The ſecond is called the *Sagittalis*, or right ſuture, as that which running through the crowne devides the head into two equall parts, as with a ſtraigth line, running the length of it from the Coronall to the *Lambdoides* or hinde 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 alwaies but as for the greater part to be thus. For there be ſome skulls that want the foremoſt ſuture, otherſome the hind, & ſomtimes ſuch as have none of the true ſutures, but only the falſe & ſpurious. But alſo you ſhal ſomtimes find the Sagittal to run to the noſe. Some ſculls want Sutures.

And oft times there be three or foure ſutures in the backe part of the head, ſo that indeed the number of the ſutures is not certaine. 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 backe part of the head, were broken, becauſe his Probe thruſt to the roughnes of the ſecond ſuture *Lambdoides*, ſtaied as at a Cleft made in the bone by a ſtroake. *Celſ. lib. 8. Cap. 4.*

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 combe-like connexion. But if any aske, why the head conſiſts not of one bone, that ſo it might be the ſtronger: I anſwere it is, that ſo it might be the ſafer both from interniall and externall injuries. For the ſcull being as it were the tunnel of the chymney of this humane fabrick, to which all the ſmoky vapours of the whole body aſcend, if it had beene compoſed of one bone, theſe vapours ſhould have had no paſſage fourth. Why the ſcull conſiſts of diverſ bones.

Wherefore the groſſer vapours paſſe away by the ſutures, but the more ſubtile by the pores of the ſcull; 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 bredth from the *Lambdoides*, through which the *Vena pupis* enters into the skull, and they are of that largenes that you may put a points tagge into them, that ſo the vapours may have free paſſage forth, otherwiſe there would be danger of death; thus nature hath beene careful to provide for man againſt internall injuries; and in like manner againſt externall, for it hath made the head to conſiſt of diverſe bones, that when one bone is broken the other may be ſafe, the violence of the ſtroak being ſtayed in the diviſion of the bones. In whatbodies and by what meanes the *Vena pupis* ſometimes enters into the pores within the ſcull.

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 unperfect, and too firmely cloſed; otherwiſe it is unpoſſible ſuch fractures ſhould happen by reaſon of the ſeparation of the bones, which breakes the violence of the blow that it can goe no further. In what men one part of the head being ſtriken, the oppoſite is broken.

And certainely as it is rare to find a skull without Sutures, ſo it is rare to find ſuch kinde of fractures. Therfore Chirurgions muſt diligently obſerve the Sutures and ſite of them, leaſt they bee deceived and take them for fractures, or unawares apply a

Why we must not apply a Trepan to the Suturet.

Trepan to them, whence by breaking the veines, arteryes and nervous fibers by which the internall parts communicate with the externall, there may ensue increase of paine, a violent defluxion of blood upon the *Crassa meninx*, and the falling thereof upon the braine, (the fibers being broken by which it stuck to the *Pericranium*) and so consequently a deadly interception of the pulsation of the Braine.

Chap. IIII.

Of the Cranium, *or Skull.*

What the *Cranium* or scull is.

THe *Cranium*, or Skull covering the braine like an Helmet, is composed and consists of seaven bones, of which some are more dense, thick and hard than other some. The First is the *Os occipitis*, or Nowle bone seated in the back part of the head, more hard and thicke than the rest, because we want hands and eyes behind, whereby we may keep or save our selves from falling.

Why the nowle bone is harder than the rest.

This bone is circumscribed, or bounded by the future *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 foureteene muscles and strong ligaments, which firmely tye these heads of the Nowle bone in the cavityes of this first *vertebra*.

* My Author meanes by the *Os Basilare* in this place the wedge bone: but some Anatomists make it a *Sys nemma* of this *Os occipitis*.

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 thicknesse. It is bounded by the Coronal future, and the ends of the wedgebone: in this forehead bone there is often found a great cavity under the upper part of the eye-browes, filled with a glutinous, grosse, viscide and white matter or substance, which is thought to helpe to elaborate the aire for the sense of smelling.

The fore-head bone, next to the nowle bone is harder than the rest.

A Cavity to be observed in the forehead bone.

Chirurgions must take speciall notice of this cavity, because when the head chances to be broken in that place, it may happen, that the fracture exceeds not the first table; wherefore they being ignorant of this cavity, and moved with a false perswasion that they see the braine, they may thinke the bone wholy broken, and to presse the *Meninges*, whereupon they will dilate the wound, 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 and *bregmatis*.

The third and fourth bones of the Skull are the *Ossa parietalia*, or *Bregmatis*, having the third place of density and thicknes; although this density and thicknes be different in diverse places of them. For on the upper part of the head, or crowne, (where that substance turnes not to a bone in children untill they have all their teeth, so that it feeles soft in touching, and through it you may feele the beating of the braine) these bones are very tender, so that oft times, they are no thicker than ones naile, that so the moist and vapourous excrements of the braine, shut up where the greater portion of the braine resides, may have a freer passage by the Braines *Diastole* and *Systole*. These two square bones are bounded above with the Sagittall future, below with the scaly, on the forepart with the coronall, and on the hinde 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 next to the former in strength. They are bounded with the false or bastard Suture, and with part of the *Lambdoides*, and wedgebone.

Os Sphenoides, or the wedge-bone.

The seaventh is the *Os sphenoides*, *basilare* or *Cuneiforme* that is, the wedgebone. 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 fastened in their places. This bone is bounded on each side with the bones of the forehead, the stony bones, and bones of the Nowle and pallate. The figure represents a Batte, and its processes her wings.

Os Ethmoides or *cribriforme*.

There is besides these another bone at the Basis of the forehead bone, into which the mamillary processes end, the Greekes call it ἠθμοειδὲς, the Latines *Cribrosum* and *Spongiosum*, the Spongy bone, because it hath many holes in it not perforated in a direct passage, as in a sive, but winding and anfractuous, that the aire should not by the force of attraction presently leap or ascend into the braine, and affect it with its qualityes,

qualityes, before it be elaborated by its lingring in the way. There are beſides alſo ſixe 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.

The three bones of the Auditory paſſage.

But alſo in ſome skuls there are found ſome diviſions of bones, as it were collected fragments to the bigneſſe almoſt of ones thumbe, furniſhed and diſtinguiſhed by their proper commiſſures, or ſutures, which thing is very fit to be known to a Chyrurgion in the uſe of a Trepan.

Verily he may give a conjecture hereof, whileſt 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 Skuls in women are ſofter and thinner than in men, and in children more than in women, and in young men more then in men of a middle age. Alſo the Æthiopians or Blackamoores, as alſo all the people inhabiting to the South, have their ſculles more hard and compoſed with fewer ſutures.

By what meanes a Chirurgion may conjecture, that there are extraordinary ſutures in certaine places of the ſcull. The ſculls of ſuch as inhabite the Southerne countries are more hard and denſe.

Therefore as it is written by *Hippocrates*, ſuch as have their Skulls the ſofter, the Symptomes 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 yeilds to the perforating Trepan. Moreover in ſome skuls, there bee bunches ſtanding out beſides nature, made either round, or cornered, which the Chirurgion 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 ſeeme 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 deepe, by the weapon forced the deeper; becauſe as a round body touches a plaine but onely *in puncto* in a prick or point, ſo what-ſo-ever falls only lightly or ſuperficially upon it, onely touches a point thereof. But on the contrary a long wound muſt be upon a plaine ſurface, which may be but only ſuperficiall.

We muſt obſerve the extuberancies beſides nature which are in ſome ſculls.

Another cauſe is, becauſe ſuch bunches change the figure and ſite of the Sutures. And the Chirurgion muſt note that the skuls hath two tables, in the midſt whereof the *Diploe* is; which is a ſpongy ſubſtance into which many veines and arteryes & a certaine fleſhyneſſe are inſerted, that the skull ſhould not be ſo heavy, and that it might have within it ſelfe proviſion for the life thereof; and laſtly that there might be freer paſſage out for the fuliginous vapours of the braine.

The ſite and ſubſtance of the *Diploe*.

The upper table is thicker, denſer, ſtronger and ſmoother than the lower. For this as it is the ſlenderer, ſo it is the more unequall, that it may give place to the internall veines and arteryes (which make a manifeſt impreſſion into the ſecond table on the inſide thereof) from which branches enter into the skull by the holes which containe 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 appeares in the skull by reaſon of the great concuſſion or ſhaking of the braine, theſe veſſels are often broken, whence happens a flux of blood between the skull and membranes, and laſtly death. But it is fit the Chirurgion 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, leaſt 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 will hereafter more at large declare in handeling the wounds of the head.

There may be a deadly rapture of the veſſells of the braine without any fracture of the Scull. Caution to be had in the uſe of the Trepan

CHAP.

Chap. 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 ſutures 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 ſmels to the Braine, and purge it of excrementitious humors. This ſame *Craſſa meninx* inveſts the inner coate 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 conſiſtence of the *Craſſa meninx*

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.

The uſe.

The uſe of it is to involue all the braine, and to keepe it when it is dilated, that it be not hurt by the hardneſſe of the Scull. For the courſe of nature is ſuch, that it alwayes places ſome third thing of a middle nature, betwixt two contraryes. Alſo the *Craſſa meninx*, yeelds another commodity, which is, that it carryes the veines and arteryes entring the Scull for a long ſpace. For they inſinuate themſelves into that part, where the duplicated or folded *Meninges* ſeparate the braine from the *Cerebellum*, and ſo from thence they are led by the ſides of the *Cerebellum*, untill they come, as it were, to the toppe 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 braine at the top into the right and left; Theſe united veines run in a direct paſſage even to the fore-head, after the manner of the Sagittall ſuture; They have called this paſſage of the mutually infolded veines, the *Torcular*, or Preſſe, becauſe the blood which nouriſhes the braine is preſſed and drops from thence by the infinite mouthes of theſe ſmall veines. Therefore alſo here is another uſe of the *Craſſa meninx*, to diſtinguiſh the braine by its duplication, being it thruſts it ſelfe deepe 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 remaine ſafe and ſound, performing its duty to the creature, as we ſee in ſome that have the Palſey. *Columbus* obſerved that this *Meninx* was double, and verily I have found it true by my owne ſight.

What the *Torcular* is.

One part of the braine being hurt the other keepes the creature alive.

The conſiſtence of the *Pia mater*,

The other *Meninx* or membrane of the braine, called *Pia mater*, is moſt ſlender interchaſed with divers veines and arteryes, for its owne and the braines nouriſhment and life. This doth not onely involve the Braine, as the *Craſſa meninx* doth, but alſo more deeply penetrates into the anfractuous paſſages thereof, that it may every where joyne and bind it to it ſelfe, not eaſily to be drawne 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 wee have mentioned, and not plucke it away unleſſe with the ſubſtance of the Braine.

The ſenſe of the *Meninges*.

Theſe membranes when they are hurt or afflicted, cauſe greivous and moſt bitter torment and paine; wherefore I dare ſay, that theſe membranes are rather the authors of ſenſe than the braine it ſelfe, becauſe in diſeaſes of the Braine, as in the Lethargie, the party affected is troubled with litle or no ſenſe of paine.

CHAP. VI.

Of the Braine.

NOw followeth the Braine, the beginning of the nerves and voluntary motion, the instrument of the first and principall faculty of the Soule, that is, the Animall and Rationall. Man hath this part in greater plenty then any other Creature, for it almost fills the whole Scull. But if it should have filled it all, the Braine could not be moved, that is, dilated and contracted in the Scull. It is of a cold and moist Temperature. The laudible temper of the braine is knowne by the integrity and perfection of the internall and externall senses, the indifferency of sleepe and waking, the Maturity or ripenesse of judgment, and constancy of opinions, from which, unlesse it meet with better and more probable, it is not easie to be moved.

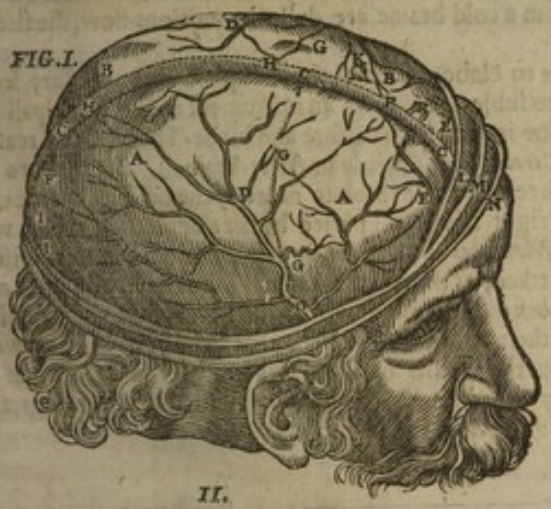
What the braine is.

The quantity

Temper.

The first figure of the head, as it appeares when the scull is taken away.
The second figure shewing the Braine, the scull and Dura mater *being taken off.*

FIG. I.



II.



AA, BB. The *Dura meninx* or thicke membrane.

CCC. The third *Sinus* of this membrane.

DD. The course of the veines as they runne through the membrane, or the second veine of the braine.

EE. The first veine of the braine.

FFF. Certaine final veines which perforate the scull and reach to the *pericranium* or Scull-skin.

GGG. Fibres of the *Dura meninx* passing through the Coronall Suture, which fibres make the *Pericranium*.

HH. fibres passing through the sagittall Suture.

II. Others passing through the Lambdall Suture.

K. A knub which useth to grow to the *Sinus* of the Scull.

L. A cavitie in the fore-head bone.

M. The Scull.

N. The *Pericranium* or Scull-skinne.

Fig. 2.

AAA. A part of the *Crasse meninx* dividing the braine. *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

sing the braine. *FFF.* Certaine vessels running through the convolutions or branches of the braine. *GGG.* Certaine branches of veines running through the sides of the *dura meninx*. *HHH.* The thicke membrane reflected downeward.

You shall know the braine is more hott, by the quickneſſe of the senses and motions of the body, by shortneſſe of sleepe, the suddaine conceiving of opinions and change of them, by the slippery and failing memory, and lastly by easily receiving hurt from hot things, as the Sunne and Fire. Such as have a cold braine, 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 braine, are also slow to learne; for you shall not easily imprint any thing in dry bodyes, but they are most constant reteiners of those things they have once learned; also the motions of their bodyes are quicke and nimble. Those who have a moist braine doe easily learne, but have an ill memory, for with like facility as they admit the species of things and imprint them in their minds, doe they suffer them to slide and slip out of it againe. 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 againe, mixes, obliterates and confounds the same. Therefore the senses proceeding from a cold braine are dull, the motions slow, the sleepe profound.

The Action. Number.

The Action of the braine is to elaborate the Animall Spirit and necessary sense serving the whole body, and to subject it selfe as an instrument to the principall faculties, as to reason. The braine is twofold, the fore and hinde. The hinde by reason of its smallneſſe is called the *Cerebellum*, (the litle or After-braine). But the fore by reason of its magnitude hath retained the absolute name of the braine. Againe this fore-braine is two-fold, the right and left, parted by that depression, which wee formerly mentioned, of the *Meninges* into the body of the braine. But this division is not to be here so absolutely taken, as though the Braine 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 Braine is soft, but the inward hard, callous and very smooth; when on the contrary, the outward appeares indented and unequall with many windings, and crested as it were with many wormelike foldings.

Chap. VII.

Of the ventricles and mamillary proceſſes of the Braine.

The substance of the braine is porous and sweats forth blood.

FOr the easie demonstration of the ventricles of the braine, 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 braine are heaped up, to be presently strained out, and sent away by the hollow passage. In the substance of the braine you must observe 4 ventricles, mutually conjoined by certaine passages, by which the spirits endued with the *species* of things sensible, may goe from one into another. The first and two greater, one on each side are placed in the upper braine. The third is under them in the middle part of the braine. 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 braine in the forme of a semicircle, whose hornes looke 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 clensed; but in other ventricles, the pure and already elaborate spirits are onely 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, scituate at the

The foure ventricles thereof.

The magnitude of the upper ventricles of the braine.

basis

basis of the Pillar of the middle ventricle towards the nose under the *Septum lucidum* or cleere partition, severing or parting in sunder these two ventricles.

The *Septum Lucidum*.

This *Septum lucidum*, or cleare or thin partition, is nothing else than a portion of the braine indifferently solide, but very cleere, that so through this partition the animall spirits contained in these two ventricles may mutually passe and bee communicated, and yet no other grosser substance may peirce the thin density thereof.

Why the Palsie of one side is not presently communicated to the other.

Wherefore it is not to be feared, that the water contained in one of the ventricles may passe to the other through this partitiō, as I have oft times observed to the great admiration of the spectators in the dead bodyes 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 wholy empty and without any; or certainly no fuller than in any other, dead through any other occasion. For some affirme that there is a certaine kind of wateriſh moisture alwaies 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 braine goe into one common passage, as both the bellowes 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-braine,

CD, The *anterior* and *posterior* regions of the middle part of the After braine.

E, The *anterior* wormy processe.

F, The *posterior* wormy processe.

GG, In this place the After-braine did grow to the spinall marrow. *H*, The cavity in the spinall marrow maketh the forth ventricle. *IK*. The *anterior* and *posterior* processes of the braine, called *vermi-formes* or the wormy processes.

The *Plexus Choroides*.

This *Plexus Choroides* is nothing else, but a production of the *Pia mater* diversly folded with the mutuall implication of veines and arterys woven in the forme 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 veines stretched fourth into this same *Plexus*, the hinde artery and veine *Torcular*, and also from the aire entring into the braine by the mamillary processes. But the mamillary processes are certaine common waies for conveyance of the aire and smells into the braine, and carrying of excrements from the braine.

The *Processus Mammillares*.

For thus in them who have the Catarrhe and *Coriza* or pose, neither the aire, nor smels can penetrate into the braine; whence frequent sneesings ensue, the braine strongly moving it selfe to the expulsion of that which is troublesome to it. But of the excrements of the braine, whether bred there, or proceeding from some other part, some are of a fumide and vaporous nature which breathe insensibly through the Sutures of the skull; Others are grosse and viscide, of which a great part is expelled by

by both these productions, or through each of them. For thus in the Pose you may see some who have one of their nosthrils stopt, the other running, and some who have both obstructed. The most proper benefit of the two first ventricles of the braine is to entertaine the Phantasie as in a convenient seat and habitation, seeing the minde there estimates and disposes in order the species of things brought in from the externall senses, that so it may receive a true judgement of them from reason which resides in the middle ventricle.

The use of the upper ventricles of the Braine.

The seat of the third ventricle of the braine. The parts to be considered in it.

The third ventricle is seated betweene the hindermost extremityes of the former ventricles, and the last ventricle of the *Cerebellum*. In this fixe parts present themselves to our consideration, that is the *Psalloides* or Arch, the *Conarium*, or pine Glandule, the Buttockes, wormelike productions, the Bason and passage which is from this middle into the last and hindemost ventricle. The *Psalloides* or arch is nothing els, but the cover of the middle ventricle, resembling a roofe borne up with three stayes or pillars, the one whereof is extended to the nose under the *Septum lucidum*, the two other on each side one, looke towards the backe part of the braine. 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 sustaine the burden of the braine lying upon it. For an arched figure is the most convenient of all other to sustaine a waight.

What the *fornix* or Arch is, and the use therof.

What the *Conarium* or pine Glandule is.

The *Conarium* or Pine glandule, is a small Glandule of the same substance with the braine, 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 vessells led thither with the production of the *Pia mater* for the generation of the animall spirits, and the life and nourishment of the braine.

What the *Nates* or Buttocks are.

The *Nates* or Buttocks are subjected or placed under this Glandule, that is, bodies of a solid and white substance drawne out in length like a childs buttocks, especially in beasts, and cheifly in a sheepe. These buttocks have such a solid substance, that so they may keepe open and free the passage, or channell that runnes downe from the middle to the lower ventricle, by meanes of which the Braine participates with the *Cerebellum*.

What the worme is.

The worme is a production of the *Cerebellum* or After-braine, to wit a portion of the same being in the top or beginning and as it were in the entrance thereof, being like many litle circles or wheeles mutually knit together by slender membranes; and it is so called becaule it resembles those thicke white wormes which are found in rotten wood. It doth as it were performe 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 suddaine violence into the *Cerebellum*, they might confound the imprinted notions of things to be remembred.

Here the *Pelvis* or Bason is confounded with the Tunnell.

The *Pelvis* or Bason is a passage appointed for the carrying away of the grosse excrements by the palate, and is so called becaule it hath the similitude and use of a bason or Tunnell: it descends from the third ventricle into the Glandule which is seated betweene the processes of the wedge-bone called the saddle thereof, as you may perceive by putting in a spatherne. Now there remaines the last of the fixe 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.

The Channell from the third into the fourth ventricle.

This Channell descending in its originall from the Bason, 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 spatherne through it. The benefit of the third ventricle is; that it may be as a Tribunall or judgment seate to the Reasoning faculty, when the minde will draw conclusions from things seene.

The fourth ventricle of the Braine.

The fourth ventricle is seated in the place we formerly mentioned; it is lesse than the rest, but more solide; lesse as that which was not to receive the spirit before it was purified, and cleared from all impurities; but more solid that it might containe it the safer. The use therof is, to be as a Treasury and store-house of the opinion,

and

and judgments which reason shall decree, that when neede requires, wee may fetch and draw them from thence as laid up in store. I know *Galen*, and the Greeke Physitions have not so distinguished in places the three fore-mentioned facultyes; but have written, that they all are all over confused through the whole substance of the braine, which opinion also *Fernelius* in his *Pathologia* hath renewed. Yet I had rather follow this opinion, as commonly received and celebrated by the Arabian Physitions.

The Mammillary processes are the instruments and passages of smelling, being of the same substance with the braine, and like nerves, which runne out from the hinde hornes of the upper or foremost ventricles of the braine to the *Ethmoides* and spongy bones of the nose, that hence they may receive the divers kinds of smells, and carry them into the Braine. But although they be like nerves, yet they are not accounted nerves because they go not out of the scull. The use of the Mammillary processes.

The Fourth and Fift figures of the Braine.

FIG. V.



Figure 5.

R R R, The lower *superficies* of the callous body reflected.

S T V, The *triangular* surface of the *Fornix* or Arch.

X X, The lower part of the partition of the ventricles continuated with the Arch.

Y Y, The upper part of the partition continued with the callous body.

Figure 6.

A A A, The lower surface of the Arch.

B C, Two corners of the Arch, by which it is continuated with the ventricles.

D E, The right and left ventricles.

F G, 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 venticle.

I K L, The division of this vessell, a part whereof goeth to the right venticle at *K*, and another to the left at *L*.

M N, The *Plexus choroides* made of the artery *F G*, and the vessell *H*.

O O, Small veines passing thorough the ventricles of the braine, produced from the vessels *K* and *L*.

P, Other veines arising from the same, dispersed without the ventricles into the *Pia mater*. *Q*. A passage from the third ventricle unto the *Bason or Tunnell*. *R S*, Canales or *Sinus* graven or furrowed in the substance of the ventricles, in which the phlegme is led along to the orifice of the foresaid passage marked with *Q*.

The

The Sixth figure of the Braine.

XI.



X.



XII.



Figure 10.
A A, Parts of the ſpinall marrow cut from the braine.
BC, The places where this marrow did grow unto the braine.
DE, The Teſticles. *FG*, The buttocks, *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 venticle. *P*, The place where the ſpinall marrow goeth out of the skull. *Figure* 11. *AB*. Parts of the opticke nerves. *CD*, The ſleepy arteries. *E*, The Baſon or Tunnell hanging downe. *F*, A hole or perforation of the *dura meninx*, through which the Tunnell reacheth unto the glandule. *GG*, Parts of the ſecond conjugation of ſinnewes. *Figure* 12. *A*, The Glandule. *B*, The Baſon or Tunnell called *Peluis* or *Infundibulum*. *C D E F*, The foure holes thorough which the phlegmaticke excrement iſſueth.

Chap. VIII.

Of the 7. conjugations of the Nerves of the Braine, ſo called, becauſe they alwayes ſhew the Nerves conjugated and doubled, that, is on each ſide one.

What a Nerve or Sinew is.

THe nerves are the waies and inſtruments of the animall ſpirit and faculties of which thoſe ſpirits are the vehicles, as long as they are contained in the braine; they conſiſt of the only and ſimple marrowey ſubſtance of the braine; or ſpinall marrow. But paſſing forth of the braine, they have another membranous ſubſtance which involves them joined with them from the two membranes of the braine; and according to the opinion of ſome Anatomiſts, they have alſo a third from the ligaments drawen as well from divers others, as from theſe by which they are tyed to the *Vertebra's*; Yet this opinion ſeemes abſurd to me, ſeeing ſuch a membrane, as that which is inſenſible, wholy repugnes the condition of a nerve, which is to give ſenſe to the parts to which it is inſerted.

Its ſubſtance. Whether the nerves have a third membrane from the Ligaments of the *Vertebra's*.

Their magnitude. Their figure.

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 braine, 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 goe downe to the Teſticles, and take life and nouriſhment by the capillary veines and arteryes, 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 braine either mediatly, or immediately; their Number is ſeaven and thirty paire, or conjugations, whereof ſeaven have their originall immediately from the braine, the other thirty from the ſpinall marrow.

Their uſe.

Their number

The firſt conjugation of nerves.

The firſt conjugation of the nerves of the braine is thicker than all the reſt, and goes to the eyes, to carry the viſive ſpirit to them. Theſe ariſeing from diverſe parts

of

of the braine, in the middle way before they goe out of the skull meet together crosse-wise like the Iron of a Mill (which is fastened in the upper stone) going into one common passage with their cavityes 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 backe into the other. An argument wherof may be drawn from such as aime at any thing, who shutting one of their eies, see more accurately; becaus 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 humour, is spent in the structure of the net-like coate which containes this humor on the backe part.

The second conjugation goes into many parts, at its passing forth of the skull, and in the bottome of the circle of the eye it is distributed into the seaven muscles moveing the eyes. The second conjugation.

The Seventh figure shewing the eight conjugations of the Nerves of the braine.

FIG. I.



FIG. I I.



A A, 2. The braine.
BB 1, 2. The After-braine.
CC 1, 2, the swelling of the braine which some call the mammillary processes.
D 1, the beginning of the spinall marrow out of the Basis of the braine.
E 1, 2, a part of the spinall marrow when it is ready to issue out of the skull.
FF 1, 2, the mammillary processes which serve for the sence of Smelling.
GG 1, 2, the opticke nerves.
H 1, the coition or union of the opticke nerves.
II 1, 2, the coate of the eye where into the optick nerves is extended.
KK 1, 2, the second paire of the sinews, ordained for the motion of the eyes.
LL 1, 2, the third paire of sinewes, or according to the most Anatomists, the lesser roote of the third paire.
MM 1, 2, the fourth paire of sinewes, or the greater roote of the third paire.
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 coate of the nosethrils.
Q 2, another into the temporall muscles. *R* 2, a branch of the fourth conjugation crumpled like the tendrill of a vine. *S* 2, a branch of the same reaching unto the upper teeth and the gummes. *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 rootes of the lower teeth. *YY* 2,

ττ 2, the assumption of the nerves of the fourth conjugation unto the coate of the tongue. Z 1,2, the fourth paire are vulgarly so called which are spent into the coats of the pallat. s 1,2. the fift paire of sinewes which belong to the hearing. *, the *Auditory* nerve spred abroad into the cavity of the stony bone. *, a hard part of the fift 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 paire. c 1, 2, a lower branch from the same originall. d 1,2, this nerve is commonly ascribed to the fift paire, but indeed is a distinct conjugation which we will call the Eight, because we would not interrupt the order of other mens accounts. e 1,2, the sixt paire of sinewes. 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, b 1,2, the seventh paire of sinewes. i 1, the union of the seventh paire with the sixt. l 2, a propagation of the seventh paire 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 *Hyois* and the Larinx. o p q 1, three holes; through the hole o the phlegme yssueth out of the third ventricle of the braine to the Tunnell, and at p q, is the passage of the *Soporary* arteries to the ventricles of the Braine.

The third conjugation.

The third is two-fold, in the passage out of the skull it is like-wise divided into many branches, of which some are carryed to the temporall muscles, into the *Masseteres* or Grinding muscles, into the skinne of the face, forehead and nose; Othersome are sent into the upper part of the cheek, and the parts belonging to it, as into the teeth, gummes and the muscles of the upper lippe; and those which are called the round which incompasse the mouth on the inside; the last are wasted in the coate of the tongue, to bestow upon it the sense of tasting.

The fourth conjugation.

The fourth conjugation is much smaller, and is almost wholy wasted upon the coate of the Pallate of the mouth, to endue it also with the sense of tasting.

The fift conjugation.

The fift at its originall and having not as yet passed forth of the skull, is divided into two, and sends the greater portion thereof to the hole of the eare, 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 sixt conjugation.

The sixt being the greatest next to the first, passing entire forth of the skull, imparts some small branches to certaine 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 bellyes, it passes even to the bladder and testicles, as wee shewed in the former booke.

The seventh conjugation.

The seventh is inserted and spent upon the muscles of the bone *Hyois*, the tongue and some of the throtle, to give them motion; it passes forth of the skull by the hole of the nowle bone at the extuberancies thereof.

Chap. IX.

Of the Rete Mirabile, *or wonderfull Net, and of the Wedge-bone.*

The existence of the Animall spirit.

THe Animall spirit is made of the vitall, sent from the heart by the internall sleepy Arteryes to the braine. 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 Arteryes in many places running crosse one another, in the forme of a Net diverse times doubled; (whereupon it had the name of the wonderfull Net) that so the spirit by longer delay in these Labyrinthean or maze-like turnings, might be more perfectly concocted and elaborate, and attaine to a greater fitnesse to performe the Animall functions.

What the *Rete Mirabile* is.

The site, and number.

This wonderfull Net scituate at the sides of the *Apophyses clinoides* or productions of the wedgebone, is twofold; that is, divided by the pituitary Glandule which is scituate

ſcituate betweene the ſaid *Apophyſes Clinoides*, having the wedgebone lying under them, next to the *Craſſa Meninx*, being perforated on the right and left ſide, next to which lye bones as rare as a ſponge even to the Pallate, by which the Phlegme is purged by the mouth and noſe; and therehence, I thinke, that ſpattle flowes, which ſuch as have a moiſt braine, continually ſpit out of their mouth.

The Eight figure of the braine.

FIG. 1.



A, The Braine.
B, The *Cerebellum* or after-braine.
C, A proceſſe of the brain, but not that which is called *Mammillaria*.
D D, The marrow of the backe as it is yet within the skul.
E, The *Mammillary* proceſſe or inſtrument of ſmelling.
F, The opticke nerve.
G, The coate of the eye into which the opticke nerve is ſpread.
H, The nerve that moveth the eye or the ſecond payre.
I, The third conjugation, or the harder and leſſer branch of the nerves of the third conjugation brought forward.
K, The fourth conjugation or the greater and thicker nerve of the third payre bending downward.
L, A branch of the nerve marked with *I*, which goeth to the fore-head.
M, A nother branch of the nerve *I*, reaching to the upper jaw, *NN*, A nerve proceeding from the branch *I*, intexed 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 ſurcle of the branch *R*, offered to the lower lip. *T T*, Other ſurcles from the branch *R*, attaining to the lower teeth, *V V*, A branch of the nerve *K*, diffuſed into the coate of the tongue. *X X*, The fourth paire of ſinews which goe into the coat of the pallat. *Y*, The fifth paire of ſinews which are the nerves of hearing. *a*, the membrane of the eare, unto which that fifth nerve goeth. *b c*, two ſmall branches of the fifth conjugation uniting themſelves with the nerve *P*. *d*, the eight conjugation or a nerve of the fifth paire attaining unto the face. *e e*, the ſixt paire of nerves. *f*, A branch from the nerve *e*, reaching to the muſcles of the neck. *g*, Small branches derived unto the throttle or *larynx*. *h*, the byfurcation of the nerve into two branches. *iii*, An inner branch hanging to the rackbones, and ſtrengthning the *intercoſtall* nerves, and is therfore called *Intercoſtalis*. *kk*, Surcles of the uter branch going to the heads of the muſcles, to the breaſt-bone and to the coller-bones. *l m*, branches of the right nerve *l*, making the right Recurrent nerve;

m m, the insertion of the recurrent sinews into the muscles of the *larinx*. *o p*, branches of the left nerve making the left recurrent sinew *p*. *q q*, branches from the sixt conjugation going to the coate 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 stomack. *t*, the right stomacke nerve going to the left orifice of the stomack. *u u*, the left stomack nerve going to the right orifice of the stomack. *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 collick gut. *α*, a nerve creeping to the gut called *duodenum* and the beginning of the *ieiunum* or empty gut. *β*, a nerve implanted in the right side of the bottome of the stomacke. *γ*, a nerve belonging to the liver and 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 collick gut and the kel. *ι*, small branches inserted into the spleen. *κ κ*, a nerve approaching to the left side of the bottome of the stomack. *μ*, a branch belonging to the left side of the *Mesentery* 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 paire of sinewes. *π*, a branch derived from the sixt coniugation to the muscles which arise from the processe called *Styloides*. *ρ*, a branch of the seaventh coniugation which goeth to the muscles of the tongue, of the bone *hyois*, and of the throtle or *larinx*. *σ* A coniunction or coition of the 6. and 7. paire into one nerve.

What the *Apophyses Clinoides* are.

These *Apophyses clinoides* are certaine productions of the *Os basilare* or wedge-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 hee seemes to confound it with the *Plexus Choroides*. Truely I have observed it alwayes after the manner, as *Sylvius* alledges against *Vesalius*. It remaines, that we recite the perforations of the skull, because the knowledge of these much conduces to the understanding of the insertions of the veines, arteryes and nerves.

Whether the *Rete mirable* differ from the *Plexus choroides*.

CHAP. X.

Of the holes of the inner Basis *of the Scull.*

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 goe to the temporall muscles. Fifthly are reckoned, these holes scarse visible, scituate under the pituitary glandule, by which the spettle is evacuated. Sixthly that hole which is in the wedge bone made for the entrance of the internall sleepy Arteries, composing the wonderfull Net, and then passing into the braine 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 Iugular veine. The eight 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 veine and artery going to the auditory passage, above the *foramen cæcum*. In the eleaventh place are reckoned the perforations which yeild passage forth to the sixth paire of nerves, to part of the sleepy Arteries, and of the internall jugular. In the twelvth those which yeild a way out to the seventh conjugation; The great hole of the Nowle bone through which the spinall marrow passes is reckoned the thirteenth. The fourteenth is that, which most commonly is behinde that great hole, by which the Cervicall veines and arteries enter in.

CHAP.

Chap. XI.

Of the perforations of the externall Basis *of the Braine.*

THere is a hole on each side at the Eye-browes, by which passes a small nerve from the third conjugation comming out of the cavity of the Orbe of the eye, and going by the forehead bone to the eye-browes, that it may give motion to the two muscles of the upper eye-brow and forehead. Yet oftentimes the hole is but to bee seene on one side, oft times there is a cleft instead thereof, otherwhiles it is not perforated nor cleft at all. The second, is the perforation of the greater corner of the eye, by which a portion of the nerves of the third coniugation descends to the coate 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 coniugation going to the parts of the face, and the teeth of the upper jaw. The fourth is at the beginning of the pallate, amongst the cutting or shearing teeth, through which a veine, an artery and the coate of the pallate passes out. In the fifth order are reckoned the perforations of the pallate, by which the nerves descend from the fourth coniugation, to give, or cause the taste. In the sixt order are ranked the holes of the pallate serving for respiration, and the flegme falling from the braine by the nosethrils. And there is a cleft under the yoake bone ascending into the Orbe of the eye, by which there is a way, as wel for the nerves of the third coniugation to the Temporall muscles, as also for certaine veines and arteryes. But also there is noted another hole at the mammillary processe, which is not perforated in the iudgement of the sense. Besides there is thought to be another at the hinde roote of the same processe, by which a certaine small veine passes from the Iugular to the *Torcular*. But I have onely noted these three passages by the way, because there is so much variety in them, that nothing can be certainely said of them.

Chap. XII.

Of the Spinal Marrow, or Pith of the Backe.

THe spinall Marrow is like a River running from the fountaine of the braine. This sends nerves for sense and motion to all the neighbouring parts under the head, spreading its banches 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 inveting the braine, distinguished by no distance of place, as in the braine. 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 forewards and about. The diseases of this marrow doe almost cause the like Symptomes, as the diseases of the braine; 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 followes a distortion or wresting aside of the Marrow; but then especially if it happen that one of the vertebra's be strained, so sharpe and bitter a compression urgs the marrow by reason of the bony body of the vertebra, that it will either rend it, or certainely hinder the passage of the spirit by it. But by these same holes of the vertbra's the veines and arteryes goe to the spinall marrow for to give life and nourishment to it, as the nerves by them passe forth into all the lower parts of the body.

What the Spinall marrow is.

The coats of the spinall marrow.

The diseases from the hurting of the spinall marrow.

Figure 1. sheweth the forme 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.

FIG. II.

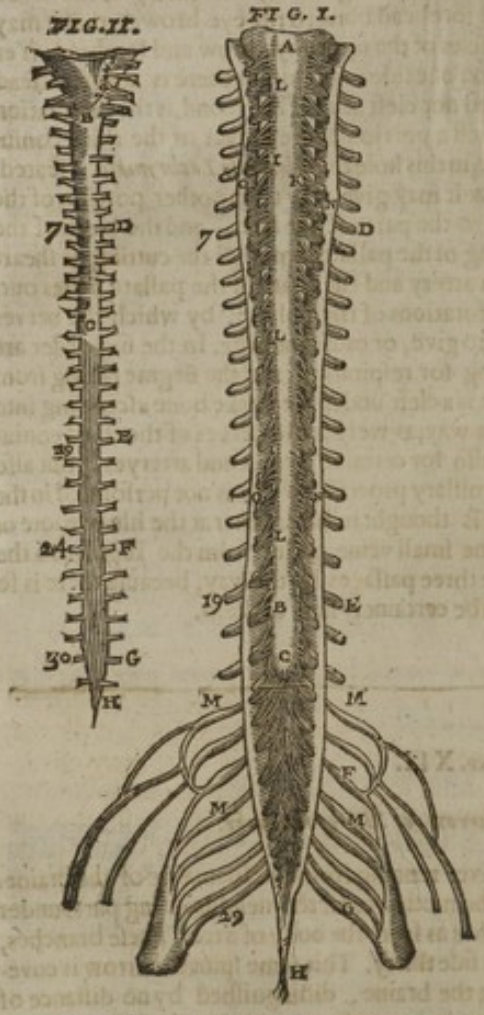


FIG. I.

A, The beginning of the spinall marrow where it fals out of the skull.
B, The thickneſſe thereof in the ſpondels or rack-bones of the loynes.
C, The diviſion thereof into ſtrings, or hairy threds.
D, the ſeven nerves of the necke.
From *D* to *E* or from 7, to 19, ſhew the nerves of the backe.
From *E* to *F*, the nerves of the loynes.
From *F* to *G*, the nerves of the *oſſa-crum* or holy bone.
E, the end of the marrow.
IKL, do ſhew how the nerves doe iſſue from the marrow in ſtrings.
M M, the knots of the ſinewes made of the conjunction of thoſe ſtrings.
ND, the membranes that inveſt the marrow.

Figure 2.

A, The beginning of the ſpinall marrow in the ſcull.
3, 4, 5, 6, 7, Theſe Characters ſhew (according to *Veſalius* opinion) how the conjugations of the nerves of the braine doe take their originall from the marrow remaining yet within the Skull.
B, The egreſſe of the ſpinall marrow out of the skull.
C The cords or ſtrings whereinto it is divided.

D 7, The marrow of the necke and ſeven paire of ſinewes. *E* 19, twelve paires or conjugations of nerves proceeding from the marow of the Cheſt. *F* 24, The marrow of the loynes and 5. paire of ſinewes. *G* 30. the marrow of the holy-bone and 6, paire of ſinewes. *H*, the extremity or end of the ſpinall marrow.

The End of the Fifth Booke.

THE

THE SIXTH BOOKE TREATING OF the Muscles and Bones, and the other Extreme parts of the Body.

The Preface.

PEradventure some may wonder, that I have ended my fifth booke of Anatomie, before I have fully described all the parts of the head, the which seemed as it were onely 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 prosequute 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 eyes: but having first described the bones of the face, without the knowledge of which it is impossible to shew the originall 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 finde 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 foote, yet it indicates and plainely intimates by the suddaine changes thereof, what affections and passions of hope, feare, sorrow and delight possesse our minds; and what state our bodyes are in, sound, sicke or neither. Wherefore seeing the face is of so much moment, let us returne to the Anatomicall description thereof, which that wee may easily and plainely performe wee will begin with the bones thereof, whereby, as we formerly sayd, the originall and insertion of the Muscles may be more certaine and manifest to vs.

The description of the bones being unknowne it must necessarily follow that the originall and insertion of the muscles must be so also

The endowments of the face.

The countenance is the bewrayer of the will.

CHAP.

Chap. I.

Of the bones of the Face.

Bones in each orbe of the Eye.

THe 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 orbe, 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 proceſſe of the ſtony bone, and ſo makes the *Zygoma*, that is, the *Os Iugale* or yoake 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 bottome, or inner part of the orbe, very ſlender & as it were of a membranous thinneſſe: then follow the two bones of the noſe which are joyned to the forehead bone by a ſuture, but on the foreſide between them ſelves by harmony. But on the backe or hinde part with two other bones, on each ſide one, which deſcending from the bone of the forehead (to which alſo they are joyned 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 Orbe, on the backe part with the wedge-bone, on the inner ſide with the two little inner bones of the pallate, 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 pallate. 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 wedge-bone, receive on each ſide one of the nerves of the fourth conjugation, which in the former booke, we ſaid were ſpent upon the membrane of the pallate.

What the *Zygoma* is and what uſe it hath.

The Ægylops.

The two bones of the noſe.

The two inner bones of the palate.

The two bones of the Iaw.

And in *Galens* opinion there be other two in the lower Iaw, joined at the middle of the chin; although ſome thinke it but one bone, becauſe by the judgement of ſenſe there appeares no diviſion or ſeparation therein. But you may ſee in children how true this their ſuppoſition is, for in men of perfect growth it appeares but one bone; theſe two are reckoned for the thirteenth and fourteenth bones. Now theſe two bones making the lower Iaw, have in their back part on each ſide two productions, as they lye to the upper Iaw, 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 proceſſe of the ſtony bone, nere to the paſſage of the eare.

Two productions on each ſide of the lower Iaw.

The Luxation of the lower Iaw.

This may be ſtrained to the forepart by violent gaping, by retraction of the muſcles ariſing from the wing-like proceſſes, and ending at the lower angles of the broader part of the ſame Iaw.

The lower Iaw filled with a marrowy humor.

This Iaw is hollow as alſo the upper, eſpecially in the back-part, being filled with a white and glutinous humor, conducing to the growth of the teeth. This humor hath its matter from the blood brought thither by the veſels, veines, Arteryes and nerves from the third coniugation 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 ſence by the benefit of the nerves entring thither with the veine and artery, by ſmall holes to be ſeene at the lower roots of the teeth; and thence it is that a beating paine may be perceived in the tooth-ach, becauſe the defluxion may be by the atteryes; or rather becauſe the humor flowing to the roots of the teeth may preſſe the artery in that place; beſide alſo you may ſee ſome apparance of a nervous ſubſtance in the root of a tooth newly pluckt out.

How the teeth feele.

Why the teeth have a beating paine.

The nerves of the Lower Iaw muſt be obſerved.

But alſo you muſt conſider, that this Iaw 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 coniugation. I have thought good to put thee in minde of theſe, that when thou ſhalt have occaſion to make inciſion in theſe places, thou maieſt warily and diſcreetly handle the matter, that theſe parts receive no harme.

There

There remaines another bone ſeated above the pallate, from which the griſtlely 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.

The bone of the noſe above the palate, or the partition of the noſe.

There are ſixe 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 Iaw-bones. The eleventh and twelfth are called the inner bones of the paſſate. The thirteenth and fourteenth the bones of the lower Iaw. The partition of the noſe may be reckoned the fifteenth.

Now it remaines having ſpoken of theſe bones, that wee treate of the teeth, the Eye-browes, the skinne, 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, ſixeteene above, and ſo many belowe; of which in the forepart of the mouth there are foure above and as many beneath, which are called *Inciſorij* cutting or ſhearing teeth, to cut in ſunder the meat, and they have but one root. To theſe are ioyned two in each Iaw, that is, on each ſide of the other one, which are called *Canini dentes*, Dogges-teeth, becauſe they are ſharp and ſtrong like dogges teeth; theſe alſo have but one roote, but that is farre longer than the other have.

The teeth are bones.

The ſhearing teeth.

The Dogteeth

Then follow the *Molares* or Grinders, on each ſide five, that is, tenne above and as many below, that they may grinde, chaw and breake the meat, that ſo it may be the ſooner concocted in the ſtomack; for ſo they vulgarly thinke, that meat well chawed is halfe concocted; thoſe grinders which are faſtened in the upper jaw, have moſt commonly three roots, and oft times foure. 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 firmely ſeated, needed not ſo many ſtayes 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 firme; but the grinders being hard, broad and ſharp, chaw and grind it aſunder. But if the grinders had beene ſmooth, they could not fitly have performed their duty, for all things are chawed and broken aſunder more eaſily by that which is rough and unequall.

The Grinding teeth.

Why the upper grinding teeth have more rootes.

The uſe of the teeth.

Wherefore they ſharpen their Milſtones when they are ſmoother than they ſhould be, by picking them with a ſharp Iron. The teeth are faſtened in the jawes by *Gomphoſis*, that is, as a ſtake or naile, ſo are they fixed into the holes of their jawes; for they adhere ſo firmely thereto in ſome, that when they are pluckt out, part thereof followes together with the tooth; which I have often obſerved to have beene alſo with great effuſion of blood. This adheſion of the teeth faſtened in their jawes is beſides ſtrengthened with a ligament, which applyes it ſelfe to their roots together with the nerve and veſſels. The teeth differ from other bones, becauſe they have action whileſt they chaw 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 worne 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 worne by its oppoſite. Beſides alſo they are more hard and ſolide 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 remaines of the nerve; they have ſuch quick ſenſe, that with the tongue they might judge of taſtes. But how feele the teeth, ſeeing they may be filed without paine? *Fallopius* anſweres, that the teeth feele not in their upper or exterior part, but only by a membrane which they have within. And

The teeth are faſtened in the Iawes by *Gomphoſis*.

The faſtening of the teeth into the iawes is to be obſerved.

Wherein the teeth differ from the other bones.

For what uſe the teeth have ſenſe.

the

The foreteeth helpe for the articulation of the voyce.

the teeth have another uſe, eſpecially the fore-teeth, which is, they ſerve for diſtinct and articulate pronuntiation; for thoſe that want them faulter 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 foreteeth. And you muſt note that the infant as yet ſhut up in its mothers womb hath ſolide and bony teeth; which you may perceive by diſſecting it preſently after it is borne.

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 aire ſhut up in the mamillary proceſſes is for hearing; ſo in the jawes there be two cavities furniſhed with a viſcide humor for the nouriſhment of the teeth.

Chap. III.

Of the Broade Muſcle.

NOw we ſhould proſecute the containing parts of the face, to wit the skin, the fleſhy pannicle and fat; but becauſe they have beene ſpoken of ſufficiently before, I will onely 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 skinne, as alſo this broad muſcle to which it immediatly adheres, and in ſome places ſo cloſly and firmely, as in the lips, eye-lids and the whole forehead, that it cannot be ſeparated from it. Nature hath given motion, or a moveing force to this broad muſcle, that whileſt 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 backe as far as you can; for thus you ſhall ſhew how it mixes it ſelfe with the skinne and the muſcles of the lips.

There are no particular muſcles appointed to open and ſhut the eye, for that is the worke of the broad muſcle onely. Divers reaſons to that purpoſe.

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 midle of the griſtle *Tarſus*, it meets with the former ending there, but they are in part extended over all the eyelid, whereby it commeth to paſſe that it alſo in ſome ſort becometh moveable. But although in publike diſſections theſe two muſcles are commonly wont to be ſolemnly ſhewed, after the manner I have related; yet I thinke, that thoſe which ſhew them know no more of them, than I doe. I have grounded my opinion from this, that there appeares no other muſculous fleſh in theſe places, to thoſe which ſeparate the fleſhy pannicle, or broad muſcle, than that which is of the panicle it ſelfe, whether you draw your inciſion knife from the forehead downewards, or from the cheeke upwards.

Why you muſt take heede of making a tranſverſe inciſion upon the eye-browes.

Beſides when there is occaſion to make inciſion on the eye-browes, we are forbidden to doe it tranſverſe, leaſt 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 ſtitch it up; which is a great argument that the motion of the upper eye-lid is not performed by its proper muſcles, but wholy 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 be meet, (becauſe when one of the muſcles is in action, the other which is its oppoſite or Antagoniſt, reſts or keeps holieday,) that when that which is ſaid to open the eye is imployed, the oppoſite thereof reſting, the upper eye-lid ſhould be drawne towards its originall, as we ſee it happens in convulſions: becauſe the operation of a muſcle is the collection of the part which it moves towards its originall.

The action of a muſcle.

Therefore

Therefore seeing such a motion or collection appears not any where in the eye-lid, I thinke 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 originall of this broad muscle is from the upper part of the *Sternon*, 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 haire, and the whole face, having diverse fibers from so various an originall. by benifit of which it performes such manifold motions in the face (for it so spreads it selfe over the face, that it covers it like a vizard) by reason of the variety of the originall 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 booke of my anatomy I required in every part, because I may seeme to have sufficiently declared them in the description of the muscles of the *Epigastrium*. Wherfore hence forward you must expect nothing from me in the description of muscles besides their originall, insertion, action, composition, and the designation of their vessels.

The originall of the broad muscle.

The insertion and reason why we expresse so many motions with the face.

Chap. IIII.

Of the Eye-lids and Eye-browes.

BEcause wee have fallne 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 els, than a ranck of haires set in a semicircular forme upon the upper part of the orbe 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 eyes browes are.

Their use.

But the Eye-lids on each side two, one above and another below, are nothing els than as it were certaine shuttings appointed and made to close and open the eyes when need requires, and to containe them in their orbes. Their composure is of a musculous skin, a gristle and haires set like a pale at the sides of them to preserve the eyes when they are open, chiefly against the injuries of small bodyes, as motes, dust & such like. These haires are alwaies of equall and like bigneſſe, implanted at the edges of the gristly part, that they might alwaies stand straight and stiffe out. They are not thick, for so they should darken the eye. The gristle in which they are fastened is encompassed with the *pericranium* stretched so far before it produce the *Coniunctiva*. It was placed there, that when any part thereof should be drawne upwards or downewards by the force of the broad muscle or of the two proper muscles, it might follow entirely and wholy by reason of its hardnes. 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 vaine 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 opticke nerves, as in an aqua-ducte. 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 overlooke 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 moment, which is granted to none of the other senses. Wherefore this is the most excellent sense of them all. For by this wee behold the fabricke and beauty of the

What the eyes are.

Their site.

The quicknes, and excellency of their action.

heavens and earth, diſtinguiſh the infinite varietyes of colours, we perceive and know the magnitude, figure, number, proportion, ſite, motion and reſt of all bodyes. The eyes have a pyramidall figure whoſe baſis is without, but the Cone or point within at the opticke 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.

Figure.

Compoſition.

They are compoſed of ſix muſcles, five coats, three humors, and a moſt bright ſpirit, (of which there is a perpetuall afflux from the braine) two nerves, a double veine, and one artery, beſides much fat, and laſtly a Glandule ſeated at the greater angle thereof, uppon that large hole which on both ſides goes to the noſe, and that, leſt that the humours falling from the braine ſhould flow by the noſe into the eyes, as we ſee it fares with thoſe whoſe 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.

Glandula Lachrymalis.

Fiſtula Lachrymalis.

Why fat is placed about the eyes.

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 ſlipperines 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 exceſſive dryneſſe. For nature, for the ſame reaſon hath placed Glandules flowing with a certaine moiſture, neere thoſe parts which have perpetuall agitation.

Chap. VI.

Of the Muſcles, Coats and humors of the Eye.

The number, ſite and action of the muſcles.

THere are ſixe muſcles in the eye, of which foure performe the foure direct motions of the eye: they ariſe from the bottome of the orbe, and end in the midſt of the eye encompaſſing the opticke nerve. When they are all moved with one endevour, they draw the eye inwards. But if the upper only uſe its action, it drawes the eye upwards; if the lower, downewards; if the right, to the right ſide; if the left, to the left ſide.

The two other muſcles turne the eye about, the firſt of which being the longer and ſlenderer, ariſes almoſt from the ſame place, from which, that muſcle ariſes which drawes 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 peircing through the middle membrane which is there, as through a ring; from whence it preſently going backe is ſpent in a right angle towards the upper part of the eye, betwixt the inſertions of thoſe 2 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 turne between the muſcles which move the eye upwards, and to the inner corner.

This fifth muſcle when it is drawne in towards its beginning, ſo drawes the eye with its circular tendon, that it carries it to the greater corner.

The ſixt muſcle is contrary to that; for it hath its originall from the lower part of the orbe at a ſmall hole, by which a nerve of the third conjugation paſſes forth; and being that it is moſt ſlender, whileſt 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 maieſt truely and accurately obſerve this anatomicall deſcription of the eye; the eye muſt not be pluct out of its orbe, but rather the orbe it ſelfe muſt be broken and ſeparated.

The 5 coats of the eye.

For thus thou ſhalt certainlie and plainelie ſee the forementioned originall 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 containe the eye in its orbe, wherefore it had the name *Coniunctiva*, others call it *Adnata*, or *Epipephycos*.

1 *Conjunctiva, or Adnata.*

The

The second is called the *Cornea*, because it resembles a horne in colour and consistence; this coat differs and varyes from it selfe, for in the forepart, as far as the *Iris* goes, it is clear and perspicuous, but thick & obscure in the binde part, by reason of the diverse polishing. On the fore-part it is dense that it may preserve and containe the Christalline and waterish humor, but withall transparent so to give the object a freer passage to the Chrystalline. It hath its originall from the *Crassamenium*, proceeding forth from the inner holes of the orbe of the eye, for it compasses the eye on every side.

2. *Cornea*, or the Horny coate.

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 coate by the veines and arteries which it communicates to it for life and nourishment. But when it arives at the *Iris*, then forsaking the *Cornea*, it descends deep into the eye, and in some sort is turned about the Christalline humour, to which also it most firmely adheres, so bounding the waterish humor, and also prohibiting that the Albugineous humor doe not overwhelme the Christalline. This grapy coate is as it were dyed on the inside with divers colours, as black, browne, blew, or green like a raine-bow, and that for these ensuing benifits.

3 *Vvea*, or the grapye coate.

Why the grapy coate resembles divers colours.

The first is, if that it had beene tinctured with one colour, all objects would have appeared of the same colour, as it comes to passe when we looke through green or red glasse. But it must be coloured, that so it may collect the spirits dissipated by the Sunne and seeing.

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 Christalline humor uppon whose circumference it ends; and perforated in the part objected to it, least by its obscurity it should hinder the passage of the objects to the Christalline, but rather that it might collect by its blacknes as a contrary, the great and as it were diffused varietye of colours, no otherwise than wee see the heat is strengthened, by the opposition of cold; some call this coat *Choroides*, because it is woven with many veines and arteries, like the coat *Chorion* which involves the infant in the wombe.

Now followes the fourth coate called *Ampibliſtroides* or *Retiformis*, the Net-like coate, because proceeding from the opticke nerve dilated into a coate, it is woven like a net with veines and arteries which it receives from the grapy coate, both for the life and nourishment both of its selfe, as also of the glassie humor which it encompasses on the back part. The principall commodity of this coate is, to perceive when the Christalline humor shall be changed by obiects, & to leade the visive spirit instructed or furnished with the faculty of seeing, by the mediation of the glassie humor, even to the Christalline being the principall instrument of seeing. It is softer than any other coate, least 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 unlesse by a *Medium*, so here it hath not fitted the hard horny coate 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 coate, 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.

4 *Ampibliſtroides* or *Retiformis*, Net-like coate.

An anatomie call Axiome.

The fifth and last coate is called *Arachnoides*, because it is of the consistence of a spiders web. And wee may well resemble this coate, to that skin of an union which exceeds the other in clearnesse, whitenesse and thinnesse. This *Aranceſa* or Cobweb-like coate encompasses the Christalline humor on the fore side, peradventure that so it might defend it, as the chiefe instrument of seeing, if the other humors should at any time bee hurt. It hath its originall from the excrementitious humidity of the Crystalline humor, hardened into that coate by the coldnes of the adjacent parts; absolutely like the thin skin which encompasses the white of an Egge.

5 *Arachnoides, sive Aranceſa*, the Cowebs coate.

The 3 humors of the Eye.

The first humor of the eye is called the *Aqueus* or waterish, from the similitude of water; it is seated betweene the transparent part of the Horny coate, the portion

1 *Aqueus*, or watery.

of the Chriſtalline humor lying towards the apple of the eye, and that reflection of the Grapy coate which comes from the *Iris* to the circumference of the Chryſtalline humor, that filling the empty ſpace it may diſtend the *Cornea*, and ſo hinder the falling thereof upon the Chryſtalline which would ſpoyle the ſight; as alſo that by its moiſture it might hinder the drying of the Chryſtalline humor. Peradventure it is made of the whayiſh humor ſweating out of the veſſells of the coats, having their orifices for the moſt part in that place, where this wateriſh humor reſides. The ſecond humor and middle moſt in ſcituation is called the Chryſtalline becauſe it imitats Cryſtall in the brightneſſe 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 tinctured with any colour, as thoſe which ſhould be the inſtruments of ſight, leſt they might beguile us in ſeeing as Red and greene ſpectacles doe; for that is true which wee have read written by the Philoſopher; That the Subject or matter appointed for the reception of any forme ſhould want all impreſſion thereof. Hence Nature hath created a formeleſſe matter, the humors of the eyes without colours, waxe without any figure, the minde without any particular knowledge of any thing, that ſo they might be able to receive all manner of formes. The figure of the Cryſtalline humor is round, yet ſomwhat flatted on the foreſide, but yet more flatted behinde that ſo the objects might be the better retained in that, as it were, plane figure, and that they might not fly backe 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 falling or hitting againſt it, becauſe that body which is exactly round touches not a plane body but onely in a point or pricke. Halfe this humor ſwims in the Glaſſy humor, that ſo it may be nouriſhed from it by tranſpoſition of matter; or rather (ſeeing it is encompaſſed on every ſide with the fift coate, 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 coate, as by the Grapye; 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.

2 *Cryſtallinum, Cryſtallene.*

A Philoſophicall Axiome.

Gal. Cap. 5 lib. 10. de uſu part. Of which thing this is an argument, that as long as a man remaines alive, wee ſee the eye every way full, and ſwolne, but lanke 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 coate is wrinkled in very old men, and the *Pupilla* is ſtraitned by the wrinkles ſubſiding into themſelves, which is the cauſe that they ſee litle, or not at all; for by age and ſucceſſe of time the humor is conſumed by litle and litle, the implanted ſpirit vaniſhes away, and ſmaller quantitie of ſpirits flow from the braine, as from a fountaine which is alſo exhauſted. The Horny coate at his originall, that is, in the parts next the *Iris*, ſeemeth to be very nigh the Cryſtalline Humor, becauſe all the coates in that place mutually cohere as touching one another, but as it runnes further out to the *Pupilla*, ſo it is further diſtant from the Criſtalline. Which you may eaſily perceive by Anatomicall diſſection, and the operation of touching or taking away a Catarrhact: for whereas a Catarrhact is ſeated betweene the horny coate, and Cryſtalline humor, the needle thruſt in, is carried about upwards, downewards, and on every ſide through a large and free ſpace, neither touching the horny coate nor Cryſtalline humor, by reaſon theſe bodies are ſevered by a good diſtance filled with ſpirit and a thin humor. The uſe of it is, that it may be like a looking glaſſe to the facultie of ſeeing carried thither with the viſive ſpirit.

In what place Catarrhacte or ſuffuſion breeds.

3 *Vitreus ſeu Albugineus*, that is Glaſſie, or like the white of an Egge.

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 Egge. It is ſeated in the hind part of the Cryſtalline humor that ſo it may in ſome ſort breake the violence of the ſpirit flowing from the braine 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 coate.

The veines of the eye.

We have formerly ſpoken ſufficiently of the nerves of the eye: Wherefore it remaines that we ſpeake of the veines. Some of theſe are internall, carried thither with the

Table 3. *figure* 1. *ſheweth the Membranes and humors of the eye by lines drawne after the manner of a true eye.*
Figure 2. *ſheweth the horny coate with a portion of the Opticke Nerve.*
Figure 3. *ſheweth the ſame divided by a tranſuerſe ſection.*
Figure 4. *ſheweth the Vvea or Grapy coate with a portion of the Opticke Nerve.*
Figure 5. *The Grapy coate of a mans eye.*
Figure 6. *The Horny, Grapy and the Choroides.*
Figure 7. *The interior ſuperficies of the Grapy coate.* (*from the Eye.*
Figure 8. *The Poſterior part of the horny coate together with the ſaid Net coate ſeparated*
Figure 9. *The coate of the vitreous or glaſſy humor called Hyaloides.*
Figure 10. *Three humors joyned together.*
Figure 11. *The forward part of the Chriſtalline.*
Figure 12, *The Chriſtalline humor covered yet with his coate.*
Figure 14. *The Chriſtalline of a mans eye.*
Figure 15, *His Coate.*
Fig. 16, *The watery humor diſpoſed upon the Chriſtalline round about.* (*glaſſy humor.*
Fig. 17. *The hairy proceſſes beamingly ſprinckled through the foreſide of the coate of the*
Fig. 18, *The foreſide of the glaſſy humor.*
Fig. 19. *The place of the watery humor.*
Fig. 20. *The glaſſy humor containeing or comprehending the Chryſtalline.*

The figure of the eye.

FIG. I.



The explication of the firſt Figure by it ſelfe.

a, The Chriſtalline humor.
b, The Glaſſie humor.
c, The watery humor.
d, The utmoſt coate called *Adnata*.
e, The darke part of the horny Tunicle which is not tranſparant.
f, The Grapy coate called *Vvea*.
g, The Net-like coate called *Retiformis*.
h, The coate of the glaſſy humor cald *Hyaloides*.
i, The coate of the Chriſtalline.
k k, The hairy proceſſes cald *Proceſſus ciliares*.
l, The impreſſion of the Grapy coate where it departeth from the thick coate.
m, The horny coate, a part of the thick coate.
n n, The fat betwixt the Muſcles.
o, The optick Nerve.
p, The *Dura meninx*.
q, The *Pia Mater* or thin Meninx.
r r, 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, The thicke

thick *Meninx* cloathing the nerve. *d* 8. the poſterior part of the horny coate. *e* 8. The coate called *Retina* gathered together on an heape. *f* 2 3. The rainebow of the eye. *g* 2,3, The leſſer circle of the eye or the *pupilla*. *h* 2,3. Veſſels diſperſed through the *Dura Meninx*. *i* 3,6, The grapy coate, but *i*, in the 3. Fig. ſheweth how the veſſels doe joyne the hard membrane with the grapy coate. *k* 6. The horny or hard membrane turned over. *ll* 3.4, Certaine fibres and ſtrings of veſſels, whereby the grapy coate is tyed to the horny. *m m* 4,5. The impreſſion of the grapy coate where it recedeth or departeth from the horny coate. *n n*,4,5,6,7, The *pupilla* or apple of the eye. *o o*,7, The Ciliar or haitie proceſſes. *p* 7, The beginning of the Grapie coate made of a thinne membrane dilated, but *p*, in the 17. figure ſheweth the ciliar proceſſes ſprinckled through the fore-part of the glaſſie humor. *r* 9, The boſome or depreſſion of the glaſſie humor receiveing the Chriſtalline. *ſ* 12.15. The bredth of the coate of the Chriſtalline, *t* 12, 13, 14, 16, The *poſterior* part of the Chriſtalline humor which is ſphericall or round. *u* 11, 14, 20, The fore-part of the ſame Chriſtalline 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 humor is diſtinguiſhed from the watry by the interpoſition of the *Hyaleides* or coate of the glaſſie humor. *α* 10, 16, The place where the grapie coat ſwimmeth in the watrie humor. *β* 18. The cavitie or depreſſion of the glaſſie humor which remaineth when the Chriſtalline is exempted or taken from it. *δ* 19. the cavitie or depreſſion of the watrie humor made by the ſame meanes.

What veines may be opened in what inflammations of the eyes.

the coats of the veſſels of the braine; other ſome externall ſtretched over the externall parts of the eye, as the Muſcles, and coat *Adnata*, and by theſe veines inflammations and reddneſſe often happen in the externall parts of the eye: for which the *Vena pupis* muſt be opened, and cupping glaſſes and hornes muſt be applied to the nape of the necke and ſhoulders; as in the internall inflammations of the eye the cephalike veine muſt be opened to avert and evacuate the morbificke humor.

Chap. VII.

Of the Noſe.

THe Noſe is called in Greeke *Ris*, becauſe the excrements of the Braine flow forth by this paſſage, thou maieſt underſtand it hath a divers ſubſtance by compoſition. The quantity, figure and ſite are ſufficiently knowne to all. But it is compoſed of the skinne and muſcles, bones, griſtles, a membrane or coate nerves, veines and arteryes. The skin and bones both contained and containing, have formerly beene explained, as alſo the nerves, veines and arteries. The griſtles of the Noſe are ſixe in number; the firſt is double ſeperating both the noſe-thrils 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 & 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 injuryes, as fractures & bruſes, and beſides more fit for drawing the aire in & expelling it forth in breathing. For nature for this purpoſe hath beſtowed foure muſcles upon the noſe, on each ſide two, one within, and another without.

The griſtles of the noſe.

The muſcles thereof.

The Externall taketh its originall from the cheeke, 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 coate which inwardly inveſts the noſe-thrils and their paſſages, is produced by the five-like bones from the *Craſſa meninx*, as the inner coate of the Palate, throtle, weazon, Gullet and inner ventricle, that it is no mervaile, if the affects of ſuch parts be quickly communicated with the braine. This ſame coate on each ſide receives a portion of a nerve from the

the third 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 aire and oft times smells to the mammillary processes, and from thence to the foure ventricles of the braine, for the reasons formerly shewed. But because the mammillary processes being the passages of the aire and smells are double, & for that one of these may be obstructed without the other, therfore nature hath also distinguished the passage of the nose with a gristly partitiō put between, that when the one is obstructed, they aire by the other may enter into the braine for the generation and preservation of the animall spirit. The two holes of the nose first ascend upwards; and then downewards into the mouth, by a crooked passage, lest the cold aire, or dust should be carryed into the lungs. But the nose was parted into two passages as we see, not onely for the forementioned cause, but also for helping the respiration and vindicating the smell from externall injuryes, and lastly for the ornament of the face.

The temper, action and use.

Why the nose was parted in two.

Chap. VIII.

Of the muscles of the face.

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, foure 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 yoake-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 meanes shut the mouth. The other being shorter and broader, passing forth of the hollownes of the cheeke, 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 exteriour fibers towards the nose, and shuts it by drawing the internall inwards towards the teeth.

There number.

The first of the lower lip being the longer and slenderer, entring 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 hollownes 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 speake 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 joyntly performe their functions (as the 2 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 straight motion; but when either of them moves severally, it moves obliquely, as when we draw our mouth aside. But these muscles are so fastened and fixed to the skin, that they cannot be seperated; so that it is no great matter whether you call it a musculous skin, or a skinny muscle (Which also takes place in the palmes 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 law.

Their number

WE have ſaid theſe muſcles are five in number, that is, foure vvhich ſhut it, and one which opens it, and theſe are alike on both ſides. The firſt and greater of theſe foure muſcles vvhich ſhut the lavv 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 yoak-bone, from vvhence it inſerts it ſelfe to the proceſſe of the lovver lavv vvhich the Greeks call *Corone*, that it may dravv it directly to the upper, ſo to ſhut the mouth.

The Temporall Muſcle.

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 fils 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 nere their originall, that is, the braine, they inferre danger of ſuddaine death by a convulſion which uſually follows the affects of this muſcle; but alſo in like manner it cauſes a fever, the Phrenzy and *Coma*.

The Figure of the chiefe 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 yoake-bone under which the temporall muſcles paſſe.*
I. *The Maſſeter, or Grinding Muſcle.*
K. *The upper griſtle of the noſe.*
M. *A muſcle forming the cheekes.*
N. *The muſcle of the lower lip.*
O. *A part of the Fifth muſcle of the lower law 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 *vnder the Chin.*
T. *The third muſcle of the bone* Hyoides *ſtretched to the law.*
T.K. *the ſeveneth 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 veſſells paſſe which go to the head, and the nerves which are ſent to the Arme.*

Therefore that it ſhould be leſſe ſubject or obvious to externall injuryes, 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 bignes, being called the *Maſſeter*, or grinding muſcle, makes the Cheeke, it deſcends from the loweſt part of the greateſt bone of the orbe (which bends it ſelfe as it were back, that it may make part of the yoake bone) and inſerts it ſelfe into the lower law, from the corner thereof to the end of the root of the proceſſe *Corone*, that ſo it may draw this law 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 neeke (the cheek in that place under the eyes ſtanding ſomewhat out like an aple ariſing from the concourſe of the greater bones of the orbe and upper jaw) deſcend obliquely to the corner and hinder part of the lower jaw, that it may move it forwards. Otherſome ariſe from the lower part of the ſame yoak-bone, and deſcending obliquely interſect the former fibers after the ſimilitude of the letter X, and inſert themſelves

themſelves into the ſame lower jaw at the roots of the proceſſe *Corone*, that ſo they may draw it back. Truely 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 gummes of the lower, inveſting the ſides of all the mouth with the coate, 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 onely to draw the lower law 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 drawes it in. The round muſcle.

The fourth being ſhorter and leſſe than the reſt ariſing from all the hollownes of the winged proceſſe of the Wedge-bone, is inſerted within into the broadeſt part of the lower law, that ſo in like manner it may draw the ſame to the upper. This is the muſcle through whoſe occaſion, we ſaid this lower iaw is ſometimes diſlocated. The leſſer muſcle of the lower law.

The fifth and laſt muſcle of the lower jaw from the proceſſe *ſtyloides* of the ſtony bone, aſcends to the forepart of the Chin, nere to the connexion of the two bones of this law, to draw this law downewards 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 ingrafted into this part for the performance of many uſes and actions, as biting aſunder, chawing, grinding and ſevering the meat into ſmall particles, which the tongue by a various and harmeleſſe motion puts under the teeth. Thus much I thought good to ſay of the parts of the face, as well containing as contained. The fifth and laſt muſcle. The uſe of the ſe mentioned muſcles.

The Figure of the Muſcles of the lower law.

FIG. III.



A. *A hole in the forehead bone in the brimme of the ſeate of the eye, ſending a ſmall nerve of the third paire to the muſcles of the fore-head and the upper eye-brow.*

B. *The Temporall muſcle.*

CHAP. X.

Of the Eares and Parotides *or kernels of the Eares.*

THe Eares are the Organs of the Senſe of hearing. They are compoſed of the skin, a little fleſh, a griſtle, veines, arteries and nerves. They may be bended or folded in without harme, becauſe being griſtlely, they eaſily yeild and give way; but they would not doe ſo, if they ſhould be bony, but would rather break. That lap at which they hang pendants and Iewels, is by the ancients called *Fibra*; but the upper part *pinna*. They have beene framed by the providence of nature into twining paſſages like a Snailes ſhell, which as they come neerer to the *foramen cæcum*, or blind hole, are the more ſtraitened, that ſo they might the better gather the aire into them, & conceive the differences of ſounds and voices, and by little and little leade them to the membrane. The nature and compoſition of the eares. What the *Fibra* and *pinna* are. The figure and the reaſon thereof.

This membrane which is indifferently hard hath growne up from the nerves of the fifth conjugation, which they call the auditory. But they were made thus into crooked windings, leaſt 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. Other wiſe alſo leſt that the aire too ſodainely entring in ſhould by

its qualitys, as cold, cauſe ſome harme: and alſo that little creeping things and other extraneous bodys as fleas & the like, ſhould be ſtaied in theſe windings and turnings of the waies, the glutinous thicknes of the cholerick excrement or eare-waxe hereunto alſo conduceing, which the braine purges and ſends forth into this part, that is, the auditory paſſage framed into theſe intricate Mæanders.

For what uſe the eare-waxe ſerves.

The Figure of the eares and bones of the auditory paſſage.



Tab. 10. *ſheweth the eares and the divers internall parts thereof.*

Fig. 1 *ſheweth the whole external eare, with a part of the Temple bone.*

Fig. 2. *ſheweth the left bone of the Temple divided in the middeſt by the inſtrument of hearing, whereabout on either ſide there are certaine paſſages heere 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 neere the hole of Hearing divided through the middeſt, whereby the Nerves, Bones and Membranes may appeare 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 ioyned and ſeparated.*

Fig. 9. *ſheweth the Muſcle found out by Aquapendens.*

For the particular declaration ſee *D. Crookes* Anatomie, pag. 577.

For what uſe the membrane ſtretched under the auditory paſſage ſerves.

What ſound is.

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 Aire, or auditory ſpirit implanted there, & ſhut up in the cavity of the mammillary proceſſe and *foramen cæcum*, that ſmitten upon by the touch of the externall aire entring in, it may receive the object, that is the ſound, which is nothing elſe then a certaine quality ariſing from the aire beaten or moved by the colliſion, and conflict of one or more bodyes.

Such a colliſion is ſpred over the aire, 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 ſtrucken 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 aire flying back diverſe waies from arched and hollow roofed

roofed places, as Dens, Ciſterns, Wells, thick Woods and the like, yeilds and produces a double ſound, and this reduplication is called an Echo. Wherefore the hearing is thus made by the aire, as a medium, but this aire is twofold, that is, externall and internall. The cauſe of an echo.

The exteriour is that which encompaſſes vs, but the interiour is that which is ſhut up in the cavity of the mammillary proceſſe and *foramen cæcum*, which truly is not pure and ſole aire, but tempered and mixed with the auditory ſpirit. Thence proceeds the noiſe or beating of the Eares, when vapours are there mixed with the aire inſteed of ſpirits, whereby their motion or agitation is perturbed and confuſed. But neither doe 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 anvill, 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 Greeke letter Δ. The 3 bones of the auditory paſſage.

They are placed behind the membrane; wherefore the anvill and hammer moved by the force of the entrance of the externall aire, 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 they common ſenſe & faculty of hearing, but being moved more vehemently and violently, they preſent a quick and great ſound; to conclude, according to their diverſe agitation, they produce diverſe and different ſounds. Their uſe. whence the difference of ſounds.

The Glandules ſhould follow the Eares in the order of Anatomy, as well thoſe which are called the emunctoryes of the braine, that is, the *Parotides* (Which are placed as it were at the lower part of the eares) as theſe which lye under the lower Iaw, the muſcles of the bone *Hyoides* & the tongue, in which the *Scrophulæ* and other ſuch cold abſceſſes breed. It ſhall here ſuffice to ſet dovvne the uſe of all ſuch like Glandules.

Therefore the *Parotides* are framed in that place by nature, to receive the vitulent and maligne matter ſent forth by the ſtrength of the braine, by the veines and arteries ſpred over that place. The reſt ſerve to ſtrengthen the diviſion of the veſſels, to moyſten the ligaments and membranes of the Iaw, leſt they shoud be dryed by their continuall motion. Their other conditions and uſes are formerly handled in our firſt booke 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 ὑοειδὲς and from the letter λ it is in like ſort called λαμβοειδὲς; by ſome it is ſtiled *Os Gutturis* and *os Linguæ*, that is, the Throat bone and Tongue bone. The compoſition thereof conſiſts of many bones joyned into one by the interpoſition of griſtles. The reaſon of the name. The compoſition.

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 forepart for conſtancy, and arched on the inſide that it might receiue and containe the root of the tongue) upon the upper part of that griſtle of the throtle which is called *ſcutiformis* or Sheild-like, (for this ſeemes 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 hornes to the ſides of the tongue on each ſide one, which in men are tyed to the Appendix *ſtyloides* by ligaments ſent from it ſelfe. 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 *ſtiloides*. 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 certaine muſ- The ſite. The temper and uſe.

cles

cles of the tongue, and inſertion as well to the two foremoſt and upper muſcles of the throtle, as to its owne, of which we will now treat.

The muſcles of the bone *Hyoides*.

The muſcles of the bone *Hyoides*, according to the opinion of ſome are eight, on each ſide foure; 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 foure before mentioned ariſes from the Appendix *Styloides*, and paſſing over the Nervous ſubſtance of the muſcle opening the lower law, is inſerted into the hornes of the bone *Hyoides*. This muſcle is very thin, yet ſomewhat broad, the which in that reſpect may eaſily be cut, unleſſe 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 nere the production thereof called *Coracoides*, to the beginnings of the hornes 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 law; and it is referd 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 roote 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 downewards; The third backwards; and the fourth forewards. I would declare whence theſe muſcles have their veſſells, had I not abundantly ſatisfied that thing, when I treated of the diſtribution of the nerves, veines and arteries.

The action of theſe muſcles.

Chap. XII.

Of the Tongue.

What kinde of fleſh the tongue hath.

THE tongue is of a fleſhy, rare, looſe and ſoft ſubſtance; it enjoyes fleſh of a different kind from the reſt of the fleſh, as chiefly appeares when you cut it from the firſt originall 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 conteined 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 coate thereof; the other from the ſeaventh is ſent into the muſculous ſubſtance even to the end thereof for motions ſake; ſo that thoſe ſenſificke nerves from the third conjugation onely give to judge of taſtes, compoſe the coate, and touch or enter not the fleſh. Beſides it is compoſed of veines and arteries on each ſide one, which it receives from the externall Iugular 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 terme theſe the *Vena nigra* or blacke veines.

The quantity, The figure. Compoſure. The nerves.

The muſcles of the tongue.

The muſcles of the tongue are abſolutly 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 drawes it upwards. The ſecond hath its originall within from the lower jaw about the region of the Grindinge teeth, and is inſerted into the lower ſide of the tongue, the which with its partner drawes it downeward. 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

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 backe into the mouth. The fift & last most usually arises from the upper part of the hornes of the bone *Hyoides* and goes to the roots of the tongue betweene the two first, that it may move it to the sides of the mouth. The temper thereof, as of all other flesh, is hot and moist. The first action & commodity therof is, to be the organ of the sense of tasting, wherfore it was made fungous & spongy, that by reason of the rarity of it, it might more easily admit the tasts conjoyned with the spettle, 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 helpe to chaw & swallow the meat. For which cause it is like a scoope or dish with which wee throw backe the corne into the mill, which hath scaped grinding. And becaufe, when the tongue is dry, it is lesse nimble & quicke to performe its motions, as appeares by those which can scarse speake by reason of thirst, or a burning feaver: therefore nature hath placed very spongy glandules at the roots therof, on each side one, which like sponges sucke and receive, both from the braine & other places a waterish and spettley humor, with which they humect and make more glib, not onely the tongue, but also the other parts of the mouth, as the throate and jawes; these glandules are called the *Tonsillæ*, or Almonds of the throate.

The temper, action, and manifold use of the tongue.

The use of the glandules placed at the roots of the tongue.

CHAP. XIII.

Of the Mouth.

THe mouth is that capacity which bounded with the cheekes & lips containes within its precincts the teeth, tongue, and the beginnings of the throttle and gullet. Therfore the use of the mouth is to conteine the tongue, & serve it in the fitter performance of its actions; & although many parts hereof have bin formerly handled, as the lips, teeth, lawes, tongue, almonds, & passages of the palate comming from the nose, yet it remaines, that we declare, what the palate, the *Gargareon*, or Vvula the *Pharinx*, & *fauces* or Chops are. The palate (or as it is commonly called, the Roofe of the mouth) is nothing else but the upper part of the mouth bounded with the teeth gums & upper law. In which place the coate common to the whole mouth, is made rough with divers wrincles, that the meats put up & down between the tongue & the Palate might be broken & chawed more easily by that inequality and roughnes. If any would finde the nerves, which descend into the palat from the fourth conjugation, let him separate that coat & cast it from the fore to the hind part of the mouth; for so he shal find them at the sides & hinde parts of the bones of the Palate, which incompasse the palate, & at the beginning of the inner holes of the mouth, which descend from the nose, & 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, & that when the nose is not well, the excrements which seeke their passage by it, may be easilier drawn away by the mouth. This same coate is woven with nervous fibers, that, like the tongue, it might judge of tasts; these fibers cõpose a coat that hath a middle consistence betwixt soft & hard. For if it should have beene any harder, like a bone or gristle, it would have been without sense, but if softer hard, acride and sharpe meats would have hurt it.

What it is. The use.

What the palate is.

The nerves therof.

Why the holes of the palate are open.

What kinde of coate the palate hath.

CHAP. XIIII.

Of the Gargareon, *or Vvula.*

BY the *Gargareon* we understand a fleshy & Spongy body, in shape like a pine apple, hanging directly down at the further end of the palate & basis of the bone *Ethmoides* where the two holes of the palate come from the nose, above the entrãce of the throttle. This little body is scituate in this place, to breake the violence of the aire drawne in by breathing, & that by delay it might in some sort tẽper & mitigate it by the warmenesse of the mouth. Besides, that it might be as it were the *Plectrũ*, or quil of the voice, so to diffuse the fuliginous vapour sent forth in breathing that it may be dispersed over al the mouth, that resounding from thence it may be articulate, & by the motion of the tongue distinguished & formed, into a certaine 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 onely their voyce vitiated and depraved

What the *Gargareon*, or Vvula is.

The site and manifold use thereof.

The discommodities that ensue the losse of the Vvula.

depraved,but ſpeake ill favouredly,and as they ſay,through the noſe; and beſides, in proceſſe of time they fall into a conſumption by reaſon of the cold aire paſſing downe before it be qualified. This ſame particle,is alſo a meanes to hinder the duſt from flying downe through the weazon into the Lungs. By the *Pharinx* and *fauces* is ment the inner & backe part of the mouth,ſet or placed before the entrance of the Throttle & Gullet;being ſo called,becauſe that place is narrow & ſtraite,that as it were by theſe ſtraits,the aire drawn in by the mouth might be forced downe by the Throtle,and the meat into the Gullet.

What the *Pharinx* and *fauces* are.

Chap. XV.

Of the Larinx *or Throttle.*

What is ment by the *Larinx*.

FIrſt we muſt ſhew what is ment by the *Larinx* or throttle,then proſequute the other cõditions of it after our accuſtomed maner. Therfore by the *Larinx* we underſtand nothing els in this place,than the head & extremity of the rough Artery,or weazon,which comes neerer to Griſtlely ſubſtance,then to any other. The quantity therof is ſufficiently large,yet divers according to the diverſity of bodies. It reſembles in ſhape the head of a Germane pipe. The compoſure of it conſiſts of 18. muſcles,on each ſide nine,which as they are like in quantity,ſo alſo in ſtrength & action; of three griſtles,veines,arteries and nerves,as we ſhewed,when we ſpoke of the diſtribution of the veſſels; as alſo of a double coate,the one externall,the other internall,as we ſhewed when we ſpoke of the weazon. Theſe three Griſtles are joyned together by certaine Ligaments & muſcles;the formoſt griſtle,which alſo is the greater is called by the Greekes θυρεοειδὴς,in Latine commonly *Scutiformis*,that is ſheild-like,becauſe it reſembles a ſheild. The ſecond being the hinder and middle in magnitude, wants a name,wherfore it is called the *innominata* or nameles griſtle. The laſt & leaſt which notwithſtanding may be parted into two,ſo lyes upon the edges of the other, that it reſembles the mouth of an oyle pot,or a pitcher,wherupon the Greekes call it *Arytenoides*. Theſe griſtles thus fitted amongſt themſelves utter a diſtinct voice,by the benifit of the *Epiglottis*,or After tongue,& alſo of the muſcles opening & ſhutting,dilating & cõpreſſing them,whence proceed infinite varieties of voyces. 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 ſharpe ſound,and to conclude,they make it infinite wayes different according to the infinite variety of the dilatation, or conſtriction thereof. Therfore becauſe it was fit theſe griſtles ſhould be moveable,eſpecially the *Arytenoides*, & Thyroides,nature hath put to them on each ſide 9 muſcles, of which three are common and 6 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, & by an oblique deſcent inſerts it ſelfe at the baſis of the ſhield-like griſtle,to dilate it upwards & 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 & ſides of the ſame ſhield-like griſtle,that it may open and dilate it with its wings. This muſcle is ſeen from the firſt originall therof,even a great part of the way ſtraitly to cohere with the third muſcle of the bone *Hyoides*;therfore under each of the muſcles,there is a glãdulous body ſpred about the fore & 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 certaine Emperike taking upon him to cure the kings evil,cauſed a defect of voice on one ſide,becauſe he pulled away the recurrent nerve lying upon that glandule as it goes to the throttle, as *Galen* reports, *Lib. de locis affectis*. The third & laſt ariſes from the part of the *Vertebra's* of the neck lying tranſverſly upon the ſides of the guller,& ends at the wings & ſides of the ſhield-like griſtle,that it may tye it more ſtraitly to the ſecond Griſtle. But theſe three are called cõmon muſcles,becauſe they take their original from ſome other place than ỹ throttle that ſo they may be inſerted into ſome part therof;for they are called the proper muſcles which ariſe from the Throttle it ſelf,which we have ſaid to be 6. on each ſide. The firſt of which ariſing from the fore part of the ſecond griſtle,makes a circle under the baſis of the ſheld-like griſtle;whileſt aſcending obliquely to the baſis therof,it is afterwards inſerted in a part of it,ſo to ſtrengthen and dilate it. The ſecond in like manner,

The magnitude,figure and compoſure.

The deſcription of the 3 griſtles of the *Larinx*.

Whence the infinite variety of voices proceed.

The muſcles of the *Larinx*. Their number

A notable hiſtory.

ariſing

arising from the second gristle, from that place where it adheres to the first, it runnes obliquely crossing the first to the inner and forepart of the gristle *Thyroides* neere to the basis thereof, that it may joyne it to the second. The third from the hinde basis of the second gristle ascends directly to the basis of the third gristle *Arytenoides*, that with the second muscle it may open & shut it. The fourth ascends from the sides of the second gristle, neere the originall of the second muscle, to the sides of the *Arytenoides*, that with the second muscle it may open and shut it. The fift arises from the inner midle of the sheild-gristle, and ends in the fore part of the *Arytenoides* at the insertion of the fourth muscle, that so it may presse down the said gristle.

The sixt and last ascends by the hinde basis of the *Arytenoides* to the fore basis of the same, to presse it downe. 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, connection, and use of the throtle may easily be knowne 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 organicall parts, by reason of the diversitie 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 simular parts, of which these organicall are composed; as if any should aske of what temper the *Larinx* is, you shall answere, of a colde, dry, and hot, and moist, because it consists both of a gristlely and fleshly substance. Hee which reckons up all the parts of the mouth, must not omit that gristlely and membranous body which arises from the roots of the tongue, which that it might be more quicke for motion, that is, whereby it might be more easily erected and depressed (for those things which are more soft doe 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 whilest we breath, but depressed when wee swallow. It is a principall instrument of the voyce, for it cannot be well articulated unlesse the way were straite. Therefore it straitens that way, and the passige of the gristles of the throttle, but specially the *Arytenoides*; it is alwayes moist by a certaine native, and inbred humiditie; wherfore if it happen to be dried by a fever, or any other like accident the speach 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 backe part thereof, that so like a cover it may open and shut the orifice of the throtle, that none of the meat and drinke in swallowing may fall into the weazon, in such aboundance as may hinder the egresse and regresse of the aire. For we must not thinke that this body doth so closely shut the orifice of the throttle, but that some small quantitie of moisture alwayes runnes downe by the inner sides, as the walles thereof, to moisten the lungs; otherwise *Eclegma's* should be of no use in the diseases of the Chest. And because that this litle body is partaker of voluntarie motion, therefore according to the opinion of some there are foure muscles bestowed upon it, two which may open it and two that shut it, on each side one. The opening muscles descend from the roote of the bone *Hyoides*, and in their insertion growing into one they are terminated in the roote of this body, that is, the *Epiglottis* in the backe part thereof. The shutting muscles (in those creatures where they are found) arise on the inside betweene the coate & gristle thereof. Truly I could never observe and finde these foure 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 litle body in swallowing lyes not upon the orifice of the Throttle, unlesse when it is pressed downe by the heavines 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 remaine 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 fal, or slip aside in the *Larinx*, it might be there stayed & reteined. Beside that, the Aire too violently entring, should be in some sort broken by these clifts, or chinkes, no otherwise than the blood and spirit entring into the heart through the *Auriculæ* or Eares thereof.

Whence the muscles of the Throttle have their nerves.

The *Epiglottis* or Afters tongue.

Of potable things some what alwayes falls upon the Lungs.

The muscles of the *Epiglottis*.

The use of the cavities or fissures of the Throttle.

Chap. XVI.

Of the Necke and the parts therof.

IN firſt we will define what the neck is, then proſequute the parts therof aſwel proper, as common, eſpecially thoſe of which we have not as yet treated. For it were ſuperfluous to ſpeake any more of the skin, the fleſhy pannicle the veines, arteries, nerves, gullet, weazon & muſcles aſcending & deſcending to the parts into which they are inſerted alongſt the necke; wherefore you muſt not expect that we ſhould ſay any thing of the neck, more than to deſcribe the *Vertebræ* or rack-bones, being the proper parts therof, & the ligaments aſwell thoſe proper to the neck, as thoſe which it hath in common with the head; & laſtly the muſcles, aſwel thoſe it hath in common with the head & cheſt, as thoſe of its own. Therfore the neck is nothing elſs, then a part of the head, which is conteined between the nowle bone & the firſt *vertebra* of the back. Firſt in the neck the *Vertebra's* muſt be conſidered, & we muſt ſhew what they have proper & peculiar, & what common amongſt themſelves, that we may the more eaſily ſhew the originall and inſertion of the muſcles growing out of them & ending in them. The neck conſiſts of ſeven *Vertebræ* or Rack-bones, in which you muſt conſider their proper body; and than the holes by which the ſpinall marrow paſſes; thirdly the *Apophyſes* or proceſſes of the *Vertebræ*; fourthly the holes through which the nerves are diſſeminated into other parts from the ſpinal marrow, & beſides the perforations of the tranſverſe productions by which the veines, & arteries which we cal *Cervicales* aſcend alongſt the necke, & laſtly the connexion of theſe ſame *vertebræ* or Rack-bones. For the firſt, by the body of the *vertebra*, we underſtand the forepart therof upon which the gullet lyes. For the hole, that is not alwaies the largeſt in thoſe *vertebræ* which are nigheſt the head; but it is alwayes encompaſſed with the body of the *vertebra*, & beſides with three ſorts of proceſſes, except in the firſt Rack-bone, that is right, tranſverſe & oblique. By right we underſtand theſe extuberancies in the Racke-bones of the necke which are hollowed directly in the upper part of them & riſe up creſted on each ſide to ſuſteine and receive the baſis of the Rack-bone which is ſet upon it. By the oblique proceſſes, wee underſtand the bunchings out by which theſe Rack-bones are mutually knit together by *Ginglymos*; theſe are ſeated between the righr & tranſverſe proceſſes. By the tranſverſe we underſtand the protuberations next the body, which devide the *Vertebra* of Rackbone in a ſtraight line. Theſe proceſſes are perforated that they may give way to the before deſcribed veines & arteries, which entring the Spinall marrow by the holes of the nerves nouriſh the Racke-bones & 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 ſpinall marrow to the ourward parts, are under the tranſverſe proceſſe, that is growing or made by the upper & lower *vertebra*, contrary to all the other which are in the reſt of the Rack-bones. For the connexiõ of the Rack-bones, you muſt know that all the *Vertebra* of the ſpine have ſix connexions, two in their own bodies, and 4 in their oblique proceſſes. By the two firſt connexions they are ſo mutually articulated in their owne bodies that each are joyned with other both above and below. But by the 4 other, by their oblique aſcendent & deſcendent proceſſes, on each ſide 2, 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 Racke-bone; ſo it receives the oblique aſcendent proceſſes of the firſt, by its oblique deſcendents, for alwayes the oblique aſcendents are received, and the deſcendents receive. Yet wee muſt except the firſt Rack-bone of the neck which is conteined with 4 connexions by his lower oblique proceſſes, & by its upper by which it receives the oblique proceſſes both of the nowle bone, & of the ſecond Rack-bone. The ſecond *Vertebra* or Rack-bone muſt alſo be excepted which is holden by 5 connexions, that is to ſay, foure by its oblique proceſſes, & the fifth by its own body, by which it is knit to the body of the third *Vertebra*. But we muſt note, that wheras nature hath not given a Spine to the firſt Rack-bone, yet it hath given it a certaine bunch or extuberancy inſtead therof; in like manner, ſeing it makes no common paſſage with the ſecond *Vertebra* for the paſſage 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 proceſſe raiſed in the upper body of the ſecond Racke-bone,

What the necke is.

What to be conſidered in the vertebræ of the necke.

Which be the right proceſſes of the vertebra.

Which the oblique.

Which the tranſverſe.

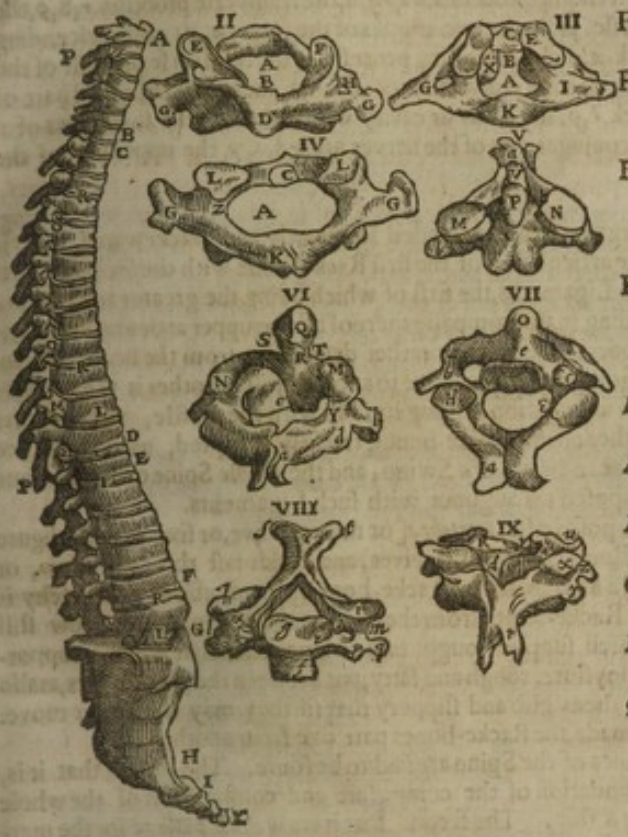
The connexions of the vertebræ of the necke.

The proceſſe called the tooth.

Racke-bone, which *Hippocrates* calles the tooth, to which the principall Ligament of the head is fastened, which descends within from the hinde part of the head under the *Apophyses clinoides* or processes of the wedge-bone.

Table 20. *Figure* 1. *Sheweth all the racke-bone of the backe knit together.*
Figure 2. *Sheweth the fore and upper face of the necke, &c.* See *D. Crooke*, pag. 398.

FIG. I



From, *A*, to *B*, the seven *vertebres* of the necke;
From *C*, to *D*, The twelve *vertebres* of the chest.
From *E*, to *F*, The five rack-bones of the Loynes.
From *G*, to *H*, The *Os sacrum* or Holy-bone consisting commonly of 6. *vertebra*.
From *I*, to *K*, The bone *Coccyx* or the rump-bone according to the late writers.
LL, The bodies of the *vertebra*.
M, The transverse processes of the *vertebra*.
N, The descendent processes.
OO, The ascendent processes.
PP, The backward processes.
QQ, The holes that are in the sides of the *vertebra* through which the nerves are transmitted.

RR, A gristly Ligament betwixt the *vertebra*.
A, 2, 3, 4, The hole whereout the marrow of the backe issueth.
B, 2, 3, The cavity which admitteth 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 racke-bone which admitteth the 2. heads of the nowle-bone.
GG, 2, 3, 4. the transverse processe of the 1. *Vertebra*.
H, 1. The hole of this transverse processe.
I, 3. The *Sinus*, which together with the cavity of the nowle-bone marked with *E*, maketh a common passage prepared for the nerves.
K, 3, 4, A rough place where the spine of the first racke is wanting.
LL, 4. Two cavities of the first racke receiving the 2. bunches of the second racke marked with *MN*.
MN, 5, 6, The 2. bunches of the second racke which fall into the cavities of the first.
O, 7, The appendix or tooth of the second racke. *P*, 5, A knub 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 racke. *ST* 6. Certaine cavities at the sides of the tooth whence the roots issue of the fore-branch of the second paire of sinews. *V*, 5, the point of the tooth. *X*, 3, An asperity or roughnesse where is a hole but not thrilled through. *Y*, 6, A cavity

cavity of the ſecond racke which together with the cavity marked with *Z*, maketh a hole, through which the nerves doe iſſue. *Z*,4, the *Sinus* of the firſt racke. *a*,5,6,7, the double ſpine of the ſecond racke. *b*,5,6,7, the tranſverſe proceſſe of the ſecond rack. *c*,7, the hole of the ſaid tranſverſe proceſſe. *d*,6,7, the deſcending proceſſe 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*. *hi*,8, the aſcending proceſſes. *lm*,8, the two deſcending proceſſes. *nopq*,8, the tranſverſe proceſſes. *r*,8,9, the ſpine or backward proceſſe. *ſt*,8, the two toppes of the ſpine. *u*,9, the deſcending proceſſe of the third rack. *x*,9, the aſcending proceſſe. *y*, the tranſverſe proceſſe of the third rack. *z*,8,9, the hole of this tranſverſe proceſſe. *&*,9, the upper hollowed part of the body of the third rack. *ſ*,9, the *Sinus* or cavity which maketh the lower part of a hole through which the conjugations of the nerves are led. *ſ*,7, the upper part of the ſame hole.

By what articulation the head is bended backwards and forewards

And by this articulation the head is bended forewards and backewards, as it is moved to the ſides by the articulation of the firſt Racke-bone with the ſecond. That proceſſe is bound by two Ligaments, the firſt of which being the greater and broader is externall, comprehending in the compaſſe thereof all the upper articulation, aſcending from the Racke-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 encompaſſes the articulation mixing its ſelfe with the griſtle, which by its interpoſition binds together all the Racke-bones, the firſt excepted, as you may ſee in pulling aſunder the Racke-bones of a Swine; and the whole Spine or Backe-bone is tyed together and compoſed throughout with ſuch Ligaments.

The *Vertebra* of the Holy bone.

The Holy bone is compoſed of 4. *Vertebræ* [or rather of five, or ſixe, as in the figure following] Beſides the Rumpe-bone, it receives, and holds faſt the *Oſſa Ilium*, or Hanch-bones, and is as a *Baſis* to all the Racke-bones placed above it, whereby it comes to paſſe that the Racke-bones from the head to the Holy-bone grow ſtill thicker, becauſe that which ſupports ought to be bigger than that which is ſupported. There is a certaine moyſture, tough and fatty, put between the Rack-bones, as alſo in other joints, to make them glib and ſlippery that ſo they may the better move. Whileſt this motion is made, the Racke-bones part one from another.

The manifold uſes of the backebone.

The commodities or uſes of the Spine are ſaid to be foure. The firſt is, that it is, as it were the ſeat and foundation of the compoſure and conſtruction of the whole body, as the Carkaſſe is in a ſhip. The ſecond, that it is a way or paſſage for the marrow. The third is, becauſe it containes and preſerves the ſame. The fourth is, that it ſerves for a wall or bulwarke to the entrailes which lye and reſt upon it on the inſide. And becauſe we have fallen into mention of Ligaments, it will not be amiſſe to inſert in this place, that which ought to be knowne of them. Firſt therefore we will declare what a Ligament is, then explaine the divers acceptions thereof, and laſtly proſecute their differences.

What a Ligament is.

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 mediatly or immediatly, and in the like manner ends in the one of them, or in a Muſcle, or in ſome other part; whereby it comes to paſſe that a Ligament is without blood, dry, hard, and cold and without ſenſe, like the parts from whence it ariſes, although it reſemble a Nerve in whiteneſſe and conſiſtence, but that it is ſomewhat harder.

Why it is without ſenſe.

What parts may be called Ligaments in a generall ſignification.

A Ligament is taken either generally, or more particularly; in generall, for every part of the body, which tyes one part to another, in which ſenſe the skin may be called a Ligament, becauſe in containes all the inner parts in one union. So the *Peritonæum* comprehending all the naturall parts, and binding them to the backe-bone: ſo the membrane inueſting the Ribbs, (that is the *Pleura*) containing all the vitall parts; thus the membranes of the braine, the nerves, veines, arteryes, muſcles, membranes, and laſtly all ſuch parts of the body, which bind together and conteine other, may be called Ligaments, becauſe they binde one part to another; as the nerves

annexe

annexe the whole body to the braine, the Arteries fasten it to the heart: and the veines to the liver. But to conclude, the name of a Ligament more particularly taken, signifies that part of the body, which we have described a little before.

The differences of Ligaments are many, for some are membranous and thin; others broad, othersome thicke and round, some hard, some soft, some great, some little; some wholy gristlely, others of a middle consistence betweene a bone and a gristle, according to the nature of the motion of the parts, which they binde together in quickneſſe, vehemency and slowneſſe. 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 Necke.

THe Muscles of the necke 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 3 or 4, the necke it self. Of the 7 which move the head, & with the head the first *Vertebra*, some extend & 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 judgement may be of the Muscles of the Necke.

Their number

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 necke called *Longus*.
C C, The second bender of the necke called *Scalenus*.
D D D D, The outward *intercostall* muscles.
E E E E, The inner *intercostall* muscles.
F F F, 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 arme called *Pectoralis*, separated from his originall.
I, The second muscle of the arme called *Deltoides*.
K, The bone of the arme without flesh.
L, The first muscle of the cubite called *Biceps*.
M, The second muscle of the cubit called *Brachiæus*.
N, The clavicle or coller-bone bent backward.
O, The first muscle of the chest called *subclavius*.
P, The upper processe of the shoulder-blade.
Q, The first muscle of the head called *obliquus*

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 backe whoſe originall is at *aa.* YY, *bb*, *cc*, The ſixt muſcle of the thigh called *Pſoa*, whoſe originall is at *cc*, and tendon at *bb.* ZZ, The ſeaventh muſcle of the thigh. *d*, the holy bone. *eee*, the holes of the holy bone out of which the nerves doe iſſue. *e*, A portion of the fift muſcle of the thigh ariſing from the ſhare-bone. *f*, the ſhare-bone bared. *k*, the ninth muſcle of the thigh or the firſt *circumactor.*

The fifth Figure of the muſcles in which ſome muſcles of the head, Cheſt, arme, and ſhoulder-blade are deſcribed.



I, The proceſſe of the ſhoulder-blade, called the top of the ſhoulder.

O, The fourth muſcle of the arme or *the greater round muſcle*, to which *Fallopius* his right muſcle is adjoyned, which ſome call the *leſſer round-muſcle.*

Q Q The ſixt muſcle of the arme or the upper *blade 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.

Υ, the fifth muſcle of the cheſt or muſcle called *Sacrolumbus.*

αβ, His place wherein he cleaveth faſt to the longeſt muſcle of the backe.

γγ, the Tendons of the muſcle obliquely inſerted into the ribs.

Δ Δ, the firſt paire of the muſcles of the head or the Splinters.

Cb. 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*, neare their inſertion.

Φ, the ſecond muſcle of the backe or the *Longeſt* muſcle.

Π, the fourth muſcle of the backe or the *Semi-ſpinatus.*

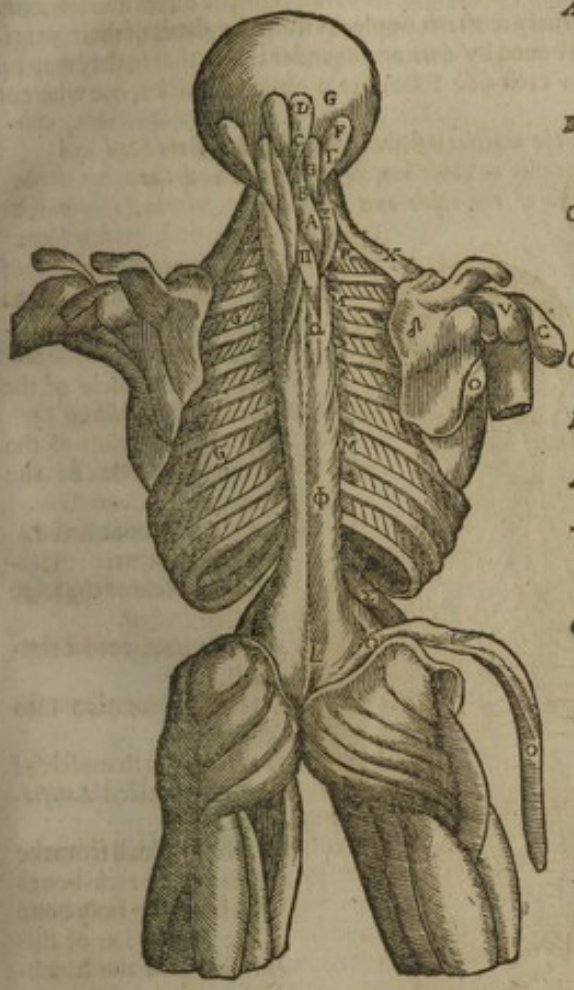
Δ, the ſhoulder-blade bare.

P, A part of the tranſverſe muſcle of the *Abdomen.*

But before I can come to the deſcription of their originall and inſertion, I muſt admoniſh thee, that the 2 Muſcles of the ſhoulder-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 wee ſeeke 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 leſſe *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 Necke and the firſt of the backe, and turned up to its inſertion

insertion, which is at three spaces of the lower ribbs nigh to the hinde, 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 de-

The sixth Figure of the muscles, shewing some of the muscles of the Head, Backe, Chest, Shoulder-blade and Arme.



A D, the second paire of the muscles of the head, or the two *Complexi*, the first part is at *A D*.
B C. the second part. *E F*, 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 *Fallopius*, which *Vesalius* made the 4. part of the 2.
G G, (Betwixt the ribs) the externall *Intercostall* muscles.
L, the originall of the 2. muscle of the backe.
M, His tendons at the racke-bone of the necke.
The upper *O* the fourth muscle of the arme or the *greater round* muscle.
O O, the lower, the 6 muscle of the chest, or the *Sacrolumbus* hanging from his originall.
Q, the sixt muscle of the arme or the upper *Bladerider* inverted.
V, the third ligament of the joynt of the arme.
X, the fourth muscle of the shoulder-blade or the *heaver*.
Z, the second muscle of the Chest or the greater *Saw-muscle*.

Ξ, the 3. muscle of the necke called *Transuersalis*. Π, the 4. muscle of the necke called *Spinatus*. Σ, the first muscle of the backe or the *Square muscle*. Φ, the 2. muscle of the backe or the *Longest*, whose originall is at *L* and his tendons at the *Vertebræ* at *M M*. Ω, the fourth muscle of the backe called *Spinatus*. ſ, the backe of the shoulder-blade flaied.

clines, for thus anatomicall order requires. Yet if you thinke 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 Spleene is called the *Splenius*, it ascends from the 5. upper spines of the backe and the 4 lower of the necke, and is obliquely inserted at the backe part of the head and the mammillary processe, whence you may raise it towards its originall. The second by reason of its composure is called *Complexus*, this passing from the third, fourth and fift transverse processe of the Backe and often from the first of the Necke, ascends directly to the backe part of the head

The *Splenius*.

The *Complexus*.

head, incompaſſing the lower and ſide part of the necke, you may eaſily take it up; if you begin at the ſpine, and ſo goe forwards to the tranſverſe proceſſes and mammillary proceſſes of the nowle bone. This *Complexus* may be divided into two or three muſcles, but that with ſome difficulty, by reaſon of its folded texture. The third and fourth, which be two of the eight little muſcles, being foure on each ſide, doe aſcend ſomewhat obliquely, the firſt truely from the whole ſide of the ſecond *Vertebra*. The ſecond from the whole ſide of the proceſſe of the firſt *Vertebra*, which it hath in ſtead of a ſpine; they aſcend to the backe part of the head juſt againſt the ſpine; theſe two muſcles by the conſent of all Anatomiſts are called right, or direct muſcles, onely moveing the head: theſe truely muſt not be pluckt from the places of their originall, nor inſertion, but onely 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

The Recti, or 2 right muſcles.

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 arme.*



A, The prominent part of the fourth muſcle of the cheſt called *Serratus poſticus ſuperior.*

Δ, the firſt muſcle of the head called *ſplenius.*

E E, the inſertion of the ſecond muſcle of the head called *Complexus.*

I, the coller bone bared.

M, the backpart of the ſecond muſcle of the arme called *Deltois.*

ζ*H*, His backward originall.

θ, His implantation into the arme.

N N, the fourth muſcle of the arme called *Latiſſimus.*

ſ μ, His originall from the ſpines of the rack-bones and from the holy bone

ϖ, the connexion of this muſcle with the hanch-bone, which is led in the inſide from μ to ϖ.

ω, the place where it lieth upon the lower angle of the Baſis of the ſhoulder-blade.

O, the 4. muſcle of the arme called *Rotundus maior.* *e*, ſome muſcles of the backe doe here offer themſelves. *P*, the fift muſcle of the arme called *Superſcapularis Inferior.* *Q*, the ſixt muſcle of the arme called *Superſcapularis Superior.* *S*, the beginning of the third muſcle of the arme called *Latiſſimus.* *V*, the third muſcle of the blade called *Rhomboides.* ϕ *X*, His originall from the ſpines of the rackebones. ϕω, 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.*

onely

onely moves the head; the other primarily the first *Vertebra*, but secondarily, and by accident the head it selfe. For the first, contrary to the opinion of some, it arises from the transverse processe 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 some thing put underneath it, but not separate it. The other entring forth of the spine of the second *Vertebra*, is inserted at the processe of the first, contrary to the originall of the precedent, although some thinke otherwise. It will be convenient in like manner onely, to lift up this with a string, and not plucke 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 originall and insertion shew.

The eight Figure of the muscles; especially of 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 muscle of the chest, or the lower and hinder Saw-muscle.

a, *b*, A membranous beginning of the muscle of the *Abdomen*, descending obliquely downe from the spine of the backe.

C, the first muscle extending the Cubit at *c*, his originall is from the necke of the arme, and from the lower basis of the blade at *d*.

E, the originall of the fourth muscle of the bone *hyois* from the blade.

GG, the outward intercostall muscles.

I, the Clavicle or coller-bone bared.

N, the upper, the second muscle of the arme called *Deltois*, char. 4, 5, the beginning of this muscle.

N, the third muscle of the arme or the broad muscle separated.

O, the fourth muscle of the arme or the lower *Super-Scapularis* or bladerider.

1, 2, 3. Char. His originall at the basis of the shoulder-blade at 1 2, and his insertion into the joynt of the arme at 3. *Q*, the sixt muscle of the arme 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. 1, 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*. *o*, the second muscle of the backe or the longest muscle. *o*, the fourth muscle of the backe called *Semispinatus*.

Wherefore

Which may be truly called the proper muſcle of the necke.

Wherefore when the firſt oblique moves the head obliquely forwards, the ſecond puls it packe 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 appeares in beckning it forwards, and caſting it backwards; the other circular.

The two motions of the head.

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 joynt.

For the laſt, which bends the head, it aſcends from the upper and ſide part of the *Sternon*, and the next part of the clavicle, obliquely to the *Apophyſis*

The ninth Figure of the muſcles, ſhewing the muſcles of the Head and Necke.



A B, the third paire of the Muſcles of the head called *Recti Maiores.*

C, the Mammillary proceſſe.

D, the tranſverſe proceſſe of the firſt rackebone.

E, the proceſſe of the 2 rackebone of the necke.

F G, the fourth paire of muſcles of the head called *Recti Minores.*

H I, the fift paire of muſcles of the head called *Obliqui Superiores.*

K L, the ſixt paire of muſcles of the head called *Obliqui Inferiores.*

X, the fourth paire of muſcles of the ſhoulder-blade.

Λ, the ſecond muſcle of the necke called *Scalenus*, which *Falopius* maketh the eight muſcle of the cheſt.

Π, the fourth muſcle of the necke called *ſpinatus.*

Σ, the firſt muſcle of the backe called *Quadratus.*

Φ, the ſecond muſcle of the backe called *Longiſſimus.*

a, the *ſinus* or boſome of this muſcle; whereby it giveth way unto the third muſcle of the backe, called *Sacer.*

b, His Originall.

Ψ, the third muſcle of the backe called *Sacer.* γ, His Originall. δ, His end. Ω, the fourth muſcle of the backe called *Semiſpinatus.* ε, His upper end under the fourth muſcle of the necke.

Maſtoides or mammillary proceſſe of the hinde part of the head, whence it is called the *Maſtoideus.* You may divide this by reaſon of its manifold originall rather into two, than into three muſcles. But it had beene better that the head might have beene moved every way, equally backwards and to the right and left ſides; but thus it would often have beene ſtrained to our great dammage and danger of life; neither could there have beene ſuch facility of motion without a looſenſſe of the joynt. Therefore nature had rather beſtow upon the head an harmeleſſe faculty of fewer motions, than one furniſhed with more variety, but with a great deale more uncertainty and danger. Wherefore it hath made this juncture not laxe or looſe, but ſtiffe and ſtrong.

The *Maſtoideus.*

After

After the shewing of these muscles, we must come to three or foure of the necke, o fwhich number two (which some reduce to one) extends, another bends, and the last moves side wayes, and all of them with a motion succeeding each other turne it about, as we said of the muscles of the head. The first of these which extend, taking its originall from the sixe transverse processes of the sixe upper racke-bones of the backe, or rather from the root of the oblique, ascends directly to the spine of the second *Vertebra* of the necke, and the oblique processe 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 turne it upwards to the transverse processes; unlesse 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. The *Transversarius.*

Marvell not, if you finde not this distinction of their originall, so plaine and manifest, for it is commonly obscure. For the muscle *Spinatus*, as it most commonly comes to passe, arising from the roots of the seven upper spines of the backe, and the last of the necke, is inserted into other spines of the necke, so that it might easily be confounded with the former by *Galen*. The third bends the necke, and arising within from the body of the five upper *Vertebræ* of the back (though with a very obscure originall, specially in leane bodies) it ascends under the gullet alongst the necke, even to the nowle-bone, into whose inner part it is obscurely inserted. Wherefore it is likely that it helpes not onely to bend the necke, but also the head. This muscle is made of oblique fibers proceeding from the body of the *vertebra*, all the way it passes to the transverse processes of the other *Vertebra*. But it seemes with its copartner which is opposite to it, to make a certaine hollow path upon the bodies of the *Vertebræ*, to the gullet, and it is called the long muscle. The fourth and last, which we said moves the necke 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 selfe into all the transverse processes of the necke by its fibers, which as it were for the same purpose, it hath sufficiently long, that it may fasten it selfe from the furthest or lowest processe of the necke into the first or highest thereof. The passage of the nerves through this to the arme makes this muscle seeme double or divided into two. For the veines and arteries pertaining to the necke, they have beene declared in the proper Chapters of the distributions of the vessels; it remaines that you note, all these muscles receive nerves from the *Vertebræ* whence they arise. The *Spinatus.* The *Longus.* The *Scalenus.*

Chap. XVIII.

Of the Muscles of the Chest and Loynes.

WE must now speake of the Muscles both of the Chest which serve for respiration, as also of the Loines. But first we must know that the hinde part of the Chest called the *Metaphrenum*, or backe, consists of twelve *Vertebræ*, the loines of five, all which differ not from the *Vertebræ* of the necke, but that they are thicker in their bodies than these of the necke; neither are they lesser in holes, neither they have their transverse processes perforated, or parted in two, as the racke-bones of the necke have. Besides each of these racke 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 *Vertrebræ* of the necke, such holes or passages are not made, but by meeting together of two of them. In what the *Vertebra* of the necke and loines agree and disagree.

Concerning the processes of the Rackbones of the Chest, whether transverse, right or oblique, they differ nothing from these of the necke (I meane even to the tenth) but that the transverse seeing they are not perforated, as we said before, do as it were sustaine the ribbes, being straitly bound to them with strong ligaments both proper and common; but after the tenth *Vertebra* of the backe, the two other of the backe, and all those of the loines are different, not onely from those of the necke, but also from the tenne first of the backe, by reason of their oblique processes, because from

the eleaventh (which is received, as well by that which is above it, as by that under it, for the ſtrength of the whole backe, and the eaſier bending thereof without feare 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 eleaventh they beginne by little and little to looke upwards, contrary to the former.

How the tenth *Vertebra* of the backe, may be ſaid to be the middle of the ſpine.

But if any aske, how the tenth *Vertebra* of the backe may be termed the midſt of the ſpine, being the whole ſpine conſiſts of twentie foure *Vertebræ*? He may know that this may be true, as thus; if the ſixe bones of the holy-bone, and the fourth of the Rumpe (being more griſtlely than bony) be numbred amongſt the bones of the Spine; for then from the ſetting on of the head to the eleaventh racke bone of the backe, are ſeaventeene in number, and ſo many from thence downewards.

The number of the muſcles of the Cheſt.

But let us returne to the muſcles of the Cheſt ſerving for reſpiration. Firſt, you muſt know that theſe Muſcles are foureſcore and nine, that is, on each ſide forty foure, alike in ſtrength, thickneſſe, ſite, and action; and one beſides in the midſt which they call the *Diaphragma* or Midriffe. Of theſe fortie foure, there are 22.

The muſcles dilating the Cheſt.

which dilate the cheſt in drawing in the breath; that is, the *Subclauius*, the *Dentatus*, or *Serratus major* in the opinion of ſome, both the *Rhomboides*, or *Serrati poſtici*; the oblique aſcendent of the lower belly, the eleaven *Intercoſtales*, and the ſixe *Intercartilaginei externi*. On the contrary, as many contract the breaſt in expiration; to

The muſcles contracting the Cheſt.

wit, the *Sacrolumbus*, the oblique deſcendent, the Right and tranſverſe of the lower belly, the inner Trangular, the ſixe *Intercartilaginei*, and the eleaven inner *Intercoſtales*. Of theſe twentie 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 Coller-bone, into the griſtle of the firſt ribbe, even to the *Sternon*, and dilates it. The

The *Subclavius* is the firſt of the muſcles dilating the cheſt.

ſecond is the *Serratus major*, the greater Saw-muſcle ariſing according to the opini-

Serratus major.

on of ſome from the whole *baſis* of the Shoulder-blade on the inſide, and it is tranſverſely inſerted into the nine upper ribbes, producing certaine toothed or ſaw-like proceſſes running further to the bones of the rib, than to the ſpaces betweene them, or Intercoſtall 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 backe, by means of a membranous and moſt thinne ligament, into the three or foure upper ribbs, running further into their ſpaces or Intercoſtall muſcles, than into the ribbs themſelves, wherupon it is called *Serratus poſterior, & ſuperior*, that is, the hinder and upper ſaw-muſcle. The

Serratus poſterior and *ſuperior.*

fourth in like manner aſcends by means of a membranous and thin ligament from the three upper ſpines of the loines, and the two laſt of the cheſt, or backe, into three or foure of the lower, or laſt of the baſtard ribbs, ſent forth further into them or their bones, than into the Intercoſtall muſcles poſſeſſing the ſpaces betweene 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

The oblique aſcendent of the lower belly.

their figure the *Rhomboides*, that is, the ſquare muſcles. The fift which we ſaid was the aſcendent of the *Epigaſtrium*, hath already beene ſufficiently deſcribed in his place. The eleaven *Intercoſtales externi*, or externall Intercoſtall muſcles deſcend

The eleaven *Intercoſtales externi.*

obliquely from the backe part of the lower ſide of the upper ribbe, into the fore-part of the upper ſide of the ribbe lying next under it, after a quite contrary manner to the ſixe *Intercartilaginei*, who having like originall and inſertion amongſt the griſtles, as the Intercoſtall amongſt the ribbes, deſcend obliquely from the forepart backwads. And thus much of the muſcles dilating the Cheſt in inſpiration.

6. Intercartilaginei.

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 (firmely and confuſedly adhering with the *Muſculus ſacer*, or holy-muſcle, which we ſhall deſcribe hereafter) to the roots of the twelve ribbes, imparting in the aſcent a ſmall tendon to each of them, by which it drawes theſe ribbs towards the tranſverſe proceſſes; and by reaſon of its Originall it is called *Sacrolumbus*, that is, the Holy-loine-muſcle.

The *Sacrolumbus*, the firſt of thoſe which contract the cheſt.

The

The second, third, and fourth, which we said were the oblique descendent, right, and transverse of the *Epigastium*, have beene formerly described in their place. The oblique descendent, the right and transverse of the *Epigastrium*.

But by the way you must note that these three muscles of the *Epigastrium* helpe expiration rather by accident, than of themselves, to wit, by driving backe the midriffe towards the lungs by the entrailes, 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 ribbes; this is more apparent under the *Sternon* in beasts, than in men, though it be not very obscure in them neither. For the internall Intercostall muscles, in my judgement, they arise from the lower sides of the upper ribbe, and descending obliquely from the fore part backwards, are inserted into the upper side of the ribbe next under it; so that they may follow the production of the fibers of the externall *Intercartilaginei*; as the five internall *Intercartilaginei* follow the site of the externall Intercostall proceeding from behinde forwards; wherefore as well the Intercostall, as the *Intercartilaginei*, every where intersect each other, after the similitude of the letter X. I know some have written that the internall muscles (whether intercostall or *Intercartalaginei*) ascend from the upper sides of the lower ribbe forwards, or backwards. *Triangulus musculus.* *Intercostales interni.* *Intercartilaginei interni.*

But if this were true, it would follow that these muscles admitted their nerves in their taile and not in their head, seeing the nerve alwayes goes under the ribbe, and not above it. Muscles alwayes receive their nerves in their heads.

The last muscle of the Chest, that is, the *Diaphragma* or Midriffe, is sufficiently described before; wherefore it remaines wee describe the muscles of the Loines. These are five in number, on each side three, equall in thickneſſe, strength and situation; one of these bends, and the other two extend the Loines; it is called by reason of the figure the *Triangulus*, or Triangular which bends the Loines, it ascends from a great part of the hinde side of the Hanch-bone into the transverse processes of the Loines, and the last of the Chest on the inside, for which cause it is made of fibers short, long, and indifferent, answering to the neareneſſe 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 Loines; this with its oblique fibers ascends from all the said spines to the transverse processes as well of the Loines 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 Loines, and of the eleaven lower Rack-bones of the Chest. The midriffe. The muscles of the loines. They are three paire. *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 Arme, 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 ribbs, is somewhat hollowed; wherefore on the other side it somewhat buncles out. It hath two ribbs, one above, another below: by the upper is ment 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 ribbe produces in the end thereof: By the lower, the underside which lies towards the lower belly and the short ribbs. 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 lookes towards the The basis of the blade.

The head of the ſhoulder-blade.

backe-bone. By the head we underſtand the narrower part thereof, in which it receives the head of the Arme in a cavity, indifferently hollow, which it produces both by it ſelfe, as alſo by certaine griſtles, which there faſtened encompaſſe that cavity. This kinde of cavity is called Glene.

This receives and containes the bone of the arme, by a certaine ſtrong ligament encompaſſing & ſtrengthening the joynt, which kind of ligament is common to all other joints; this ligament ariſes from the bottome of the cavity of the ſhoulder-blade, and circularly encompaſſes the whole joynt, faſtening it ſelfe to the head of the arme; there are alſo other ligaments beſides this, which encompaſſe & ſtrengthen this articulation. By the ſpine is ment a proceſſe, which riſing by little and little upon the gibbous part of the blade, from the *baſis* thereof where it was low and depreſt, 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 arme and ſhoulder-blade, that is, leſt the arme ſhould be eaſily ſtrained upward or forwards; beſides, it is faſtened to the clavicle, by the proceſſe *Acromion*.

The ſpine of the blade. The proteſſes *Acromion* and *Coracoides*.

The muſcles of the ſhoulder-blade.

The muſcles which move the ſhoulder-blade are ſixe in number, of which foure are proper, and two common. The firſt of the foure proper ſeated in the forepart, aſcends from the bones of five or ſixe of the upper ribbs, to the *Coracoides*, which it drawes forwards, and is called *Serratus minor*, that is, the Leſſer ſaw-muſcle; which that you may plainely ſhew, it is fit you pull the pecterall 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 drawes its originall from the three lower ſpines of the necke, and the three upper of the Cheſt, from whence it extends it ſelfe, 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 foure firſt *Vertebræ* of the necke into the upper angle and ſpine of the blade. The fourth called *Trapezius*, or the Table-muſcle, is ſeated in the backe part, and is membranous at the originall, but preſently becoms fleſhy: it ariſes from almoſt all the backe-part of the head, from all the ſpines of the necke, and the eight upper *Vertebræ* of the cheſt, and then is inſerted by his nervous part, almoſt into the whole *baſis* of the blade, extending it ſelfe 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 ribbe. 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 necke; the other is to draw it towards the backe, becauſe of the contraction of the middle or tranſverſe fibers which leade it directly thither; and the other is to draw it downewards by reaſon of the originall it hath from the fifth, ſixth, ſeventh, and eight ſpine of the *Vertebræ* of the Cheſt.

Serratus minor.

Rhomboides. Levator.

Trapezius.

But we muſt note that theſe diverſe actions are not performed by this muſcle, by the aſſiſtance of one onely nerve, but by more, which come into it by the ſpinall marrow, by the holes of the *Vertebræ*, as well of the necke as the cheſt, from whence it takes the originall. For the two other which are the common muſcles of the blade, and arme, or ſhoulder, we will deſcribe them with the muſcles of the ſhoulder or arme: for one of theſe which is called the *Latiſſimus*, that is, the broadeſt, aſcends from the holy-bone to the ſhoulder-blade and arme.

Latiſſimus.

Pectoralis.

The other named the *Pectoralis* coms from the *Sternon* and collar-bone to the ſhoulder-blade and arme.

Chap. XX.

The Deſcription of the Hand taken in Generall.

NOW it befits us to to deſcribe in order the muſcles of the arme; but firſt we muſt know, what it is that we call the arme. But ſeeing that cannot fitly be underſtood, unleſſe 1. we know what the hand is, ſeeing that the arme is a part of the hand; therefore firſt we muſt define what a hand is,

and

and then devide it into its parts. Therefore the hand is taken two manner of wayes, that is, generally and ſpecially.

The hand generally taken, ſignifies all that which is contained from the joyning of the arme to the ſhoulder-blade, even to the ends of the fingers. But in particular it ſignifies onely that which is comprehended from the furtheſt bones of the cubit, or the beginning of the wreſt, to the very fingers ends. *What is meant by the hand in generall.*

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 Arme, Cubite, and Hand, vulgarly, and properly ſo called; but the hand taken thus in particular is againe devided in three other parts, the *Carpus* or *Brachiale*, the Wreſt, the *Metacarpium*, or *Poſtbrachiale*, the afterwreſt, and the fingers; all theſe parts (ſeeing each of them are not only organicall parts, but alſo parts of organicall parts) are compoſed of all, or certainely of the moſt of the ſimular parts; that is, of both the skinnes, the fleſhy panniele, the fat vaines, arteries, nerves, muſcles or fleſh, coats both common and proper, bones, griſtles and ligaments, all which we will diſcribe in their order.

But firſt I thinke good to admoniſh you of the differences of the hand taken from the ſite thereof; and theſe differences are ſixe in number, the fore, the hinde, the internall, the externall, the upper and lower ſide or part thereof. *The differences of the hand from the ſite thereof.*

By the fore we meane that part which lookes directly from the thumbe to the ſhoulder: by the hinde, we underſtand the part oppoſite to it, which from the little finger lookes 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 retaines its naturall ſite; by the outſide, the part oppoſite to it. The upper and lower ſide you may know by the very naming thereof.

The hand properly ſo called is devided 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 leaſts bodies with the fingers ends, needles, pins, and ſuch like. *Why the hand is devided into ſo many fingers.*

Nature hath beſtowed two hands upon us, that ſo they may helpe 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 owne nature ſoft, ſhould be armed with nailes, that conſiſting of ſoft fleſh and an hard naile, they might ſerve for all actions; for the naile is a ſtay to the ſoft fleſh, which otherwiſe would turne away in meeting with an hard body; the uſe of the nailes is to ſcratch, ſhave, and pull off the skinne, to rend, pinch, and plucke aſunder ſmall bodies. They have not bony hardneſſe, that ſo they might not breake, but bend. *Why the nailes are added to the ſoft fleſh of the fingers.*

Yet other creatures have hard nailes, 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. *Why the nailes 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 runne out. The length of the fingers is unequall, 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 remaines that we proſecute the diſtribution of the veines, arteries, and ſinewes, which runne over all the parts of the hand taken in generall and particular, whereby wee may more commodiouſly hereafter handle all the proper parts thereof.

Chap. XXI.

The Diſtribution of the Subclavian veine, and firſt of the Cephalica, or Humeraria.

TWo large veines deſcend from the Subclavian, the one from the lower ſide, the other from the higher. Yet ſometimes, and moſt uſually, both theſe proceede from the ſame common orifice, as in men of a low ſtature in the arme. The one of theſe is called the *Axillaris*, the other the *Humeraria*, or *Cephalicke*; therefore this Cephalicke paſſing forth of the Subclavian runnes ſuperficially along the foreſide betweene the muſcle *Delteides*, and the Tendon of the pectorall muſcle, and deſcends in the midſt betweene the common coate of the muſcles and the fleſhy pannicle, even to the bending of the cubite, where in leane bodies it is plainely to be ſeene, whereas in fat bodies it is hardly to be perceived, being as it were buried in abundance of fat. This veine having in its deſcent, ſent forth ſome ſmall branches, both to the skinne, as alſo to certaine muſcles over which it runs, is devided into two, a little above the outward protuberation of the arme. One of the branches into which it is devided deſcending obliquely to the fore part of the cubite, a little below the bending of the cubite, it meets, and is united with the like branch in the ſame place, as ſhall be ſhowne hereafter.

The Cephalicke veine.

That which ariſes from this concourſe, is called the median veine, becauſe it ariſes from two branches, and is ſeated betweene them. They uſually open this median veine 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 concourſe it is made, which you ſhall think the fitteſt: and becauſe each branch drawes from the next parts, according to the ſtraightneſſe 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 Cephalicke, you preſently lay your thumbe upon it, untill you ſuppoſe, you have drawne a juſt quantity of bloud from the liver, by the *Baſilica*, or liver veine; which done, you may take off your thumbe, and ſuffer the bloud to follow freely, by the open branch of the Cephalicke, untill you have drawne as much bloud as you ſhall judge requiſite; otherwiſe you will draw it but from one part, to wit, the head. So you ſhall evacuate it onely from the liver, if you open the branch which comes from the *Baſilica*, and concurs to the generation of the median.

The median veine.

How by opening the median veine, you may draw more or leſſe bloud from the head or liver.

Moreover, when there is neede to open the *Baſilica*, and it ſhall be no where conſpicuous, the Cephalicke 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 Cephalicke, preſſing but the trunke thereof with your thumbe, 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 neceſſitie to open the Cephalicke, it ſhall not appeare. Moſt of thoſe which at this day open a veine, in ſtead of the median, open that branch of the *Baſilica* which aſcends, together with the Cephalicke to make the median. But you muſt underſtand that the median deſcends betweene the two bones of the cubit, even to the end thereof, and then devided into many branches, it is at length ſpent on the backe of the hand behinde the thumbe, the fore and middle fingers, or the afterwreſt. Sometimes it runs backe into the following branch, and then at the wreſt it departs from it, to be beſtowed upon the forementioned parts. The other branch of the Cephalicke, whichwe may call the fore and outward Cephalicke, deſcending directly downe to the midſt of the wand, thence wanders overthwart into the hinde part of the arme, where encreaſed with a branch from the *Baſilica*, it is diſtributed over all the backe of the hand, which with the median it nouriſhes. But the branches of theſe veines doe ſo run through the forenamed parts, that by the way, they yeeld them neceſſary proviſion.

CHAP. XXII.

The Description of the Axillary veine.

THE Axillary arising at the insertion of the pectorall muscle, or a little higher, after it hath produced the two *Thoracicæ* it is devided under the tendon of that muscle into two faire branches, that is to say, into the inner deepe Axillary, and the skinne or outward axillary. The deepe 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 arme, it goes into the bending of the elbow, where running somewhat deepe with the artery and nerve into the muscles of the cubite, it is devided 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 thumbe, 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, as the former alongst the cubite, sends branches to the rest of the fingers, like as the former. The third goes on the foreside betweene the two bones even to the wrest, and the square muscle.

The axillary is devided into

The deepe axillary, and outward axillary.

But you must note that the veines of which we now treate, doe not onely make these devisions 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 deepe axillary veine. For the externall or skin Axillary (which first appeares under the skinne, especially in leane bodies, a little above the inward production of the arme) it is devided in that place into two branches, the one whereof descending to the bending of the arme meets, and is united with the Cephalike 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 skinne, as into the other neighbouring parts, descending alongst the lower side of the bone of the cubite, properly so called, is at length spent upon the fore and outward Cephalicke branch, which we said descended alongst the wand; and thus united, they runne over all the hand, where in the right hand, betweene 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 alwayes remember, (if in dissection you finde any thing otherwise than wee have delivered it) that the distribution of the vessels is so various (especially in the hands) that there can no certaine 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 *Thoracicæ*, descending betweene the muscle called *Biceps*, or the two headed muscle, and the *Brachiæus*, with the deepe axillary veine, distributes a large branch amongst the outward muscles of the arme, which extend the cubite, and is spent in the externall muscles of the same, which arise without, from the productions of the arme.

And

And this is called the *Ramus Muſculus*, or Muſculous branch, as alſo the veine that accompanyes this Arterye. Then this Arterye when it comes to the bending of the cubite, thruſting it ſelfe into the muſcles bending the fingers, communicates certaine 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.

An Aontomicall Axiome. Verily it may it may be a generall rule; that every veſſell ſends or beſtowes certaine portions thereof by the way to all the parts by which it paſſes. But if you ſhould aske, why I have not proſecuted theſe productions; I would anſwer; I never intended, to handle other than large and faire 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 divarications of the veines, arteryes and nerves. Therfore this Artery ſunke 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, & the other alongſt the Cubite 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 veine, 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 therof, beſtowes two ſprigs upon the Thumbe, on each ſide one, & two in like manner on the fore finger, and one on the midle; the other which runs alongſt the Ell, performes the like office to the litle and the midle or ring finger, as you may ſee by diſſection.

CHAP. XXIIII.

Of the Nerves of the Necke, Backe, and Arme.

The 7 paire of nerves of the necke. NOw we ſhould handle the ſinewes of the Arme, but becauſe theſe proceed from the Nerves of the Necke and Backe, I thinke it fit therefore to ſpeake ſomething of them in the firſt place.

The firſt paire. Therefore from the Necke there proceed ſeven paire of Nerves, the firſt of which proceeds from the nowle bone, and the firſt *Vertebra* of the necke; as alſo the firſt paire of the Backe from the laſt *Vertebra* of the Necke and the firſt of the Cheſt. But all theſe Nerves are divided into two or more branches of the firſt paire (that is to ſay, on each ſide) goe, the one to the ſmall right muſcle, aſcending from the firſt racke-bone of the necke to the nowle bone, the other to the long muſcle on the foreſide of the necke.

The ſecond paire. The branches of the ſecond paire are diſtributed, ſome with a portion which they receive from the third paire over all the skin of the head; the two others go as well to the muſcles, which are from the ſecond *Vertebra* to the backe part of the head, and from the ſame to the firſt *Vertebra*, as alſo to the long muſcle before mentioned.

The third paire. One of the third paire of Sinewes is communicated to the head, as we ſaid before, but others to the Muſcles which extend, or erect the head and the Necke; there is alſo one of theſe diſtributed into the neighbouring ſide muſcle and part of the long.

The fourth paire. The nerves of the fourth paire go, one to the muſcles aſwel of the neck as the head, & to the broad muſcle; the other after it hath ſent ſome portiõ therof into the long muſcle & the ſide muſcles of the necke, it deſcends with a portion of the fift and ſixt paire to the Midriffe. One of the branches of the fift paire is beſtowed on the hinde muſcles of the necke and head, the other upon the longe muſcle and Midriffe; the third is communicated to the *Levatores*, or Heaving muſcles of the Arme and ſhoulder.

The fift paire.

The ſixt paire One of the Nerves of the ſixt paire goes to the hinde muſcles of the Necke and head, another to the Midriffe, the third with a portion of the ſeventh paire of the necke, and of the firſt and ſecond of the Cheſt goe to the Armes and heaving muſcles of the ſhoulder-blade.

The ſeventh paire. One of the branches of the ſeventh paire runs to the broad muſcle and to the neighbouring muſcles both of the necke and head; another encreaſed with a portion of the fift and ſixt paire of the necke, and a third joyned to the ſecond and third paire

of

of the Cheſt deſcending into the Arme goe to the hand.

But you muſt note that the Muſcles which take their originall from many *Vertebræ*, whether from above downwards, or from below upwards, admit Nerves not onely from the *Vertebræ*, from whence they take their originall, but alſo from them which they come neere in their deſcent, or aſcent.

There paſſe twelue conjugations of Nerves from the Rack-bones of the Cheſt. The 12. paire of Nerves of the Cheſt.

The firſt entring forth from betweene the laſt Racke-bone of the necke 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 goe ſome of them to the Armes, as we ſaid before, others to the muſcles as well theſe of the Cheſt, as others ariſing there, or running that way. The firſt paire.

The branches of the ſecond conjugation are diſtributed to the ſame parts, that theſe of the firſt were. The ſecond paire.

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 *Sternon*, and under the baſtard ribs even to the right and long muſcles; and the Coſtall Nerves of the ſixt 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 paſſe forth, or runne alongſt by the *Vertebræ*, from whence theſe nerves have either their originall, or paſſage forth. The other paires.

Having thus therefore ſhewed the originall of the Sinewes of the Arme, it remaines that we ſhew their number and diſtribution. The Nerves which are carryed to the Armes.

Their number is five or ſixe; proceeding from the fifth, ſixth, and ſeventh *Vertebra* of the necke, and the firſt and ſecond of the Cheſt. The firſt of which not mixed with any other from the fifth *Vertebra* of the necke, goes to the Muſcle *Deltoides* and the skin which covers it.

The other 4 or 5 when they have mutually embraced each other, not onely from their firſt originall 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 litle 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 Cubite, in the bending whereof it is divided into two branches deſcending alongſt the two bones of the Cubit, untill at laſt borne 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 ſtraight way ſeparated from it, it ſends a portion thereof to the Arme which lyes under it, and to the skin thereof; laſtly at the bending of the Cubit on the fore ſide, it is mingled with the fift paire.

The fourth, the largeſt of all the reſt, comming downe below the third branch under the *Biceps* with the internall Axillary veine and Artery, is turned towards the outward and backe part of the Arme, there to communicate it ſelfe to the Muſcles extending the Cubit, and alſo to the inner skin of the Arme and the exteriour of the Cubit; the remainder of this branch when in its deſcent it hath arrived at the joynt of the Cubit, below the bending thereof it is divided into two branches, the one wherof deſcending alongſt the Cubit is ſpent on the outſide of the Wreſt; the other aſſociating the Wand is on the outſide in like manner in two branches beſtowed upon the Thumbe, and in as many upon the fore finger, and by a fift upon the middle finger though more obſcurely.

The fift branch being alſo lower than the reſt, ſliding between the muſcles bending and extending the Cubite, when it comes behinde the inner protuberation of the Cubite (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 Cubite goes in two ſprigs to the litle finger, & ſo many to the middle finger, and one to the Ring finger; the other

two

two, the one without and 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 ſmall portions, of which theſe which are from that portion which deſcends without the Ring, ſend two ſprigs to the litle, two to the fore and one to the middle finger; but theſe which come from that which paſſes under the Ring, by ſuch a diſtribution communicates it ſelfe to other fingers, as two ſprigs to the thumbe, two to the fore and one to the middle finger. The fixt the loweſt and laſt runs betweene the skin and fleſhy Pannicle, by the inner protuberation of the Arme, and then is ſpent upon the skin of the Cubit.

Chap. XXV.

The deſcription of the bone of the Arme, and the Muſcles which move it.

The greatneſſe and figure.

The Appendix of the Arme.

The proceſſes of the Arme.

Because we cannot perfectly demonſtrate the originall of the muſcles of the Arme, (eſpecially of the two Arme muſcles) not knowing the deſcription of this bone; firſt therefore we will deſcribe it, then returne to the originall of the muſcles ariſing from thence. The bone of the arme 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 necke, 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 hinde, betweene which ſwellings there is a cavity like to halfe the compaſſe of a wheele, about which the Cubit is moved. The extremityes of this cavity ends in two holes, of which one is the more externall, the other more internall: theſe cavityes receive the heads of the Cubite, that is, the fore, or internall receives the fore proceſſe when the arme is bended inwards, but the externall or hinder the exteriour, as it is extended.

For the head of the arme it hath a double connexion, the one with its owne necke by *Symphyſis*, that is, a naturall union of the bones without any motion; the other with the lightly ingraven cavity of the ſhoulder-blade, which we call *Glene*, by that kinde of Dearticulation which is called *Arthrodia*; this connexion is made firme and ſtable by the muſcles deſcending into the arme from the ſhoulder-blade, as alſo by the proper Ligaments deſcending from the circle and brow of the cavity of the *Acromion* and *Coracoides* to this head of the arme; this ſame head of the arme 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 comming from the ſhoulder-blade to the muſcle *Biceps*. For aſmuch as belongs to the lower end of the bone of the arme (which we ſaid hath two proceſſes) we may ſay that it is faſtened to the bones of the Cubit by two ſorts of articulation, that is, by *Ginglymes* 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 proceſſe of the arme, and is turned about it for the motion of the hand. The hinder proceſſe is chiefly added for the ſafety and preſervation of the veines, arteries and nerves.

The figure of the Arme.

Theſe things thus ſhowne, it is worth our labour to know the figure of the arme it ſelfe, as it lyes betweene the forementioned appendices and proceſſes, that in the caſe of a fracture, we may know how conveniently to reſtore it; therfore firſt we muſt underſtand, that this bone is ſomwhat bended and hollowed on the inſide under the cleft of the head thereof, but bunching out on the out and fore ſide.

The 8 muſcles thereof.

Wherefore ſeeing it muſt be moveable forwards and backewards, upwards and downewards, nature for the performance of ſo many motions hath furniſhed it with eight muſcles, which are ſixe proper and two common with the ſhoulder-blade. Of which number two move it forwards, two backwards, two upwards and downewards Which muſt not be underſtood ſo, as that theſe two Muſcles ſhould move it directly forwards inclining either upwards, nor downewards; and the other two ſhould move

it

Table 24. ſheweth the Braine together with the After-braine, the ſpinall marrow and the Nerves of the whole body.



A, That part of the braine that is next the noſethrils.
B, That part which is at the ſide of the ventricles.
C, The back part of the braine.
D, The *Cerebellum* or After-braine.
E, The Mamillary proceſſe in the right ſide.
F, The originall of the opticke nerve.
G, Their conjunctions.
H, The coate into which the opticke nerve is extended.
I, The ſecond paire of the ſinewes of the braine.
K, The leſſer roote of the third conjugation.
L, The thicke roote of the ſame conjugation according to the common opinion.
M, The fourth conjugatiō of the ſinews
N, The leſſer roote of the fift paire.
O, The bigger roote of the ſame paire.
P, The ſmall membrane of the eare which they call the *Tympany*.
Q, The lower branch of the bigger roote of the fift conjugation.
S, The ſixt paire of ſinewes.
T, The ſeventh paire.
V, The beginning of the ſpinall marrow out of the middle of the baſis of the braine.
X, The right ſinew of the midriffe cut off.
Y, A branch from the fift paire creeping to the top of the ſhoulder.
Z, The firſt nerve of the arme from whence there goeth a branch to the skin.
A, The ſecond nerve of the arme, and a branch there from into the firſt muſcle of the Cubite.
B, The third nerve of the arme and a branch going to the skin on the outſide.
C, A branch from the 3. nerve to the 2. muſcle of the Cubite.
D, The congreſſe or meeting of the ſecond nerve with the third.
E, A ſmall branch from the 3. nerve to the 2. muſcle of the *Radius*.
F, The diſtribution of the ſecond nerve into two branches.
* The leſſer branch of this diviſion lengthened out to the skin as far as the thumbe.
a, The place of the ſpinall marrow where it iſſueth out of the braine. 1, 2, 3, &c. Thirty paires of nerves ariſing from the ſpinall marrow are here noted by their Char. that is to ſay, 7. of the necke, 12, of the Cheſt, 5. of the loynes and 6, of the holy-bone.
b, The thicker branch of the 2, nerve divided into 2, parts.
c, Branches of the 3, nerve ſprinkled here and there.
d, Nerves from the third paire to the thumb, the forefinger and the middle finger.
ee, The 4, nerve of the arme. *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

from the 4. nerve to the outward skin of the Cubite. *i*, the upper branch of the diviſion of the 4. nerve. *kk*, A branch of *i*, reaching to the outſide of the hand. *ll*, the lower branch of the diviſion of the 4. nerve paſſing through the backſide of the Cubite. *m*, the 5. nerve of the arme. *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 ſurcle of the branch *o*, derived to the outſide of the hand and the fingers. *qq*, the 6, nerve of the arme 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 braine. *xx*, Nerves from the loynes led unto this place. *y*, A branch going to the teſticle here cut off. *z*, A nerve reaching to the 1. muſcle of the thigh. *ε*, the 1. nerve of the leg. *αβ*, A ſurcle of the former nerve derived to the skin at *α*, and inſerted into the muſcles at *β*. *γ*, the 2. nerve of the leg. *δδδ*, A nerve from the former, allowed unto the skin as low as to the foot, and paſſing along the inſide of the leg. *ι*, a branch of the 2. nerve running unto the muſcles. *ζ*, the 3 nerve of the leg. *η*, a ſurcle thereof unto the skin. *θ*, another ſurcle unto the muſcles. *ικ*, the 4. nerve of the leg. *λλ*, the *anterior* propagations of the nerves proceeding from the holybone. *μ*, 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. *οο*, nerves attaining to the heads of the muſcles of the foote. *ππ*, the diviſion of the 4. crurall nerve into two trunks. *ρ*, a branch from the trunke *π*, diſperſed into the outward skin of the leg. *τ*, a ſurcle of the trunke *π*, derived to the muſcles. *υ*, another ſurcle to the skin of the leg on the foreſide. , a branch of the truncke *ρ*, to the skin of the inſide of the leg and of the foot. *χ*, a ſurcle of the trunke *ρ*, to the hindmoſt skin of the leg. *ψ*, a branch of the whole trunke *ρ*, led along to the forward part of the leg and the foot. *ω*, the deſcent of the trunke *ρ*, into the foote.

it ſo upwards, as it ſhould incline neither foreward, nor backwards; but thus, that it cannot be moved neither to this nor that part unleſſe by the helpe and proper action of this, or that muſcle. Thus therefore if the Pectorall with his aſſociate performe their duty or action, the arme is alwayes moved forwards, as it is lifted up by the action of the *Deltoides* and his companion, and ſo of the reſt.

The originall and inſertion of the pectorall muſcle.

But to come to the originall and inſertion of theſe muſcles; the one of theſe two which move the arme forwards called by reaſon of his originall, the Pectorall, ariſing from more than halfe of the Collar bone, and almoſt all the *Sternon* and the 6, 7. and 8, Rib, goes up and faſtens it ſelfe to the *Coracoides*, by a membrane or a membranous tendon ſufficiently ſtrong (for which cauſe it is ſaid to be common to the ſhoulder & arme) and it goes into the arme betweene 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 *Sternon*, 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 alwayes it drawes the arme forwards, whether it be moved upwards, downwards, or to the Breſt; the other which is his companion deſcends from the whole lip or brow of the ſimous or hollow part of the Blade, which it fills in the forepart of the arme neere the head thereof. For the two *Levatores*, or the Lifters up of the arme, the firſt named

The *Deltoides*

Deltoides deſcends from almoſt halfe the Clavicle, the proceſſe *Acromion* and all the ſpine of the ſhoulder-blade into the foreſide of the arme the bredth of foure fingers below the joynt. 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 alwayes lifts and heaves the arme upwards. The other which is his aſſociate deſcends from the gibbous part of the Shoulder-blade conteined betweene the upper rib therof & the ſpine between

The *Epomis*, or *Scapularis*.

the proceſſes *Acromion* and *Coracoides*, to the neck of the arme; and this we will call the *Epomis* or *Scapularis*, that is, the ſhoulder Muſcle. But the firſt and larger of the two

muſcles,

muſcles, which draw the arme backwards, ariſes from the greateſt part of the utter lip of the gibbous part of the ſhoulder-blade, which is under the ſpine therof, & lying upon the blade it ſelf, it goes into the hind part of the arme above the neck thereof. The other which is cõtiguous to it & his partner in working, but leſſer, paſſes from the upper and exteriour part of the lower rib of the ſhoulder-blade, and thence as it were in ſome ſort extending it ſelf upon the gibbous part therof neere unto that rib, it goes into the arme. This muſcle ſeemes to be the ſame with the former, being fleſhy without even above the top of the ſhoulder. One & the leſſer of theſe two which draw downwards, enters out from the ſtreight line of the lower Rib of the blade, & goes into the lower part of the arme about the neck therof. The other called the *Latiſſimus* or broadeſt, aſcends from the ſpines of the holy-bone, of the Loynes, & often alſo from the nine lower of the Cheſt, by the lower corner of the ſhoulder-blade into which it is inſerted by a membranous tendon, as alſo it is into the inner part of the arme neere unto the necke by another ſtrong tendon; wherupon this muſcle is called a common muſcle of the ſhoulder and arme. But when this muſcle happens to be wounded, the arme cannot eaſily be ſtretched forth, or lifted up.

CHAP. XXVI.

The Deſcription of the bones of the Cubit and the muſcles moving them.

AFter theſe muſcles, follow thoſe which bend & 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 deliniate the bones themſelves. But verily leſt this doubtful word cubit ſhould cauſe obſcurity, firſt we muſt note, that it hath a threefold ſignificatiõ; for ofttimes it is uſed for althat part of the hand which lies between the arme & wreſt, oft times for the lower bone of this part, ſomtimes for the upper part of this bone which is turned within the Orbe or Cavity of the arme (nio otherwiſe than a cord in the wheele of a Pulley) and this is called the *Olecranon*. Here truly we uſe this word Cubit in the firſt ſignification. Wherfore we ſay the cubite is compoſed of two bones, the one of which we call the *Radius* or Wand, or the leſſer *Focile* of the Arme; the other we properly call the Cubit or Ell. Theſe two bones ſticke together at their ends being firmely bound together by ſtrong Ligaments; but the middle parts of them are a prety way diſtant from each other, & chiefly towards their lower ends, for the better ſcituation and paſſage of the muſcles and veſſells from the inner ſide, to the exteriour, as ſhall be ſhewed in fit place. The wand hath two *Epiphyſes* or Appendices, the one at the upper end, the other at the lower. The upper is round & hollowed on the ſurface like a baſon, it receives the fore proceſſe of the bone of the arme, bound to the ſame by ſtrong ligaments, deſcending as wel from that proceſſe of the arme, as the *Olecranon* into the circumjacent parts of this appendix of the VVand. This connexion is made for this uſe, that we may turne our hand upwards and downwards by the Cubit turned and twined about this proceſſe. But the lower appendix of this wand is hollowed on the inſide that ſo it might more commodiouſly receive the bones of the wreſt, 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, wherby to receive the muſcle *Biceps*, beſides on the outſide of the middle therof it is ſomewhat gibbous and round, ſo to become more ſafe from the injuries of externall bodies; but it is hollowed, or bended on the inſide for the better taking or holding any thing in the hand. But that ſide which lyes next to the Ell is flatted for the fitter originall and ſeat of the muſcles; laſtly it is ſeated upon the bone of the Cubit, or Ell, juſt againſt the thumb. But the Ell, or bone of the cubit properly & particularly ſo called, hath in like maner two appendices, the one above, the other beneath. The upper which alſo is the greater, is fitted to the Orbe of the arme, in which it goes to & again for the extenſiõ & bending of the arme, no otherwiſe than a rope runs in a pulley but that it turnes not abſolutly & perfectly round, which is cauſed by the two proceſſes of unequal bigneſſe, the which are therfore ſtaied in the holes or cavities of the bone of

What is meant by the Cubit.

What the *Olecranon* is. The 2 bones of the Cubit.

The two Appendices of the wande.

The figure and ſite of the wande.

The 2 Appendices of the bone of the Cubit.

the arme, the greater proceſſe which we called *Olecranon* is letted by the exterior hole that ſo the extenſion of the arme can be no further, but the leſſer proceſſe by the inner hole makes the bending therof the leſſe perfect. The Compoſure of theſe bones is by *Ginglymos*, & it is ſtrengthened not onely by common Ligaments comming from the muſcles, which move the bones themſelves, but alſo by proper Ligaments deſcending from the proceſſes of the arme & 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 wreſt, but the outſide is round & 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 arme, but ſlenderer towards the wreſt. And beſides in the thicker part therof it is hollowed or bended towards the inſide, & in the ſame place is gibbous or bunching forth on the out ſide; but it is round & ſtraight, unleſſe on that ſide which lyes next the wand, for the reſt, it is hollow & 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 arme might be the better & more eaſily moved; becauſe the motion by which the arme is extēded & bēded is according to a right line, but that by which the inſide of the hand is turned upwards & downwards, is performed obliquely & circularly. Wherfore it was expedient that the wand ſhould be oblique, & the cubit ſtreight for the cubit-bone is appointed for to extend & bend the arme; but the wand to performe the wheeling & turning about therof, & this is the cauſe that it was fitting ther ſhould be a different connexion of theſe bones with the arme. Theſe things were fitting to be ſpoken concerning the nature of theſe bones, that in the cure of fractures we may worke the more ſafely & happily, taking indication from that which is agreeable to nature: wherfore now it remaines that we come to the deſcription of the muſcles which are ſeated in the arme, the cubit-bone, or Ell. Theſe are 4, in number, two extending it, & two bending it. The firſt of the Benders is called *Biceps*, by reaſon of its two heads; the one wherof deſcends from the *Coracoides*, that other from the lip of the cavity of the ſhoulder-blade by the fiſſure or clift of the head of the bone of the arme. Theſe two heads under the necke of this arme becoming fleſhy, are firmely united at the belly & midſt of the arme, & thus united are at length implanted by a ſtrong tendon to the inner protuberation of the wand. The other is called the *Brachiæus*, by reaſon of the ſtraite coherence therof with the bone of the arme; this faſtened under the *Biceps* deſcends obliquely on the backe and upper part of the bone of the arme 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 Arme goes thither (faſtened and as it were alwayes moſt ſtraitly joyned with his fellow muſcle, ſpecially nere the Cubite) where you ſhall preſently heare. The other termed the *Brevis* or ſhort Muſcle, being the companion of the long, deſcends on the hinde part of the necke of the bone of the Arme, 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 *Olecranum*, ſo by mutuall aſſiſtance to extend the Cubite.

The figure of the Cubit bone or Ell.

The muſcles moving the Cubite.

The *Biceps*, or 2 headed muſcle.

The *Brachiæus*.

The *Longus*.

The *Brevis*.

Chap. XXVII.

The Deſcription of the Bones of the Wreſt, Afterwreſt and fingers.

What the Hand properly ſo called is.

WE ſaid before that the Hand taken more particularly and properly, is divided into the Wreſt, afterwreſt & fingers, & that the hand in this ſignification is bounded by the ends of the bones of the cubit and fingers. All the parts of the wreſt, which it hath cōmon with the afterwreſt, have bin already alſo plentifully explaned, this only remaines to be noted, that the skin aſwell of the hands as of the feete, is of a middle nature betweene pure fleſh and pure skin, no otherwiſe than that which covers the forehead, but that this which covers the palmes of the hands & ſoles of the feet is unmoveable; But it is moſt thicke, eſpecially on the feete, leſt it ſhould be eaſily offended by continuall going. Beſides the common parts, the wreſt is compoſed of eight ſmall bones mutually knit together in

a certaine order, and by *Diarthrosis* with the two bones of the Cubite, but mutually and amongst themselves by *Synarthrosis*, by interposition of Gristles and Ligaments aswell common, that is, comming from the muscles, as proper, descending alwayes from the upper to the lower. But these same bones are some lesse than othersome, 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 rankes. The first Ranke containes onely three, but the second five. The three of the first Ranke ar thus arayed, or placed, that one of them may receive the Appendix *Styloides* of the Cubite; 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 susteine the foure bones of the afterwrest & are knit to the same by *Synarthrosis*, after which manner of connexion they are joyned to the bones of the first ranke; the fourth sustaines the first bone of the Thumbe to which also it is coarticulate by *Synarthrosis*; the fift and last is seated on the inside against the Ell, cheifly above that bone of the first order, which receives the Appendix *Styloides* of the Cubite, this is the least and weakest of them all by reason of its gristlely substance, which makes the Ring with certaine Ligaments running from one of the inner sides of the wrest to the other.

What the *Annulus* or Ring is.

This Ring is placed there as well for the preservation of the sinewes, veines & Arteries passing under it (least when we leane upon our hand, or wrest, 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 & the cõtracting thẽselves might deform the hand by their passing forth of the Cavity of the wrest. For what attraction soever is made by strings, if it be free and not hindered, is according to a streight line.

The bones of the Afterwrest

Now follow the bones of the second part of the hand, or of the afterwrest. These are foure in number, gibbous without, but arched within, or hollow in the middle; for hence is the palme of the hand, or certainly the greater part thereof; their ends next the fingers are somewhat remote from each other, that in these clifts the Muscles *Interosses* might finde a place and seate. But these ends have each an Appendix, as you may perceive in the Sceleton of a childe. But you must note that by the first bone of the wrest or Afterwrest, we meane that which is in the forside of the hand, that is to say, that in the wrest which lies under the Thumbe, and that in the Afterwrest, which it seated under the forefinger, as these which keepe in order the fingers which exceed the rest in necessity and dignity.

The bones of the fingers.

After these follow the fifteene 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 thicke as in the arme and thigh. They are outwardly gibbous, but inwardly hollow and flat for the fitter seate of the Tendons ascending alongst the fingers on the inside even to the upper joynt. 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 & strong Ligament, which running overtwhart from one side to the other doth so straitly 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 Thumbe, foure are joyned together with so many bones of the afterwrest by *Synarthrosis*, for the bones of the afterwrest are moved by no manifest motion; the fift is knit to the second ranke of the bones of the wrest, therefore that bone cannot be attributed to the afterwrest, as some have written, seeing it hath manifest motion and is knit by *Diarthrosis*, but the bones of the afterwrest are onely fastened by *Synarthrosis*. For the second and third ranke 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 superficary cavity, as those of the first ranke, the bones of the afterwrest, and those of the second ranke, 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 & produce nailes thereof:

Whence the nailes are generated.

Wherefore the nailes are generated by the fibers of the Ligaments, and the excrement of the tendons which are terminated at the bottome of the nailes. Now remaine the *Oſſa Seſamoidea*, or ſeed-bones: theſe are 19. in number in the inner joynts of each of the hands, and as many in each foote, *viz.* two in the firſt joynt of the foure fingers and in the ſecond of the thumbe, and one in each of the reſt. For the inner ſide of the joynts, you may for themoſt part obſerve one in each of them; yet in the ſecond joynt of the thumbe there be two, above the two tendons, which are ſomewhat griſtlely.

The *Oſſa Seſamoidea*, or Seed-bones.

Their uſe.

They are made for this uſe, that they firme and ſtrengthen the joynts, 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 whirle-bone of the knee. They are called *Seſamoidea* from the reſemblance they have to the ſeed of *Seſamum*, which is ſomewhat long and flat.

The Figure of the bones of the Hand. The 1. *ſhewes the inſide of the right hand, and the* 2. *ſhewes the backe ſide of the ſame.*



The Charact. 1,2,3,4,5,6,7,8. ſhew the eight bones of the wreſt.

A,1,2, The firſt bone of the Afterwreſt lying under the thumbe.

I.II.III.IIII. The 4. other bones of the Afterwreſt annexed to the fingers.

B,*C*. The two bones of the thumbe.

D,*E*,*F*.1,2. The 3 bones of the forefinger, which are the ſame in the other fingers.

M,1,2. A litle bone ſometimes faſtened outwardly at the joynt of the eight bone of the wreſt.

N,1. A proceſſe of the eight bone of the wreſt, ſwelling out into the ball of the hand.

O,1. A proceſſe of the fift bone of the wreſt, from which a Ligament proceeds.

P,2. An Appendix of the bones of the wreſt, by which they are articulated to the afterwreſt.

Q,2. Another appendix which with its head entreth into the Cavity of the finger.

R,1,2. The ſpace betweene the bones of the afterwreſt.

S,1,2. Two litle ſeed-bones ſet on the inſide and outſide of the firſt joynt.

T,1. Two ſeed-bones in the firſt of the 4 fingers.

V.V.1. One ſeed-bone in the ſecond and third joynt of the fingers.

Chap. XXVIII.

Of the muſcles which ſeated in the Cubite move the Wand and with it the Hand.

The muſcles of the Cubite.

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 *Interoſſei*. Now the muſcles of the Cubit are 14, 7 externall, and 7 Internall; two of the ſeven externall doe primarily twine

twine or turne up the Wand, and secondarily or by accident turne the Palme of the hand upwards, wherupon they have called them *supinatores*, or turners up of the hand; two extend the wrest, wherupon they are named *Carpitensores* or the Wrest-extenders; two the fingers, whence they are stiled *Digitumtensores* or finger-stretchers; to cõclude, the seventh & 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 Arme above the processes therof, and is inserted by a round and strong tendon into the lower Appendix. The other descends obliquely from the outward and upper processe of the arme, and is inserted at the third part of the Wand by a membranous & fleshy tendon before and on the inside thereof. The upper of the two Extenders of the Wrest, descending above the wand from the externall and upper processe of the arme is inserted by two Tendons into the first and second bone of the After-wrest, which susteine the fore and middle fingers.

The *Supinatores*. The *Carpitensores*. The *Digitumtensores*. The *Obliquator externus*. The first of the *Supinatores*. The second. The upper of the *Carpitensores*.

The other & lower, descending from the same place as the former, above the Cubit is inserted into the fourth bone of the Afterwrest which beares up the litle finger. These muscles whilest they move alone, that is, each with his Antagonist, to wit the wrest-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 *Olecranum*, or bone of the Cubit, descends superficiarilie betweene the two bones of the Cubite even to the wrest, in which place it is divided into 4 tendons, which passing under the Ring seated there, end (each distinguished by a common ligament above the bone of the Afterwrest) in the last joynts of the foure fingers, adhering nevertheless firmely to the bones, which are above these joynts.

The lower. The greater of the *Digitumtensores*.

The other which is the lesser arising almost in the middle of the Wand, goes obliquely to the Thumbe into which it is inserted by two Tendons; the one thicker which is inserted into the root therof, and drawes it from the other fingers; the other slenderer continued even to the upper joynt therof, and by its action extending the Thumbe.

The lesser.

The seventh which is the *Abductor* or *Obliquator*, is seated at the hinde part of the hand, that is, towards the litle finger; we have often found this divided in two, yea verily we have found it trifide, or divided into 3. this yeare in three or 4 dead bodyes. one portion therof went to the lower side of the Ring-finger with two Tendons, the other in like manner to the middle and fore-fingers, and the third to the Thumbe.

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 Thumbe by reason of their common originall; and thus of 4. muscles they have made one divided into 7. 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 supplyes that defect by certaine productions of tendinous strings. But some also have written, that this muscle which we said hath 7. tendons, is onely a production of the deepe fore muscle, which should be sent through the space betweene the bones of the Cubit; yet I had rather make it a muscle of it selfe, by reason of its strait adhesion with the bones of the Arme and Wand. And let thus much suffice for the externall muscles of the Cubit, which you may comprehend in the number of seaven, as we have done; or in sixe, if you take away one of the 4. or in nine, if you had rather resolve it into 4. with *Galen*; or in eight, if you divide this muscle onely into three. For in very deed the *Abductor* or *Obliquator* of the Ring-finger is not often found in men.

Now must wee 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 joyned by the communion of their action turne downe or prone the Wand, and consequently the hand, so that the palme lookes towards the feet, whereupon they are called *Pronatores*.

The muscles of the inner part of the Cubit.

The 4. and 5. joyned also in affinity of action bend the Wrest, wherefore they are named *Carpiflexores*, Wrest benders. The sixth and seaventh are appointed to bend the first, second, and third joynts of the fingers, wherefore they are tearmed *Digi-*

The Palmaris

Digitumflexores, Fingerbenders. For their originall; the *Palmaris* the leaſt & uppermoſt of them all, deſcends fleſhy from the hinde proceſſe of the inner arme, & a litle after ending in a long and ſlender Tendon, it is ſpent in the skin of the Palme 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 onely for the fitter taking or comprehenſion of any thing, leſt that skin in holding ſhould be wrinckled & drawne 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, ſmoth, æquall, rough, ſoft, hard,

The Pronatores.

grear, litle, and ſuch other qualityes. Then follow the two *Pronatores*, of which one called the round, comes obliquely from the inner ſide of the hinde proceſſe of the arme almoſt to the middle of the Wand, to which it adheres by a mẽbranous & fleſhly tendon, even to the place appointed for inſertion. The other ſquare three or foure fingers broad, yet ſomwhat ſlender, ſeated within under all the muſcles which deſcend on the inſide to the wreſt or fingers, upon the ends of the bones of the Cubit, aſcends tranſverſe from below the Ell, unto the top of the VVande where it ends in a mem-

The Carpiflexores.

branous tendon. Both the *Carpiflexores*, or VVreſt-benders ariſe from the hinde, but inner proceſſe, and deſcende obliquely (the one more, or leſſe than the other) the one alongſt the Ell, but the other alongſt the wande; and that which deſcends alongſt the Ell, is inſerted into the eight bone of the wreſt, which we ſaid made part of the Ring; the other which followes the VVande is inſerted with his greater part into the bone of the wreſt, and with the reſt into the firſt bone of the After-wreſt which

The Digitum flexores.

ſuſteines the fore-finger.

Now remaine the *Digitumflexores*, or Fingerbenders, which becauſe they lye upon one another, the upper is called the *ſublimis*, but the lower the *Profundus*. The *Sublimis*

The Sublimis Digitumflexor.

or upper, ariſing from the inner part of the hinde proceſſe of the arme, and from the upper parts of the Ell and VVand deſcends betweene theſe two bones of the Cubit even to the wreſt and Ring; divided into 4. tendons it is inſerted into the ſecond dearticulation of the foure 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 certaine fibers cõming from it, which it ſends thither by the way in its paſſage. But theſe 4 tendons nere unto this their inſertion are divided into two, ſo to give paſſage and ad ſtrength to the tendons of the Deep muſcles deſcending into the third and laſt joint of

The profundus Digitum, flexor.

the fingers.

But this ſame *Profundus* or Deepe muſcle ariſing from the upper and inner parts of the Ell and Wand, deſcends betweene theſe two bones under the *Sublimis*, alſo undivided even to the wreſt, 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 joynt of the fingers, which they bend, by this their proper inſertion, as alſo the bones of the firſt and ſecond joynts of the fingers by the meanes of the common Ligament and fibrous productions which they beſtow upon them by the way. Beſides theſe forementioned there is ſeene alſo a certaine 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 Thumbe. The 4. other are called by reaſon of their figure the *Lumbrici* or wormy muſcles, or the

The Thenar.

Adductores, or Drawers of the foure fingers to the thumbe. Now the firſt called *Thenar*, thicker than the reſt, ariſes from all the bones of the Afterwreſt, taking its beginning from that bone which beares up the Ring finger, whence aſcending alongſt the Vitall line even to the end therof at the firſt bone of the After-wreſt ſuſteining the fore finger, & it is at length inſerted into the laſt joynt of the Thumbe by the longſt

fibers

fibers, but by the middle and ſhorteſt fibers almoſt into all the inner part of the firſt bones of two joynts, and by reaſon of this, the thumbe is drawne to the other fingers, and from them againe by his lower originall.

Some devide this muſcle into three, by reaſon of his diverſe actions, making the firſt to ariſe from the roote of the bone of the afterwreſt which beares up the ring finger; but the other from that middle bone of the afterwreſt which ſuſtaines 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 afterwreſt, and that bone of the wreſt which ſuſtaines it, and then with its longeſt fibers, it is inſerted into the ſecond joynt of the ring-finger, and by the ſhorteſt into the firſt, through which occaſion, as alſo in reſpect of its twofold action, ſome have devided it into two, that the one of them might leade it from the reſt, and the other might draw it to the thumbe. The Hypothenar.

The third the externall *Abductor* of the thumbe, deſcends from the firſt bone of the afterwreſt, into the firſt and ſecond joynt of the thumbe; wherefore ſome have devided it into two. The *Lumbrici*, or foure externall *Abductores* of the foure fingers ariſe from a membrane, inveſting and binding together the tendons of the *Digitum-flexores*, or fingerbenders, and at length on the ſides towards the thumbe even by a ſmall tendon, running even to the ſecond joynt of the foure fingers. The externall *Abductor* of the thumbe. The *Lumbrici*.

Now the *Interoſſes* of the afterwreſt, remaine to be ſpoken of; theſe are ſixe, two in each of the ſpaces betweene the fingers, one Internall, the other Externall, of which the Internall deſcending with oblique fibers from the ſide of the firſt bone of the afterwreſt, goes alſo into the ſides of the fingers, that ſo it may the more cloſely binde together the bones of the afterwreſt, whoſe action is manifeſted when wee thruſt our fingers into a ſtrait glove, or when we bend our hand. Some thinke that it helpes alſo the drawing of the fingers towards the thumbe. The Externall aſcends alſo by oblique fibers from the ſides of the ſecond bone of the afterwreſt, to the firſt joynts of the fingers, interſecting the internall which we now deſcribed after the manner of the letter X, for to extend the palme of the hand, and helpe the drawing away of the fingers from the thumbe. The *Interoſſes*.

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 arme; foure ſet to move the cubit in generall; ſeven ſeated on the outſide of the cubit, and as many on the inſide in the ſame cubite, moving the wand, and with it the hand; ſeven on the inſide of the hand: and laſtly, the ſixe *Interoſſes*. Some encreaſe this number, ſaying, there are nine on the externall part of the cubite, and eleven on the inſide of the hand. The number of the muſcles of the whole taken in generall.

Chap. XXX.

A Deſcription of the Legge taken in generall.

After the hand followes the deſcription of the legge. Wherefore to take away all doubtfulneſſe, we will firſt define the legge; then devide 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 Legge, is uſed two manner of wayes, that is, either generally and ſpecially, and ſpecially againe after two ſorts, that is, either abſolutely and ſimply ſo, or with an adjunct. It is ſimply taken for all that which is betweene the knee and the foote. But with an adjunct for the greater bone thereof. But the legge taken in generall, is the inſtrument of going, containing all whatſoever is from the hipps, to the very ends of the toes. It is devided into three great parts, that is to ſay, The diverſe acception of the legge.

The thigh. The legge or ſhanke. The foote.

ſay, the Thigh, the Legge, or Shanke, and the Foote. By the thigh we meane that which lies betweene the hippe and the knee. By the legge, properly ſo called, or ſhanke, that which is contained betweene the knee and the foote. By the foote all from thence to the ends of the toes.

The diviſion of the foote. The inſtep.

Againe, they devide the foote into three parts, that is, the *Tarſus* or Inſtep, the *Pedion* or top of the foote, and the *Digiti pedum*, or toes. We underſtand by the inſtep, that which is contained in the firſt ſeven bones, which anſwers in proportion to the wreſt of the hand. By the top of the foot, that which is comprehended in the five following bones, which is anſwerable to the afterwreſt That which remaines, we call the toes. But becauſe all theſe parts have other common and proper parts, we will onely follow the diſtribution of the veines, arteries, and nerves; ſeeing we have ſufficiently explained the reſt, when we deſcribed the containing parts of the body in generall.

The top of the foote. The toes.

Chap. XXXI.

A Deſcription of the Crurall veine.

The beginning of the Crurall veine. The two branches thereof.

THe Crurall veine begins then, when the hollow veine paſſing forth of the *Peritonæum*, and ſtretched to the hanch bone, and the ſides of the *Pubis* in the groine, is firſt divided into two large branches; the one of which deſcends on the inſide alongſt the bones of the whole legge, together with the artery and nerve; the other runnes downe outwardly and ſuperficially alongſt the legge, betweene the fat lying under the skinne, and the muſcles even to the foote, and is ſpent in the skinne thereof. This becauſe it is alwayes apparent and manifeſt, is called properly by the Greekes *Sapheia*, but commonly *Saphæna*.

By what veines, the matter cauſing thoſe tumors called *Bubones* flows downe.

This veine by the way preſently at its originall is devided into two branches, the one internall, the other externall; of which the internall is ſpent upon the *Bubones*, and other glandules of that place and the skinne, and by this branch come the defluxions called *Bubones*; the other branch is waiſted in the fore and utter skinne of the upper part of the thigh; then a little lower, that is, about the bredth of three or foure fingers, it is gathered againe into one branch made of many little ones, which is ſpent in the fore and hinde skinne of this thigh. Thirdly, a little below the middle of the thigh it is againe devided into two other branches, of which the one goes into the skinne on the fore ſide, and the other on the hinde ſide. Fourthly, it is diſtributed by two other ſmall ſpriggs into the skinne, on the fore and hinde part of the knee; which oftentimes are not found, eſpecially when the *Poplitea* or ham veine, is ſomewhat larger than ordinary. Fiftly, a little below the knee, it produces two other branches, lying upon each other in their paſſage out into the fore and hinde skinne of that place. You muſt note, that branch which runnes into the skinne of the hinde part, is carried by a certaine other ſprigge, which it produces, into a branch of the *Poplitea* paſſing forth of the two twin muſcles. Sixthly, in the bigger part of the calfe of the legge, it is divided into two other branches, which in like manner are diſtributed into the skinne, as well in the fore ſide as the backe ſide of the legge.

Where and in what diſeaſes, the *Sapheia* muſt be opened.

At length after many other diviſions, which for brevitie 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 midriffe which require bloud-letting) it is parted into two other branches, the leſſer of which deſcends to the heele, the other in many ſprigs is ſpent upon the skinne of all the upper and lower part of the foote and toes.

To what places, and by how manifold deviſions the internall branch of the crurall veine goes. *Iſchiadica vena.*

The ſecond branch of this Crurall veine, which wee ſaid deſcends within together with the artery and nerve, even into the foote, is devided; firſt peircing ſomewhat deepe in, it produces foure divarications; one internall deſcending below the originall of the *Sapheia* into the muſcle called *Obturator externus*, and into certaine other externall muſcles. The three other runne 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, all that branch

is,

is devided into two other branches, the one above, the other below, an artery alwayes 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 bestowes many branches uppon the fore and inner muscles of the thigh, descending to the ham, it produces the *Poplitea* or ham veine, 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 skinne of the calfe of the legge, another while upon the knee, otherwhiles encreased with branches of the *Sapheia*, it goes on the outside of the anckle to the skinne, on the upper side of the foote, and sometimes on the lower. *Musculo rum.* *Poplitea Vena.*

Thirdly, a little below the originall of the ham veine, and under the bending of the knee, it brings forth the *Suralis*, which is bestowed upon the muscle of the *Sura*, or calfe of the legge, and upon the skinne of the inner side thereof, and of the foote continued sometimes even to the inner part of the great toe. *Suralis venas.*

Fourthly, under the head of the hinder appendix of the bones of the legge, it produces betweene these two bones, another veine, which nourishing the fore muscle of the legge, is consumed upon the foote.

Fiftly, and lastly, it brings forth the *Ischiadica maior* or greater *Ischias*, which is devided into two branches of an unequall bigneſſe; the larger whereof, from his originall descending alongst the inner part of the legge bone, insinuates it selfe under the muscles of the calfe, betweene this and the heele, into the sole of the foote, upon which it is wasted, devided into ten small sprigs, two for each toe; the other being the lesser descending alongst the *Perone*, or shin-bone, is consumed betweene it and the heele, yet sometimes it is produced, not onely even to the muscle the *Abductor* of the toes, but also by five furcles, even to the fourth toe, and the sides of the middle toe. *Ischiadica maior.*

Chap. XXXII.

The Distribution of the Crurall Artery.

THe crurall artery arising from the same place whence the crurall veine proceeded, and descending with the internall crurall veine is distributed as followeth.

First, into the muscle of the thigh, which spreading it selfe through the muscles therof meets with the utmost *hypogastrica*, descending with the veine through the common hole of the huckle and share bone, and is joyned with it. *Arteria muscula.*

Secondly, when it arrives at the ham, betweene the *Condyles* or processes of the legge, it sends two branches into the knee.

Thirdly, a little after it produces another branch, which it sends to the exteriour muscles of the legge, and when it arrives at the middle of the legge, it is devided into two branches, betweene the twin muscles and *Soleus*, the one internall, the other externall; the internall, some furcles communicated by the way to the parts by which it passes, but specially to the joynt of the anckle, stretches it selfe over the sole of the foote, betweene the lower extremity thereof and heele, whither, when it arrives it is divaricated into five furcles, 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 foote, betweene the *fibula* and the heele, besides other sprigs, which it may spread by the way, it produces one without on the joynt of the anckle, another in the muscle, the *Abductor* of the toes, to the wrest and backe of the foote. But the remainder is devided into five portions, of which two are sent to the fourth, and two to the little toe, and one to the middle.

Chap. XXXIII.

Of the Nerves of the Loynes, Holy-bone and Thigh:

The five conjugations of the nerves of the loines.

THere ariſe five conjugations of nerves from the loines, devided into externall & internall branches; the externall are diſſeminated into the *Rachita* or chin muſcles, the muſcles *Semiſpinatus* and *Sacer* and the skinne lying over them. The internall are ſent into the oblique aſcendent and tranſverſe muſcle of the lower belly, into the *Peritonæum*, into the loine 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 loines, and oftentimes alſo of the ſecond,

Where the teſticles have their nerves.

but that ſometimes they ſend a ſmall ſprigge 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.

The conjugations of the nerves proceeding through the holybone.

Now from the holy-bone, proceede ſixe conjugations of nerves, reckoning that for the firſt which proceeds from the laſt *Vertebra* of the loines, and firſt of the holy-bone; and that the ſixte which proceeds from the loweſt part of the holy-bone, and the firſt of the rumpe; theſe conjugations of nerves are devided 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

An Anatomicall axiome.

and skinne thereof; for every nerve by the law of nature firſt and alwayes yeelds to the neighbouring parts, that which is needefull, 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 veines, arteries and nerves, thou muſt remember the ſite of each part and the courſe of the veſſels, and to conſider this, that the veines 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 farre from thence, but never by the taile, whereby it may eaſily be underſtood by what branch of each veine, artery, and nerve, each part may have nouriſhment, liſt, and ſenſe. The other internall branches of the foreſaid conjugations goe, eſpecially the foure uppermoſt united from their originall with the three lowermoſt of the loines, into all the legge, as you ſhall preſently heare. 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 necke of the bladder in men, but in women upon the necke of the wombe and bladder.

For theſe parts admit another in their bottome from the coſtall nerve, being of the ſixth conjugation of the braine; theſe thus conſidered, let us come to the nerves of the thigh, which (as we ſaid) from their firſt original, as it were cõpacted and compoſed of the greater portion of the three inner and lower branches of the loines, and the foure upper of the holy-bone, are devided in the thigh into foure branches, of which the firſt and higher deſcending from above the *Peritonæum*, to the little *Trochanter*, is waſted upon the inward and ſuperficiary muſcles of the thigh, and the skin which covers them a little above the thigh.

The ſecond, deſcending with the crurall veine and artery by the groine, is devided into two branches like as the veine, the one internall, the other external, of which the internall deſcending with the veine and artery is ſent into the inner and deepe muſcles of the thigh ending above the knee. But the externall deſcending ſuperficially with the *Saphæa*, even into the foote, gives branches by the way to the skinne which covers it.

The third ſeated under theſe former, paſſing by the hole common to the ſhare and hanch-

hanch-bone, send s certaine branches to the groines, to the muſcles called *Obturatores*, to the *Tricipites*, and ſometimes to the muſcles of the yard, and it ends at the midſt of the thigh.

The fourth, which is the th ickeſt, ſolideſt, and hardeſt of all the nerves in the body, deſcending wholely from the produ ctions of the holy-bone, and deſcending outwardly betw eene the lower part of the ſame bone, and the *Os Ilium*, or Hanch-bone to the thigh, beſtowes certaine ſprigges to the hinde muſcles thereof proceeding from the proturberation of the *Iſchium* or huckle-bone, and in like ſort it gives otherſome to the skinne of the buttocks, and alſo to the skinne covering the forementioned muſcles.

A little after, it is parted into two branches deſcending undevided even to the bending of the knee, they both are communicated by diverſe ſurcles of the muſcles of the legge; yet ſo as the leſſer produces another branch from the reſt of the portion thereof deſcending on the fore part of the legge, alongſt the ſhin-bone unto the top of the foote, where it is devided into tenne ſurcles ſcarſe 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 hinde part of the legge into the ſole of the foote, caſts its ſelfe with the veines and arteries betweene the heele and legge bone; where firſt devided 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. XXXIIII.

Of the proper parts of the Thigh.

Having explaned the common parts of the legge in generall; now wee 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 bee 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 anteriour, and the third the middle, and after a manner the poſteriour. The upper by a particular name is called the *Os Ilium*, the hanch-bone, and it is the largeſt and biggeſt, having a griſtlely appendix in the compaſſe thereof, even to the connexion it hath with the other neighbouring bones, whoſe upper part we terme the right line thereof; but the *baſis*, which is adjoyned to it by *Simphyſis*, we call the lippe or brow therof, becauſe it ſtands both ſomewhat out and in, after the manner of the brow. But that which lies betweene the *baſis* and ſtraight line we name the ribbe; 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 wee called the middle, and after ſome ſort the poſteriour; 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 Greekes call *Cotyle*, the Latines *Acetabulum*, and it is ended by the ſide of the hole common to it, and the ſhare-bone; this middle, and in ſome ſort poſteriour bone is called properly and particularly the *Os Iſchij*, or huckle-bone, and containes nothing elſe but the forementioned cavitie, but that on the hinde and lower part thereof, it brings forth a proceſſe, which adjoynes it ſelfe to the ſhare bone at the lower part of the common hole, in which place it appeares very rough and unequall, and it is called the tuberoſitie of the huckle-bone, at whoſe extremity alſo it brings forth a little head ſomewhat reſembling the proceſſe of

Of how many bones the *Oſſa Ilium* conſiſt. What the *Os Ilium* ſtrictly taken is.

What the line, lippe, brow, and rib, of the *Os Ilium* are.

The *Os Iſchium*, or huckle-bone.

The Os pubis, or ſhare-bone.

of the lower jaw called *Corone*. The third bone named *Os pubis* or the ſhare-bone, ſtretches it ſelfe even to the higheſt part of the *peſten*, 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 travell, yet hitherto I can finde no certainety thereof.

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 ſelfe.

D 1, 2, 3, the necke of the thigh.

E, *F*, the two lower heads of the thigh.

G, 1, 2, The conjunction of the lower appendix.

H, 1, 12, 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 foote doth proceede.

L 2, Another part from whence the ſecond and firſt muſcles ariſe.

M 2, Another part to which the Tendon of the fift muſcle of the thigh is infixed.

N 1, 2, A ſinus of the outward ſide of the head for the fourth muſcle of the legge.

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 proceſſe of the thigh, and betwixt *Q* and *D* is the ſinus. *R* 1, 2, the union of the proceſſe with the thigh. *S S* 2, a rough line from the impreſſion of the externall proceſſes. *T* 1, the anterior impreſſion of the internall proceſſes. *ß*, betwixt *T* and *V* another impreſſion higher than the former. *V* 1, 2, the fourth impreſſion in the toppe of the proceſſe. *X* 3. Foure *X*, ſhew the foure *appendices* of the thigh. *Y* 3, Three *Y*, ſhew the three heads of the thigh. *Z Z* 3, Two proceſſes of the thigh. *a* 1, the interior proceſſe of the thigh. *b* 1, the conjunction of the proceſſe with the thigh. *c c* 2, a line deſcending obliquely from the inner proceſſe. *d d* 2, a line running through the length of the thigh. *e* 2, the largeneſſe of the thigh in this part. *f* 1, a roughneſſe from which the eight muſcle iſſueth. *g*, *h* 5, a knub 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 roughneſſe. *m* 4, the foreſide of the pattell or whirle-bone rough and unequall.

You

You may perceive a manifeſt ſeparation of theſe three bones in the *Scelcton* of a child; for in thoſe who are of more yeares, the griſtles which runne betweene theſe connexions turne into bones.

Now followes the thigh-bone, the biggeſt of all the bones of the body; it is round, and ſo bended, that it is gibbous on the exteriour and fore part thereof, that ſo it might be the ſafer from externall injuries; but on the hinde and inner part, it is hollow or ſimous, like to the backe of an Aſſe, whereby the muſcles might have a more commodious originall and inſertion. The deſcript of the thigh-bone.

That ſimous part a little below the midſt thereof, is devided into two lines, the one whereof goes to the internall tuberoſitie, the other to the externall of the lower appendix of the ſame thigh. Theſe are chiefely to be obſerved, becauſe the oblique fibers of the vaſte muſcles thence take their originall.

Beſides, this bone hath two appendices in the ends thereof, as eaſily appeares in a childs thigh; the upper appendix, makes the round head of the thigh it ſelfe, which (as every other appendix) ſeated upon a long necke, is received in the cavitie of the hanch-bone by *Enarthroſis*; it is ſtaied and faſtened there by two ſorts of ligaments, of which the one is common, proceeding from the muſcles, which deſcend from above, about the necke thereof; the other is proper, which is twofold, that is, one membranous and broad, proceeding from the whole cavity of the orbe, or cuppe, deſcending about all the head of the thigh, above the necke thereof; the other thicke and round, deſcending from the ſecond cavity of the *Cotyle* it ſelfe, which is extended, even to the common hole at the top of the head thereof. The two appendices of the thigh-bone.

Beſides, under this head, that bone hath two proceſſes, the one great and thicke, the other little and ſhort.

The greater ſeated in the hinde part, is called the great *Trochanter*; the leſſer ſituate in the inner part, is named the little *Trochanter*. The two proceſſes of the thigh-bone make the two *Trochanters*.

But you muſt note, that the great *Trochanter*, on the higher and hinde part thereof, which lookes towards the head of this bone, makes a certaine ſmall *ſinus* or boſome, into which the twin muſcles and others, whereof we ſhall hereafter ſpeake, are implanted; we muſt alſo conſider the multitude of holes encompaſſing this necke, betweene the head and the two *Trochanters*, which yeeld a paſſage to the veſſels, that is, the veines, arteries, and nerves, into the marrow of the bone it ſelfe, whence the marrow it ſelfe becomes partaker of ſenſe, eſpecially on that part which is covered with a coate, and the bone lives and is nouriſhed. Whence the marrow becomes partaker of ſenſe.

The other Appendix of the thigh, that is, the lower, is the greateſt and thickeſt, riſing, as it were with two heads, which are devided by two cavities, the one ſuperficiarie and on the fore ſide, whereby it receives the whirle-bone of the knee; the other deepe, and on the backe part, by which it receives the griſtlely and as it were bony ligaments, proceeding from the eminencie which is ſeene betweene the two cavities of the upper appendix of the bone of the legge, which *Hippocrates*, *lib. de fracturis*, calls in his tongue *Diaphyſis*.

CHAP. XXXV.

Of the muſcles moving the thigh.

THe muſcles of the thigh are juſt foureteene 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 heele inwards, as when wee croſſe our legges; 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. Their number.

Foure of theſe are called *Gemini* or Twins, by reaſon of the ſimilitude of their thickneſſe, originall inſertion and action; the two other are called *Obturatores*, becauſe they ſtop the hole which is common to the ſhare and backe-bones.

The two *flexores*.

Now one of the two *Flexores*, being round, deſcends on the inſide with fibers of an unequall length from all the tranſverſe proceſſes of the loines, above the hinde commiſſure of the haunch and ſhare-bones, and is inſerted into the little *Trochanter*; the other broader and larger from the originall paſſes forth of the whole lippe, and inner brow of the hanch-bone, and filling the inner cavity thereof, is inſerted above the fore part of the head of the thigh, into the little *Trochanter* by a thicke tendon, which it with the fellow muſcle lately deſcribed, produces, even from the fleſhy part thereof, wherefore you neede to take no great paines 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 rumpe, the holy-bone, and more than halfe of the exteriour and hinder lippe of the hanch-bone, is inſerted by oblique fibers, ſome foure fingers breadth from the great *Trochanter* at the right line, which we ſaid, reſembled an Aſſes backe.

The ſecond, which is the middle in bigneſſe and ſite, deſcends from the reſt of the lippe, and from the fore and outward ribbe of the hanch-bone, and above the midſt of the bone, is inſerted into the upper part of the great *Trochanter* by a triangular inſertion above the upper and exteriour part thereof.

The third being leſſer, ſhorter and thinner, lying hidde under theſe former, proceeds from the middle of the externall ſurface of the hanch-bone, and then is inſerted into the greater part of the right line of the great *Trochanter*.

Theſe three muſcles have a great and large originall, but a narrow inſertion, as it were by oblique fibers.

Three *Intrò moventes*.

Then follow thoſe three muſcles which move the thighes inwards, ſtraiten and croſſe them, ſo that the knee ſtands forwards or outwards, but the heele is drawne inwards, as you may underſtand by their inſertion, although ſome thinke otherwiſe. But theſe three muſcles by their originall, partly fleſhy, and partly membranous, ariſe from the upper and fore part of the circumference of the ſhare-bone, and thence are inſerted into the hinde line of the huckle-bone, ſome higher than otherſome; for the leſſer and ſhorter ſtayes at the roots of the little *Trochanter*, the middle deſcends a little deeper, the 3. 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 inſerted into the hinder line of the huckle-bone, whileſt they alone performe their action, and draw the thighs together, they will turne them outwards, juſt ſo as when we put them acroſſe, but they will not draw one heele to another, and put the heele outwards, for ſuch like motion is performed by the inner Vaſte muſcle of the thigh, moving the legge. Now follow the ſixe which move the buttocks.

The movers of the buttocks.

The firſt, and higher of the *Quadrigemini*, or the foure twin muſcles, paſſes forth of the commiſſure of the holy-bone, with the bone of the rumpe, or rather from the loweſt extreme of the holy-bone, and thence it is inſerted into the cavity of the great *Trochanter* by a tendon of a ſufficient largeneſſe.

The ſecond proceeding from the hollow part or fiſſure, which is betweene the extremity of the huckle-bone, and the tuberoſitie, 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, betweene 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 exteriour protuberancie of the huckle-bone, and thence is inſerted into the great *Trochanter*, and theſe foure muſcles lie hid under the thicke 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*.

The two *Obturatores* remaine to be ſpoken of, that is, the internall and externall, both which ariſe from the circuite and circumference of the hole which they ſtoppe, which as wee ſaid is common to the ſhare and huckle-

bone,

bone, but the internall ascends to the exteriour roote of the great *Trochanter* by the middle fissure betweene the upper part of the protuberancy of the hucklebone, and the spine which stands up in the hinder basis of the hanch-bone.

But the externall proceedes from the exteriour cavity, and the middle space betweene the tuberosity of the huckle-bone and cavity thereof, and is inserted in the lower part into the cavity of the great *Trochanter*, together with the *Quadrigemini*.

If you would plainely see the exteriour *Obturator*, you must either cut off the beginning of the three-headed muscle, or handsomely pluck it away, and then extend it, and turne it up; The internall is easily discerned when the bladder is taken away.

Chap. XXXVI.

Of the bones of the Legge, or Shanke.

THose which would describe the muscles of the legge, ought first to describe the bones thereof, beginning at the *Rotula*, or whirle-bone of the knee. What the *Patella*, or whirle bone of the knee is.

This bone is gristlely on the outside, and round in compasse, 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 joynt of the knee, and fitted within the anteriour cavity of the two *appendices* of the thigh, and the upper and foremost of the legge.

The use thereof is to strengthen the joynt of the knee, and to hold the legge at his due extent, so that it may not be bended so farre forwards, as it is backewards. The use thereof.

The bones of the legge are two, the one thicker, called by the particular and proper name, the *Os Tibiæ* or legge-bone; the other which is lesser, is termed *Perone*, or *Fibula*, but commonly the lesser *focile*, (and in English it may be termed the shinbone.) 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 legge hath. The legge-bone.

The bigger seated on the upper part of the bone, and conjoyned to it by *Symphysis*, makes two superficiall and side cavities disjoyned 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 betweene the two protuberances thereof.

This joynt is strengthened, not onely 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 internall part of that connexion; the third which we, out of *Hippocrates*, called *Diaphysis*, from the distance or space betweene them. What *Diaphysis* is. The other processe of the legge-bone, which we called the lesse, seated in the lower part thereof, makes as it were a double cavitie, whereby it receives the *Astragalus* or Pasterne bone; but on the inside it makes the anckle, as the *Perone* makes it without: betweene these ancles the *Astragalus* is received on the sides, and turned as the nut in a Crosse-bow, as often as there is neede to bend or extend the foote. Besides, this same leg-bone, being triangular hath three eminencies made in the shape of an Asses back; the sharper descends alongst the fore part, called by the Greekes *Anticnemion*; the second resides on the inner part, and the third on the outer; all these must be diligently observed, and chiefely, that on the fore part; because it is as a guide and rule to a Chirurgion in the well setting of a broken legge. The *Perone*, or shinne-bone, is seated, as it were, on the outside, and as behinde the legge-bone; it hath also two *appendixes* hollow on the inside, but gibbous on the out. This bone by the upper of these is fastened and inserted under the inner, and in some sort the hinder *appendix* of the legge-bone, so that it is in no sort articulated with the thigh, but The *Perone* sive *Fibula*, or shinbone.

ſerves onely in ſtead of a leaning ſtocke. But by the lower, this ſame bone is not onely received in the loweſt part of the legge, or anckle, or paſterne bone, but alſo receives part thereof, which is joined on the ſame ſide with the heele, eſpecially then when we bend our foote outwards.

This bone is faſtened 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 arme. But this ſame *fibula* or ſhin-bone is alſo ttiangular, having three lines, of which one ſtands outwards, another on the foreſide, and the third behinde.

Chap. XXXVII.

Of the Muſcles of the Legges.

Their number. ALL the motions of the legge are performed by eleven muſcles, of which there be ſixe on the foreſide, and five on the hinde. But of theſe, ſome move the legge onely, as thoſe which take their originall from the bone of the thigh; others truly move the legge, but with the thigh, as theſe which ariſe above the thigh, that is, from the hanch, huckle, and ſhare-bones.

The *Longus*. The firſt of theſe on the foreſide, 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, into the fore and inner part of the legge under the knee; the action thereof is to croſſe the legges, but being firſt bended by the muſcles preſently to be treated of, it helpes alſo the three headed muſcle in the performance of the forementioned action.

The *Membranoſus*. The ſecond of theſe fore muſcles is termed the *membranoſus*, or membranous, becauſe it is wholy ſuch, unleſſe at the originall where it deſcends fleſhy from the roote 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 legge, which it moves outwards, as alſo the thigh with the foure 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 performe 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, betweene the two Vaſte muſcles) comes forth betweene the extremity of the appendix of the hanch-bone and cavity thereof, with a very ſtrong ligament, and then is inſerted into the fore part of the legge, paſſing over the midſt of the whirle-bone of the knee; it extends the legge, with the three following, but by accident it may helpe the bending of the thigh.

The two *Vaſti*. The fourth and fifth are called *Vaſti*, Vaſte or huge muſcles, by reaſon of their largeneſſe; 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 ſeeme to have a compound action from a right and oblique motion; the right helping for the extenſion of the legge, but the oblique to draw one knee to another, or to deſioyne 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 certaine places ſo mixed with the *Crureus* that they cannot be ſeparated unleſſe you violate the one of them; they goe into the legge (each on his ſide) above the whirle-bone of the knee alongſt the ſides of the right muſcle, with which it makes an unſeparable tendon, as you ſhall preſently heare. The ſixt and laſt of theſe fore muſcles called the *Crureus*, or Thigh-muſcle,

The *Crureus*.

(by

(by reason of the straite and firme adhesion, which it hath with the thigh-bone, which is by some called *Crus*) from the space betweene the two Trochanters descends under the right muscle, and two vaste muscles into the fore part of the thigh, even to the whirle-bone of the knee. But we must note that these foure last muscles make a common thicke and broad tendon with which they couer the *Patella*, or whirle-bone, and all the fore dearticulation of the knee, that they cannot be separated without tearing; wherefore we must thinke that this tendon, serves the knee for a ligament; now all these muscles performing their action together, extend the legge. The five hinde 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 legge. Of the internall, one passing frō the forementioned tuberositie, descends ligamentous even into the midst of the thigh, and then becomming 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 legge, which with its companion, it drawes inwardly, and brings to the other, which same thing it performes in the thigh, by the helpe of the three headed muscle.

The third, being the inner, or hinder, descends from the middle part of the share-bone, with a broad and slender ligament, and is inserted with a round tendon, into the inner part of the legge after the manner of the fore-mentioned.

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 legge, as we formerly said.

The *Biceps*, or two-headed muscle.

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 legge, at the joyning thereof to the shinne-bone; the action thereof is, to draw the legge, after a manner inwards.

The Popliteus or ham muscle.

CHAP. XXXVIII.

Of the Bones of the Foote.

THE Order of Anatomy requires, that we now prosecute the muscles moving the foote; but because we should in vaine deliver their insertion, the disposition and condition of the bones of the foote, not being first known, wherefore it first behoves us, to set forth their description. Therefore the bones of the foote are sixe and twenty in number, distinguished into three ranks, that is, the bones of the *Tarsus* or Instep, are seven; these of the *Pedium*, the afterwrest, or backe of the foote, five, and those of the toes foureteene. 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 legge, is called *Astragalus*, the pasterne, or ankle-bone. This hath three connexions, one, as we said before, in the upper and broader part with the bones of the legge, of which it is received; the other in the lower and hinde part, by which it receives the upper and inner processe of the bone of the heele; the third on the foreside by which it is received in the cavitie of the *Os naviculare* or *Scaphoides*, that is, the boate-like-bone. By the first connexion the foote is extended and bended; by the second it is moved with the heele to the sides: the two first connexions are by *Diarthrosis*, the last by *Synarthrosis*. But it is strengthened by strong and broade ligments, descending, and ascending from one bone into another; also they are strengthened by membranes, muscles and tendons, descending to the foote, above and under these joints. But this bone hath 3. processes, as 3. feete fastened to the bone of the heele; of which the first and least is under the outer ancle; the bigger (which *Galen* saith, makes a round head, fastened on a long necke) lookes towards the fore part of the foote, over against the great toe, and the next toe to it; the middlemost is at the heele, behinde the legge-bone.

Their number. The bones of the Instep.

The *Astragalus*, its three connexions, and their use.

Its three processes.

I paſſe over in ſilence many other things, as the ſmoothneſſe and aſperity or roughneſſe of the bone, which I had rather you ſhould learne by ocular inſpection, than by booke. The ſecond bone lying under this is called the *Calcaneum*, or heele-bone, being the biggeſt of all the bones of the foote, upon which all the body relies when we go. It hath two upper proceſſes, the one great, the other little. The great is received in the hinde and outer proceſſe of the *Aſtragalus*; the leſſer is received on the inſide in the 3. proceſſe of the ſame bone, which we ſaid had a round head faſtened to a long neck. Beſides, it is round on the hinde part, and much diſioyned from the legge-bone, but on the fore and longer part, it is knit by *Synarthroſis* to the Die-bone, whoſe lower and inner part, it ſeemes to receive; the ſuperficies thereof is wholy unequall, 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 foote 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 heele-bone, is very dangerous, becauſe of the preſſing and contuſion of the veſſels; as *Hippocrates* ſhewes. For the ligaments of this heele, or heele-bone they are ſuch, as theſe of the *Aſtragalus*, to wit, tendons, membranes and ligaments properly ſo called, comming from one bone to another. The third bone of the foote is named *Scapheides* or boate-like, from the reſemblance it hath to a boate, for on that part which lookes towards the poſterne bone, it is hollow; but on that part which is next the three *Innominata*, or nameleſſe bones (which it ſuſtaines, 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 boate. 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 ſterne of a ſkippe. 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 fore part it ſuſtaines the toes; which by a certaine proportion to the fingers of the hand, may be called the Ring and little toes, but it is ſuſtained on the hinde part, with the backe part of the heele; on the inner ſide it is joyned with the boat-like-bone, and that nameleſſe bone which ſuſtaines the middle toe; on the outſide, it produces a riſing like the backe of an Aſſe, which on the lower part is extended tranſverſly all the length thereof; at the two ſides of this eminency or riſing, there are two ſmall cavities, in the forme of a channell. The firſt and the greater of the *Oſſa innominata*, or nameleſſe bones, ſuſtaines 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 hinde part with the boate-like bone which they receive. Now we muſt come to the bones of the ſecond ranke, that is, of the *Pedium*, or backe of the foote; theſe are five in number, bearing up the five bone of the toes. They are ſomewhat gibbous on their 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 nameleſſe 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 remaine to be ſpoken of, which wee ſaid, make the toes, and they are foureteene, 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 convexe, but on the lower ſomewhat hollow, and plaine long wiſe, that the tendons which bend them, may paſſe more ſtraightly and ſafely without inclining to either ſide, even to their furtheſt joynts; although ſuch paſſages are much helped by the membranous and 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 bignes; that is, thicke at their beginning (where they receive the heads of the precedent bones,

The deſcription of the *Calcaneum* or *Calx*.

Why a fracture of the heele is ſo dangerous. *Hippocrates, Sect. 3. lib. de fracturis.*

The *Os Scapheides*, or boate-like bone.

The *Os Cuboides* or Die bone.

The *Oſſa innominata*, or nameleſſe bones.

The bones of the foote or *Pedium*.

The bones of the toes.

bones, upon which they move, as a doore 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 betwe them, through which occasion they are farre thicker at their ends, than in their p dle.

The Figure of the bones of the Foote properly so called.

Figure 1. *and* 2, *shew the bones of the right foote fastened 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 pasterne.*

Fig. 7,8,9. *sheweth the same sides of the Heele.*

Fig. 10, *and* 11. *sheweth the forward and backward side of the boate bone.*

Fig. 12, *and* 13, *shew the fore and back part of the wrest made of foure bones.*



ABCD 3,5,6. The protuberation of the *Talus* joyned to the appendix of the leg-bone, and of this protuberation foure 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* crusted over with a gristle, joyned to the inner ankle.

H 6, The outward *sinus* of the protuberation 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.

L M 5,6, two *sinus* in the hinder part of the *Talus*.

N 3,4,5,6, the necke of the *Talus* or pastern bone.

O 3,4,5,6. the head of the *Talus* going under the *sinus* of the boate bone.

P 7,8,9. the head of the bone of the heele crusted over with a gristle, and going under the *sinus* of the *Talus* or the pasterne bone.

Q, 4. a large *sinus* of the *Talus* receiving the head of the heele.

R 7,8,9. a *sinus* of the heele whereto the lower part of the head of the *Talus* is joyned.

S 4, the lower part of the head of the *Talus* going into the *sinus* of the heele.

TT 4, a sharpe *sinus* of the heele receiving a gristly ligament from the pasterne bone.

XY Z 2, the place of the heele.

YZ 2, Y 8, Z 9. a processe of the heele made for the production of muscles.

ab 7,

a b 7 8,9, from *a* to *b* the diſtance of the upper part of the heele. *c* 8,9. the hinder part of the heele. *d* 2,8, the inner ſide of the heele. *e* 8, the place where the tendons that run to the bottome of the foote are reflected. *f* 7 8, the utter ſide of the heele. *g* 1,7, 9, here the tendons of the 7 and 8 muſcles of the foote are ſtretched out. *h* 7. the forepart of the heele which is joyned to the paſterne bone. *i* 7, that part of the heele which is joyned to the Cube-bone. *k* 11, the *ſinus* of the Boat-bone receiving the head of the *Talus*. *lmn* 10, three ſurfaces of the Boat-bone lightly prominent, which are articulated to the bones of the wreſt. *op* 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 foote is led. *ſ t u* 13. the plain ſurfaces of the three inner bones of the wreſt whereby they are articulated to the Boat-bone. *x* 13, a ſhallow *ſinus* of the Cube-bone whereby it is articulated to the heele, $^{\alpha\beta}$ 12, the place of the Cube bone to which that bone of the Afterwreſt is joyned which ſupporteth the laſt Toe ſave one. $^{\gamma}$ 12, 13, the place of the Cube bone where the third bone of the wreſt is articulated. $^{\delta}$ 12, 13. that part of the Cube bone which reſpecteth the outſide of the foote. $^{\varepsilon}$ 12, 13. the ſurface of the Cube-bone in the upper part of the foote. $^{\zeta}$ 2, 13, that part of the Cube bone which regardeth the earth. $^{\eta}$ 2, a *ſinus* of the Cubebone at which the tendon of the ſeventh muſcle of the foot is reflected. B 13, a proceſſe of the third bone of the wreſt wherein to the fift muſcle of the foot is inſerted. $^{\iota}$ 12. the place of the inner bone of the wreſt to which that bone of the Afterwreſt which ſuſtaineth the great Toe is coupled. $^{\kappa}$ 12, the place of the ſecond bone of the wreſt whereto the bone of the Afterwreſt that ſupporteth the fore Toe is articulated. $^{\lambda}$ 12 the place of the third bone of the wreſt whereto that bone of the Afterwreſt which ſupporteth the middle toe is articulated. $^{\mu}$ 1, 2, a ſmall bone whereby that bone of the Afterwreſt which ſuſtaineth the little toe is joyned unto the Cubebone. $^{\nu}$ 1, 2 the diſtances betwixt the bones of the Afterwreſt. $^{\xi\xi}$ 1, 2, the heads of the bones of the Afterwreſt which enter into the boſomes of the toes. $^{\pi}$ 2, a proceſſe of the bone of the afterwreſt wherein the tendon of the ſeventh muſcle of the foote is implanted. $^{\rho}$ 2, a proceſſe of the Bone of the Afterwreſt, which ſuſtaineth the litle toe, which proceſſe receiveth the tendon of the eight muſcle of the foote. $^{\varsigma,\tau,\upsilon}$ 1, 2, the three bones of the foretoe. $^{\phi,\omega}$ 2, two ſeede bones placed under that bone of the afterwreſt which ſuſtaineth the great toe, * 2 under *X*, a ſeede bone ſet to the ſecond joynt of the great Toe. $^{\Gamma}$, 1, 2, the *Talus* or paſterne. $^{\Delta}$, 1, 2, the Heele. $^{\Theta}$, 1, 2, the Boat-bone. $^{\Lambda}$, $^{\Xi}$, 1, 2, the bones of the toes. $^{\Phi}$, ^{X}, 1, 2, two bones of the great toe I, II, III, IV, V, 1. the five bones of the afterwreſt.

The Ligaments by which their connexions are faſtened, 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 out ſide, but ſmooth and hollow on the inſide, ſeated betweene two cavities, encompaſſed by three riſings, of which two are on the ſides, and the third in the midſt of the extremity of the firſt bone of the *Pedium*, which chiefly beares up the great toe. To conclude, before we come to ſpeake of the muſcles, we muſt obſerve that the foote was made for two commodities. The firſt is to ſtay and beare the whole body when we ſtand, for which cauſe nature ſet not the great toe contrary to the other, as it placed the Thumbe on the hand. The other is for apprehenſion, or taking hold of, wherefore nature framed and made the foote and theſe moveable and joynted 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, & in other ſome plaine in a triangular figure, that ſo our feet may carry us over every ſoile, plaine mountanous, equall and unequall, through all parts of the world.

The Seed-bones of the foote.

The twofold uſe of the feete.

CHAP.

Chap. XXXIX.

Of the Muſcles moving the foote.

THe muſcles of the Legge moving the foote are abſolutely nine, three in the fore part and ſixe in the hinde. Two of the three fore muſcles bend the foote, when they joyntly performe their action, but when ſeverally, each drawes it to his ſide; the third chiefly extends the Toes, for other whiles it ſeemes by its ſlenderer and longer Tendon (which exceeds not that bone of the *Pedium* which ſuſteines the litle Toe) to helpe alſo to bend the foote. Their number.

The firſt is called *Peroneus*, becauſe it deſcends alongſt the bone *Perone*; the other the *Tibiaus anticus*, for that it deſcends along the *Os Tibia*, or bone of the Legge. The third from its action is called the *Digitumtenſor*, or Toe-ſtretcher. For their originall the *Peroneus* which ſeemes 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 hinde, as the ſuperficies ſhewes which paſſes betweene the fore and outward line of the ſaid bone; but after it arives at the lower and hinder appendix of the ſame bone, behind the outer Anckle it produces two tendons, which by the guidance of the Ligaments as well proper, as common, goe, the thicker under the ſole of the foote, ending in the Die-bone and that bone of the *Pedium* which ſuſteines the great Toe; the leſſer goes on the outſide to the Die-bone, & the laſt & leaſt bone of the *Pedium* which beares up the litle Toe, ſometimes a ſlender portion thereof is produced even to the ſide of the litle Toe, extending it and drawing it from the reſt. The *Tibiaus anticus* or Fore legge muſcle proceeding from the upper and outer appendix of the Leg-bone deſcends above the ſurface of the ſame bone, which is betweene 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 nameles 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 *Pedium*, ſo to extend the great Toe, drawing it inwards to the other foote. And this muſcle with the precedent bends the foote, if they both performe their parts at once; but if ſeverally, each drawes the foote towards his ſide. The third which is the *Digitumtenſor*, or Toe-ſtretcher, is two fold; the one takes its originall from the top of the Legge, and running alongſt the ſhin-bone and paſſing under the ring, carries it ſelfe into the foote, in which it ends by five tendons going to all the joynts of the Toes, and by a ſixth at that bone of the *Pedium* which ſuſteines the litle Toe, whereby (as wee formerly ſaid) it helpes the bending of the foote. The other deſcends into the midſt of the ſhin-bone, and ſomewhat faſtened 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 performe their function, as if they were more diſtinct muſcles. And wee muſt thinke the ſame of the reſt which have diſtinct Tendons preſently from their fleſhy part. *Muſculus Peroneus.* *Tibiaus anticus.* The Toe-ſtretcher is two-fold.

The ſixe hinde 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 palme 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 fift the *Tibiaus poſticus* or hindlegge Muſcle which deſcends alongſt the backe part of the leg-bone. The ſixth and laſt the *Digitumflexor* or Toe-bender, equivalent to the Deepe muſcle of the hand, ſome make but one muſcle of this and the *Tibiaus poſticus*, which produces three tendous; others had rather make three, as thus, that one ſhould be the *Tibiaus*, the other the bender of foure Toes, the third the bender of the great Toe. The 6 hinde muſcles. The 2 *Gemelli* or Twins muſcles.

Now for the two *Gemelli* or Twins, the one is internall, the other externall; the internall paſſes forth from the roots of the inner Condyle of the Thigh; but the externall

externall from the externall Condyle; and from this their originall preſently becomming fleſhy, eſpecially on the out ſide, they meet together a litle after in their fleſhy parts, and with the *ſoleus* they make the thicke and great Tendon at the midſt of the legge, which from thence is inſerted into the backe part of the heele; in this very Tendon breed painfull kibes. The action thereof is, to helpe our going by putting forth the foote, whileſt it drawes the Heele towards its originall.

In what place the kibes breed

The *Plantaris* the leaſt and ſlendereſt of them all, paſſes forth fleſhy from the outward head of the legge-bone, and from thence the ſpace of ſome foure fingers bredth it ends in a ſtrong and ſlender Tendon, which it ſends betweene the Twin and ſole muſcles to the ſole of the foot, there to produce a membrane which covers the ſole of the foote, and a muſcle equivalent to the upper bender of the Hand.

The *Plantaris*

The *Soleus*, or ſole muſcle the thickeſt of them all, and ſeated under the Twin muſcles, deſcends from the commiſſure of the legge and ſhin-bones, and about the midſt of the legge, after it hath mixed his tendon with that of the Twin muſcles, it runs into the foreſaid place that it may extend the foote for the foreſaid uſe,

The *Soleus*.

The *Tibiæus poſticus* deſcends from the hinder appendix of the legge and ſhinbones, and adhering, to them almoſt as fare 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 nameles bones ſo to helpe the oblique extenſion of the foote.

The *Tibiæus poſticus*.

The laſt being the *Digitum flexor* or Toe-bender is twofold, for one ariſes from the legge-bone, in that place where the *Poplitæus* ends, and inſerted into that ſame bone it goes even to the backſide of the inner ankle & from thence into the joynts of foure of the toes. The other drawes his originall from almoſt the middle of the ſhin-bone, and ſomewhat inſerted into it, it goes by the heele and paſterne bone to the great toe, mixed with the precedent; their action is to bend the firſt joynt 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 dearticulation of the Toes by their proper inſertion.

The *Digitum flexor* twofold.

Chap. XL.

Of the Muſcles moving the Toes of the feete.

Their number.

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 Paſterne, heele and Die bones below the externall Anckle, or the Ligament of theſe bones with the Legge-bone, and obliquely ſtretched to the top of the foote is parted into five ſmall tendons to the ſides of the five toes, ſo to draw them outwards towards its originall, whereupon it is called the *Abductor* of the Toes, and alſo *Pedioſus*, becauſe it is ſtretched over the *Pedium*, or backe of the foote.

The *Abductor* of the Toes, or *Pedioſus*.

The firſt of the ſeven of the lower ſide called the *flexor ſuperior* or upper bender, ariſes from the heele and ſtretched alongſt the foote under the ſtrong membrane, (which from the heele is ſtraitly faſtened to the extremity of the bones of the *Pedium* to ſtrengthen the parts conteined under it) is inſerted by foure Tendons, at the ſecond joints of the foure Toes which it bendes. Here you muſt note that neer the inſertion thereof, this muſcle divides it ſelfe, like that muſcle of the hand which is called *ſublimis*, that ſo it may give way to the Deepe, which (as we ſaid) deſcends alongſt the fingers, to which a certaine common membranous Ligament adjoynes it ſelfe, which involues and faſtens it to the bone all alongſt the lower part of the fingers, even to the laſt dearticulation.

The *Flexor ſuperior*.

The ſecond equivalent to that muſcle of the hand which is called *Thenar*, ſeated on the inner ſide of the foote, ariſes from the inner and hollow part of the heele and paſterne bones and ends in the ſide, and inner part of the great Toe, which it drawes 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 heele and aſcending by the ſides of the foote it is in like manner inſerted into the ſide of the litle Toe, ſo to draw it from the reſt;

The muſcle equivalent to the *Thenar*.

to

to which ſame action a certaine fleſh contained under the ſole of the feete may ſerve, which is ſtretched even to theſe Toes, that alſo it may ſerve to hollow the foote. The foure *Lumbrici* or wormy muſcles follow next, which from the membrane of the Deep Toe-bender are inſerted into the inner & ſide part of the foure 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, remaine to be ſpoken of: Theſe are eight in number, foure above, and as many below, different in their originall, inſertion and action; for the upper becauſe they draw the foote outwards with the *pedioſus*, ariſe from the fore and inner part of that bone of the *pedium*, which beares up the litle Toe (and ſo alſo the reſt each in its order) and are inſerted into the outward & forepart of the following bone. The lower on the contrary paſſe from the fore and outer part of that bone of the *pedium*, which beares 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 foote as the outwards, or to flat the foote, as we ſaid of the *Interoſſes* of the hand.

The 4 Lumbrici.

The deſcription of the uppe and lower *Interoſſes*.

CHAP. XLI.

An Epitome or briefe 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 ſcull, 14 or 17. of the face, and 32 teeth; Of the bones of the ſcull there be 8 conteining and ſixe conteined; the

The bones of the Scull, 14.

This firſt ſheweth the forepart of the Sceleton of a man, &c.



The Declaration of theſe three figures put into one.

A 3. The Coronall Suture called in Greeke στεφανιαία.

B 2 3. The ſuture like the letter Λ called λαμβδοειδὴς.

C 2. The ſagittall Suture called ὀβελιαία.

D 2,3. The ſcale-like *Conjunction* called λεπιδοειδὴς.

α 2,3, *Os verticis*, or *ſyncipitis*, the bone of the *Sinciput*, called *Os* βρεγματικὸν.

β, 1,3. The forehead-bone, that is, μετωπαῖον.

γ, 2, 3. The bone of the Nowle or ἰνιακὸν.

δ, 2,3. The bones of the temples or κροταφῖται.

ε, 3. An appendix in the temple-bone like a Bodkin, σκολοειδὴς.

ζ 1,2,3. A proceſſe in the temple-bone like the teate of a dugge, called therefore *Mamillaris* & μαστοειδὴς

E, 2, 3. the wedge-bone, σφηνοειδὴς.

η, 3, the ſtony part of the Scull.

θ, 3, a proceſſe of the wedge-bone much like the wing of a Bat, and therefore called πτερυγοειδὴς.

F, 1,

The 2 and 3 Figures ſheweth the backſide of the Sceleton, and the lateral part of the Sceleton.



F, 1, 2, 3. the yoke-bone ζυγῶμα. G 1, 3. the lower jaw. I, K, L, M, N, 1, 2, 3. the backe or the ſpine, ῥαχὶς. From I to K, the Necke, τράχηλος. From K to L, the Rackebones of the Cheſt. From L to M, the rackebones of the Loynes. From M to N, the Holy-bone, ἱερὸν. N, the Rumpe bone, κόκκυξ. O, 1, 3. the breſt-bone, στέρνον. P, 1, 3. the Sword-like griſtle of the breſt, ξιφοειδὴς Char. 1, 2, 3, as farre as to 12. in all three Tables, ſhew the twelve ribs of the Cheſt πλευραὶ. Q 1, the clavicles or coller bones, κλεῖδες. R, 1, 2, 3 the ſhoulder-blade, ὠμοπλάτης. S, 1, 2, 3, the upper proceſſe of the ſhoulder-blade, or the top of the ſhoulder, called ἀκρωμίον. T, 1, 3, The lower proceſſe of the ſhoulder-blade: called ἀγκωνοειδὴς. S, 1, 2, the bone of the arme, called *Humerus* and βραχίων. T, V, 1, 2, 3, the Cubit πῆχυς. X, 1, 2, 3: the wand or the upper bone of the Cubit, called κερκὶς. Y, 1, 2, 3, the ell or lower bone of the Cubit, called πῆχυς, 3, the proceſſe of the Cubit, ὠλέκρανον. ξ, 13, the proceſſe like a bodkin or probe, called στυλοειδὴς. ZZ: 1, 2, 3, the wreſt καρπὸς. ΓΓ, 1, 3, the after-wreſt μετακάρπιον. ΔΔΔ. 1, the fingers δάκτυλοι. Θ, 1, 2, 3, the bones joyned 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*, λαγόνων. 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*, ἤβης. σ, 1, 2, 3, a griſtle going betweene the conjunction of the ſhare-bones. Λ, 1, 2, 3, the thigh, μηρὸς. τ, 1, 2, 3, the greater outward proceſſe of the thigh called *Rotator* τροχαντὴρ μέγας. υ, 1, 2, 3, his leſſer

lesser and inner processe. Ξ, 1,2,3, the whirlebone of the knee, *Patella Rotutula*, ἐπιμυλὶς. Π.Σ, 1,2,3, the leg, κνήμη, Φ, 1,2,3, the inner & greater bone of the leg σκελίμαν. Ψ, 1,2,3, the utter and smaller bone of the leg, called the *Brace-bone*, *Fibula*, περόνη. Θ,1,2,3, the processe of the Leg or the inner anckle called *Malleolus internus*. X, 1,2, the processe of the brace of the out-ward ankle, both of them are called in greeke, σφυρὸν. Ω, 1,2, 3, the bone called the cockal, *Talus*, *balista*, *Os* ἀστράγαλος, 2, the Heele *Calx*, πτέρνα. b, 1,3, the bone called *Os Naviculare*, ναυκληρικὸν, 1,2,3, the wrest of the foot called *Tarsus*, consisting of foure bones, πρῶτον, ε, ζ, 1,2,3, three inner bones of the wrest of the foot, called by some χαλκοῦν. g, 1,2,3, the utter bone of the wrest of the foot like a Dye, κυβοειδὲς. hh, 1,2,3, the afterwrest of the foote called *Pedium*, by some μετατάρσιον. ii, 1, 2, 3, the toes of the foote. k, 1,2,3, the seed bones of the foote, called *oscicula sesamina*, σησαμοειδῆ.

This figure sheweth the Sceleton of the bones & gristles of a woman, that it may appeare all her bones are in proportion lesser than the bones of a man. But in this figure onely those parts are marked with letters wherein a woman differeth from a man in her bones and gristles.



A, The sagittall suture descending into the nose, & dividing the fore head bone, which is sometimes found in women, very rarely in men, but alwayes in Infants.

BB, the Chest somewhat depressed before, because of the Paps.

CC, the coller bones not so much crooked as in men, nor intorted so much upward.

D, the brest-bone perforated sometimes with a hole much like the forme of a heart, through which veines do run outward, from the mammary veines 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 backe reflected, or bent backward above the loynes.

GG, the compasse of the hanch-bones running more outward, for the wombe 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 thicke 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 Rumpe or Coccyx, curved backeward to give way in the time of the birth. M, the thigh bones by reason of the largenesse of the foresaid cavity, have a greater distance betwixt them above, whence also it is that womens thighes are thicker than mens.

conteining are, the *Os frontis*, or Forehead bone, the Nowle-bone, the two bones of the *Synciput*, the two ſtony bones, the Wedgebone, and the Sive-like or ſpongy-bone. But the conteined are ſixe ſhut up in the cavity of the Eares, the Anvile, Hammer and ſtirrop.

The bones of the face 15.

For the bones of the face, there are ſix within or about the Orbe of the Eye, that is, on each ſide three; two bones of the Noſe, two leſſer law bones, and two bigger, which are alwayes in beaſts ſeene diſtinguiſhed by a manifeſt difference, but it is ſo rare in men, that I have not found it as yet; therefore theſe onely are diſtinguiſhed by manifeſt difference, two which conteine all the upper teeth, the two inner of the palate, the two of the lower law in children; And laſt of all the *Os Criſtæ*, whence the middle griſtle or partition of the noſe ariſe.

The teeth 32.

The two and thirty teeth are equally diſtributed in the upper and lower Iawes; and of theſe there be eight ſhearers, foure fanges, or Dog-teeth, and twenty Grinders.

The bone *Hyoides*

And there is another bone at the roote of the tongue called *Os Hyoides*, alwayes compoſed of three bones, ſometimes of foure.

The bones of the ſpine 34.

Now follow the bones of the Spine, or Back-bone, which are juſt foure and thirty, that is, ſeven of the necke, twelve of the Cheſt, five of the loines, ſix of the holy-bone; and foure of the rumpe: Beſides there are two bones of the throate, or Collar bones.

2 Collers bones.

The Ribs 24.

The bones of the *Sternon* 3.

The Ribbes are twenty foure, that is, fourteene true and ten baſtard ribs. The bones of the *Sternon* or Breaſt-bone moſt frequently three, other whiles ſeven, as ſometimes in young bodyes.

The bones of the whole arme 62.

Hence comming to the Armes there are reckoned 62, beginning with the ſhoulder-blade; as there are two ſhoulder-blades; two Arme bones; foure bones of the Cubite; that is, two Ell-bones and two Wands; ſixteene of the Wreſt, eight of the Afterwreſt, and thirty of the fingers: into this number alſo come the *Seſamoidea*, or ſeedbones, of which ſome are internall, & theſe alwayes twelve at the leaſt, although ſomtimes there may be more found, a great part of which rather merite the name of Griſtles, than bones; there are others externall if we beleeve *Sylvius*.

The bones of the whole leg, 66.

Now remaine the bones of the Leg, which (if we reckon the *Oſſa Ilium* on each ſide three, as in yong 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, foure of the leg, that is two leg-bones, and two ſhin-bones. Fourteen of the Inſtep, as two heele, two paſterne, two boat-like, two Die, & ſix nameleſſe bones. Ten of the *Pedium* or back of the foote, that is, five in each foot; & twenty eight of the Toes: & as many ſeed-bones in the feet, as the hands enjoy. But I have thought good to adde theſe figures for the better underſtanding of what hath beene ſpoken hereof.

Chap. XLII.

An Epitome of the names and kinds of compoſure of the bones:

What the *Sceletos* is.

Because it is as nececeſſary for a Chirurgion to know the manner of ſetting & 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, breifly to ſet downe, by what and how many meanes the bones are mutually knit and faſtened together. The univerſall compoſure and ſtructure of all the bones in a mans body is called, by the Greekes; *Sceletos*. But all theſe bones are compoſed after two ſorts, that is, by *Arthron*, an Articulation or joynt, and by *Symphyſis* a naturall uniting or joyning together. There are many other kinds of both 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* conteines under it *Enarthroſis*, *Arthrodia* & *Ginglymos*. Now *Enarthroſis* or Inarticulation is a kind of Dearticulation, in which a deep

The bones are compoſed two manner of wayes.

2 Sorts of Articulation.

What *Diarthroſis* and *Synarthroſis* are.

3. Sorts of *Diarthroſis*.

What *Enarthroſis* is.

Cavity

Cavity receives a thicke and long head, such a compositon hath the Thigh-bone with the Huckle-bone.

Arthrodia is when a lightly engraven civity admits a small and short head, such a connexion is that of the Arme-bone with the shoulder-blade; of the first *Vertebra* with the second. The Greekes have distinguished by proper names these two kinds of Cavities and heads; For they call the thicke and long head *Cephale*, that is, a Head absolutely; but the lesser they terme *Corone*, or *Coronon* which the Latines call *Capitulum*, a Litle-head. But they call a deepe Cavity *Cotyle*, and a superficiary 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 composure is in the Cubite and knee, that is in the connexion of the Thigh-bone.

What *Arthrodia*.

What *Cephale* is.
What *Corone* is.
What *Cotyle* is
What *Glene* is
What *Ginglymos*.

And thus much of Dearticulation and the three kinds thereof. *Synarthrosis* or Coarticulation, another kinde of juncture, hath also three kinds thereof (*Gal. lib. de Ossibus*) to wit, *Sutura*, *Gomphosis* and *Harmonia*.

3 Kinds of *Synarthrosis*.

Suture is a composition of the bones after the manner of sowing things together, example whereof appeares in the bones of the Scull. *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 Iawes. *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 joyned together.

What a Suture is.
What *Gomphosis* is.
What *Harmonia* is.

Hitherto we have spoken of the first construction of the bones by articulation and the kinds thereof; now it followes we treat of *Symphysis*.

What *Symphysis* is.

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 succesſe of time the bones of the lower Iaw 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 kinde of union the Greeks call *Synchondrosis*, after which manner the Share-bones grow together and also some *Appendices* in young bodyes; 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 certaine bones of the *Sternon* and Haunch.

Synchondrosis.

Syneurosis.

Thirdly, the bones grow into one by interposition of flesh, called in Greeke *Synsarcosis*; thus the flesh of the Gums fastens the teeth and makes them immoveable. But if some be lesse pleased with this division, by reason of the obscurities, in which it seemes to be involved, this following expression comes into my minde, which I was first admonished of by *Germain Cortin* Doctor of Physicke, which if you well observe it, is both blamelesse and more easie for your understanding.

The things signified by word Nerve.
Synsarcosis.

The bones, which as pillars ſuſteine the fabricke of the whole body, are either,

- Vnited mutually by *Symphyſis* or union; by which they are ſo conjoyned that there is no diſſimular, nor heterogeneous body, at leaſt which may be diſcerned, interpoſed between them. Such union appeares in the two bones of the lower Iaw at the Chin, in the bones of the *Sternon*, the Hanch with the Huckle-bones, and the Share-bones betweene themſelves; of this union there are no more kinds, for by this it cometh to paſſe, 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.
- or Conjoyned by that which they call *Arthrodia*, or Articulation, as when they ſo concur & are bound together, that ſome Heterogeneous ſubſtance may be noted betwixt them, but the bones thus cõpoſed are knit two manner of wayes, that is,
  - either more looſly as by *Diarthroſis*, that is a kind of Articulation not very ſtraite, as by which it might have opportunity to preforme diverſe motions: of this compoſure or Articulation of bones there are three kinds, as
    - *Enarthroſis*, when the head of a bone is wholy received in the cavity of another, & hid therein, as the Thigh-bone is joyned with the Huckle-bone.
    - *Arthrodia*, when in a lightly engraven & not much depreſſed cavity, the head of another bone is not wholy hid, but only received in part therof; ſo that unleſſe nature had otherwiſe provided a ſufficient receptacle for the head of this bone (as by the ligamẽts of the neighbouring Muſcles) it would otherwiſe have bin in perpetuall danger of diſlocation. Thus the Arme-bone is faſtened to the ſhoulder-blade.
    - *Gynglymos*, when the bones mutually receive each other, ſuch like compoſition hath the Cubit and Arme-bone.
  - or more ſtraitly, as by *ſynarthroſis*, whẽ the bones are more ſtraitly knit ſo that they can performe no motions in the body. Of this Articulation there are alſo 3, kinds, that is
    - *Gomphyſis*, as when one bone ſo receives another as a Pin is faſtened in the hole made by a peircer, thus the teeth are faſtened in the Iawes.
    - *Sutura*, like a Saw, or teeth of a combe; as the bones of the ſcul 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.

An Epitome or briefe 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, & covering the whole necke & almoſt all the face. Then follow 4, perteining to the upper eye-lids. In the Orbs of the eyes lye 14, that is 7, in each Orbe, 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 Iaw, of which two are called the *Crotaphitæ* or Temporall; two *Maſſeteres* or Grinders; two round (which ſeeme to me rather to perteine to the lips, than to this Iaw;) two litle ones hid in the mouth, ariſing from the winged proceſſe of the wedge-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. Wherfore the muſcles of the whole face are 51. In the fore part of the neck are found the muſcles of the bone *Hyoides* & throtle; 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 proceſſe *Styloides* perforated in their midſt, through which the 2 openers of the mouth in that part nervous do paſſe; 2 ariſe from the *Sternõ*, & 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 *Maſtoides* lye upon them. The

The Throtle compoſed of three griſtles hath eighteene or twenty muſcles, of which ſixe or eight are common, and twelue proper; Of the common there are two above, two below, and two at the ſides of the firſt griſtle, to which wee may adde theſe two which ſerve for the opening of the *Epiglottis*, which are alwayes found in great foure footed beaſts for to preſſe downe the *Epiglottis*. The 18. of the *Larinx*.

The proper are twelue 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 behinde the *Thyroides*. Beſides theſe, there are the *Maſtoidei* which bend the head. The head is mooved by 14. Muſcles.

But in the backe part of the Necke there are twelue muſcles alſo appointed for to move the head, ſo that in all there are fourteene muſcles ſerving for the motion of the head, the two fore *Maſtoidei*, and the twelue hinde Muſcles, that is to ſay, the two *Splenij*, two *Complexi*, foure Right, and ſo many oblique which are very ſhort, ſo that they paſſe not beyond the firſt and ſecond *Vertebra*.

The Necke hath eight Muſcles, of which two are called the long, lying before upon the bodyes of the *Vertebra*; the two *Scaleni* which are at the ſides; the two *Spinati* which runne alongſt the Spine; the two tranſverſe which goe to the tranſverſe proceſſes of the Cheſt. The 8. Muſcles of the necke.

The Cheſt hath 81 Muſcles, of which ſome are on the fore part, ſome on the hinde, others on the ſides; they are all combined or coupled together except the Midriffe. Now of theſe there are the two *Subclavij*; the two great Saw-muſcles which proceed from the baſis of the ſhoulder-blade; the foure litle *Rhomboides* or ſquare muſcles, that is, two above and two below; the two *Sacro-lumbi*; the two binders of the Griſtles within the Cheſt. The Muſcles of the cheſt 18.

Beſides there are twenty and two externall and as many internall Intercoſtall muſcles, twenty foure *Intercartilaginei*, that is, twelue externall and as many internall; ſo that the Intercoſtall, and *Intercartilaginei* are 68, which with the twelue before mentioned make the number of 80 Muſcles. Adde to theſe the Midriffe being without an aſſociate, and you ſhall have the number formerly mentioned, to wit, 81. But alſo if you will adde to theſe the Muſcles of the lower belly, I will not much gainſay it, becauſe by accident they helpe inſpiration and exſpiration.

Wherefore of the eight muſcles of the *Epigaſtrium*, there are foure Oblique, of which two are deſcendent and ſo many aſcendent; two right, to which you may adde the two Aſſiſting or Pyramidall muſcles which come from the ſhare-bone, if it pleaſe you to ſeparate them from the head of the right muſcles: The 8. muſcles of the lower belly.

There are ſixe or eight Muſcles of the Loynes, of which two bend the loines which are the triangular; the two *Semiſpinati*; two *Sacri*; two are in the midſt of the backe, which for that cauſe we may call the *Rachitæ* or Chine-muſcles. Now, that hereafter we may ſeverally and diſtinctly ſet downe the muſcles of the extreme parts, will we come to the privities. The 6. or 8 of the loines.

Where for the uſe of the Teſticles there are two Muſcles called the *Cremaſteres*, or Hanging Muſcles. At the roote of the yard, or *Perinæum*, there are foure others, partly for the commodious paſſing of the urine and ſeed, and partly for erecting the yarde. The *Sphincter* Muſcle is ſeated at the Necke of the Bladder. The two Cremaſters 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 proſequute the Muſcles of the Extremities, or Limbs. But it will be ſufficient to mention onely the Muſcles of one ſide, becauſe ſeeing theſe parts of the body are double, thoſe things which are ſaid of the one may be applyed to the other. The three of the fundament.

Wherefore the muſcles of the Arme, beginning with theſe of the ſhoulder-blade, at the leaſt, are 42. for there are 4 of the ſhoulder-blade: of the Arme properly or particularly ſo called, ſeven or eight; and there are three, foure, or five proper muſcles of the Cubite, that is, appointed for the performance of the motions thereof; in the inner part of the Cubite are ſeven, and as many in the outer; but thoſe of the hand are reckoned thirteene at the leaſt. The muſcles of the Arme in generall 32.

The fourth of the ſhoulder-blade are the *Trapezius* reſembling a Monkes Cowle, which moves it upwards and downewards, and drawes 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 *Coracoides*. The arme is moved forwards, backwards, upwards, downewards and circularly.

The Pectorall muſcle ariſing from the Clavicle, Breaſt-bone and neighbouring ribs, drawes it forwards; the *Humilis* or low-muſcle comming from the lower rib of the ſhoulder-blade drawes it backwards; the *Deltoides* upwards; and the *Latiſſimus* downewards, and ſomewhat backe-wards. But the three ſeated about the ſhoulder-blade move it about, or circularly.

The *Epomis* or *Scapularis* upwards; the *Superſcapularis*, which may ſeeme two, backwards and downewards; the *Subſcapularis* which is in the Cavitie of the ſhoulder blade, forewards, ſo that by a certaine viciſſitude and ſucceſſion of action they move it circularly. Two muſcles bend the Cubite, the one named *Biceps* or Two-headed, and the other *Brachiaus* or the Arme-muſcle; but one, two, or three muſcles extend it; for if you have reſpect to the originall, this muſcle hath two or three heads, but one onely inſertion.

In the inſide of the Cubite are ſeven muſcles, one *Palmaris*, two wreſt-benders; two *pronatores*, one ſquare, another in ſome ſort round; two finger-benders, and one *Abductor* or Drawer aſide. Theſe fourteene internall and externall muſcles of the Cubite, doe not indeed move the Cubite, but onely ſeated there move the wande and with it the hand. Theſe are the thirteene Muſcles of the hand; the *Thenar* which may not only be divided into two, but into ſixe, not only by the diverſe actions it performes, but alſo by the branches divided by a manifeſt ſpace betweene them; the ſecond is called the *Hypothenar*, which lyes under the litle finger, as the *Thenar* doth under the Thumbe; the third is the *Abductor of* the Thumbe; then follow the foure *Lumbrici* and ſixe *Interoſſes*, although eight may be obſerved.

The muſcles of the legge in generall 50.

The whole Legge hath at the leaſt 50. Muſcles, for wee reckon there are fourteene muſcles in the thigh; there are eleven made for the uſe of the Legge; there are nine ſeated in the Legge, three before and ſixe behinde which ſerve for the uſe of the foot and toes; in the foote are ſeated ſixteene. Therefore of the foureteene 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 4. twin muſcles, and two *Obturators*, of which the one is internall, the other externall, turne the Thigh about. The Legge hath eleven, that is, the Long, the Membranous, the foure *Poſtici* or Hinde muſcles (three of which come from the Huckle-bone, but the other from the commiſſure of the Share-bone) the Right, the two Vaſte, the *Crureus* or Legge-muſcle, and the *Poplitaus*, or Ham-muſcle. Theſe ſeated in the leg for the uſe of the foote and toes are three fore and ſixe hinde muſcles: two of the fore bend the foote, one of which is called the *Tibiaus anticus*, the other *Peronaus*, which you may divide into two. The third the bender of the toes, although it alſo partly bend the foote, to which alſo the bender of the Thumbe may be revoked. One of the hinde is the Toe-bender, others extend the foote, and are in this order; Two twins, one *Plantaris*, one *Solens*, one *Tibiaus poſticus* and the great bender of the Toes, to which may be revoked the bender of the Thumbe. Of the ſixteene ſeated in the foote, one is above, ſeated on the backe of the foote, which wee call the *Abductor* of the Toes; another in the ſole of the foote, to wit, the litle bender of the Toes, which goes to the ſecond joynte of the Toes alongſt the inſide of the foote; the other lends his helpe to the great Toe, which you may call the *Abductor* of the Thumbe; another is ſeated on the outſide for the uſe of the litle Toe. To theſe are added the foure *Lumbrici*, beſides the eight *Interoſſes*; 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 veines, the fat, and all the fleſhy membrane are taken away, that part of the fleſhy membrane excepted, which takes upon it the nature of a muſcle, as being conjoyned with the muſcles.



a, the muſcle of the fore-head.
b, the temporall muſcle.
c, the muſcle ſhutting the eye-lid.
d, the muſcle opening the wings of the noſe.
e, the fore part of the yoake-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 therof which riſes immediatly from the coller-bone & the top of the ſhoulder.
l, that part therof which bends forwards to *l*.
m, the muſcle which lifts up the arme.
n, the pectorall muſcle.
o, the membranous part of this muſcle which is joyned to the nervous part of the firſt muſcle of the *Abdomen* or belly. *q*, *q*, the fleſhy portion thereof, from the 6. and 7. ribs, and the inſertion thereof. *r* the muſcle drawing down the arme. *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 skinne being taken away. *y*, the veſſels of ſeed. *z*, the teſticles wrapped in the fleſhy membrane. *β*, the fore muſcle bending the cubite. *γ*, *γ*, the hinde muſcle bending the cubite. *δ*, the muſcle extending the cubite. *ε*, the two-headed muſcle extending the wreſt. *ϛ*, the muſcle producing the broad tendon on the backe of the hand. *ζ*. his tendon. *η*, the muſcle turning up the Wand. *θ*, the upper muſcle flatting the Wand. *ι*, the ſecond of the arme-benders, whoſe beginning is *κ*, and tendon *λ*. *ο*, a portion of the muſcle, whereof one part yeelds tendons to the wreſt, the other to the thumbe. *π*, the fleſhleſſe articulation of the thumbe. *ρ*, a muſcle inſerted into the wreſt, lying neere to the following muſcle. *σ*, a muſcle devided into two tendons, the one whereof is inſerted into the firſt joint of the thumbe, the other into the following. *τ*, the firſt muſcle of the thigh, whoſe head is at *υ*, and tendon at *φ*. and inſertion at *χ*. *ψ*, the end of the ſecond muſcle of the thigh. *ω* the end of the third muſcle of the thigh. 1, the ſixt muſcle of the legge; his beginning at 2. almoſt wholy membranous at 3. 4, the ninth muſcle of the legge. 5, the eight of the legge. 6, a portion of the ſixth and ſeventh of the thigh. 7, the Glandules of the groines. 8, the eight of the thigh. 9, the

9, the ſecond of the legge. 11, the innermoſt of the ancle. 12, the ſixth muſcle of the foote, his originall 13. end 14. 15, the ſeventh of the foote. 16, the tendon of the muſcle lifting up the great toe. 17, the muſcles extending the foure other toes. 18, the abductor of the great toe. 19, a tranſverſe ligament. 20, a tendon of the ninth muſcle of the foote. 21, the firſt muſcle. 22, the fourth muſcle of the foote. 23, the tendon of the third muſcle. 24. a muſcle bending the third bone of the foure leſſer toes.

THE

THE SEVENTH BOOK Of Tumours 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 Continuitie, concurring to the hindering or hurting of the Action. An humor, or any other matter, answering in proportion to a humor, abolishing, weakening, or depraving of the office or function of that part or body in which it resides, causeth it.

What an Impostume vulgarly so called is.

The materiall causes of Impostumes, or unnaturall tumors.

The differences of Impostumes are commonly drawne from five things; quantitie, matter, accidents, the nature of the part, which they affect or possesse; and lastly, their efficient causes. I have thought good for the better understanding of them, to describe them in this following Scheme.

A Table of the differences of Tumors.

The differences of *Impostumes* are drawne principally from five things, that is,

- 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. Pushes and Pustules, all kinde 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 blacke, and so of any other colour.
  - Paine, hardnesse, softnesse, and such like, from whence they are said to be painefull, not painefull, hard, soft, and so of the rest.
- from the matter, of which they are caused and made, which is either
  - Naturall, or
    - Hot, and that either,
      - Sanguine, from whence a true *Phlegmon*.
      - Cholerick, from whence a true *Erysipelas*.
    - Cold & that either
      - Phlegmatick, frō whence a true *Oedema*.
      - Melācolick frō whēce a perfect *Scyrrhus*.
  - Not naturall, which hath exceeded the limits of its naturall goodnesse, from whence illegitimate tumors, therefore
    - of a sanguine humor,
      - Carbunckles, Gangrenes, eating ulcers, Sphaceles are caused.
      - Of the grosser, the eating *Herpes*, of the subtiler the *Herpes miliaris* is made.
    - of a cholerick humor,
    - of a phlegmatick humor,
      - Watery and flatulent Impostumes, the Kings-evill, knots & all phlegmatick swellings, & excrescenses.
    - of a melācholick humor,
      - The exquisite or perfect *Scyrrhus*, hardnesses and all sorts of cancerous Tumors.

From the condition and nature of the parts which they possesse, from whence the *Ophthalmia*, is a Phlegmon of the eyes. *Parotis* a tumor neere the eares. *Paronychia* or a whitlow at the roots of the nailes; 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, & the other cōmonly cold, as it shal more manifestly appeare by the following chapter.

CHAP.

Chap. II.

Of the generall causes of Tumors.

After what manner tumours against nature are chiefely made.

THere are two generall causes of Impostumes, Fluxion, and Congestion. Defluxions are occasioned, either by the part sending, or receiving; the part sending discharges it selfe of the humors, because the expulsive facultie residente in that part is provoked to expell them, moved thereto, either by the troublesomenesse of their quantity or quality. The part receiving drawes, and receives occasion of heat, paine, weakenesse (whether naturall, or accidentall) openesse 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 acride meates and medicines.

Foure causes of paine.

The causes of paine are foure, the first, is a sodaine and violent invasion of some untemperate thing, by meanes of the foure first qualities; the second is solution of continuitie, by a wound, luxation, fracture, contusion or distention; the third, is the exquisit sense of the part, for you feele no paine in cutting a bone, or exposing it to cold or heate; the fourth is, the attention, as it were of the animall faculty, for the minde diverted from the actuall cause of paine, is lesse troubled, or sensible of it.

Two causes of weakenesse.

A part is weake, 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 paine, or great defluxion have seazed upon it, and wearied it, for so the strength is weakened, and the passages dilated. And the lowneſſe of site yeelds opportunity for the falling downe of humors.

Two causes of congestion.

The causes of congestion are two principally, as the weakenesse of the concoctive facultie, which resides in the part, (by which the assimulation into the substance of the part of the nourishment flowing to it is frustrated) and the weakenesse of the expulsive faculty; for whilest 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 conjuncte, or containing, as we will hereafter treat more at large.

Chap. III.

The signes of Impostumes or Tumors in generall.

The principall signes of tumors are drawne from the essence of the part.

BEfore wee undertake the cure of Tumors, it is expedient to know their kindes and differences, which knowledge must be drawne from their proper signes, the same way, as in other diseases. But because the proper and principall signes of tumors are drawne 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, wee shall easily judge whether it be swollen, or no.

But because it is not sufficient for a Chirurgion onely to know these generall signes (which

(which are knowne even to the vulgar) he must attentively observe such as are more proper and nere. And these are drawne 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 flowes downe and generates the tumor; also they are knowne by such accidents as happen to them, as colour, heat, hardnesse, softnesse, paine, tension, resistance. *Lib. 2. ad Glauc. & 13. method.*

Wherefore paine, heate, rednesse, and tension indicate a sanguine humor; coldnesse, softnesse, and no great paine, phlegme; tension, hardnesse, the livide colour of the part; and a pricking paine by fits, melancholy; and yellowish and pale colour, biting paine without hardnesse of the part, choler. The proper signes of a sanguine tumor, of a plegmaticke, of a melancholick, of a cholerick.

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 kinde of the humor; for as in the Spring, so in the morning the bloud is in motion; as in the Summer, so in the middest of the day, choler; as in Autumne, so in the evening, melancholy; as in Winter, so on the night the exacerbations of phlegme are most predominante. For *Hippocrates* and *Galen* teach, that the yeare hath circuits of diseases, so that the same proportion of the excesse and motion of humors which is in the foure seasons of the yeare, is also in the foure quarters of each day. The knowledge of tumors by their motion and exacerbation. *Lib. 2. Epidem.*

Impostumes which are curable have foure times, their beginning, increase, state, and declination, and we must alter our medicines, according to the varietie of these times. We know the beginning by the first swelling, of the part; The increase when the swelling, paine, 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, remaine in their state immoveable, unlesse the very matter of the tumor degenerate, and change it selfe into another kinde of humor; The declination, when the swelling, paine, feaver, restlesnesse are lessened. And from hence the Chirurgion may presage what the end of the tumor may be; for tumors are commonly terminated foure manner of wayes, if so be that the motion of the humors causing them be not intercepted, or they without some manifest cause, doe flow backe 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 Scyrrhus, 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 the violence, or the abundance or quality of the humor, or both, it comes to that distemper, that it looses its proper action.

It is best to terminate a tumor by resolution; and the worst by corruption; suppuration and induration are betweene both, although that is far better than this. The signes by which the Chirurgions may presage that an Impostume may be terminated by resolving, are the remission, or slacking of the swelling, paine, pulsation, tension, heat, and all other accidents, and the unaccustomed livelinesse 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 signes of a tumor to be terminated by resolution.

Signes of suppuration are the intension or encrease of paine, heat, swelling, pulsation, and the feaver; for according to *Hippocrates*, paine and the feaver are greater when the matter is suppurating, then whan it is suppurated. The signes of suppuration.

The Chirurgion 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 thicknesse of the part lying above, or over it.

The signes of an Impostume degenerating into a Scyrrhus hardnesse, are the diminution of the tumor, and hardnesse remaining in the part. The causes of the hardnesse not going away with the swelling, are the weakenesse of nature, the grosnesse and toughnesse of the humor, and unskilfulnesse of the Chirurgion, who by too long using resolving things hath occasioned, that the more subtile part of the humor being dissolved, the rest of the grosser nature like earthy dreggs remaines concrete in the part. The signes and causes of a tumor terminated in a *Scyrrhus*.

part. For ſo potters veſſels dried in the Sunne grow hard. But the unskilfull Chirurgion may occaſion a Scyrrhous hardneſſe by another meanes, as by condenſating the skinne, 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, redneſſe, pulſation and tenſion ſhall be more intenſe, than they are wont to be in ſuppuration; if the paine preſently ceaſe without any manifeſt cauſe, if the part waxe livide or blacke; and laſtly, if it ſtinke.

The ſignes of a Gangrene at hand.

But we ſhall treate of this more at large when we come to treate of the Gangrene and *Sphacelus*. A ſodaine diminution of the tumor, and that without manifeſt cauſe, is a ſigne of the matter fallen backe, and turned into the body againe, which may be occaſioned by the immoderate uſe of refrigerating thinge. And ſometimes much flatulencie mixed with the matter, although there be no fault in thoſe things which were applied.

Of diſappearance of a tumor, and the ſignes thereof.

Feavers and many other maligne Symptomes, as ſwoundings and convulſion, by tranſlation of the matter to the noble parts, follow this flowing backe of the humor into the body.

Chap. IIII.

Of the Prognoſticks in Impoſtumes.

TVmors ariſing from a melancholy, phlegmaticke, groſſe, tough, or viſcous humor, aske a longer time for their cure, than thoſe which are of bloud or choler. 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 qualitie, than in quantitie, and undergoe the divers formes of things diſſenting from nature, which are joyned by no ſimilitude or affinitie with things naturall, as ſuet, poultis, hony, the dregs of oile, and wine; yea, and of ſolid bodies, as ſtone, ſand, coale, ſtrawes, 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 entrailes, are more dangerous and deadly, as alſo thoſe which are in the joints, or neere to them. And theſe tumors which ſeaze upon great veſſels, as veines, arteries, and nerves, for feare of great effuſion of bloud, waſting of the ſpirits and convulſion. So impoſtumes of a monſtrous bigneſſe are often deadly, by reaſon of the great reſolution of the ſpirits cauſed by their opening. Thoſe which degenerate into a *Scyrrhus* are of long continuance and hard to cure, as alſo thoſe which are in hydropicke, leprous, ſcabby and corrupt bodies, for they often turne into maligne and ill conditioned vulcers.

Hippo. Aph. 3. ſect. 6.

Chap. V.

Of the generall cure of Tumors againſt Nature.

THere 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 drawne from the eſſence, that is, from the greatneſſe, or ſmallneſſe 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 *Oedema* than a *Scyrrhus*, and a ſimple tumor, otherwiſe than a compound. And alſo you muſt cure after another manner a tumor comming of an humor not naturall, than that which is of a naturall humor, and otherwiſe that which is made by congeſtion,

What muſt be conſidered in undertaking the cure of tumors.

geſtion, 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 wee 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 throate; one ſort of things to theſe parts which by reaſon of their raritie 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.

Galen by the name of faculty underſtands the uſe and ſenſe of the part. This hath a manifold indication in curing, for ſome parts are principall, as the Braine, Heart, and Liuer; for their vertue is communicated to the whole body, by the nerves, arteries, and veines. What we muſt underſtand by the faculty of the part.

Others truly are not principall, but yet ſo neceſſary that none can live without them, as the Stomacke. Some are endued with a moſt quicke ſence, as the eye, the membranes, nerves, and tendons; wherefore they cannor endure acrid and biting medicines. Having called to minde theſe indications, the indication will be perfected by theſe three following intentions, as if we conſider the humor flowing downe, 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 alwayes have care of that which is moſt urgent and of the cauſe. Therefore firſt repercuſſives muſt be applied for the antecedent matter, ſtrong or weake, having regard to the tumor as it is then, onely excepting ſixe conditions of Tumors; the firſt is, if the matter of the Tumor be venenate: the ſecond, if it be a criticall abſceſſe: the third, if the defluxion be neare the noble parts: the fourth, if the matter be groſſe, rough, and viſcide: the fifth, when the matter lies farre in, that is, flowes by the veines which lies more deepe: the ſixth, when it lies in the Gandules. But if the whole body be plethoricke, 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 weakeneſſe of the part receiving draw on a defluxion, it muſt be ſtrengthened. What we muſt conſider in performing the cure. What things diſſwade us from uſing repercuſſives.

If the part be inferiour 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 paine 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 conteined 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. Laſty, for the conjunct accidents, as the Feaver, paine and ſuch like, they muſt be mitigated by aſſwaging, mollifying and malaxing medicines, as I ſhall ſhew more at large hereafter.

Chap. VI.

Of the foure principall and generall Tumors, and of other Impoſtumes which may be reduced to them.

THe principall and cheiſe Tumors which the abundance of humors generate are foure, A *Phlegmon*, *Eryſipelas*, *Oedema* and *Scyrrhus*: innumerable others may be reduced to theſe, diſtinguiſhed by divers names according to the various condition of the efficient cauſe and parts receiving. Wherfore a *Phygethlum*, *Phyma*, Fellon, Carbuncle, inflammation of the eyes, Squincy, *Bubo*, & laſtly all ſorts of hot and moiſt tumors may be reduced to a Phlegmon. *The Herpes miliaris*, the eating *Herpes*, Ringwormes and Tetters and all impoſtumes brought forth What tumors may be reduced to a Phlegmon. Which to an *Eryſipelas*.

Which to an *Oedema.*

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 Phlegme produces.

Which to a *Scyrrhus.*

In the kindred of the *Scyrrhus* are reckoned a Cancer, Leproſie, Warts, Corns, a *Thymus*, a *Varix*, *Morphew*, black and white, and other Impoſtumes ariſing from a melancholy humor.

Now wee will treate of theſe Tumors in particular beginning with a Phlegmon.

Chap. VII.

Of a Phlegmon.

What a true Phlegmon is.

A Phlegmon is a generall name for all Impoſtumes, which the abundance of inflamed bloud produces. That is called a true Phlegmon, which is made of laudable bloud, offending onely 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 maligne Puſtules. So when there is a confluxe of diverſe humors into one tumor, divers kinds of phlegmonous Impoſtumes called by diverſe names, according to the more abundant humor, ariſe; as if a ſmall portion of phlegme ſhall be mixed with a greater quantity of bloud, it ſhall be called an *Oedematous Phlegmon*; but if on the contrary, the quantity of phlegme be the greater, it ſhall be named a phlegmonous *Oedema*, and ſo of the reſt; alwayes naming the tumor, from that which is moſt predominant in it.

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 bloud cauſing it offends onely in quantity; which if it doe, 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 goodneſſe of bloud.

But bloud is ſaid to offend in quantity, either by admixture of ſome other matter, as Phlegme, Choler, or melancholy, from whence proceedes *Oedematous*, *Eryſipelous* and *Scyrrhous* Phlegmons; or by corruption of its proper ſubſtance from whence Carbuncles, and all kindes of Gangrens; or by concretion, and when nature is diſappointed of its attempted and hoped for ſuppuration, either by default of the aire, or patient, or by the error of the phyſition; and hence oft times happen *Atheroma's*, *Steatoma's*, and *Melicerides*. Although theſe things be ſet downe by the ancients, of the ſimple and ſimular matter of the true Phlegmon; yet you muſt know, that in truth there is no impoſtume, whoſe matter exquiſitely ſhewes the nature of one, and that ſimple humor without all admixture of any other matter; for all humors are mixed together with the bloud, yet from the plenty of bloud predominating, they are called Sanguine, as if they were of bloud alone.

Wherefore if any Tumors reſemble the nature of one ſimple humor, truely they are not of any naturall humor, but from ſome humor which is corrupt, vitiated and offending in quality; for ſo bloud by aduſtion degenerates into choler and melancholy.

Gal. lib. de tumoribus, & 2. ad Glauc.

Therefore a true Phlegmon is defined by *Galen*; A tumor againſt nature, of laudable bloud flowing into any part in too great a quantity.

Hippoc. lib. de vuln: cap. Gal. lib. de tumor. praeter naturam.

This tumor though moſt commonly it be in the fleſh, yet ſometimes it happens in the bones, as *Hippocrates* and *Galen* witneſſe.

A Phlegmon is made and generated thus, when bloud flowes into any part, in too great a quantity; firſt the greater veines and arteries of the affected part are filled, then the middle, & laſtly, the ſmalleſt and capillary; ſo from thoſe thus diſtended, the bloud ſweats out of the pores and ſmal paſſages like dew; and with this the void ſpaces which are between the ſimular parts are firſt filled, & then with the ſame bloud all the adjacent

adjacent parts are filled, but especially the flesh, as that which is most fit to receive defluxions, by reason of the spongious 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 paine also happens at the same time, both by reason of the tension and preternaturall heate.

And there is a manifest pulsation in the part, specially whilest it suppurates; because the veines, arteries, and nerves, are much pained, being they are not onely heated within by the influxe of the fervide humor, but pressed without by the adjacent parts. Therefore seeing the paine comes to all the foresaid parts because they are too immoderately heated and pressed, the arteries which are in the perpetuall motion of their *Systole & diastole*, whilest they are dilated, strike upon the other inflamed parts, whereupon proceeds that beating paine. The cause of a beating paine in a Phlegmon

Hereunto adde, the Arteries then filled with more copious and hot bloud, have greater neede to seeke refrigeration by drawing in the encompassing Aire; wherefore they must, as of necessitie, 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, painefull, and sensible to the Patient himselfe; for otherwise as long as we are in health, we doe not perceive the pulsation of the arteries. *Comm. ad Aph. 21. sect. 7.*

Wherefore these two causes of pulsation, or a pulsificke paine in a phlegmon are worthy to be observed, that is, the heate and aboundance of bloud, contained in the vessels and arteries (which more frequently than their wont incite the arteries to motion, that is, to their *Systole* and *Diastole*) and the compréssion and streightning 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 paine.

Hence they commonly say, that in the part affected with a Phlegmon, they feele 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. Another kinde of Pulsation in a phlegmon.

The cause of heate in a Phlegmon is bloud, which whilest it flowes more plentifully into the part, is as it were troden or thrust downe, and causes obstruction, from whence necessarily followes a prohibition of transpiration, and a putrifaction of the bloud, by reason of the preternaturall heate. But the Phlegmon lookes red by reason of the bloud contained in it, because the humor predominant in the part shines through the skinne.

Chap. VIII.

Of the causes and signes of a Phlegmon.

The causes of a Plegmon are of three kindes; for some are primitive, some antecedent, and some conjunct. Primitive are falls, contusions, straines, immoderate labour, frictions, application of acrid ointments, burnings, long staying or labouring in the hot Sun, a diet unconsiderate, and which breeds much bloud. The antecedent causes are, the great abundance of bloud, too plentifully flowing in the veines. The conjunct, the collection or gathering together of bloud impact in any part. The primitive causes of a Plegmon. The Antecedent and conjunct. The signes of a Phlegmon.

The signes of a Plegmon are swelling, tension, resistance, feaverish heate, paine, pulsation, (especially while it suppurates) redneſſe, and others, by which the aboundance of bloud is signified.

And a little Phlegmon is often terminated by resolution; but a great one by suppuration; and sometimes it ends in a Scyrrhus, or a Tumor like a Scyrrhus; but

otherwhiles in a Gangren, that is, when the faculties, and native ſtrength of the part affected, is overwhelmed by the greatneſſe of the defluxion, as it is reported by Galen. The Chirurgion 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.

Gal. l. de Tum.

Chap. IX.

Of the cure of a true Phlegmon.

What kinde of diet muſt be preſcribed in a Plegmon.

THe Chirurgion in the cure of a true Phlegmon muſt propoſe to himſelfe foure intentions. The firſt of Diet; This, becauſe the Plegmon is a hot affect and cauſes a feaver, muſt be ordained of refrigerative and humecting things, with the convenient uſe of the ſixe things not naturall, that is, aire, meat, and drinke, motion and reſt, ſleepe and waking, repletion, and inanition; and laſtly, the paſſions of the minde. Therefore let him make choiſe of that aire which is pure and cleere, not too moiſt, for feare of defluxion, but ſomewhat coole; let him command meates which are moderately coole and moiſt, ſhunning ſuch as generate bloud too plentifully; ſuch will be brothes not to fat, ſeaſoned with a little Borage, Lettuce, Sorrell, and Succory, let him be forbidden the uſe of all ſpices, and alſo of Garlicke, and Onions, and all things which heate the bloud, as are all fatty and ſweet things, as thoſe which eaſily take fire. Let the Patient drinke ſmall wine, and much alaied with water: or if the feaver be vehement, the water of the decoction of Licoris, Barly, and ſweet almonds, or water and ſugar; alwayes having regard to the ſtrength, age, and cuſtome of the Patient.

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 waxe hot by motion, but let him chiefely have a care that hee doe not exerciſe the part poſſeſſed by the plegmon for feare of a new defluxion. Let his ſleepe be moderate, neither, if he have a full body, let him ſleepe by day, ſpecially preſently after meate. Let him have his belly ſoluble, if not by nature, then by art, as by the frequent uſe of gliſters and ſuppoſitories. Let him avoid all vehement perturbations of minde, as hate, anger, brawling; let him wholly abſtaine from venery.

How to divert the defluxion of humors.

This manner of diet thus preſcribed, wee muſt come to the ſecond ſcope, that is, the diverſion of the defluxion, which is performed by taking away its cauſe, that is, the fulneſſe and illneſſe of the humors. Both which we may amend by purging and bloud-letting, if the ſtrength and age of the patient permit.

The paine muſt be aſſwaged.

But if the part receiving be weake, it muſt be ſtrengthened with thoſe things which by their aſtriction amend the openneſſe of the paſſages, the violence of the humor being drawne away by cupping glaſſes, frictions, ligatures. But if paine trouble the part, which is often the occaſion of defluxion, it muſt be mitigated by medicines aſſwaging paine.

The third ſcope is to overcome the conjunct cauſe. That we may attaine to this, we muſt enter into the conſideration of the tumor, according to its times, that is, the beginning, encreaſe, ſtate, and declination. For from hence the indications of variety of medicines muſt be drawne. For in the beginning we uſe repercuſſives to drive away the matter of the Phlegmon flowing downe, as the white of an Egge, Oxicrate, the juices or waters of Houſeleeke, Plantaine, Roſes; Caraplaſmes of Henbane, Pomgranate, Pills, Balauſties, Bole armenicke, *Terra ſigillata*, oile of Roſes, Quinces, Mirtilles, Poppies.

When we muſt uſe repercuſſives.

Of theſe ſimples, variety of compound medicines ariſes. This may be the forme, of a Cataplaſme. R, *far. hordei* ℥ij. *ſucci ſempervivi, plantag. an.* ℥iij. *pul. malicorij, balauſtiorum & roſar. an.* ℥ij *ol. mirtill. & roſar. an.* ℥j, *fiat Cataplaſma.* Another, R, *Plantag. ſolani, byoſcyam. an. m.* ij. *caudæ equin. tapſi barb. cinnamomi an. m.* j. *coquantur perfectè in oxicrato, piſtentur, trajciantur, addendo pulveris mirtill. nuc. cupreſſi. & roſ. rub. an.* ℥iij. *farin. fab.* ℥ij, *olei roſar. & cydon. an.* ℥iß: mixe

mixe them and make a cataplasma to the forme of a liquid pultis. And you may use this liniment, by dipping linnen clothes in it, and applying to the part; ℞, *ol. nymph. & rosar. an.* ℥iij, *aq. ros. solani & plantag. an.* ℥ij, *aceti* ℥iij, *albumin. ovor um n.* iij, *fiat linimentum.* Also *ung. rosatum & ung. Album, camphor. Rasis* are good to apply to it, as in like manner, *Emp. Diacalcitheos* dissolved in vinegar, and oile of Roses, and also *Populeon* may be used. In the increase you must have care of the humor flowing downe, and of that which already impacted in the part, did formerly fall down. Therefore repercussives must be tempered & mixed with discussing medicines, but so that they may carry the chiefe sway, as ℞, *sol. malva, absinth. plantag. an. m.* iij, *coquantur in oxicrato, contundantur, trajectis* adde *farinæ fabarum & hordei an.* ℥j, *pul. rosar. rub. & Absinth. an.* ℥i, *ol. rosar. & chamæm. an.* ℥j, *fiat cataplasma ad formam pultis satis liquidæ.* Another. ℞, *farinæ hord.* ℥iij. *farinæ sem. lini & fænugræci, an.* ℥j. *coquantur in aqua communi, addendo sub finem pul. mirtillorum, rosarum & chamæmeli an.* ℥ß, *axungiæ anseris & olei rosarum an.* ℥j, *misce, fiat cataplasma.* What locall medicines we must use in the encrease.

But in the state the repercussives, & discussives ought to be alike with some anodine, or mitigating medicines, if it be painefull, as ℞, *rad. Althæa* ℥iiij, *malvæ, parietar. an. m.* ij, *coquantur sub cineribus, addendo farin. fabarum & lentium an* ℥ij, *pulveris chamæm. & melilot i an.* ℥ß. *olei chamæm. & rosar. an.* ℥j. *axungiæ gal.* ℥ij. *fiat cataplasma.* Another ℞, *micæ panis triticei aqua calida macerati* ℔ß, *pulveris rosar. rub. & absinth. ana.* ℥vj. *olei aneth. & mellis com. an.* ℥ij. *misce omnia simul & fiat cataplasma ad formam pultis satis liquidæ*; which is of chiefe use when there is paine. What in the state.

But when the violence of paine and other symptomes are asswaged, it is likely that the plegmon is come to determination. Wherefore then we must use more powerfull and strong discussives, and onely 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 ℞, *mal. bismal. an. m.* iij. *coquantur addendo farinæ hordei* ℥ij, *mellis com.* ℥j, *ol. chamæ. & melilot. an.* ℥ß, *fiat cataplasma*, Or ℞, *radicum Brion. & Cucumer. agrest. an.* ℥ij, *florum chamam. & meliot. ana. m.* iij. *coquantur in hydromelite addendo farinæ sem. lini & fænugræc. an.* ℥ij. *ol. aneth. axungiæ Anser. & anat. an.* ℥j. *fiat Cataplasma.* And this plaister following may here finde place. What in the declination.

℞, *Diachyl. mag.* ℥ij, *Empl. de melilot.* ℥j, *olei aneth. & chamæmel. an.* ℥ß: dissolve them all together and make a medicine for your use. Or ℞, *Empl. de mucag. & oxycro. an.* ℥ij. *Empl. Diachyl. Iredt.* ℥j. *olei liliorum & chamæmel. 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 paine is the principall. The correction of the accidents.

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 bloud and spirits to the part affected.

According to the varietie of paine there must be variety of medicines, as ℞, *micæ panis albi in lacte tepido macerati* ℔ß, *vitell. ovorum* iij. *ol. rosar.* ℥ij, *croci* ʒß, *fiat cataplasma.* Or ℞, *florum chamæm. & melil. an. p.* iij. *farinæ sem. lini. & fenugrac. an.* ℥j. *fiat cataplasma pultis, satis liquidæ.* Or ℞, *mucagin. rad. althea & fænugraci an.* ℥ij, *ol. rosar. & aneth. an.* ℥j. *farin. sem. lini. quantum satis, ut inde formetur cataplasma satis molle.* The discommodities of paine. Medicines asswaging paine.

But if the paine remaine, and yeeld not to these remedies, we must flie to stronger, making use of narcoticks, or stupifactives, but with care lest we benum, or dead the part; as ℞, *sol. hyoscyani & papaver. sub. cineribus coctorum an.* ℥iij, *adipis suillæ & ol. ros. an.* ℥j, *croci.* ʒij, *fiat cataplasma*: or, ℞, *sol. cicutæ & solani furiosi. an.* ℥iiij, *coquantur sub cineribus, pistentur, & trajciantur addendo. unguent. popul. & ol. rosar. an* ℥j, *farin. fænugrac. quantum satis erit, ut inde formetur cataplasma ad formam pultis liquidæ.* Narcoticke medicines.

Chap. X.

The cure of an ulcerated Phlegmon.

The ſignes of a Phlegmon turning to an Abſceſſe.

BVt it often happens, that the humor is ſo impact in the part, that it cannot be repreſſed, and ſo groſſe, that it cannot be diſcuſſed; which we may know by the greatneſſe of the heat and ſwelling, by the bitterneſſe of the pricking paine, the feaver, and pulſation, and heavineſſe.

Wherefore laying aſide all hope of diſcuſſing, wee muſt come to ſuppuratives. For which purpoſe *Galen* foments the ſwollen part with water, or oile being warme, or with both of them; and then applies this following cataplaſme.

Lib. 2 ad Glauc. Cap. 7.

Suppurative medicines.

℞, *farinæ tric. vel micæ panis,* ℥iiij. *ol. com.* ℥iij, *aquæ com. quantum ſufficit, fiat cataplaſma*; or ℞, *rad. lilior. alb. & althææ, an.* ℥iij, *fol. malvæ, parietar. & ſenecionis ana. m.* j. *coquantur in hydromelite, piſſentur, trajectis* adde *farin. ſem. lini* ℥ij, *axungiæ ſuillæ, ol. liliorum an.* ℥ß, *fiat cataplaſma:* Or ℞, *malvæ, biſmalv. violar. an. m.* j. *caricarum ping. n.* x. *paſſul.* ℥ij, *coquantur in aq. com. tuſis, & trajectis,* adde *n. ellis com.* ℥ij, *ung. baſilicon. & butyri recent. ana.* ℥j, *fiat cataplaſma.* You may profitably uſe for the ſame purpoſe *Empl. Diachylon magnum,* or *Baſilicon.* Or ℞, *Empl. Dyachil. mag.* ℥iij. *ung. baſilicon.* ℥j, *ol. liliorum* ℥ß. Of theſe mixed together make a a medicine for the foreſaid uſe.

The ſignes of pus or matter.

When the heat, paine, feaver, and other accidents ſhall remit, when the tumor hath a ſharpe head, when by the preſſing of your finger you finde 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 maligne, or when the ſwelling is neare a joint, or at the fundament, or ſuch like hot and moiſt places.

Hip. lib. de Fiſtula.

For by the decree of *Hippocrates* wee ſhould anticipate the maturation of ſuch tumors by opening.

They may be opened with an inciſion knife or cauſticke, and that, either actuall or potentiall. For if the patient ſhall be hartleſſe and leſſe confident, ſo that he either cannot, or will not endure any inſtrument, you muſt make way for the matter by a potentiall cautery. You may alſo doe the buſineſſe by another ſlight, as thus.

Thruſt the point of a ſharpe knife or lancet, through a braſſe counter that it may ſtand faſt in the midſt thereof; then cover it diligently with ſome Emplaiſter or Cataplaſme, 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 meanes, 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 deliniations of ſuch Inſtruments, that you may uſe theſe, either bigger, leſſer or indifferent, as occaſion ſhall ſerve.

Counters with the points of Knives or Lances put through them.

B



A

A. ſhewes the Counter or peece of Silver.
B. ſhewes the point of the Lancet.

Other

Other Instruments for opening Abscesses.



Rings in which little knives lye hid, fit for to open Abscesses.

The Deliniation of a Trunke or hollow Instrument going with a spring.

A. Shewes the thicker pipe.
B. Shewes 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.

But there are seven things which must be diligently considered in opening all sorts of Impostumes. The first is, that you put your knife to that part of the Abscesse which is the softer, and yeelds to the impression of your fingers, and where it rises into a head, or point. The second is, that you make choise of that place for dissection which is the lowest, that so the conteined impurity may the more readily flow out, and not stay in the passage. The third is, that it be made according to the wrincles of the skin, and the right fibers of the Muscles lying next under the skin. The fourth is, that you turne your knife from the larger vessels and Nerves worth speaking of. The fifth is, that the matter conteined 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 Abscesse be clensed, filled with flesh, and lastly consolidated and cicatrized. But seeing that commonly after such sections some part of the Tumor remaines, all the conteined humor being not wholy suppurated, the Chiurgion may perceive that this is an implicite affect, that is a, Tumor and Vlcer. 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.

What the cure must be after the opening of the Abscesse

℞ *Vitellum vnius ovi, terebinth. Venet. & ol. Rosar. an.* ℥ß, *fiat medicamentum.* Then you must seeke to clense it by this following Medicine. Detersive Medicines.

℞. *Mellis*

Vnguentum de Appio.

℞ *Mellis rosar.* ℥j, *Syrupi rosar. & tereb. Venet. an* ℥jß, *far. hordei* ℥ij, *fiat medicamentum ad usum.* For this very purpose there is a singular Detersive made of *Appium* or Smallage of which this is the description.

℞ *Succi appij, plantag. beton. an.* ℥j, *Mellis commun.* ℥v, *terebint. Venet.* ℥iiij, *farin. Hordei & Orobi, an.* ℥ij, *pulveris Aloes, rad. Ireos florent. myrrhæ, an* ℥j. *coquatur mel cum succis, quibus consumptis addantur farina & pulveres, & misceantur omnia ad formam unguenti.* But if you would clense 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 seeme sufficiently clensed, it shall be filled with flesh and cicatrized after the manner we shall declare in the proper treatise of the cure of Vlcers.

Chap. XI.

Of feavers, and the cures of these feavers which accompany Phlegmons.

The Feavr of a Phlegmon. What a Feaver is.

AMongst the *Symptoms* which most usually accompany Phlegmons, & afflict all the body of the patient, Feavers are the cheife; 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 kinde of Tumors are *Ephemeræ*, that is, Diary, unputrid *Synochi* or putrid *Synochi*; Of whose nature and order of cure I will here briefly relate what I have learnt from my Masters, that is, Doctors of Physicke, as I have beene conversant with them in the practise of my Arte.

What an *Ephemera*, or Diarye is.

The *Ephemera*, or Diary [that is of one day] is, a hote and dry distemperature kindled in the vitall spirits. It hath that name, because by its owne nature it tarryes not above the space of one day or twenty foure houres, by reason it is kindled in a subtie easily dissipable matter.

The causes thereof.

The efficient causes of this Feaver are wearinesse, hunger, drunkennesse, anger, fury, sorrow, watching, great and peircing cold, Adustion, Bathes, and manner of living inclining more to heat than ordinary, applying, using or drinking of acride medicines as Poysons, or of hot meats, and drinkes; to conclude, all the efficient causes common to all Feavers, putrifaction onely excepted which properly appertaines to putride feavers.

Aphorism. 55. *lib.* 4.

For a *Bubo* also, which is a *Phlegmon* of the Glandules, causes a Diary, as *Hippocrates* shewes. All feavers proceeding from the Tumors of the Glandules are evill, the Diary excepted. Which *Aphorisme* 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 risen 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 learne by Buboes in Children, and the venereous Buboes, which happen without inflammation, or corruption of the liver, for such commonly have no maligne Feaver accompanying them, which thing is worthy a Chirurgions observation.

The signes of a Diarie.

The common signes of a Diary are, a moderate and vaporous heate feeling gentle to the hand, a pulse swift and frequent, sometimes great and strong, as when the Diary is caused by anger; sometimes litle, if the Feaver proceede from sorrow, hunger, cold, crudity; for other respects equall and ordinary.

The most certaine signes are, if the Feaver come upon one not by litle and litle but sodainly and that from some externall and evident cause, no loathing of meat, no causelesse wearinesse, no deepe sleepe, yawning, great paine, restlesnesse, shaking nor cold going before, and lastly no other troublesome symptome preceeding. Wee here make no mention of the urine, because most frequently they resemble the vrines of sound bodyes; for in so short a time as Diaryes endure, there cannot so great a perturbation be raised in the blood that there may be signes thereof found in the vrine. A Diary is ended in one fit, which by the proper nature of this Feaver lasts but one day,

Why in a Diarye the vrines like to these in health.

day, although sometimes, otherwise it is extended to three, or foure dayes space; and then it easily degenerates into a Putride, especially any error of the Patient, Phisition, or those which attend him concurring therewith, or if the exterriall things bee not rightly fitted.

This Feaver is terminated either by insensible transpiration, or by the moisture of the skin, or by a sweate naturall, gentle, and not ill smelling; to this Diary wee may referre the unputride *Synochus*, generated of blood not putrid, but onely heated beyond measure. For usually there arises a great heate over all the body, by meanes of the blood immoderatly heated; whence the veines become more tumide, the face appeares fiery, the Eyes red and burning, the breath hot, and to conclude, the whole habite 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 kinde of *Synochus* may be called, a vapourous Feaver. To this Children are incident as also all sanguine bodyes, which have no ill humors. The cure of this and the *Ephemera* or Diary is the same; because it may scarse seeme different from the *Ephemera* in any other thing, than that it may be prolonged for three or foure dayes. Wherefore whatsoever we shall say for the cure of the *Ephemera*, may be all applyed to the *Synochus*, bloodletting excepted, which in an unputrid *Synochus* is very necessary. The unputride *Synochus*.

Now the Cure of a Diary Feaver consists in the decent use of things not naturall, contrary to the cause of the disease; wherefore bathes of warme and naturall water are very profitable; so that the Patient be not Plethoricke, nor stufft with excrements, nor obnoxious to catarrhes and defluxions, because a catarrhe is easily caused and augmented by the humors diffused and dissolved by the heate of a bath; therefore in this case we must eschew frictions, and annointing with warme oile, which things notwithstanding are thought very usefull in these kind 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, the gratefull society of friends, and all things replenished with pleasant good will; and to a *Bubo*, the proper cure thereof. The cure of a Diary feaver.

Wine moderately tempered with water according to the custome of the sicke 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 abstaine wholy from wine, untill the inflammation come to the state, and begins to decline. This kinde of Feaver often troubles infants; and then you must prescribe such medicines to their Nurses, as if they were sicke, that so by this meanes their milke may become medicinable. Also it will be good to put the Infant himselfe into a bath of naturall and warme water, and presently after the bath to anoint the ridge of the backe and brest with oile of Violets. But if a *Phlegmon* possesse any inward part, or otherwise by its nature be great, or seated neare any principall Bowell, so that it may continually send from it either a putrid matter or exhalation to the heart, and not onely affect it by a quality or preternaturall heate by the continuity of the parts, thence will arise the Putride *Synochus*, if the blood by contagion putrifying in the greater vessells, consists of on equall mixture of the foure humors. This Feaver is cheifly thus knowne, it hath no exacerbations, or remissions, but much lesse intermissions; it is extended beyond the space of twenty foure houres, neither doth it then end in vomite, sweat, moisture, or by litle and litle by insensible transpiration, after the manner of intermitting Feavers, or Agues; but remaines constant, untill it leaves the Patient for altogether; it commonly happens not unlesse to these of a good temper and complexion, which abound with much blood, and that tempered by an equall mixture of the foure humors. It commonly endures not long, because the blood by power of some peculiar putrifaction degenerating into choler or Melancholy, will presently bring forth another kinde of feaver, to wit a Tertian or continued Quartaine. The use of wine in a Diary. How a putride *Synochus* is caused.

The cure of this Feaver (as I have heard of most learned Physitions) cheifly consistsin Bloodletting. For by letting of blood the fullnesse is diminished, & therfore the obstruction is taken away, and lastly the putrefaction. And seeing that in this kinde of Phlebotomy necessary in a putride *Synochus*.

Feaver

Feaver there is not onely a fault of the matter, by the putrefaction of the blood, but alſo of the Temper by exceſſe of heat; certainely Phlebotomy helps not only, as we ſaid, the putrefaction, but alſo the hote diſtemper. For the blood in which all the heate of the creature is conteined, whileſt it is taken way, the acrid and fuliginous excrements exhale and vaniſh away with it, which kept in, encreaſed the Feveriſh heate. Moreover, the veines, to ſhun emptineſſe, which nature abhors, are filled with much cold aire in ſtead of the hot blood which was drawne away, which followes a cooling of the habite of the whole body; yea and many by meanes of Phlebotomy have their bellyes looſed, and ſweate, both which are much to be deſired in this kinde of Feaver.

What benefit we may reape by drawing blood even to fainting.

This moved the ancient Phyſitions, 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 at ſeverall times, as the greatneſſe of the diſeaſe ſhall require, and the ſtrength of the Patient may beare.

Why we muſt give a clyſter preſently after bloodletting.

When you have drawne blood, forthwith inject an emollient and refrigerative clyſter; leſt that the veines emptied by Phlebotomy may draw into them the impurity of the Guts; but theſe clyſters which coole too much, rather binde the belly, than looſe it. The following day the Morbificke matter muſt be partly evacuated by a gentle purge, as a bole of *Caſſia*, or *Catholicon*; then muſt you appoint Syrupes which have not onely a refrigerative quality, but alſo to reſiſt putrefaction, ſuch as the Syrupe of Lemmons, Berberries, of the Iuice of Citrons, of Pomgranats, Sorrell and Vineger; let his diet be abſolutely cooling and humecting and alſo ſlender; for the native heate 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 veale brothes made with cooling herbes, as Sorrell, Lettuce and Purſlaine. Let his drinke be Barly water, Syrup of Violets mixed with ſome pretty quantity of boiled water, *Iulepum Alexandrinum*, eſpecially if he be troubled with ſcouring, or laske. But the Phyſition muſt cheifly have regard to the fourth day, for if then there appeare any ſignes of concoction in the excrements, the *Criſis* muſt be expected on the ſeventh day and that either by a looſeneſſe of the belly, or an aboundance of urine, by vomits, ſweats, or bleeding. Therefore we muſt then doe nothing, but commit the whole buſineſſe to nature.

What Syrupes 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 putride Synochus.

But for drinking cold water, which is ſo much commended by *Galen* in this kinde of Feaver, it is not to be ſuffered before there appeare ſignes of concoction; moreover in the declining of the diſeaſe the uſe of wine will not be unprofitable to helpe forwards ſweats.

Chap. XII.

Of an Eryſipelas, *or Inflammation.*

The definition of an *Eryſipelas*.

HAving declared the cure of a Phlegmon, cauſed by laudable blood, wee muſt now treate of theſe tumors which acknowledge Choler the materiall cauſe of their generation, by reaſon of that affinity which interceeds betweene Choler and Blood. Therefore the tumors cauſſed by naturall Choler, are called *Eryſipelata*, or Inflammations; theſe conteine a great heate in them, which cheifly 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 cholericke) or by blood and choler, hotter than is requiſit, and ſometimes of choler mixed with an acride ſerous humor.

Gal. Cap. 2. Lib. 14. Meth. med. & 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 phlegme, *Eryſipelas œdematodes*; if with Melancholy, *Eryſipelas Scirrhodes*. So that the former

and

and substantive word shewes the humor bearing dominion, but the latter or adjective that which is inferiour in mixture. But if they concurre in equall quantity, there will be thereupon made *Erysipelas Phlegmene*; *Erysipelas* œdema; *Erysipelas scirrhus*.

Galen acknowledges two kinds of *Erysipelaes*, one simple and without an ulcer, the other ulcerated. For Choler drawne and severed from the warmnesse of the blood, running by its subtlety and acrimony vnto the skin, ulcerates it; but restrained by the gentle heat of the blood, as a bridle, it is hindred from peircing to the top of the skin, and makes a tumor without an ulcer. But of unnaturall choler are caused many other kinds of cholericke tumors, as the *Herpes exedens*, and *Miliaris*, and lastly all sorts of tumors which come betweene the *Herpes* and *Cancer*. You may know *Erysipelaes* cheifly by three signes, as by their colour, which is a yellowish red; by their quicke sliding backe 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, paine. The heat of an *Erysipelas* is far greater than that of a Phlegmon, but the pulsation is much lesse; for as the heat of the blood is not so great, as that of choler, so it farre exceeds choler in quantity and thicknesse, which may cause compression and obstruction of the adjacent muscle.

Two kinds of *Erysipelas*.

For Choler easily dissipable by reason of its subtlety quickly vanishes, neither doth it suffer it selfe to be long conteined in the empty spaces betweene the muscles; neither doth an *Erysipelas* agree with a Phlegmon in the propriety of the paine. For that of an *Erysipelas* is pricking and biting without tension, or heavinesse, 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 assailes the face, by reason of the rarity of the skin of that place, and the lightnesse of the cholericke 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 shewes that there is obstruction by the admixture of a grosse humor, whence there is some danger of erosion in the parts next under the skin.

Gal. lib. 2. ad Glauc.

Hip. Aphe. 70 Sect. 7. Aph. 25 Sect. 6. Aph. 43. Sect. 3.

It is good when an *Erysipelas* comes from within outwards; but ill when from without it retires inward. But if an *Erysipelas* possesse the wombe 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 braine.

Chap. XIII.

Of the cure of an Erysipelas.

FOr 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 cheefe scope must be for refrigeration. Which being done, the conteined matter must be taken away and evacuated with moderatly resolving medicines. We must doe foure things to attaine unto these forementioned ends. First of all we must appoint a convenient manner of Diet, in the use of the sixe things not naturall; that is, we must incrassate, 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 veine, and by medicines purging choler. And that by cutting the Cephalicke veine, if there be a portion of the blood mixed with Choler, if the *Erysipelas* possesse the face, and if it be spread much over it.

Gal. 14. Method.

4 Things to be performed in curing an *Erysipelas*.

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 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 plethoricke, 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 veine; but it belongs to a learned and prudent

prudent Phyſition to preſcribe medicines, purging choler.

What topicke medicines are fit to be uſed in the beginning of an *Eryſipelas*

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 drynes or aſtriction, becauſe the more acride matter by uſe of aſtringent things being driven in, would ulcerate and fret the adjacent particle.

Galen and *Avicen* much commend this kinde of remedy; Take faire water ℥vj. of the ſharpeſt Vinegar ℥j, make an Oxycrate, in which you may wet linnen clothes and apply to the affected part and the circumjacent places, & renew them often. Or ℞, *Succi ſolani, plantag. & ſempervivi, an.* ℥ij, *aceti* ℥ß, *Mucaginis ſem. Pſylij* ℥ij, *ſucci hyoſcyami* ℥j, *Miſce.* But if the *Eryſipelas* be upon the face, you muſt uſe the medicine following.

℞. *Unguent. Roſ.* ℥iiij, *ſucci plantagin. & ſempervivi, an.* ℥j. *trochiſc. de Camphora* ℥ß, *aceti parum*; let them be mixed together and make a liniment. But if the heate and paine be intolerable, we muſt come to narcoticke medicines. As, ℞ *ſucci hyoſcyami, ſolani, cicutæ, an.* ℥j. *albumin. ovorum n. ij. aceti* ℥ß, *opij & Camphor. an. gra.* 4 *croci* ℈ß, *Mucaginis ſem. pſill. & ſanigr. extracta in aq. roſ. & plantag. an* ℥j, *ol. de papau.* ℥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 heate and mortification of the part.

What caution muſt be had in the uſe of narcoticke medicines.

Wherefore ſuch Narcoticke 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 Narcoticke or ſtupefactive medicines. The firſt is when the Patient in the affected part feels not ſo much heat, pricking and paine, as before; The ſecond is when the part feeles more gentle to the touch than before; The third when the fiery and pallide colour begins by litle and litle to waxe livid and blacke; for then muſt we abſtaine from Narcoticke, and uſe reſolving and ſtrengthening things, whereby the part may be revived and ſtrengthened by recalling the Native heate; As ℞. *Farina hordei & Orobi, an.* ℥ij *farina ſem. lini* ℥jß. *coquantur in Hydromelite vel oxycrato, addendo pulv. roſarum & chamamal. an.* ℥ß. *ol. anethi & chamam. an.* ℥j, *fiat cataplaſma.* Or you may uſe this following fomentation ℞. *Rad. Althææ* ℥ij, *fol. malvæ, biſmal. pariet. abſinthij, ſalviæ, an. m.* j. *flor. chamam. meliloti, roſar. rub. an. m. ij. coquantur in aquis partibus vini & aquæ, & fiat fotus cum ſpongia.* After the fomentation you may apply an Emplaiſter of *Diachylon Ireatum*, or *Diapalma* diſſolved in oile of chamomille and Melilote, and ſuch other like. The fourth Intention which is of the correction of accidents, we will performe by theſe meanes which we mentioned in curing a Phlegmon, by varying the medicaments, according to the judgement of him which undertakes the cure.

Reſolving and ſtrengthening medicines.

Chap. XIIII.

Of the Herpes; *that is Teaters, or Ringwormes, or ſuch like.*

What a *Herpes* is, what be the kinds thereof. *Gal. 2. ad Glauconem.*

Herpes is a tumor cauſed by pure choler ſeparated from the reſt of the humors, that is carryed by its naturall lightneſſe and tenuitye even to the outer or ſcarſe skin, and is diffuſed over the ſurface thereof. *Galen* makes three ſorts of this tumor. For if perfect choler of an indifferent ſubſtance, that is, not very thicke, cauſe this tumor, then the ſimple *Herpes* is generated, obteining the name of the *Genus*; but if the humor be not ſo thin, but compounded with ſome ſmall mixture of Phlegme, it will raiſe litle 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, if will be an *Herpes exedens*, terrible by reaſon of the eroſion or eating into the skin and muſcles lying under it.

What the *Herpes miliaris* is. What the *exedens*.

Three intentions in curing *Herpes*.

There are abſolutely three intentions of curing; The firſt is to appointe 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

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 carryed into the bladder; The third shall be to take away the conjunct cause by locall medicines ordained for the swelling and ulcer: Therefore the Chirurgion 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, unlesse the swelling be taken away. Therefore because the chiefest care must be to take away the Tumor, which unlesse it be performed there can be no hope to heale the ulcer, he shall lay this kinde of medicine to dissolve and dry, as R. *Ceruse & tuthiæ prapar. an.* ℥j. *ol. ros. & adipis capon. an.* ℥ij. *corticis pini usti, & loci,* ℥ß *cera quantum satis, fiat unguentum.* Or R. *Farin. hordei & lent. an.* ℥ij, *coquantur in decocto corticis mali granati, balaust. plantag. addendo pulveris rosar. rub. absinth. an.* ℥ß, *olei Myrtillor. & mellis com. an.* ℥vj, *fiat ungentum, ut artis est.* But for an *Herpes Miliaris* these must chiefly be used, R. *pulv. gallarum, malicorij, balaust. boli armeni an.* ℥j. *aqua ros.* ℥iij, *aceti acerrimi* ℥j. *axungiæ anser. & olei Myrtillor. an.* ℥jß, *terebinth.* ℥j *fiat unguentum ad usum.* I have often found most certaine helpe in *unguentum enulatum cum Mercurio*, for it kills the pustules, and partly wasts the humor conteined in them. Yet if the ulcer, not yet neither yeelds, but every day diffuses it selfe further and further, you shall touch the edges and lipps thereof with some acride medicine, as *Aqua fortis*, oyle of Vitriole, or such like, for by this kinde of remedy, I have oft times healed fretting ulcers, which seemed altogether incureable.

A rule for healing ulcers conjoined with tumors.

The force of *Unguentum enulatum cum Mercurio.*

Medicines fit for restraining eating and spreading ulcers.

Chap. XV.

Of Feavers, which happen upon Erysipelous Tumors.

AS Feavers sometimes happen upon Inflammations, and Erysipelaes, which savour of the humor whereof they proceed, that is, Choler. Therefore seeing it is peculiar to Choler, to move every third day, it is no marvaile 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.

A vulgar description of an intermitting Tertian feaver.

The Primitive causes in generall are strong exercises, especially in the hot Sunne, 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 distemperature either of the whole body, or of the liver onely: the conjunct cause is the putrefaction of the Cholericke humor lying in some plenty without the greater vessells, in the habit of the body.

The causes of Tertian feavers.

The signes, a shaking or shivering like as when we have made water in a cold winter morning, a great pricking, stretching, or stiffnesse, as if there were pins thrust into us over all our bodies, by reason of the acrimony of the cholerick humor driven uncertainly & violently over all the body, & the sensible membranous & Nervous particles at the beginning of the fit; then presently the heate becomes acride, the Feaver kindled, like a fire in dry straw; the pulse is great, quicke and equall; the tongue dry; the urine yellowish, red and thin. The Symptomes are watchings, thirst, talking idlely, anger, disquietnesse & tossing the body at the least noise or whispering. These Feavers are terminated by great sweats. They are incident to cholericke young men, such as are leane, & in Summer; after the fit oft times follow cholericke vomiting & yellowish stooles. After the fit there followes an absolute intermission retaining no reliques of the Feaver, untill the approach of the following fit, because all the cholericke matter by the force of that fit & nature is easily cast out of the body, by reason of its natural levity & facility; wheras in Quotidians there is no such thing, as which after the fit alwaies leave in the body a sense & feeling of a certaine inequality by reason of the stubbornesse of the Phlegmatick humor, & dulnesse to motion. The fit commonly uses to endure 4, 5, or 6 houres, although at sometime it may be extended to 8 or 10. This Feaver is ended at 7 fits, and usually is not dangerous, unlesse there be some error committed by the Physition, Patient, or such as attend him. Tertians in summer are shorter, in winter longer.

The Symptomes.

Why Tertians have an absolute cessation of the feaver at the end of each fit.

Wherefore the beginning of the fit is accompanied with stiffenesse, or stretching,

the ſtate with ſweate, whereupon if the noſe, lips or mouth breake forth into pimples or ſcabbes, it is a ſigne 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 habite of the body; yet theſe pimples appeare not in the declining of all Tertians, but onely then, when the Cholericke humor cauſing the Feaver ſhall reſide in the ſtomacke, or is driven thither from ſome other part of the firſt region of the Liver. For hence the ſubtler portion therof carryed by the continuation of the inner coate 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.

Therefore let the Diet be ſo ordered for the ſixe things not naturall, that it may incline to refrigeration and humection, as much as the digeſtive faculty will permit, as Lettuce, Sorrell, Gourds, Cowcumbers, Mallowes, Barly Creames, Wine much alaid with water, thinne, ſmall, and that ſparingly and not before ſignes of concoction ſhall appeare in the urine; for at the beginning he may not uſe wine, nor in the declining, but with theſe conditions, which we have preſcribed.

When ſuch as have a tertian may uſe wine.

The time of feeding the patient.

But for the time of feeding the patient, on that day the fit is expected, hee muſt eate nothing for three houres before the fit, leſt the aguiſh heate lighting on ſuch meats as yet crude, may corrupt and putrefie them; whence the matter of the Feaver may be increaſed (becauſe it is as proper to that heate 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 excrefaction), the fit lengthened, and nature called away from the concoction and excretion of the Morbificke humor; yet wee may temper the ſeverity of this law by having regard to the ſtrength of the patient; for it will be convenient to feed a weake patient not onely before the fit, but alſo in the fit it ſelfe, but that onely ſparingly, leſt the ſtrength ſhould be too much impaired.

When to purge the patient.

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*, *Caſtia* newly extracted, the decoction of Violets, of Citrine Myrobalanes; Syrupes of Violets, Roſes, of Pomegranats and Vineger. But if the powers of the Patient languiſh, hee muſt not onely not be purged, but alſo muſt not draw blood too plenteouſly, becauſe Cholericke men ſoone faint, by reaſon of the facile and eaſie diſſipation of the ſubtle humors and ſpirits; beſides, ſuch as are ſubject to tertian Feavers doe not commonly abound with blood, unleſſe it be with Cholericke blood, which muſt rather be renued, 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 worke by inſenſible tranſpiration, which provoke ſweats, vomite or urine by reaſon of the ſubtlety of the Cholericke humor, than by any other. Alſo the frequent uſe of emollient glyſters made with a docoction of Prunes, jujubes, Violets, branne and Barly, will profit much; If the patient fall into a *Delirium* or talke idlely by reaſon of the heate and drynes of the head, with a particular exceſſe of the Cholericke humor, the head muſt be cooled by applying to the Temples and forehead and putting into the noſe oyle of Violets, Roſes, or womans milke. Let the feete and legs be bathed in faire and warme water, and the ſoles of the feet be anoynted with oyle of Violes and ſuch like.

In the declining, a Bath made of the branches of Vines, the leaves of Willowes, Lettuce and other refrigerating things boyled in faire water, may be profitablely uſed three houres after meat eaten ſparingly.

When the time is fit to uſe a Bath.

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 warmneſſe of the bath, may more eaſily and readily breathe forth: he which otherwiſe ordaines 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 groſſe, no evacuation going before.

What kinds of evacuations are moſt fit in a Tertian.

Alſo it will be good after generall purgations to cauſe ſweate by drinking White wine thinne and well tempered with water; but urine by a decoction of Smallage and Dill; Certainely ſweate is very laudable in every putride

Feaver,

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 ſweate may be laudable, it is fit it be upon a criticall day, and be foreſhewed by ſignes 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 applyed outwardly; by things taken inwardly, as with white wine, with a decoction of Figgs, Raiſons ſtoned, graſſe roots and the like opening things; but by things outwardly applyed, as ſpunges dipped in a decoction of hot herbes (as Roſmary, Time, Lavander, Marjerome and the like) applyed to the Groines, Armeholes, and ridge of the backe. Sudorifickes,

You may for the ſame purpoſe, fill two Swines bladders with the ſame decoction, or elſe ſtone bottles, and put them to the feete, ſides, and betweene the thighes. Then let this be the bound of ſweating, when the patient begins to waxe cold, that is, when the ſweate feeles no more hote, 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 comne to its ſtate; but *Hippocrates* forbide us to move any thing in the ſtate, leaſt 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 Phlegmaticke Tumor.*

Hitherto wee have treated of hote Tumors, now wee muſt ſpeake of cold; Cold Tumors are onely two, an *Oedema*, and a *Scirrhus*; And for all that *Hippocrates* and the Ancients uſed the word *Oedema* for all ſorts of Tumors in generall; yet by *Galen* and theſe Phyſitions which ſucceeded him, it hath beene drawne from that large and generall ſignification, to a more ſtraite and ſpeciall, onely to deſigne a certaine *ſpecies*, or kinde of Tumor. *Gal. lib. de tumo. præter natur.*

Wherefore an *Oedema* is a ſoft, laxe and painleſſe Tumor, cauſed by collection of a flegmaticke humor. What an *Oedema* is.

The Ancients made eight differences of Tumors proceeding of Phlegme. The firſt they termed a true and lawfull *Oedema* proceeding from naturall Phlegme; from unnaturall Phlegme by admixtion of another humor they would have three ſorts of Tumors to ariſe, as that by mixture of blood, ſhould be made an *Oedema Phlegmonodes*, and ſo of the reſt. The differences of *Oedemas*

Beſides, when they perceived unnaturall Phlegme 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 Phlegme often to turne into a certaine Plaiſter-like ſubſtance, they thought that hence proceeded another kinde of *Oedema*, which they expreſſed one while by the name of *Atheroma*, another while by *Steatoma*, and ſometime by *Melicerides*, as laſtly they called that kind of *Oedema* which is cauſed by putride and corrupt flegme, *Scrophula*. For we muſt obſerve that Phlegme ſometimes is naturall, and offends onely 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 blood, Choler or Melancholy, whence ariſe the three kinds of *Oedema's* noted formerly by the way; or by the putredneſſe and corruption of its proper ſubſtance, whence the *Struma* and *Scrophula* proceed; or by concretion, whence kernells and all kinds of Wens, *Ganglia* and knots; or by reſolution, whence all flatulent and wateriſh Tumors, as the *Hydrocele*, *Pneumatocele* and all kinds of Dropſies. By how many waies Phlegme becomes not naturall.

The cauſes of all *Oedema's* are the defluxion of a Phlegmaticke or flatulent humor The Cauſes.

humor into any part, or the congeſtion of the ſame made by litle & litle in any part, by reaſon of the imbecillity thereof in concocting the nouriſhment, and expelling the excrement.

The ſignes. The ſignes are a colour whitiſh and like unto the skinne, a ſoft Tumor, rare and laxe by reaſon of the plentifull moiſture with which it abounds, and without paine, by reaſon this humor inferres no ſenſe of heate nor manifeſt cold; when you preſſe it with your finger the print thereof remaines, becauſe of the groſſeneſſe of the humor and flowneſſe to motion. *Oedema's* breed rather in winter than in the ſummer, becauſe winter is fitter to heape up Phlegme; they chiefly poſſeſſe the Nervous and Glandulous parts, becauſe they are bloodleſſe, and ſo cold and more fit by reaſon of their looſeneſſe to receive a defluxion; for the ſame cauſe bodyes full of ill humors, ancient, and not exerciſed, are cheifly troubled with this kinde of Tumor.

The prognoſticks.

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 heate in that humor.

A Symptomaticall *Oedema*, as that which followes upon a Dropſie or Conſumption, admits no cure unleſſe the diſeaſe be firſt taken away.

The intentions of curing *Oedema's*. The generall cure is placed in two things, that is, in evacuation of the conjunct matter, prohibiting the generation of the antecedent. Wee attaine to both cheifly by foure meanes.

The diet. The firſt truely by ordaining a fit manner of living and preſcribing moderation in the uſe of the ſixe things not naturall. Wherefore we muſt make choyſe of ſuch aire as is hote, dry and ſubtle; wee muſt preſcribe wine of a middle nature for his drinke; let the bread be well baked; let meates be appointed which may generate good blood, and theſe rather roſted than boyled. Let all fruites be forbidden, as alſo brothes and milke-meates; let him eate ſuch fiſh as are taken in ſtony rivers; the Patient ſhall obſerve mediocrity in feeding, but principally ſobriety in drinking, for feare of crudities; After meat let him uſe digeſtive powders, or common drige pouder; if his belly be not naturally looſe let it be made ſo by arte.

Exerciſe. Let the Patient uſe exerciſe before meate, ſo by litle and litle to ſpend this humor, and reſtore the native heate. Let him ſleepe litle, becauſe much ſleepe breedeth cold humors; let him avoyde griefe and ſadneſſe. And if he be of a weake body, let him abſteine from venery, leſt by another weakening by the uſe of venery added to his preſent infirmity, he fall into an uncureable coldneſſe, 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 Phlegmaticke diſeaſes, as *Galen* in his commentaryes tells us. The Phyſition may performe the ſecond intention by turning his counſell to that part, from whence the ſpring of this Phlegmaticke humour flowes. For if the infirmity ariſe from the ſtomacke, or from any other part, the part from whence it comes muſt be ſtrengthened; if from the whole habite of the body, let attenuating, penetrating and opening medicines be preſcribed. Wee performe the third intention by evacuating the humor impact in the part with locall medicines varyed according to the foure 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 ſpunge. But if ſo be that the *Oedema* be upon the Arme 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, ℞. *Lixivij ex cineribus ſarmentorum, & caulium, an.* ℥iiij. *Tartari & Aluminis an.* ℥ß, *aceti* ℥ij. mixe all together and make a decoction, wherein wet ſpunges and foment the place. Alſo you may uſe the following Cataplaſme, ℞, *farinæ hordei* ℥iiij. *coquantur in Lixivio communi, addendo pulveris nucis cupreſſi, corticum granatorum, balauſti. an.* ℥j. *Myrrhæ, Aloes, alum. an:* ℥ß, *olei Myrtill.* ℥ij, *fiat Cataplaſma.* In the ſtate and declination you muſt

uſe

use drying and resolving medicines, as R. *Nucum cupressi, granat. sumach, balausti, an.* ʒj. *Salviæ, origan. calament. Hyssopi, melissæ an. m.* j. *absinthij, plantag. caudæ. equi. tapsi. barb. centinod. an. m. ss. alumi. tartar. & salis com. an.* ʒj. *coquantur cum lixivio*; foment it with a spung, then presently apply this following Cataplasme. R, *Rad. Brionia* ʒij. *absinth. plantage. centin. chamæm. meliloti, puleg. an. m. ss. coquantur in hydromelite, pistentur, traijciantur, addendo pulveris ros. rub. chamæm. melil. an.* ʒj. *fiat Cataplasma.*

What caution to be had in application of Emplaisters.

Lastly, you may here with good successe use resolving emplaisters and ointments, first heating or chafing the part by friction or fomentations aswell moist as dry; otherwise emplaisters will scarsly doe their duty, by reason of the great coldnesse of the part, being not sufficient of it selfe to assimulate the nourishment, or to expell the superfluous and unprofitable humor. Let a fomentation be made with white wine, in which Sage, Rosmary, Time, Lavander, Chamomile and Melilote flowers, red Roses, Orris roots, *Stechos* and such like have beene boyled, with a litle Vineger added thereunto. Quench hot brickes in the same decoction, and apply them wrapped in linnen clothes to the affected part, for so a vapour will breathe forth which hath an attenuating, pearcing, resolving and strengthening faculty. But you may in stead of the bricks fitly apply Hoggs or Oxe bladders, filled halfe full with the foresaid decoction, and that hot. The frictions must be made with hot linnen clothes, for so the native heate together with the blood and spirits is recalled to the part, and suliginous humors conteined under the skinne are resolved, whereby the strength of the part is in some sort recovered.

Chap. XVII.

Of the cure of flatulent and wateriſh Tumors.

In what places flatulencies may be gathered.

I Formerly declared that not onely flatulent and wateriſh Tumors were comprehended under this word *Oedema*, but also such as are bred of congealed Phlegme, as *Atheromata, Steatomata* and *Melicerides*. Flatulent or windy Tumors are caused by vapour and winde kept in or conteined sometimes under the skinne, somewhiles under the membranes, as the *Periostium* and *pericranium*, whereupon ensues cruell torment by reason of the distention of these parts which are endued with most exquisite sense. Sometimes the Entrailes, as the stomacke and Guts are swollen and stretched out with winde, as in a Tympany.

In what flatulent tumors differ from a true *Oedema*.

They in this differ from a true and legitimate *Oedema*, that when you lay your finger upon them and take it off againe, there remaines no signe of the pressure thereof, because they are distent by vapour and not by humor, for the vapour being pressed returnes speedily againe, as you may perceive by balles or bladders filled with winde.

The causes of flatulent Tumors.

The cause of such Tumors is the weakenesse of the native heate, not being able easily to resolve and waste the Phlegme by which the windy Tumors are raised, for so the morning Sunne (which in some sort resembles our native heate) cannot resolve the mists diperſed in the aire; which at noone it easily resolves into pure aire, Almost after the same manner our weaker heate stirs up vapours from that flegme it could not dissolue, which vapours are the matter of inflations, or swellings. But oft times although the native heate be sufficiently powerfull, yet because the humor lyeth deepe, or is kept in by the thickneſſe of some membrane, tendon or Ligament, the stirred up vapour cannot exhale, whereby it comes to passe, that encreased by litle and litle it causes a Tumor.

The signes of such Tumors.

The signes of such a Tumor are a certaine renitency or resistance perceived by pressing it with your finger, and sometimes a noise as if you smit upon a drum,

especially if much winde be conteined therein, such as is often gathered together in the hollownesse of the belly, and in the spaces betweene 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 winde Collicke, in which sometimes the distention is so great that death ensues by reason of the renting or tearing the coats of the Guts.

Chap. XVIII.

Of the cure of a flatulent and wateriſh Tumor.

Diet. Things strengthning the parts.

WE shall chiefly and principally cure flatulent and wateriſh tumors by three meanes. First by the same diet which wee prescribed in an *Oedema*; then by strengthening the parts appointed for concoction, as the stomacke & Liver, chiefly by the temperate use of Aromaticke things as *Diacuminum*, *Diacalamentha*, *Aromaticum caryophyllatum*, *Aromaticum Rosatum*, and the like, to be prescribed according to good liking of the Physition 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 conteined 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 applyed to the stomacke, others to the Guts, others to the joynts, and others to the fleshy parts; for the Collicke you must inject carminative glisters, let resolving *Sacculi* or Baggs be applyed, and cupping Glasses fastened to the Navel; if an outward part be affected, we use fomentations, liniments, cheifly if paine torment; as also Cataplasmes and Emplaisters, as ℞ *Florum chamam. melil. roriſmarini, rosar. rub. an. p.* j: *abſinth. hyſſopi, an. m. ℈.* let them be boiled in Lye, adding a litle vineger for a fomentation to be used with spunges.

Medicines evacuating the conjunct matter.

Galens fomentation.

Galen foments the part with Rose-vinegar and a litle salt put thereto, and would have a spunge dipped therein to lye somewhat long upon the part. ℞. *Olei chamam. aneth. rut. & liliorum, an.* ℥ß, *cerae albae* ℥vj; *aq. vitae* ℥j, let them all be mixed together and make a liniment, with which anoint the part after the fomentation. ℞. *Farinae fabar. orobi, an.* ℥iij, *coquantur in decocto pulegij, origani, calamenth. ſalviae, addita pulverum chamam. & melilot. an. m.ſſ. furfur. farinae 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 conteined 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. ℞. *Nucum cupreſſi, corticum granat. ſumach. berberis, balauſt. an.* ℥j, *caudae equin. arnogloſs. tupſi barb. abſinth. ſalviae, roriſm. lavendul. an. m.ſſ. flor. chamam. melil. rosar. anthos, an. p.* j. *alum. ſalis com. an.* ℥j, *bulliant omnia in aequis partibus aquae fabrorum & vini auſteri*, make bagges for a fomentation, or use the decoction for the same purpose with a spunge. ℞, *Farinae fab. hordei & lupin. an.* ℥ij. *terebinth. com.* ℥iiij, *pulver. radicis ireos, maſtic. an.* ℥ß, *mellis com.* ℥ijß, of the foresaid decoction as much as shall suffice, so to make a cataplasme to the forme of a poultice liquid enough, let it be applyed hot to the affected part having used the fomentation before.

The ſignes of a wateriſh Tumor.

The signes 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 hard a noyse or murmure as of a bladder halfe filled with water.

Therefore

Therefore the wateriſh tumor if it ſhall 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 often times this kind of remedy muſt be neceſſarily uſed, not onely 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 cyſt or bagge, the thickneſſe of which fruſtrates the force of the reſolving medicines, neither ſuffers it to penetrate into the humor. As I ſome yeares agoe found by experience in a maid of 7. yeares 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 forct to open it with my knife; not onely to evacuate the contained matter, but alſo that I might plucke out the bagge, which unleſſe it were cut up by the roote, would be a meane to cauſe a relapſe. *John Altine* doctor of Phyſicke called me to this buſineſſe. *Iames Guilemeau* the Kings Chirurgion overſaw the cure.

Why a wateriſh tumor muſt be opened with an inſtrument.

A Hiſtory.

Chap. XIX.

Of an Atheroma, Steatoma, and Meliceris.

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 bagge, 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 nnto Tallow [for στέαρ in Greeke ſignifieth Tallow, or ſeame] yet it oft times is found ſtuffed with other divers hard bodies, ſtony, bony or callous like unto the clawes of an hen. For *Philoxenus* reports that he ſometimes ſaw flyes in a *Steatoma* at the opening thereof, and ſuch other like things wholy diſſenting from the common matter of Tumors. The matter contained in an *Atheroma* is like to pappe, with which they feede little Children. A *Meliceris* containes matter reſembling honey in colour and conſiſtence; theſe Tumors appeare and riſe without any Inflammation going before them. Thus you ſhall 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 returne to its former figure, becauſe the matter is more groſſe; It is of the ſame colour as the skin, without paine, and of a longiſh figure. The *Meliceris* yeeds to the touch, as being a looſe and ſoft body, and as it is eaſily diſpoſed and diffuſed, ſo it quickly returnes to its former place and Tumor. It differs from the *Atheroma* in figure and ſubſtance. For it is more globous and of a ſubtiler and more ſhining matter, beſides alſo it takes up a large ſpace, and is more obſequious to the touch, and for the reſt, without paine. As for the manuall operation of the Chirurgion in their cure, it ſeemes to bee of no great conſequence of what ſort the matter is, whether reſembling tallow, honey, or pappe, for there is one ſimple manner of operation, which is, that you plucke away the conteined humor, as alſo the receptacle in which it is conteined. Yet you muſt note ſuch Tumors, ſometimes as it were hanging in the ſurface of the skin, are eaſily to bee mooved this way and that way; but other ſome againe deeper faſtned firmely cohere with the adjacent bodies, and theſe require an exquiſite hand and alſo induſtry for feare of a great flux of blood and convulſion by cutting a veine. 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 thicke, clammy and viſcous Phlegmaticke humor) ſo alſo in kinde 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 farre different from the common matter of Tumors, as ſtones, chalke, ſande, coales, ſnailes, ſtrawes, or awnes of Corne, hey, horne, haires, fleſh both hard and ſpongious, griſtles, bones, whole creatures as well living as dead.

The generation of which things (by the corruption & alteration of humors) ſhal not make us much to admire it, if we conſider, that as nature of all the ſeedes & elements

In what an *Atheroma*, *Steatoma*, and *Meliceris* differ.

Of Chirurgery to be uſed to theſe Tumors.

What the cauſe may be, that wee ſometimes finde *inſecta* in theſe Tumors.

of

of the wholegreat 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 kindes 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 anicents, we will briefely shew the opinions of the later Writers concerning them.

What the *Testudo*, or *Talpa* is.

Now they say, the *Testudo* is a rumor contrary to nature, soft, diffused, or vaulted, or arched like a Tortois, sometimes it arises in the head in forme of a Mole, and then it is called a Mole.

What the *Nata* is.

The *Nata* is a great and fleshly tumor, not in shape unlike a Melon, or rather the flesh of a mans buttockes, whence it may seeme to have had the name, unlesse wee had rather say it had it, because it more usually breeds upon the buttocks, than upon any other part of the body.

What a *Glandula*.

The *Glandula* takes its denomination from an Acorne, called *Glans* in Latine, the which it somewhat resembles in the compasse and forme of the tumor; or else because it most commonly breeds in the Glandules, or Emunctories of mans body.

What *Nodus*.

The *Nodus* or knot, is a round tumor, hard and immoveable, named from a rope tied on a knot.

Guido Cauliacensis affirmes 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.

Chap. XX.

Of the cure of Lupiæ, *that is, Wens, or Ganglions.*

What a *Glauglion* is.

A Wen or *Ganglion* is a tumor sometimes hard, sometimes soft, yet alwayes round, using to breed in dry, hard, and nervous parts. And seeing that some of the tumors mentioned before in the former Chapter, sticke immoveable to the part to which they grow, because they are contained in no cyste, or bag; othersome 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 containe them, and therefore we thinke fit, the rather more freely, and particularly to treate of their cure, because they are more difficultly cured, especially where they are inveterate and of long standing.

The causes.

The primitiue causes of these are dull blowes, fallings from high places, straines, and other such like occasions. But the antecedent and conjunct causes are the same with those of an *Atheroma*, *Meliceris* and *Steatoma*.

Signes.

The description formerly set downe, will furnish you with the signes by which you may know when they are present; certainely from very small beginnings they grow by little and little to a great bignesse, in the space of sixe or seaven yeares, some of them yeeld much to the touch, and almost all of them are without paine.

Their cure at the beginning.

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 bagge or bladder, together with the skinne waxe thin, and the contained humor growes hot, is attenuated and resolved. But if so you nothing prevaile, 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 cyste or bagge be broken by your impression; Then apply and strongly binde 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 waste 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, and throat, let there be applied an Emplaister which hath a resolving force, such as this following hath; R, *gummi ammon. bdelij galban. an.* ℥iij, *liquefiant in aceto, & trajciantur per setaceum, addendo olei liliorum & lauri, an.* ℥j, *aqu. vitæ parum, pulveri, ireos, salis ammon. surphur. vivi, vitrioli romani, an* ℥ß; let them be all incorporated together, and make an Emplaister according to Art. But if the

Plates of lead rubbed with Quick-silver.

A resolving plaister.

tumor

tumor cannot be thus resolved, it must be opened with a knife or cautery. And after the Eschar is removed, and the bagge waisted by Ægyptiacum, Mercury, and the like, the ulcer must be cleansed, repleniſhed with fleſh, and cicatrized. Things to waſt or consume the Lag.

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 roote, by your hand and instrument, if so be that there be no danger by reason of their greatnesse, and so that they adhere not too closely to the adjacent parts, and if they be not too nigh to the greater veines and arteries; for it will be better in such a cause to let them alone. This shal be your way to cut thē off, or take them away. A smal incision must be made even to the bladder, or bag, by which thrust in a probe of a fingers thicknes, hollowed in the midst, round at the end, and as long as neede shall require; then draw it many times about betweene the skinne and the bagge, even to the roote of the Wen, that so the skinne may be devided long wayes, then it will be requisite to make another incision overthwarte, so that they may interſect each other like a crosse; then presently draw the skinne from the bladder, from the corners of the Wen, towards the roote, and that with your finger covered with a fine linnen cloath, or else with a Razor if neede require. The manner to take away Wens.

But you must obserue that in a Wen there are alwayes certaine vessels, which are small in the beginning, but much encreased in processe of time, according to the encrease of the Wen, whereof they are as it were the rootes; wherefore if any *Haemorrhagie* or fluxe of bloud 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 manytimes doubled thred, and let the ends hang forth untill it fall away of its owne accord. Neither will it be sufficient to have cut away all this tumor, but also it will be fit to cut away portion of the skinne, wherewith the tumor was covered, and onely to leave so much as shall suffice to cover the part, then with a needle and threed 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 clensed, and the rest of the cure be workemanlike performed, even to the cicatrizing thereof.

The Chirurgion *Collo* and I using this method, in the presence of Master Dr. *Vidanius* the Kings Physition, tooke away a Wen from Martiall *Colard*, the Major of Burbon; it hanged at his necke, as bigge as a mans head, and it weighed eight pounds; which made it so troublesome and burdensome to him, that he was forced to carry it bound up in a towell, as in a scrip. *A History.*

Verily if these kinde of tumors have a slender roote and broade 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 necke, neare unto the Iugular veines, these under the armeholes, in the groines, and such as are under the ham; by reason of the deadly force of such symptomes, as may thence arise. We can onely conjecture, not certainely say what kind of matter may be contained in them. We can onely know of what sort it is, when by incision it is presented to our sight. Yet in such as are very hard and doe much resist the touch, there are often found matters, which in consistence may be resembled to little stones, or pebles. What Wens to be cured by ligature. Which dangerous to cure.

I being on a time called to open the body of a great Lady, found in one of her breasts a body which might equall the bignesse of an Hens egge, hard, and compact like a rough peble; it was held, whilst she lived, both by the Physitions and Chirurgions to be a *Cancer*, because this hardnesse was very painefull to her, when it was but gently pressed downe. *A History.* The matter of a Wen is sometimes taken for a *Cancer.*

But also some few yeares agon, I being called to the cure of a very honest woman, which was troubled with the same disease, strongly withstood the Physitions and Chirurgions affirming it to be a *Cancer*, for the tumor had taken no deepe roote, the habite of the part was not changed from the native colour, the veines about it were not swollen, neither was there any other convincing signe 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 paine, unlesse when you pressed downe the part affected. Besides thenceforward the tumor grew not at all; no other evill accident befell her, yea verily she lives merrily, and well both in body and minde. Another History. How you may know a Wen from a *Cancer.*

Chap.

Chap. XXI.

Of a Ganglion *more particularly ſo called.*

What a *Ganglion* properly ſo called is.

THere are alſo certaine ſmall tumors of the kinde of *Lupia* or Wens, which grow on diverſe parts of the body, but chiefely on the wreſts of the hands, and anckles of the feete, being called by a more particular name *Ganglia*; they appeare on the top of the skinne, neither doe they ever lie deepe.

The cauſes.

The cauſe of them is either the imbecilitie of a Nerve or Tendon got by wreſting, extenſion, a blow, labour, or other ſuch like cauſe. Through which occaſion the alimentary juyce which flowed to theſe parts, ſeeing it can neither be concocted, nor aſſimulated into the proper ſubſtance, is converted into an humor of the like nature cold, and groſſe; which in continuance of time heaping it ſelfe 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 poſſeſſe the tendons and joints, but onely apply *Ammoniacum* and *Galbanum* diſſolved in Vinegar and *Aquâ vitæ*: as ℞ *gummi ammon. & ſagapeni in aqua vitæ diſſolutorum, ana.* ℥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 ſoftened by theſe remedies, muſt be wrought, rubbed, or preſſed, ſo long, untill the bladder or bagge be broken under your fingers, which I have divers times done; then it will be expedient preſently to apply and binde hard thereunto a plate of lead rubbed with Quickſilver, which may waſte and conſume the remainder of the tumor.

Sometimes there are *Ganglia* ſeene hanging by a ſmall roote, as it were a ſtring; wherefore they muſt be tied with a ſtring at the roote, 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-Evill.*

What the *Scrophulæ* or Kings-Evill is.

THe *Scrophulæ* are œdematous tumors ariſing in the glandulous parts, as the breaſts, armeholes, groines, but chiefely in the glandules of the neck. They appeare either one or many, according to the quantity of that matter from whence they proceede, commonly contained in their proper cyſte, or bagge, as *Atheromaes*, *Steatomaes*, and *Melicerides* are.

Their materiall cauſe. How they differ from other glandulous tumors.

They are made of a groſſe, cold, viſcide, and phlegmaticke matter with ſome admixture of malancholy. They differ from other glandulous tumors; firſt in number, for moſt uſually there appeare many of them united together, ſpringing from ſomewhat a deeper roote than glandulous tumors doe; ſome of them are moveable, otherſome woven with the neighbouring nerves, remaining unremoveable.

Ganglia appeare fewer in number, and are without paine; but *Scrophulæ* oftentimes are painefull, eſpecially when they waxe hot by putrefaction; ſo that ſometimes they degenerate into cancerous ulcers, not to be touched by inſtruments, nor acride medicines.

Their cure by diet.

Phlegmaticke, Melancholike, and gluttonous perſons, and ſuch as are accuſtomed to feede on cold and moiſt nouriſhments, as fiſh and cold water, and leade a ſedentarie and idle life, are ſubject to the *Scrophulæ*. They are cured by a moſt ſlender diet, for ſo the native heate by want of nouriſhment turned upon the materiall cauſe of ſuch like tumors, waſts it.

And

And they are cured by purging of the superfluous humors, and also by application of emollient resolving, and suppuratine topicke medicines, after this following manner. ℞, *Mucaginis alth. fænugr. & ficuum ping. an.* ℥ij, *olei liliorum, & chamam. an.* ℥j, *pinguedinis anseris & axungiæ porci* ℥ß, *Terebinth. Ven.* ℥iß, *ammoniaci, & galbani in aceto dissolutorum an.* ℥j, *ceræ novæ quantum satis, fiat cerotum secundum artem ad modum diachyli magni.* Emollient and resolving medicines.

The ointment for the French disease, and the Emplaister 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 selfe of the humor, generating the *Scrophulæ*, which I have sometimes tried with happy successe. ℞, *Emplastri diachyl. alb. & mag. ceroti æsopi descriptionis Philagrij, ana.* ℥ij. *Terebinth. claræ* ℥j, *olei liliorum parum, fiat emplastrum satis molle.* But if the *Scrophulæ* cannot by this meanes be resolved, but as it oft times happens, tend to suppuration, you must use suppuratives, as ℞, *rad. alth. & liliorum, an.* ℥iij. *coquantur in aqua communi, pistentur, trajectis adde capitum alliorum sub cineribus coctorum* ℥iij, *olei liliorum, & ping. anseris & anat. an.* ℥iß, *farinæ seminis lini quantum satis, formetur cataplasma.* Suppuratives.

Here we must admonish the Chirurgion, 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 remaine crude, and will scarse 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 soone as any portion of the contained humors appeares converted into *pus*, procure and hasten the apertion. For that portion of the suppurated humor, causes the rest sooner to turne into *pus*, which you may observe in inanimate bodies. For fruits which begin to perish and rot, unlesse we presently cut away the putrifying part, the residue quickly becomes rotten; there is also another reason; The native heate 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 owne nature, to corruption and putrefaction, as the fundament; if the contained matter be maligne, or criticall, it will be farre better to hasten the apertion. A note to be observed in opening *Scrophulous* tumors. Naturall heate the cause of suppuration.

There is also another way of curing the *Scrophulæ*, which is performed by the hand. For such as are in the necke, and have no deepe roots, by making incision through the skin, are pulled and cut away from these parts with which they were entangled. But in the performance of this worke, wee take speciall care, that we doe not violate or hurt with our instrument, the jugular veines, the sleepy arteries, or recurrent nerves. If at any time there be danger of any great effluxe of bloud, after they are plucked from the skn, 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. The Chirurgicall manner of curing *Scrophula*.

CHAP. XXIII.

Of the Feaver which happens upon an œdematous Tumor.

HAving shewed all the differences of œdematous tumors, it remaines that we briefely treate of the Symptomatical feaver, which is sometimes seene to happen upon them. This therefore retaining the motion of the humor by which it is made, is commonly of their kinde, which they name Intermitting Quotidians. Now the fit of a Quotidian comes every day, and in that repetition continues the space of eighteene houres; the residue of the day it hath manifest intermission. How an intermitting Quotidian happens upon œdematous tumors. The cause of a Quotidian feaver.

The primitive causes of this feaver are, the coldnesse and humitity of the aire encompassing

compassing us, the long use of cold meates and drinkes, and of all such things as are easily corrupted, as Summer fruites, crude fishes, and lastly, the omission of our accustomed exercise.

The antecedent causes are a great repletion of tumors, and these especially phlegmaticke. The conjunct cause, is phlegme putrefying in the habite of the body, and first region thereof without the greater veines.

The Signes

The signes of this feaver are drawne from three things; as first naturall; for this Feaver or Ague chiefely seazes upon these which which are of a cold and moist temper, as Old-men, Women, Children, Eunuches, because they have abundance of phlegme; and it invades Old-men by its owne nature, because their native heate being weake, they cannot convert their meates, then taken in a small quantity, into laudable bloud, and the substance of the parts. But it takes children by accident, not of its selfe, and the owne nature, for children are hot and moist; but by reason of their voracitie, or greedinesse, and their violent, inordinate, and continuall motion after their plentifull feeding, they heape up a great quantity of crude humors fit matter for this feaver; whereby it comes to passe, that fat children are chiefely troubled with this kinde of feaver, because they have the passages of their bodies straite and stopped; or because they are subject to Wormes, they are troubled with paine, by corruption of their meate; whence ariseth a hot distemper by putrefaction, and the elevation of putride vapours, by which the heart being molested, is easily taken by this kinde of feaver.

How children come to be subject to Quotidian feavers.

From things not naturall, the signes of this feaver are thus drawne. It chiefely takes one in Winter, and the Spring, in a cold and moist Region, in a sedentary and idle life, by the use of meates, not onely cold and moist, but also hot and dry, if they be devoured in such plenty, that they overwhelme the native heate.

How phlegmaticke 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 phlegmaticke humors, and causes cold diseases. Therefore drunkennesse, gluttony, crudity, bathes, and exercises presently after meate, being they draw the meats as yet crude into the body and veines, and to conclude, all things causing much phlegme in us, may beget a Quotidian feaver. But by things contrary to nature, because this feaver usually followes cold diseases, the Center, Circumference, and Habit of the body being refrigerated.

The Symptomes of quotidians.

The symptomes of this feaver are, the paine of the mouth of the stomacke, because that phlegme is commonly heaped up in this place, whence followes a vomiting, or casting up of phlegme; the face lookes pale, and the mouth is moist without any thirst, often times in the fit it selfe; because the stomacke flowing with phlegme, the watery and thinner portion thereof continually flowes up into the mouth and tongue, by the continuitie of the inner coate of the ventricle common to the gullet and mouth.

The manner of the pulse and heate in a Quotidian.

It takes one with coldnesse of the extreame parts, a small and deepe pulse, which notwithstanding in the vigour of the fit, becomes more strong, great, full, and quicke. Iust after the same manner, as the heate of this feaver at the first touch appeares mild, gentle, moist, and vaporous; but at the length it is felt more acride, no otherwise than fire kindled in greene wood, which is small, weake, and smokie at the first; but at the length when the moisture being overcome, doth no more hinder its action, it burnes and flames freely.

Criticall sweats.

The urine.

The Patients are freed from their fits with small sweats, which at the first fits breake forth very sparingly, but more plentifully when the *Crisis* is at hand; the urine at the first is pale and thicke, and sometimes thinne, 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 phlegme by vomite, and that fit be terminated in a plentifull sweate, it shewes the feaver will not long last; for it argues the strength of nature, the yeelding and tennitie of the matter flying up, and the excretion of the conjunct cause of the feaver.

Why Quotidians are oft times long. In to what diseases a quartaine usually changes.

A Quotidian feaver is commonly long, because the phlegmaticke humor being cold, and moist by nature, is heavie and unapt for motion; neither is it without feare of a greater disease, because oft times it changes into a burning, or quartaine feaver, especially

especially if it be bred of salt Phlegme; for saltnesse hath affinity with bitternesse, wherefore by adustion it easily degenerates into it, so that, it neede not seeme very strange, if salt Phlegme by adustion turne into choler, or Melancholy. Those who recover of a quotidian Feaver, have their digestive faculty very weake; 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 dayes. 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 kinde of the humor, and the propriety of the Symptomes and accidents; beside, quotidians commonly take one in the evening, or the midst of the night, as then when our bodies are refrigerated by the coldnesse of the aire caused by the absence of the Sunne. Wherefore then the cold humors are moved in us, which were bridled a litle before by the presence and heate of the Sunne. But on the contrary, double tertians take one about noone. The shortnesse and gentlenesse of the fit, the plentifull sweat breaking forth, the matter being concocted, causes us to thinke the quotidian short and salutary.

How to distinguish a quotidian from a double tertian.

The Cure is performed by two meanes; to wit Diet and Pharmacy. Let the Diet be slender and attenuating, let the patient breathe in a cleere aire moderately hot and dry; let his meats be bread well baked, cocke or chicken brothes in which have bin boiled the roots of Parsly, Sorrell and the like.

Diet.

Neither at some times will the use of hot meats, as those which are spiced and salted, be unprofitable, especially to such as have their stomacke & liver much cooled. Let him eate Chickins, Mutton, Partridge and small Birds, river fishes and such as live in stony waters fryed or broiled, reare Egges and such like. These fruits are also good for him, Raisons, stewed Prunes, Almonds and Dates. Let his drinke be small white wine mixed with boyled water. Moderate exercises will be good, as also frictions of the whole body: sleepe taken at a fitting time, and proportioned to waking, so that the time of sleepe 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 bowells.

When the use of spiced and salted meats are fit.

When sleepe is hurtfull.

For the passions of the minde, the patient must be merry, and comforted with a hope shortly to recover his health. It seemes not amisse to some, at the comming of the fit to put the feet and Legs into hot water, in which Chamomill, Dill, Melilote, Marjerome, Sage, and Rosemary have beene boyled.

The Medicines shall be such Syrupes as are called digestive and aperitive, as Syrupe of Wormewood, Mints, of the five opening rootes, *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*, Agaricke, Turbith; of which you shall make potions with the water of Mints, Balme, Hyssope, Sage, Fennell, Endive or the like, *Pillulæ aureæ* are also good. These purgatives shall sometimes be given in forme of a bole with Sugar, as the Physition being present shall thinke most fit and agreeable to the nature of the Patient.

Medicines.

About the state of the disease, you must have a care of the stomake and principally of the mouth thereof, as being the chiefe seate of Phlegme; wherfore it will be good to anoynt it every other day with oyle of Chamomill mixed with a litle white wine, as also to unlade it by taking a vomit of the juice of Raddish, and much *Oxymel*, or with the decoction of the seeds and roots of *Asarum* and Chamomill; and Syrupe of vineger 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 forme of a Bole, or to drinke it dissolved in *Aqua vitæ*.

Care must be had of the stomacke.

Vomits.

The use of Treacle in an inveterate quotidian.

Chap. XXIIII.

Of a Scirrhus, *or an hard Tumor proceeding of Melancholy.*

What a true and legitimate *Scirrhus* is,

HAving ſhewed the nature of Tumors cauſed by blood, choler and Phlegme, it remaines we ſpeake of theſe, which are bred of a Melancholike humor; Of theſe there are ſaid to be foure differences. The firſt is of a true and legitimate *Scirrhus*, that is, of an hard Tumor endued with litle ſenſe, and ſo commonly without paine, generated of a naturall Me-

What an illegitimate *Scirrhus* is.

lancholike humor. The ſecond is, of an illegitimate *Scirrhus*, that is, of an hard Tumor inſenſible, and without paine, of a Melancholike humor concrete by too much reſolving and refrigerating. The third is of a cancrous *Scirrhus* bred by the corruption and aduſtion of the Melancholike humor. The fourth of a Phlegmonous, *Eryſipelous* 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 of the liver or ſpleene, as obſtruction; or by ſuppreſſion of the *Hæmorrhoides* or Courſes.

The ſignes. The ſignes are hardneſſe, renitency, a blackiſh colour, and a dilatation of the veines of the affected part with blackiſhneſſe, by reaſon of the aboundance of the groſſe

Prognoſticks. humor. The illegitimate or baſtard *Scirrhus* which is wholy without paine and ſenſe, and alſo the cancerous, admit no cure, and the true legitimate ſcarſe yeeld to any. Thoſe which are brought to ſuppuration, eaſily turne into cancers and fiſtulaes; theſe tumors though in the beginning they appeare litle, yet in proceſſe of time they grow to a great bignes.

Chap. XXV.

Of the Cure of a Scirrhus.

THe Cure of a *Sirrhus* cheefly conſiſts of three heads. Firſt, the Phiſition ſhall

Diet. preſcribe a convenient diet, that is, ſober and moderate in feeding, tending to humidity, and indifferent heate; for his manner of life, let it be quiet and free from all perturbation of anger, greiſe and ſadneſſe, 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*, *Hyera*, *diaſenna*, polipody, *Epythymum* according to the minde of the learned Phyſition. The third conſiſts in the convenient uſe of Topicke medicines, that is, emollient at the beginning, and then preſently reſolving, or rather ſuch as are mixed

Lib. 2. Ad Glauconem. both of reſolving & 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 feare of concretion the ſubtiler part being reſolved, and the groſſer ſubſiding.

Emollients. The emollient ſhall be thus: ℞. *Rad. alth. lib. ſ. rad. liliorum* ℥iij. *coquantur in aqua com. piſtentur, trajciantur per ſetaceum, addendo olei chamæm. & lilior. an.* ℥ij. *æſipi humidæ* ℥ß. *emplaſtri diachyl. alb. cum oleo liliorum diſſoluti* ℥iij, *ceræ albæ quantum ſit ſatis, fiat cerotum.* Or ℞. *gummi ammoniaci, galb. bdellij, ſtyracis liquidæ in aceto diſſolutorum, an.* ℥j. *diachyl. mag.* ℥jß, *olei liliorum, & axungiæ anſeris, an.* ℥j. *ceroti æſip. deſcriptione Philagr.* ℥ij. *liqueſcant omnia ſimul, ceræ quantum ſit ſatis, ut inde fiat cerotum ſatis molle.* When you have ſufficiently uſed emollient things, fume the Tumour with ſtrong Vinegar and *Aqua vitæ* poured vpon

a peice of a Milstone, flint or bricke heated very hot; for so the mollified humor will be rarified, attenuated, and resolved; then some while after renew your emollients, and then againe apply your resolvers to waste that which remaines, which could not be performed together and at once; for thus *Galen* healed a Scirrhus in *Cerellius* his sonne. Goats dung is very good to discusse Scirrhous tumors; but the Emplaster of *Vigo* with a double quantity of Mercury is effectuall above the rest, as that which mollifies, resolves and wasts all tumors of this kinde.

Lib. 2. ad Glau.

The efficacy of the Empl. of Vigo with Mercury.

Chap. XXVI.

Of a Cancer *already generated.*

A *Cancer* is an hard Tumor, rough and unequall, round, immoveable, of an ash or livide colour, horrid by reason of the veines on every side, swollen with blacke blood, and spred abroad to the similitude of the stretched out legs and clawes of a Crabb. It is a tumor hard to be knowne at the first, as that which scarse equalls the bigneſse of a Chicke, or *Cicer*, after a little time it will come to the greatneſse of a Hasell Nut, unleſse peradventure provoked by somewhat too acride medicines it sodainly encrease; being growne bigger, according to the measure of the encrease it torments the patient with pricking paine, with acride heat, the grosse blood residing in the veines growing hot, and inferring a sense like the pricking of Needles, from which notwithstanding the Patient hath oft times some rest. But because this kinde of Tumor by the veines extended & spred about it like clawes and feet, being of a livide and ash colour, associated with a roughneſse of the skin and tenacity of the humor, represents, as it were, the toothed clawes of the Crab, therefore I thought it not amiſse here to insert the Figure of the Crabb, that so the reason both of the name and thing might be more perspicuous.

What a *Cancer* is.

The nature of the paine.

The reason of the name.

The figure of the Crabb, called Cancer *in Latine.*



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 morbificke affection

The causes of a *Cancer*.

of the Liver disposed to the generation of that bloud; by the infirmity or weakenesse of the spleene in attracting and purging the bloud; by the suppression of the Courses or Hæmorrhoids, or any such accustomed evacuation. The conjunct cause is that grosse and melancholicke humor sticking and shut up in the affected part, as in a straite. That malancholicke bloud which is more milde, and lesse maligne, onely encreased by a degree of more fervide heat, breeds a not ulcerated *Cancer*, but the more maligne and acride causes, an ulcerated. For so the humor which generated Carbuncles, when it hath acquired great heat, acrimony, and malignitie, corrodes, and ulcerates the part upon which it alights. A *Cancer* is made more fierce and raging by meates inflaming the bloud, by perturbations of the minde; anger, heate, and medicines too acride, oiely, and emplaisticke, unfitly applied, both for time and place.

The causes of a not ulcerated *Cancer*.

The sorts and differences of *Cancers*.

Amongst the sorts or kindes of *Cancers*, there be two chiefely eminent, that is, the ulcerated or manifest *Cancer*, and the not ulcerated, or occult. But of *Cancers* some possesse the internall parts, as the Guts, Wombe, Fundement; 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 maligne, another more milde. Every *Cancer* is held almost incurable, or very difficult to be cured, for it is a disease altogether maligne, to wit, a particular Leprosie. Therefore saith *Aetius*, a *Cancer* is not easily staied 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 laxe, 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 armeholes, and sends the swelling ever to the glandules thereof; whereupon the Patients doe complaine that a pricking paine even peirces to their hearts. But this same paine also runs to the clavicles, and even to the inner side of the shoulderblades and shoulders. When it is encreased, and covers the noble parts, it admits no cure but by the hand; but in decaied bodies, whose strength faile, especially if the *Cancers* be inveterate, we must not attempt the cure, neither with instrument, nor with fire, neither by too acride medicines, as potentiall Cauteries; but we must onely seeke to keepe 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) doe quickly die, but such as are not cured live longer.

Aetius lib. 16.

The parts most subject to *Cancers*.

What Canters one must not undertake truely to cure.

Chap. XXVIII.

Of the Cure of a Cancer *beginning, and not yet ulcerated.*

A *Cancer* beginning is oft hindred from encreasing, before it fasten its roots, but when it hath once encreased, it admits no cure but by iron, as that which contemnes, by reason of the malignity & contumacy, the force of all medicines. *Galen* affirmes, 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 fæculent bloud. The distemper of the Liver must first be corrected, the Spleene strengthened, as also the part affected; in men the Hæmorrhoides, in women their Courses must be procured.

Diet.

Threfore thicke and muddy wines, vinegar, browne bread, cold hearbes, old cheese, old and salted flesh, Beefe, Venison, goate, hare, garlicke, onions and mustard, and lastly all acride, acide and other salt things, which may by any meanes incrassate the blood, and inflame the humors, must be

be eschewed. A cooling & humecting diet must be prescribed; fasting eschewed, as also watchings, immodera e labours, sorrow, cares, and mournings; let him use ptisans, and in his brothes boile Mallowes, Spinach, Lettuce, Sorrell, Purslaine, Succory, Hops, Violets, Borradge, and the foure cold seeds. But let him feede on Mutton, Veale, Kid, Capon, Pullet, young Hares, Partridges, Fishes of stony rivers, reare Egges; and use white wine, but moderately for his drinke.

How to handle the cancorous part.

The part affected with the *Cancer* must be gently handled, and not overburdened by over hard, or heavy things, or by too solide, or fat emplaisters; on the contrary gentle and mitigating medicines must be used; applying also at certaine times such things as resist venome or poyson, as Treacle and Mithridate. Asses milke is exceeding fit to asswage the acrimony of the cancorous humor. Therefore it must not only be taken inwardly, but also applied outwardly to the cancrous ulcer, making thereof a fomentation.

Antidotes.

Asses milke.

Chap. XXIX.

Of the cure of an ulcerated Cancer.

The Signes.

AN Vlcerated *Cancer* hath many signes common with that which is not ulcerated, as the roundnesse of the tumor, the inequality, roughnesse, and paine; to the judgement of the eye, the tumour seemes soft, but it is hard to the touch; the Vlcer is filthy, with lips thicke, swolne, hard, knotty, turned out, and standing up, having a horrid aspect, and casting forth ichorous, filthy, and carionlike filth, sometimes blacke, sometimes mixed with rotten filth, and otherwhiles with much bloud. This kinde of ulcer is maligne, rebellious, and untractable, as that which contemnes milde remedies, and becomes more fierce, by acride and strong; the paine, feaver, and all the symptomes being encreased, from whence the powers are dejected, the wasting and consumption of the body followes, and lastly death. Yet if it be small, and in a part which may suffer amputation, the body being first purged, and bloud drawne, 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 quicke, that no feare of contagion may remaine, or be left behind. The amputation finished, the bloud must not be presently stopped, but permitted to flow out in some measure, yea verily pressed forth all about it, that so the veines swollne with blacke and melancholicke bloud may be disburdened. When you have taken a sufficient quantity of bloud, the place must be seared with an actuall cautery. For that will strengthen the part affected, draw forth the venenate quality, and also stay the defluxion. Then must you apply mitigating medicines, & procure the falling away of the Eschar. To conclude, that which remaines, 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 graines of a Pomeganate, the pricking paine, and all the symptomes being asswaged. Yet the cure of an ulcerated *Cancer*, which shall possesse the lips may be more happily and mildly performed, no causticke medicine being applied after section, so also that scarse any deformity will be left, when it is cicatrized. Which new and never formerly tried, or written of way, as farre as I know, I found and performed in a man of fifty yeares old. Doctor *John Altine*, a most learned Physition being called to Counsell, *Iames Guillemeau*, and Master *Eustachius*, the Kings Chirurgions, and *John Le Ieune* the Duke of Guise his most worthy Chirurgion being present.

How and 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*.

Signes 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 with a needle and threed, that so you may rule and governe the *Cancer* with your left hand, by the benefit of the threed (least any portion thereof should scape the instrument in cutting) and then with your Sizers 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 lippe, which is next to the teeth, may remaine. (if so be that the *Cancer* be

A new and observeable way of taking away a *Cancer* from the lippe.

not growne quite through) which may ſerve as it were for a foundation to generate fleſh to fill up the hollowneſſe againe. Then when it hath bled ſufficiently, the ſides & brinkes of the wound muſt be ſcarified on the right and lift ſides, within, and without, with ſomewhat a deepe 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-lippe) we may have the fleſh more pliant and tractable to the needle and threed. The reſidue of the cure muſt be performed juſt after the ſame manner as we uſe in hare-lips; of which we ſhall treate hereafter.

Chap. XXX.

Of the Topicke medicines to be applied to an unlcerated, and not ulcerated Cancer.

Repelling medicines,

WE at the beginning uſe repercuſſive medicines, ſuch as are the juyces of Nightſhade, Plantaine, Henbane, Lettuce, Sorrell, Houſeleeke, Water Lentill or Duckes-meate, 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 oile of Roſes is very fit for not ulcerated *Cancers*. *Pompholix*, or *Tutia*, waſhed in juice of Nightſhade, or Plantaine, is very good for ulcerated *Cancers*. Beſides this following medicine is very cõmendable.

℞. *Lytharg. & ceruſ. an.* ℥j, *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 ℞. *plumbi uſti loti, pomphol. thuris, an.* ℥ijß, *abſinth. pontic.* ℥ß, *olei roſarum* ℥iij, *ceræ* ℥vj, *ſucci ſolani, quantum ſufficit ad unguenti craſſitudinem*. They very much commend *Theodorickes* Emplaiſter to aſſwage the paine of ulcerated *Cancers*.

Theodorickes Emplaiſter.

℞. *Olei roſ. ceræ alb. an* ℥ijß, *ſucci granat. & ſolani, an.* ℥ij, *ceruſæ lotæ* ℥j, *plumbi uſti, loti, & tuthiæ præpar. an.* ℥ß, *thuris, maſtich. an.* ℥ij, *fiat empl. molle*. This following ointment I have often uſed with good ſucceſſe.

℞. *Therciac. veter.* ℥j, *ſucci cancrorum* ℥ß, *ſucci lactucæ & olei roſar. an.* ℥iß, *vitel. ovorum ſub cinerib. cott.* ij, *camphor.* ℥ß. *piſtentur omnia in mortario plumb. & fiat unguentum.*

℞. *ſpum. argent. axungiæ porci recentis, ceræ alb. an lib.* ß, *olei boni* ℥viij, *vitel. ovorum aſſat.* iiij, *fiat unguent. ſervetur uſui*. And when you will vſe it, mixe it with a little ointment of Roſes. I have alſo mitigated great paine by applying Leaches to an unulcerated *Cancer*, in that part where the torment was moſt vehement, by disburdening the part of ſome portion of the maligne humor; which ſame thing I have done by application of young Whelpes, or Kitlings, or Pidgions, or Chickins cut long wayes, and preſently applied to the ulcer, and now and then changed, as ſoone as their heat ſeemes 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 herbe *Eryſimum*, or Cadlocke, being beaten, is very good to be applied to a *Cancer* not ulcerated; but if the *Cancer* be ulcerated, he boiles this ſame herbe in *Hydromel*, and ſo by injections and lotions clenſes the ulcer, and mitigates the paine. If the *Cancer* affect the wombe, the patient feeles the pricking of the paine in the groines above the *pecten*, and in the Kidneyes, & is often troubled with a difficulty of making water; but when it is ulcerated it poures forth filth or matter exceeding ſtinking & carion-like, and that in great plenty; the filthy vapour of which carryed up to the heart and braine, cauſes often ſwounding. Now to mitigate the paines of ſuch like places, the following medicines are of good uſe.

Leaches.

The application of whelps, chickins, &c.

Epiſt. 21. The eſtate of *Eryſimum*.

The ſignes of the *Cancer* in the wombe.

℞. *Mucag. ſemin. lini, fœnugr. extract. in aqua roſar. & plantaginis quod ſatis eſt*; Of this being warme make a fomentation.

℞. *Rad. Athea,* ℔ß. *coquatur in hydromelite, piſtetur, & trajiciatur, addendo olei roſar. parum, fiat Cataplaſma*. Alſo you ſhall make divers peſſaries according to the different kinds of paine; alſo make injections of the juice of Plantaine, Knotgraſſe, Lettuce, Purſlaine, mixed together, and agitated or laboured in a leaden mortar with a litle

oile

oyle of Roses; for this kinde of medicine is commended by *Galen*, in every kinde of ulcerated *Cancer*. Also this following water is very profitable, and often approved by me. R. *Stercoris bubuli* lb .iiij. *herbæ Roberti, plantag, sempervivi, hyoscyami, portul. lact. lactuc. endiv. an* m.j. *cancros fluviatiles, num. xij.* let them be all beaten together and distilled in a leaden Alembicke, keepe 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 ever and anon; for so the acrimony and force of the inflammation is refunded, and the paine asswaged. *Galen* beats into powder river Crabs burnt; the powder mixed with oyntment of Roses is most profitably applyed upon lint to cancerous ulcers. *Lib. 9. Simpl.* *Lib. 4. de comp. med. secundum gen.*

It will be very convenient to put into the necke of the wombe the following instrument made of Golde, or Silver, whereby the cancerous filth may have free and safe passage forth, and the filthy and putredinous vapours may more easily breathe forth. Therefore let it be hollow quite through; some five or sixe fingers long, and about the bignes of ones Thumbe, 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 thicke in the circumference, make it with a neat springe, that may hold that end open more, or lesse according to the Physitions minde; let there be two strings, or laces put unto it, by which being tyed before and behinde to the rowler, with which the woman shall girt her loynes, the Device may be kept from falling, as you may see in the following figure.

A Vent made like a Pessary for the wombe affected with a Cancerous ulcer.



A. *Shewes the upper end perforated with five or sixe holes.*
B. *The Lower end.*
C. *That part of the end which is opened by the springe, which is marked with the letter* D.
E E. *The strings, or laces.*

Neither is that remedy for not ulcerated cancers to be contemned, which consists of a plate of lead besmeared with quick-silver; for *Galen* himselfe testifies that lead is a good medicine for maligne and inveterate ulcers. But *Guido Cauliacensis* is a witnesse of ancient credit and learning, that such plates of lead rubbed over with quick-silver, to such maligne ulcers as contemne the force of other medicines, are as it were Antidotes, to waste and overcome their malignity and evill nature. This kinde of remedy, when it was prescribed by that most excellent Physition *Hollerius*, who commanded me to apply it to the Lady of *Montigni* maide of Honor to the Queene mother, troubled with a *Cancer* in her left brest, which equalled the bignes of a Wallnut, did not truely throughly heale it, yet notwithstanding kept it from further growth. Wherefore *Lib. 9. simp.* Plate of Lead A History.

Wherefore at the length growing weary of it, when shee had committed her selfe to a certaine Physitian boldly promising her quicke helpe, she tryed with losse of her life, how dangerous, and disadvantagious that cure of a *Cancer* was, which is undertaken according to the manner of healing other ulcers; for this Physition, when he had cast away this our medicine, and had begun the cure with mollifying, heating and attractive thing, the paine, inflammation and all the other Symptoms encreasing, the Tumor grew to that bignes; that being the humor drawne thither could not be conteined in the part it selfe, it stretched the brest forth so much, that it broke it in the middle, just as a Pomegranate cleaves when it comes to its full maturity; whereupon an immoderate fluxe of blood following, for staying whereof hee was forcte to strew caustick pouders thereon; but by this meanes the inflammation and paine becomming more raging, and swoundings comming upon her, shee poore Soule in steed of her promised health, yeelded up her ghost in the Physitions bosome.

Chap. XXXI.

Of the Feaver which happeneth in Scirrhous Tumors.

Why a quartaine happens upon scirrhous tumors.

SVch a Feaver is a Quartaine, or certainly comming neare unto the nature of a Quartaine, by reason of the nature of the Melancholike humor of which it is bred. For this shut up in a certaine seat in which it makes the tumor, by communication of putride vapours heats the heart above measure, and enflames the humors conteined therein, whence arises a Feaver. Now therefore a quartaine is a Feaver comming every fourth day, and having two dayes intermission.

The primitive causes thereof are, these things which encrease Melancholicke humors in the body, such as the long eating of pulse, of course and burnt bread, of salte flesh and fish, of grosse meates as Beefe, Goate, Venison, olde Hares, olde Cheese, Cabbage, thicke and muddy wines and other such things of the same kinde.

The antecedent causes are a heaped up plenty of Melancholicke humors abounding over all the body. But the conjunct causes are Melancholike humors putrifying without the greater vessels, in the small veines and habite of the body.

The signes.

We may gather the signes of a Quartaine feaver from things which they call naturall, not naturall, and against nature; from things naturall, for a cold and dry temper, olde age, cold and fat men, having their veines small, and lying hidde, their spleene swolne and weak, are usually troubled with quartaine Feavers.

Why they are frequent in Autumne.

Of things not naturall; this Feaver, or Ague is frequent in Autumne, not onely because, for that it is cold and dry, it is fit to heape up Melancholike humors; but cheifly by reason that the humors by the heate of the preceding Summer are easily converted into adust Melancholy, whence far worser and more dangerous quartaines arise, than of the simple Melancholike humor; to conclude, through any cold or dry season in a region cold and dry, men that have the like Temper easily fall into quartaines; if to these a painefull kinde of life full of danger and sorrow doth accrew.

Of things contrary to nature; because the fitts take one with painefull shaking, inferring as it were the sence 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 thinne skurfe and pustles especially on the legges; the pulse at the beginning is litle, slow, and deepe, and the urine also is then white and wateriish, inclining to somewhat a darke colour.

In the declination when the matter is concocted the urine becomes blacke, not occasioned by any maligne Symptome or preternaturall excesse of heat, (for so it should be deadly) but by excretion of the conjunct matter. The fit of the Quartaine continues 24 houres, but the intermission is 48 houres. It often takes its originall

originall from an obstruction, paine, and *Scirrhus* of the Spleene, and the suppression of the courses and Hæmorroides.

Quartaines taken in the Summer are for the most part short, but in the Autumne long, especially such as continue till Winter. Those which come by succession of any disease of the Liver, Spleene, 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 bowells, and to such a patient, as will be governed by the Physition in his Diet, infer no greater harme, but free him from more grievous and long diseases, as Melancholy, the Falling sickenesse, Convulsions, Madnesse, because the Melancholy humor, the author of such diseases, is expelled every fourth day by the force of the fit of the Quartaine. Prognostike. From what diseases a quartaine frees one.

A Quartane Feaver, if there be no error committed, commonly exceeds not a yeare, for otherwise some Quartanes have beene found to last to the twelfth yeare according to the opinion of *Avicen*: the Quartane beginning in Autumne is oft times ended in the following spring; the Quartane which is caused by adust blood or choler or Salt flegme is more easily and sooner cured, than that which proceeds from an adust Melancholy humor; because the Melancholy humor, terrestriall of its owne nature, and harder to be discussed than any other humor, is againe made by adustion (the subtiller parts being dissolved and the grosser subsiding) more stubborne, grosse, maligne and acride. The cure is wholy absolved by two meanes, that is, by Diet and medicines. The Diet ought to be prescribed, contrary to the cause of the Feaver in the use of the sixe things not naturall, as much as lyes in our power. Wherfore the Patient shall eschew Swines flesh, flatulent, viscide and glutinous meats, fenny fowles, 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 grosse 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 meate; for then it is the sooner provoked, the fibers of the Stomach being humected & relaxed, and the stomach is sooner turned to vomiting, whereupon followes a more plentifull, happy and easie evacuation of the Flegmatique and Cholericke humor, and lesse troublesome to nature: and of all the crudities with which the mouth of the ventricle abounds in a Quartaine, by reason of the more copious afflux of the Melancholike humor, which by his qualities cold and dry, disturbes all the actions and naturall faculties. Moreouer exercises and frictions are good before meat; such passions of the minde as are contrary to the cause from which this Feaver takes his originall, are fit to be cherished by the patient; as Laughter, Iesting, Musique, and all such like things full of pleasure and mirth. At the beginning the patient must be gently handled and delt withall, and we must abstaine from all very strong medicines untill such time, as the disease hath beene of some continuance. For this humor, contumacious at the beginning when as yet nature hath attempted nothing, is againe made more stubborne, terrestriall and dry, by the almost fiery heat of acride medicines. If the body abound with bloud, some part thereof must be taken away by opening the Median or Basilick veine of the left arme, with this caution, that if it appeare more grosse and blacke, we suffer it to flow more plentifully; if more thin, and tinctured with a laudable red Colour, that we presently stay it. The matter of this Feaver must be ripened, concocted and diminished with the Syrrupes of *Epithymum*, of *Scolopendrium*, of Mayden hayre, Agrimony, with the waters of Hopps, Bugloss, Borage and the like. I sincerely protest, next unto God, I have cured very many quartaines by giving a potion of a little Treakle dissolved in about some two ounces of *Aqua vitæ*; also sometimes by two or three graines of muske dissolued in Muskadine, given at the beginning of a particular fitt towards the generall declination of the disease, after generall purgations the humor and body being prepared, and the powers strong; And certainly an inveterate Quartaine can scarce ever be discussed unlesse the body be much heated with meates and medicines. Therefore it is not altogether to be disproved which many say, that they have driven a- Diet. How much vomiting prevailes to cure a quartaine Medicine.

way

way a quartaine by taking a draught of wine every day as soone as they came forth of their bed, in which some leaves of Sage had bin infused all the night. Also it is good a little before the fit to anoint all the spine of the backe with oyles heating all the nervous parts, such as are the oyle of Rue, Wallnuts, of the Peppers, mixing therewith a little Aqua vitæ, but for this purpose the oyle of *Castoreum* which hath beene boyled in an apple of *Coloquintida*, the Kernells taken out, uppon hot coles to the consumption of the halfe part, mixing therewith some little quantity of the powders of Pepper, Pelitory of Spaine and *Euphorbium*, is excellent. Certainly such like Inunctions are good not onely to mitigate the vehemency of the terrible shaking, but also to provoke sweats; for becaufe by their humid heat they discusse this humor being dull and rebellious to the expulsive faculty, for the Melancholy is as it were the drosse and mudde of the bloud. Therefore if on the contrary the Quartaine feaver shall be caused by adust choler, we must hope for and expect a cure by refrigerating and humective medicines, such as are Sorrell, Lettuce, Purslane, brothes 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 subtiller parts. Thus *Trallianus* boasts that hee hath cured these kinds of Quartane Feaver by the onely use of refrigerating *Epithemaes* being often repeated a little before the beginning of the fit. And this is the summe 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 kinde, but mixt or composed by admixture of some other matter; for example, according to the mixture of diverse humors Flegmatique and cholericke, the medicines must also be mixt, as if it were a confused kinde of Feaver of a *Quotidian* and *tertian*; it must be cured by a medicine composed of things evacuating flegme and choler.

What quartaines 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, veine, or Sinnew.*

What it is.

AN *Aneurisma* is a soft tumor yeelding to the touch, made by the bloud and spirit powred forth under the flesh and Muscles, by the dilatation or relaxation of an Artery. Yet the author of the definitions seemes 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 meane time agglutinated, filled with flesh and cicatrized, which doth not seldome happen in opening of Arteries unskilfully performed and negligently cured; therefore *Aneurismaes* 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 travaile. 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 di ated and broken, whence followes an effusion of bloud and spirits under the skin. The signes are, a swelling one while great, another small, with a pulsation and a colour not varying from the native constitution of the skinne. It is a soft tumor, and so yeelding to the impression of the fingers that if it peradventure be small, it wholy vanisheth, the Arterious bloud and spirits flying backe into the body of the Artery, but presently assoone as you take your fingers away, they returne againe with like celerity. Some *Aneurismaes* doe not onely when they are pressed, but also of themselves make a sensible hissing, if you lay your eare neare to them, by reason of the motion of the vitall spirit rushing with great violence through the straitnes of the passage.

In what parts they chiefly happen.

Wherefore

Wherefore in *Aneurismaes* in which there is a great rupture of the Artery, such a noyse is not heard, because the spirit is carryed through a larger passage. Great *Aneurismaes* under the Arme pits, in the Groines and in other parts wherein there are large vessells, admit no cure, because so great an eruption of blood and spirit often followes uppon such an incision, that death prevents both art and Cure. Which I observed a few yeares agoe in a certaine preist of Saint *Andrewes* of the Arches, M. *John Maillet* dwelling with the chiefe President *Christopher de Thou*. Who having an *Aneurisma* at the setting on of the shoulder about the bignes of a Wall-nut, I charged him, hee should not let it be opened, for if it did, it would bring him into manifest danger of his life, and that it would be more safe for him, to breake the violence thereof with double clothes steeped in the juyce of Night-shade and Houselike, with new and whayey cheese mixt therewith: Or with *Vnguentum de Bolo* or *Emplastrum contra rupturam* and such other refrigerating and astringent medicines, if hee 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 hee might fasten his breeches instead of a swathe, and in the meane time he should eschew all things which attenuate and inflame the blood, but especially he should keepe himselfe from all great straining of his voyce. Although he had used this Diet for a yeare, 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 kinde of vulgar inpostumes, 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 ayde, and bidds 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 threshould, he gave up his ghost with his blood, Wherefore I diligently admonish the young Chirurgion that hee do not rashly open *Aneurismas* unlesse they be small in an ignoble part, and not indued with large vessells, but rather let him performe the cure after this manner. Cut the skinne which lyes over it untill the Artery appeare, 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, binde it, then cut it off and so expect the falling off, of the thred of it selfe whiles 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 uncurable. Such as frequently happen to those who have often had the unction and sweat for the cure of the French disease, because the blood being so attenuated and heated therewith that it cannot be contayned in the receptacles of the Artery, it distends it to that largenesse as to hold a mans fist; Which I have observed in the dead body of a certaine Taylor, who by an *Aneurisma* of the Arterious veine suddenly whilest hee was playing at Tennis fell downe dead, the vessell 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 largenesse I formerly mentioned, and the inner Coate thereof was bony. For which cause within a while after I shewed it to the great admiration of the beholders in the Physitions Schole whilest I publiquely dissected a body there; the whilst he lived said he felt a beating and a great heate over all his body by the force of the pulsation of all the Arteryes, by occasion whereof hee often swounded. Doctor *Syluius* the Kings professor of Physicke at that time forbad him the use of Wine, and wished him to use boyled water for his drinke, and Crudds and new Cheeses for his meate, and to apply them in forme of Cataplasmes upon the grieved and swolne part. At night he used a ptisan of Barley meale and Poppy-seedes, and was purged now and then with a Clyster of refrigerating and emollient things, or with Cassia alone, by which medicines hee said hee found himselfe 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 Coates of an Artery, then breakes them; which when it happens, it then borrowes from the neighbouring bodies a fit matter to restore the loosed continuity thereof.

This matter whilest by litle and litle it is dried and hardened, it degenerats into a Gristely

Prognostick.

A History.

Aneurismaes must not rashly be opened.

How they must be cured.

These of the inward parts incureable.

A History.

Griſtely or elſe a bony ſubſtance, juſt by the force of the ſame materiall and efficient cauſes, by which ſtones are generated in the reines and bladder. For the more terreſtriall portion of the blood is dried and condenſed by the power of the unnaturall heat contayned in the part affected with an *Aneuriſmae*; whereby it comes to paſſe 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 handmaide of God is ſhewed, as that which, as it were by making and oppoſing a new wall or bancke, would hinder and breake the violence of the raging blood ſwelling with the abundance of the vitall ſpirits; unleſſe any had rather to refer the cauſe of that hardneſſe to the continuall application of refrigerating and aſtringent 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 ſignes; 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 contayned 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 putrifies; Thence enſue great paine, a Gangren, and mortification of the part, and laſtly the death of the Creature.

Lib. 4. Cap. 10. de præſ. ex pulſu.

A Caution in the knowing of *Aneuriſmaes*

The End of the Seventh Booke.

THE

OF PARTICULAR TVMORS AGAINST NATVRE.

The Eight Booke:

The Preface.

BEcause the Cure of diseases must be varied according to the variety of the temper, not onely of the body in generall, but also of each part thereof; the strength, figure, forme, site, and sence thereof being taken into consideration: I thinke it worth my paines, having already spoken of Tumors in Generall, if I shall treate of them in particular which affect each part of the body, beginning with those which assayle the head. Therefore the Tumor either affects the whole head, or else onely some particle thereof, as the Eyes, Eares, Nose, Gumms and the like. Let the *Hydrocephalos*, and *Physocephalos* be examples of those tumors which possesse the whole head.

Chap. I.

Of an Hydrocephalos *or watry tumor which commonly affects the heads of Infants.*

THe Greekes call this disease *Hydrocephalos*, as it were a Dropsie of the Head, by a wateriſh humor; being a disease almost peculiar to Infants newly borne. 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 veine or Artery, and an effusion of the blood under the skinne. Which by corruption becomming whayish, lastly, degenerateth into a certen wateriſh humor. It hath also an inward cause, which is the abundance of serous and acride blood, which by its tenuity and heat sweats through the Pores of the vessells, sometimes betweene the Musculous skinne of the head and the *Pericranium*, sometimes betweene the *Pericranium* and the skull, and sometimes betweene the skull and the membrane called *Dura mater*, and otherwhiles in the ventricles of the braine.

What it is.

The causes.

Differences by reason of place

The signes of it, contained in the space betweene the Musculous skinne and the *Pericranium*, are a manifest tumor without paine, soft, and much yeelding to the

Signes.

preſſure of the fingers. The Signes, when it remayneth betweene the *Pericranium* and the skull, are for the moſt part like the forenamed, unleſſe it be that the Tumor is a little harder, and not ſo yeelding to the finger, by reaſon of the parts betweene it and the finger; And alſo there is ſomewhat more ſence of paine. But when it is in the ſpace betweene the skull and *Dura mater*, or in the ventricles of the Braine or the whole ſubſtance thereof, there is a dullneſſe of the ſences as of the ſight and hearing; the tumor doth not yeeld to the touch, unleſſe you uſe ſtrong impreſſion, for then it ſincketh ſomewhat downe, eſpecially in infants newly borne; who have their ſculls almoſt as ſoft as waxe, and the junctures of their Sutures laxe, both by nature, as alſo by accident, by reaſon of the humor conteined therein moiſtening and relaxing all the adjacent parts; the humor conteined here lifts up the Scull ſomewhat more high, eſpecially at the meetings of the Sutures, which you may thus know, becauſe the Tumor being preſſed, the humor flyes backe into the ſecret paſſages of the braine.

To conclude, the paine is more vehement, the whole head more ſwollen, the forehead ſtands ſomewhat further out, the eye is fixt and immoveable, and alſo weepes by reaſon of the ſerous humor ſweating out of the braine.

A Hiſtory. *Veſalius* writes that hee ſaw a girle of two yeares old, whoſe head was thicker than any mans head by this kinde of Tumor, and the Scull not bonie, but membranous, as it uſeth to be in abortive birthes, and that there was nine pound of water ran out of it.

Aucraſis tells that he ſaw a child whoſe head grew every day bigger by reaſon of the watery moiſture conteined therein, till at length the tumor became ſo great, that his necke could not beare it neither ſtanding nor ſitting, ſo that hee died in a ſhort time. I have obſerved and had in cure foure children troubled with this diſeaſe, one of which being diſſected after it died, had a braine no bigger than a Tennis Ball. But of a Tumor and humor conteined within under the *Cranium*, or Scull, I have ſeene none recover; but they are eaſily healed of an externall Tumor.

Therefore whether the humor lye under the *Pericranium*, or under the muſculous skin of the head, it muſt firſt be aſſailed with reſolving medicines, but if it cannot be thus overcome, you muſt make an inciſion, taking heede of the Temporall Muſcle, and thence preſſe 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 beene cauſed by contuſion; then the wound muſt be filled with dry lint, and covered with double boulſters, and laſtly bound with a fitting ligature.

Chap. II.

Of a Polypus, *being an eating diſeaſe in the Noſe.*

The reaſon of the name. THe *Polypus* is a Tumor of the Noſe againſt nature, commonly ariſing from the *Os Ethmoides* or ſpungye 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 or Excreſcence one while white, another while reddiſh, which adheres to the bone of the Noſe, and ſometimes fills the Noſthrils hanging towards the lipps, ſometimes it deſcends backe through that hole, by which the ſpirit deſcends from the Noſe to the throtle; it growes ſo that it may be ſeene behinde the *Vvula*, and often ſtrangles a man by ſtopping his breath.

Lib. 6. Cap. 8.

The differences thereof. There are five kinds thereof, the firſt is, a ſoft membrane, long and thin like the relaxed and depreſſed *Vvula*, hanging from the middle griſtle of the noſe, being filled with a Phlegmaticke and viſcide humor. This in exſpiration hangs out of the Noſe, but is drawne in and hid by inſpiration; it makes one ſnaffle in their ſpeech and ſnort in their ſleepe. The ſecond, hath hard fleſh, bred of Melancholy blood without aduſtion, which obſtructing the noſthrils intercepts the reſpiration made by that part. The third, is fleſh hanging from the Griſtle, round, and ſoft, being the off-

ſpring

spring of Phlegmaticke blood. The fourth is an hard Tumor, like flesh, which when it is touched yeelds a sound like a stone; it is generated of Melancholike blood dryed, being somewhat of the nature of a *Scirrhus* confirmed and without paine.

The fifth is as it were composed of many cancrous ulcers spred 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 painefull, hard, resisting, and which have a livide, or leaden colour, must not be touched with the hand, because they savour of the Nature of a *Cancer*, as into which they oft degenerate; yet by reason of the paine which oppresses more violently, you may use the Anodyne medicines formerly described in a *Cancer*, such as this following. Which of them admit no manuall operation.

℞. *Olei de vitell. ovorum* ℥ij, *Lytharg. auri, & Tuthiæ prep. an.* ℥j. *succi plant. & solani an.* ℥ß. *Lapid. hæmatit. & camphoræ, an* ℥ß. Let them be wrought a long time in a leaden mortar, and so make a medicine to be put into the nosethrills. An Anodyne.

Those which are soft, loose and without paine, 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 *Ægyptiacum* composed of equall parts of all the simples with vitrioll which hath a facultie to waste such like flesh. *Aquafortis* and oyle of vitrioll have the same facultie, for these take away a *Polypus* by the rootes; for if any part thereof remayne it will breede againe. But Cauteries and acride medicines must be put into the nostrills with this Caution, that in the meane time cold repelling and astringent medicines be applied to the nose and parts about it to asswage the paine, and hinder the inflammation. Such as are *Vnguentum de bolo*, and *vnguentum nutritum*, whites of Egges beate with Rose leaves, and many other things of the like nature. Why it must be taken cleare away.

Chap. III.

Of the Parotides *that is, Certaine swellings about the Eares.*

THe *Parotis* is a Tumor against nature, affecting the Glandules and those parts seated behinde and about the Eares, which are called the Emunctories of the braine; for these becaule they are loose and spungy, 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 Symptomaticall, the excrements of the braine increased in quantity or quality rushing thither of their owne accord. Such abscesses often have great inflammation joyned with them, because the byting humor which flowes thither is more vitiated in quality than in quantity. Besides also they often cause great paine, by reason of the distention of the parts indued with most exquisit sence, as also by reason of a Nerve of the fifth Conjugation spread over these parts; as also of the neighbouring membranes of the braine, by which meanes the patient is troubled with the Head-ach and all his face becomes swolne. Yet many times this kinde of Tumor useth to be raysed by a tough, viscous, and grosse humor. What it is. The differences. Their signes and Symptomes.

This disease doth more grievously afflict young men than olde; it commonly brings a Feaver and watching. It is difficult to be cured, especially when it is caused by a grosse, tough, and viscide humor, sent thither by the *Crisis*. Prognostickes.

The cure must be performed by diet, which must be cõtrary to the quality of the humor in the temper & consistence of the meates. If the inflãmation & redneſſe be great, The cure.

which indicate abundance of bloud, Phlebotomie will be profitable, yea very necessary. But here we must not use the like judgement in application of locall medicines as wee doe in others tumors, as *Galen* admonisheth us; that is, wee must not use repercussives at the beginning, especially if the abscesse be critically; for so, we should infringe or foreslow the indeavors of nature forcibly freeing it selfe from the morbifique matter. But wee must much lesse repell or drive it backe if the matter which hath flowed thither be venenate, for so the reflow thereof to the noble parts would prove mortall. Wherefore the Chirurgion shall rather assist nature in attracting and drawing forth that humor. Yet if the defluxion shall be so violent, if the paine so fierce that thence there may be feare 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.

Lib. 3. de comp. med. ser. Locos. Hip. aph. 21 lib. 1.

℞. *Far. hord. & sem. lin. ana.* ℥ij. *coquantur cum mulsa aut decocto cham. addendo but. recen. & olei cham. ana* ℥j. *fiat Cataplasma.* And the following oyntment wil also be good.

℞. *But. recen.* ℥ij, *oles cham. & lilior. an.* ℥j. *unguen. de Althea* ℥ß. *cerae parum*: make an oyntment to be applyed with moist and greasie wooll to mitigate the paine, also somewhat more strong discussing and resolving medicins will be profitable, as:

Gentle resolving medicines

Stronger resolvers.

℞. *Rad. althea & bryon. an.* ℥ij. *fol. rutae, puleg. orig. an. m.j. flo. chamam. melil. an. p.j. coquantur in hydromelite, pistentur, trajciantur, addendo farin. fanugrec. orobi, an.* ℥j. *pul. Ireos, cham. melilot. an.* ℥ij. *oles aneth. rutac. an.* ℥j. *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 medicine.

℞. *Rad. lilior um & ceparum sub cineribus cott. an.* ℥iij. *Vitell. over. num. ij. axung. suillae & unguent. basilicon, an.* ℥j. *far. sem. lini* ℥iß. *fiat Cataplasma.* But if the matter doe so require, let the tumor be opened as we have formerly prescribed.

Chap. IIII.

Of the Epulis, *or overgrowing of the flesh of the Gums.*

What it is.

THe *Epulis* is a fleshy excrescence of the Gums betweene the teeth, which is by litle and litle oft times encreased to the bignes of an Egge, so that it both hinders the speach and eating; it casts forth salivous and stincking filth, and not seldome degenerates into a *Cancer*, which you may understand by the propriety of the colour, paine and other accidents; for then you must by no meanes touch it with your hand. But that which doth not torment the Patient with paine, may be pluckt away; and let this be the manner thereof.

The Symptomes.

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 trunke or pipe, or with *Aqua fortis*, or oyle of *Vitriol*, but with great care that the sound parts adjoyning thereto be not hurt, for if so be that it be not burnt, it usually returnes.

The Chirurgicall cure.

I have often by this meanes taken away such large tumors of this kinde, that they hung out of the mouth in no small bignes, to the great disfiguring of the face, which when as no Chirurgion durst touch, because the flesh looked livide, I ventured upon because they were free from paine; 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 againe, because a certaine 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 gristlely & bony substance. Wherfore the cure must be begun as speedily as may be; for being but litle, and having fastened no deepe roots, it is more easily taken away, being then only filled with a viscide humor, which in succesſe of time is hardened, and makes the taking away thereof more difficult.

Why the cure must not be deferred.

Chap.

Chap. V.

Of the Ranula.

THere is oft times a tumor under the tongue, which takes away the liberty of pronuntiation, or speech; wherefore the Greeks call it *Batrachium*, the Latines *Ranula*, because such as have this disease of the tongue, seeme to expresse their minds by croaking rather than by speaking. The Reason why it is so called.

It is caused by the falling downe of a cold, moiste, grosse, tough viscide and Phlegmaticke matter, from the braine upon the tongue; which matter in colour and consistence resembles the white of an egge, yet sometimes it lookes of a Citrine or yellowish colour. The Cause.

That you may safely performe the cure, you must open the Tumor rather with a cautery or hot Iron, than with a Knife, for otherwise it will returne againe. 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 burne it, by thrusting your thumbe 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 conteined therein, and then wash the patients mouth with some barly water, hony, and Sugar of Roses; for so the ulcer will be safely and quickly healed. The Cure.

The deliniation of the Iron plate and crooked actuall Cautery.



Chap. VI.

Of the swelling of the Glandules, or Almonds of the Throate.

NAture at the jawes neare 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 downe from the braine, both least that the too violent falling downe 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 faile. For thus this spittle being consumed by feaverish heats, the patients are scarse able to speake, unlesse they first moisten their tongue by much washing of their mouth. Why the Glandules are called Almonds. Their use.

These Glandules because they are seated in an hot and moist place, are very subject to inflammations; for there flowes into these oft times together with the blood, a great quantity of crude, phlegmaticke and viscous humors, whence arises a tumor; The Cause of their tumor.

which is not ſeldome occaſioned by drinking much and that vaporous wine, by too much Gluttony, and ſtaying abroad in the open aire.

Symptomes. Swallowing is painfull and troubleſome to the Patient, and commonly hee hath a Feaver. Oft times the neighbouring Muſcles of the Throtle and necke are ſo ſwolne together with theſe Glandules, that (as it uſually happens in the *Squinzye*) the paſſage of the breath and aire is ſtopped, and the Patient ſtrangled.

Cure. We reſiſt this imminent danger by purging and blood-letting, by applying Cupping-Glaſſes to the Necke and ſhoulders, by frictions and ligatures of the extreme parts, and by waſhing and gargling the mouth and throte with aſtringent gargariſmes. 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 encreaſed, 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; & it may be done ſo much the ſafer, becauſe the jugular veines, and arteryes are furtheſt diſtant from this place, and for that this place hath commonly litle fleſh upon it. And that the inciſion may be the fitlyer made, the patient muſt be wiſhed to bend his head backe, that ſo the Artery may be the more eaſily come to by the inſtrument; then you ſhal make an inciſion overthwart with a crooked knife betweene two rings (not hurting nor touching the Griſtlely ſubſtance) that is to ſay, the membrane which tyes together the Griſtlely rings being onely cut; you ſhall then judge that you have made the inciſion large enough, when you ſhall perceive the breath to breake 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 lipps 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 Griſtlely rings thereof cut with a great wound, as we ſhall note when wee ſhall come to treate 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 of the Vvula, *or* Columella.

What the *Vvula* is, and what the uſe therof. The Cauſe of the ſwelling thereof. THe *Vvula* is a litle body, ſpongy and ſomewhat ſharpened to the forme of a pine apple, hanging even downe from the upper and inner part of the palat, ſo to breake the force of the Aire drawn in, in breathing and carryed to the Lungs, and to be as a quill to forme and tune the voyce. It often growes above meaſure by receiving moyſture falling downe from the braine, becomming ſharpe by litle and litle from a broader and more ſwolne *Baſis*.

Symptomes Which thing cauſes many Symptomes; for by the continuall irritation of the diſtilling humor the Cough is cauſed, which alſo hinders the ſleepe, and intercepts the liberty of ſpeech; but alſo by hindring reſpiration the patients cannot ſleepe unleſſe with open mouth: they are exerciſed with a vaine endeavoring to ſwallow (having as it were a morſell ſticking in their jawes) and are in danger of being ſtrangled.

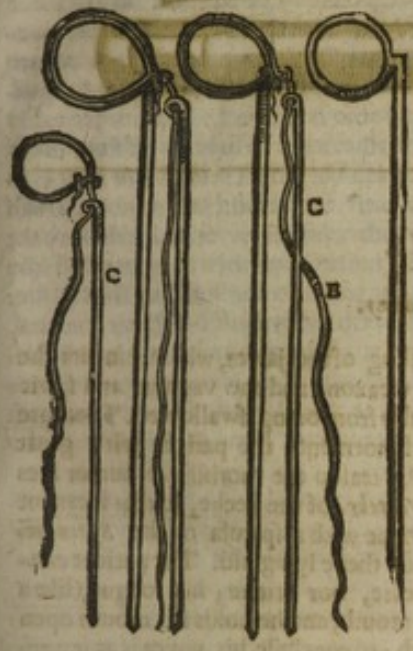
The Cure. This diſeaſe muſt be reſiſted and aſſailed by purging, bleeding, Cupping, taking of chyſters, uſing aſtringent Gargles, and a convenient diet; but if it cannot thus be overcome, the cure muſt be tryed by a cauſticke of *Aqua fortis*, which I have divers times done with good ſucceſſe. But if it cannot be ſo done, it will be better to put to your hand, than through idleneſſe to ſuffer the patient to remaine in imminent and deadly danger of ſtrangling; yet in this there muſt very great caution be uſed; for the Chirurgeon ſhall not judge the *Vvula* fit to be touched with an inſtrument or cauſtick, which is ſwolne with much enflamed, or blacke blood after the manner of a *Cancer*; but hee ſhall boldly put to his hand if it be longiſh, grow ſmall by litle and litle into a ſharpe, looſe & ſoft point; if it be neither exceeding red, neither ſwolne with too much blood

The Care by Chirurgery.

but

but whitiſh and without paine. 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, and cut away as much thereof as ſhall be thought unprofitable. Otherwiſe you ſhall binde 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 Phyſition in ordinary, and the chiefe Phyſition of the Queene mother; Which alſo may be uſed in binding of *Polypi* and warts in the necke of the Wombe.

The Deliniation of conſtrictory rings fit to twitch, or binde the Columella, *with a twiſted thred.*

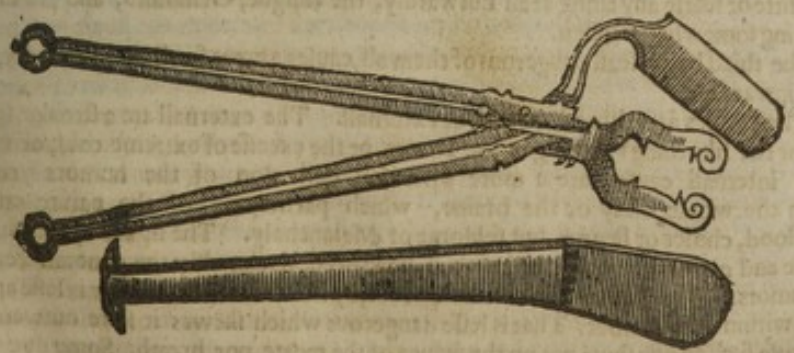


A. Shewes the ring whoſe upper part is ſomewhat hollow.

B. A double waxed thred, which is couched in the hollowneſſe of the ring, and hath a running, or looſe knot upon it.

C. An iron rod, into the eye whereof the forementioned 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 fluxe of blood. When you would ſtraiten the thred, draw it againe through this iron rod, and ſo ſtraine it as much as you ſhall thinke 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 meanes thereof, and ſo the part and patient be reſtored to health. I have deliniated 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, whileſt the Chirurgion 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 fluxe

fluxe of blood, then it muſt be burnt and ſcared with an hot iron, ſo thruſt into a Trunke, or Pipe with an hole in it, that no ſound part of the mouth may be offended therewith.

A hollow Trunke 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 Squinancy, or Squinzy, is a ſwelling of the jawes, which hinders the entring of the ambient aire into the weazon, and the vapours and ſpirit from paſſage forth, and the meate alſo from being ſwallowed. There are three differences thereof. The firſt torments the patient with great paine, no ſwelling being outwardly apparent, by reaſon the morbificke humor lyes hid behinde the almonds or Glandules at the *Vertebræ* of the necke, ſo that it cannot be perceived, unleſſe you hold downe the tongue with a ſpatula or the *Speculum oris*, for ſo you may ſee the redneſſe and tumor there lying hid. The patient cannot draw his breath, nor ſwallow downe meate, nor drinke; his tongue, (like a Gray-hounds after a courſe,) hangs out of his mouth, and he holds his mouth open that ſo hee may the more eaſily draw his breath; to conclude, his voyce is as it were drownd in his jawes and noſe; he cannot lye upon his backe, but lying is forced to ſit, ſo to breathe more freely: and becauſe the paſſage is ſtopt, the drinke flyes out at his noſe; the eyes are fiery and ſwollen, and ſtanding out of their orbe. Thoſe which are thus affected are often ſuddainely ſuffocated, a foame riſing about their mouthes.

The differences. The firſt kind. The Symptomes.

The ſecond kinde.

The ſecond difference is ſaid to be that, in which the tumor appeares inwardly, but litle or ſcarſe any thing at all outwardly, the tongue, Glandules, and jawes appearing ſomewhat ſwollen.

The third.

The third being leaſt dangerous of them all, cauſes a great ſwelling outwardly, but litle inwardly.

The Cauſes.

The Cauſes are either internall, or externall. The externall are a ſtroake, ſplinter or the like things ſticking in the Throat, or the exceſſe of extreme cold, or heat. The internall cauſes are a more plentifull defluxion of the humors either from the whole body or the braine, which participate of the nature either of blood, choler or flegme, but ſeldome of Melancholy. The ſignes by which the kinde and commixture may be knowne, have beene declared in the generall treatiſe of tumors. The Squincy is more dangerous, by how much the humor is leſſe apparent within and without. That is leſſe dangerous which ſhewes it ſelfe outwardly, becauſe ſuch an one ſhuts not up the wayes of the meate, nor breath. Some dye of a Squincy in twelue houres others in two, foure or ſeven daies. Thoſe (ſaith *Hippocrates*) which ſcape the Squincy, the diſeaſe paſſes to the lungs, and they dye within ſeven dayes;

Hip. ſect. 3. prog. 2. Aphor. 20. ſect. 5.

dayes; but if they scape these dayes, they are suppurated; but also often times 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.

The way of Resolution is the more to be desired; it happens when the matter is small, and that subtle, especially if the Physition shall draw blood by opening a veine, and the patient use fitting Gargarismes. A Criticall Squincy divers times proves deadly by reason of the great falling downe of the humor upon the throtle, by which the passage of the breath is sodainely shut up. Brothes must be used made with Capons, and Veale, seasoned with Lettuce, Purslaine, Sorrell, and the cold seeds.

If the Patient shall be somewhat weake, let him have potched Egges, and Barly Creames, the Barly being first boiled with Raisons in water and Sugar, and other meates of this kinde. Let him be forbidden wine, in stead whereof he may use *Hydromelita*, and *Hydrosachara* (that is, drinkes made of water and Hony, or water and Sugar) as also the Syrupes of dryed Roses, of Violets, Sorrell and Limons, and others of this kinde. Let him avoide too much sleepe. But in the meane time the Physition must be carefull of all, because this disease is of their kinde, which brooke no delayes. 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 veine under the tongue be opened; let cupping-Glasses be applyed, sometimes with scarification, sometimes without, to the necke and shoulders, and let frictions and painefull Ligatures be used to the extreme parts. But let the humor impact in the part be drawne away by glisters and sharpe suppositories. Whilest the matter is in defluxion, let the mouth without delay be washed with astringent gargarismes to hinder the defluxion of the humor, least by its suddaine falling downe it kill the Patient, as it often happens, all the Physitions care and diligence notwithstanding. Therefore let the mouth be frequently washed with Oxycrate, or such a gargarisme: R *Pomorum silvest. nu.* iiij. *sumach, Resar. rub. an. m. ss. berber.* ʒij. let them be all boyled with sufficient quantity of water to the consumption of the halfe, adding thereunto of the wine of foure Pomegranats ʒiiij. of *diamoron* ʒij, let it be a litle more boyled and make a gargle according to arte. And there may be other Gargarismes made of the waters of Plantaine, Night-shade, Verjuice, Iulep of Roses and the like. But if the matter of the defluxion shall be Phlegmaticke, Alume, Pomgranate pill, Cypresse nuts, and a litle Vinegar may be safely added. But on the contrary, repercussives must not be outwardly applyed, but rather Lenitives, 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, speake and breathe more freely, if he sleepe quietly, and the paine begin to be much aswaged. Therefore then natures endeavor must be helped by applying resolving medicines, or else by using suppuratives inwardly and outwardly, if the matter seeme to turne into *pus*. Therefore let gargarismes be made of the roots of March-Mallowes, Figgs, Iujubes, damaske Prunes, Dates, perfectly boyled in water. The like benefit may be had by Gargarismes of Cowes milke with Sugar, by oyle of sweete Almonds, or Violets warme, for such things helpe forward suppuration and aswage paine; let suppurating cataplasmes be applyed outwardly to the necke and throate, and the parts be wrapped with wooll moistened with oyle of Lillyes. When the Physition shall perceive that the humor is perfectly turned into *pus*, let the patients mouth be opened with the *Speculum oris*, and the abscesse opened with a crooked and long incision knife; then let the mouth be now and then washed with clensing gargles; as R. *Aqua hordei lib. ss. mellis ros. & syr. rosar. sic. an* ʒj. *fiat gargarisma.* Also the use of *oxymel*, that is wine, and Hony will be fit for this purpose. The ulcer being clensed by these means, let it be cicatrized with a litle roch-Alume added to the former gargarismes.

Diet.

Cure.

Repelling Gargarismes.

Ripening Gargarismes.

Detergent Gargarismes.

The

The Figure of an incision knife opened out of the haste, which serves for a sheath thereto.



Chap. IX.

Of the Bronchocele, *or* Rupture *of the throate.*

The reason of the name.

THat which the French call Goetra, that the Greeks call *Bronchocele*, the Latines *Gutturis Hernia*, that is, the Rupture of the throate. For it is a round tumor of the throate, the matter wherof comming from within outwards, is conteined betweene the skin and weazon; it proceeds in weomen from the same cause as an *Aneurisma*.

The differences.

But this generall name of *Bronchocele* undergoes many differences, for sometimes it retaines the nature of *Melicerides*, other whiles of *Steatom'as*, *Atheroma's* or *Aneurisma's*, in some there is found a fleshy substance having some small paine; some of these are small, others so great, that they seeme almost to cover all the throate; some have a Cyste, or bagge, others have no such thing; all how many so ever they be, and what end they shall have, may be knowne by their proper signes; The Cure. these which shall be cureable, 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 performeed at diverse times, and discussed by fit remedies, and lastly let the ulcer be consolidated and cicatrized.

Chap. X.

Of the Pleurisie.

What it is.

THe Pleurisie is an inflammation of the membrane, investing the ribbes, caused by subtile and cholericke bloud, springing upwards with great violence from the hollow veine into the *Azygos*, and thence into the intercostall veines, & 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 paine, a Feaver and difficulty of breathing. This suppurated bloud 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 stoole.

Of a Pleurisie comming to suppuration.

But if nature being too weake, 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 betweene the third and fourth true and legitimate ribs; & that must be done either with an actuall or potentiall cautery, or with a sharpe knife drawne upwards towards the backe, but not downwards, lest the vessells should be violated which are disseminated under the rib. This apertion may be safely and easily performed by this actuall cautry; it is perforated with foure holes, through one whereof there is a pin put higher or lower according to the depth & manner of your incision:

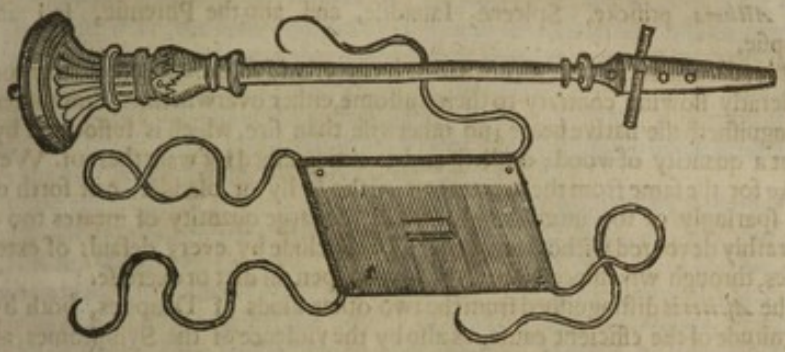
Of the change thereof into an *Empyema*.

Of the apertion of the side in an *Empyema*

the

then the point thereof is thruſt through a plate af iron perforated alſo in the midſt, into the part deſigned by the Phyſition, 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 foure ſtrings. Wherefore I have thought good here to expreſſe 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 apertion be made, the *pus* or matter muſt be evacuated by little and litle at ſeverall times; and the capacity of the Cheſt clenſed from the purulent matter by a detergent injection of vj ounces of Barly water, and ℥ij hony of Roſes, and other the like things mentioned at large in our cure of wounds.

Chap. XI.

Of the Dropſie.

THe Dropſie is a Tumor againſt nature by the aboundance of a wateriſh humor, of flatulencies, or Phlegme, gathered one while in all the habite of the body, otherwhiles in ſome part, and that eſpecially in the capacity of the belly betweene the *Peritonæum* and entrailes. From this diſtinction of places and matters there ariſe divers kinds of Dropſies. First that Dropſie which fils 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 *Berachio*, becauſe the wateriſh humor is contained in that capacity, as it were in ſuch a veſſell.

What the Dropſie is.

The differences thereof.

The dry is called the *Tympanites*, or Timpany, by reaſon the belly ſwolne with winde, ſounds like a (*Tympanum*) that is, a Drum. But when the whole habit of the body is diſtended with a Phlegmaticke humor, it is called *Anaſarca* or *Leucophlegmatia*. In this laſt kinde 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 fountaine of the native heate; wherefore if you preſſe them downe, the print of your finger will remaine 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 certaine conſequence the thighes and feet doe ſwell. There are beſides alſo particular Dropſies contained in the ſtrait bounds of certaine places, ſuch are the *Hydrocephalos* in the head; the *Bronchochele* 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 weakneſſe or defect of the

The Symptomes.

The Cauſes.

the altering or concocting faculties, especially of the liver, which hath beene caused by a *Scyrrhus*, or any kinde of great distemper, cheifly cold, whether it happen primarily, or secondarily by reason of some hote distemper dissipating the native and inbred heate, such a Dropsie is uncureable; or else it comes by consent of some other higher or lower part; for if in the Lungs, Midriffe, or Reines there be any distemper, or disease bred, it is easily communicated to the gibbous part of the Liver by the branches of the hollow veine, which runne thither. But if the mischiefe proceed from the Spleene, Stomacke, Mesentery, Guts, especially the *jejunum* and *Ileum*, it creeps into the hollow side of the Liver by the meseraicke veines, and other branches of the *Vena porta* or Gate-veine. For thus such as are troubled with the *Asthma*, ptisicke, Spleene, Iaundise, and also the Phrensie, fall into a Dropsie.

How divers diseases turne into Dropsies.

Lastly, all such as have the menstruall or hæmorrhoidall bloud suppressed or too immoderatly flowing contrary to their custome, either overwhelmes, diminisheth or extinguisheth the native heate; no otherwise than fire, which is suffocated by too great a quantity of wood; or dieth and is extinguished for want thereof. We must looke for the same from the excrements of the belly or bladder, cast forth either too sparingly or too immoderatly: Or by too large quantity of meates 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 signes of an *Ascites*.

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 Symptomes, as the dejected appetite, thirst, and swelling of the *Abdomen*. And also when the body is moved or turned upon either side, you may heare a sound as of the jogging of water in a vessell halfe full. Lastly the humor is diversely driven upwards or downewards,

The Symptomes.

according to the turning of the body and compression of the *Abdomen*; It also causeth various Symptomes by presture of the parts to which it floweth. For it causeth difficultie of breathing and the cough by pressing the Midriffe; by sweating through into the capacity of the Chest it causeth like Symptomes as the *Empyema*. Besides also the Patients often seeme, as it were, by the ebbing and flowing of the wateriſh humor, one while to be carryed to the skies, and another whiles 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 downe to the lower parts, they suppresse the excrements of the Guts and bladder by pressing & straitning the passages. When the patient lies on his backe the tumor seemes lesse, because it is spread on both sides; On the contrary when hee stands or sits, it seemes greater, for that all the humor is forced or driven into the lower belly, whence hee feeles a heavines in the *Pecten* or share. The upper parts of the body fall away by defect of the bloud fit for nourishment in quality and consistence, but the lower parts swell by the flowing downe of the Serous and watrish humor to them. The pulse is little, quicke, and hard with tention.

Prognosticks.

This disease is of the kinde of Chronicall or long diseases; wherefore it is scarce, or never cured, especially in those who have it from their mothers wombe, who have the Action of their Stomacke depraved, and those who are cachecticke, old, and lastly all such as have the naturall facultie languishing and faultie.

On the contrary young and strong men, especially if they have no Feaver, and finally all who can endure labour and those exercises which are fit for curing this disease, easily recover, principally if they use a Physition before the water which is gathered together doe putrifie and infect the bowells by its contagion.

Chap.

CHAP. XII.

Of the cure of the Dropsie.

THe beginning of the cure must be with gentle and milde medicines; neither must we come to a *Paracentesis*, unlesse we have formerly used and tried these. Therefore it shall be the part of the Physition to prescribe a drying diet, and such medicines as carry away water, both by stoole and urine. *Hippocrates* ordaines this powder for Hydropicke persons. R, *Canthar. ablatis capitib. & alis* ʒß. *Comburentur in furno, & fiat pulvis*; of which administer two graines in white wine, for nature helped by this, and the like remedies hath not seldome beene seene to have cured the dropsie. But that we may hasten the cure, it will be availeable to stirre up the native heate of the part by application of those medicines which have a discussing force: as bagges, baths, ointments, and emplaisters. Let bagges be made of drie and harsh Bran, Oates, Salt, Sulphure, being made hot, or for want of them, of Sander, or Ashes often heated. *Hip. lib. 4. de acut. & lib. de intern.* Bagges.

The more effectuall 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, Marjarom, the leaves of Fennell, and tops of Dill, of *Stechas*, and the like be added, the businesse will goe better forwards. Let the ointments be made of the oyles of Rue, Dill, Baies, and Squills, in which some *Euphorbium*, Pellitory of Spaine, or Pepper have beene boyled. Let plaisters be made of Franckinsence, Myrrhe, Turpintine, *Costus*, Baiberies, 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 *Synapismes* and *Phœnigmes*, that is, to rubrifying and vesicatory medicines. When the blisters are raised, they must be annointed againe, that so the water may by little and little flow so long untill all the humor be exhausted, and the patient restored to health. Baths. Liniments. Emplaisters. Vesicatories.

Galen writes, the Husbandmen in *Asia*, when they carried wheat out of the country into the city in Carrs, when they will steale away and not be taken, hidde some stone juggs fild with water in the middest of the wheat; for that will draw the moisture through the juggs into it selfe, and increase both the quantitie and weight. When certaine pragmaticall Physitions had read this, they thought that wheat had force to draw out the water, so that if any sicke of the Dropsie should be buried in a heape of wheat, it would draw out all the water. *Gal. lib. de fac. nat. nat.* 1.

But if the Physition shall profit nothing by these meanes, he must come to the exquisitely chiefe remedy, that is, to *Paracentesis*. Of which because the opinions of the ancient Physitions have beene divers, we will produce and explaine them. Diversopinions of *Paracentesis*, or opening of the belly.

Those therefore which disallow *Paracentesis*, conclude it dangerous for three reasons. The first is, because by powring 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 borne up; thence forward hanging downe by its weight, depresseth and draweth downewards the Midriffe and the whole Chest, whence a drie cough, and a difficulty of breathing proceede. 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 spermatique 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 hardnesse of the Liver, and of the other bowels, whereby it comes to passe that by breeding new waters they may easily againe 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. Reasons against it. *Erasistratus* his Reasons against it.

Reasons for it. For, for the first *Galen* inferres, that harmefull 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 seeme to be removed farre from the number of wholesome remedies, as whereby the bloud is powred forth, which hath farre more pure and subtile 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 backe in his bed, for so the Liver will not hang downe. But for the third reason, the feare of pricking the *Peritonæum*, is childish: for those evils which follow upon wounds of the nervous parts, happen by reason of the exquisite sence of the part, which in the *Peritonæum* ill affected and altered by the contained water, is either none or very small. But reason and experience teach, many nervous parts, also the very membranes themselves being farre removed from a fleshie substance, being wounded, admit cure; certainely 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 labour. But the reason which seemes to argue the unprofitablenesse of the *Paracentesis* is refelled 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 vaine let forth, which the Liver being vitiated, might grow againe. But first this is not the fault of this bowell alone, and then although the water had his originall from the Liver, yet unlesse the water which staieth there contrary to nature being evacuated, it hurteth both the Liver, and the rest of the inner parts, whilest it either encreaseth their hardnesse, 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 make way for medicines, which while it was there contained, it hindered. But this serous, salt, and corrupt humor, is so farre from being able to mitigate a Feaver and thirst, that on the contrary, it encreaseth them. And also it augmenteth the cold distemper, whilest by its abundance it overwhelmes and extinguisheth the native heate. But the authority of *Celius Aurelianus* that most noble Phisition, though a Methodicke, 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, doe lie; for we have seene many recover by this kind of remedy: but if any died, it happened either by the default of the slow or negligent administration of the *Paracentesis*. I will adde this one thing which may take away all error of controversies: we unwisely doubt of the remedy when the patient is brought to that necessity, that we can onely helpe him by that meanes. Now must we shew how the belly ought to be opened. If the Dropsie happen by fault of the Liver, the section must be made on the left side; but if of the Splene, in the right: for if the patient should lie upon the side which is opened, the paine of the wound would continually trouble him, and the water running into that part where the section is, would continually droppe, whence would follow a dissolution of the faculties. The Section must be made three fingers bredth 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 paine and difficulty of healing. Therefore wee 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 Chirurgion both with his owne hand, as also with the hand of his servant assisting him, must take up the skinne of the belly, with the fleshie pannicle lying under it, and separate them from the rest; then let him divide them so separated with a Section even to the flesh lying under them, which being done, let him force as much as hee can the devided skinne upwards towards the stomacke, that when the wound, which must presently be made in the flesh lying there under, shall be consolidated, the skinne by its falling therein, may serve for that purpose: then therefore let him divide the musculous flesh and *Peritonæum* with a small wound, not hurting the Kall or Guts.

Lib. 3. Cap. 21.

Lib. de morb. Ch. cap. de Hydrope.

The places of the apertion must be divers, according to the parts chiefely affected.

The manner of making apertion.

Then

Then put into the wound a trunke, or golden, or silver crooked pipe, of the thicknesse of a Gooses-quill, and of the length of some halfe a 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, unlesse at the Chirurgions pleasure. Let a spunge 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 powred out all together, but by little and little, for feare of dissipation of the spirits, and resolution of the faculties, which I once saw happen to one sicke of the Dropsie. He being impatient of the disease and cure thereof, thrust a Bodkin into his belly, and did much rejoyce at the powring forth of the water, as if he had bin freed from the humor and the disease, but died within a few houres, because the force of the water, running forth, could by no meanes be staied, for the incision was not artificially made. But it will not be sufficient to have made way for the humor by the meanes aforementioned, but also the externall orifice of the pipe must be stopped and strengthened by double cloathes, and a strong ligature, least any of the water flow forth against our wills. But we must note that the pipe is not to be drawne out of the wound, before as much water shall be issued forth as we desire, & the tumor requireth; for once drawne forth, it cannot easily be put in againe, and without force & paine 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 whilest the water is in evacuation, we must have a diligent care of feeding the Patient, as also of his strength, for if that faile, and he seeme to be debilitated, the effusion of the water must be staied for some dayes; which at the length performed according to our desire, the wound must be so consolidated that the Chirurgion beware it degenerate not into a Fistula.

A History.

A Caution for taking out the Pipe.

The Figure of a Pipe in forme of a Quill, to evacuate the water in Dropsies.



Others performe this businesse after another manner; for making an incision, they thrust through the lipps of the wound with a needle and threed: but they take up much of the fleshie substance with the needle, least that which is taken up should be rent and torne by the forcible drawing of the lippes together. Then the threed it selfe is wrapped up and downe over both ends of the needle, so thrust through, as is usually done in a hare-lippe, that so the lippes of the wound may so closely cohere, that not a drop of water may get out against the Chirurgions will. Sometimes such as are cured and healed of the Dropsie, fall into the laundise, whom I usually cure after this manner. R, *fierc. anser.* ℥ij, dissolve it in ℥iij, *vini alb. coletur.* make a Potion, and let it be given two houres before meate.

Another manner of evacuating the water after the apperation.

A medicine for the laundice.

Chap. XIII.

Of the tumor and relaxation of the Navell.

The *Exomphalos* or swelling of the Navell, 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 bloud powred 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 selfe will retaine his proper colour, that is, the colour of the skinne; the tumor will be soft and almost without paine, and which will reside without noise, either by the pressure of your fingers, or of it selfe when the Patient lieth on his backe; but the

The diuers causes thereof.

Signes hereof occasioned by the Kall.

By the guts. tumor caused by the guts, is more unequall, and when it is forced in by the pressure of your fingers, there is such a noise heard, as in the *Enterocele*; but if the tumor proceede of superfluous flesh, it will be harder and more stubborne, not easily retiring into the body, although the Patient lie upon his backe, and you presse it with your fingers.

By flesh.

By winde. The tumor is softer which proceeds of winde, but which will not retire into the body, and sounds under your naile like a taber. If the swelling be caused by a waterish humor, it hath all things common with the flatuous tumor, except that it is not so visible, and without noise. If it be from effusion of bloud, it is of a livid colour, but if the effused bloud shall be arteriall, then there are the signes of an *Aneurisma*. Wherefore when the tumor is caused by the Guts, Kall, Winde, or a waterish humour, it is cured by Chirurgery: but not if it proceede from a fleshie excrescence or suffusion of bloud. The tumor of the Navell proceeding from the Kall, and Guts, the Patient must lie upon his backe to be cured, and then the Kall, and Guts, must with your fingers be forced into their due place: then the skinne 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 threed; 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 foure times, according to the manner and condition of the distention and tumor. And so twitch it strongly with a threed, that the skinne which is so bound may at length fall off together with the ligatures. But also you may cut off the skinne 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 powred forth by making a small incision. And the wound shall be kept open, so long, untill all the water be drained forth.

By a waterish humor. By bruised blood. Which may be cured by Chirurgery, which not. The cure by Chirurgery.

CHAP. XIIII.

Of the Tumors of the Groines and Codds, called Herniæ, *that is, Ruptures.*

There are onely 3. sorts of Ruptures.

THe ancient Phisitions have made many kindes of Ruptures, yet indeede there are onely three to be called by that name, that is, the *Intestinalis*, or that of the guts, the *Zirbalis*, or that of the kall, and that which is mixed of them both. The other kindes 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.

The Greekes 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 Groines, nor falls downe into the Codds, *Bubonocele*: but the compleate which penetrates into the Codde, if it be by falling downe of the Gut, *Enterocele*: if from the Kall, *Epiplocele*; if from them both together, they name it *Enteroepiplocele*: but if the tumor proceede from a waterish humor, they terme it *Hydrocele*; if from winde, *Physocele*, if from both, *Hydrophydocele*; if a fleshie excrescence shall grow about the testicle, or in the substance thereof, it is named *Sarcocele*. If the veines interwoven, and divaricated diverse wayes shall be swollen in the Codde and Testicles, the tumor obtaines 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 stroake, 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 vp of a heavy burden, racking, also the too immoderate use of viscide and flatulent meates; for all such things may either relaxe or breake the *Peritonæum*, as that which is a thinne and extended membrane. The signes of a *Bubonocele* are a round tumor in the Groine, which pressed, is easily forced in. The signes of an *Enterocele*, are a hard tumor in the Codde, which forced, returneth backe and departeth

Bubonocele. *Enterocele* and *Epiplocele.* *Hydrocele.* *Physocele.* *Sarcocele.* *Cirsocele.* The Causes. The signes.

parteth with a certaine murmour and paine; but the tumor proceeding of the Kall, is laxe and feeles soft like Wooll, and which is more difficultly forced in, than that which proceeds from the Guts, but yet without murmuring and paine: for the substance of the Guts, seeing it is one, and continued to it selfe, they doe not onely mutually succeede each other, but by a certaine consequence doe, as in a dance draw each other, so to avoide distention, which in their membranous body cannot be without paine, 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 stupide body, and almost without sence, heavy, dull, and immoveable. The signes that the *Peritonæum* is broken, are the sudden increase of the tumor, and a sharpe and cutting paine; for when the *Peritonæum* is onely relaxed, the tumor groweth by little and little, and so consequently with small paine; yet such paine returnes so often, as the tumor is renewed by the falling downe 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 renued without any distention, and so without any paine to speake of. The rest of the signes shall be handled in their places. Sometimes it happens that the Guts, and Kall, do so firmely adhere to the processe of the *Peritonæum*, that they can not be driven back into their proper seate. This stubborne adhesion happens by the intervention of the viscide matter, or by meanes 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 codde, and the neglect of wearing a Trusse, may give occasion to such adhesion. A perfect and inveterate rupture by the breaking of the processe of the *Peritonæum* in men of full growth, never, or very seldomes admits of cure. But you must note, that by great ruptures of the *Peritonæum*, the Guts may fall into the codde, to the bignesse of a mans head, without much paine and danger of life, because the excrements, as they may easily enter, by reason of the largenesse of the place and rupture, so also they may easily returne. What rupture is uncurable.

Chap. XV.

Of the cure of Ruptures.

BEcause children are very subject to Ruptures, but those truely not fleshy or varicous, but watry, windy, and especially of the Guts, by reason of continuall and painefull crying and coughing: Therefore in the first place we will treate of their cure. Wherefore the Chirurgion, called to restore the Gut which is fallen downe, shall place the child, either on a table, or in a bed, so that his head shall be low, but his buttocks, and thighes higher; then shall he force with his hands by little and little, and gently, the Gut into its proper place; and shall foment the Groine with the astringent fomentation, described in the falling downe of the wombe. Then let him apply this remedy. R, *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 chiefe 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 keepe the child seated in his cradle for 30. or 40. dayes, as we mentioned before; and keepe him from crying, shouting, and coughing. *Aetius* bids steepe paper 3. dayes in water, and apply it made into a ball to the groine, the gut being first put up; for that remedy by 3. dayes adhesion wil keep it from falling down. But it wil be, as I suppose more effectuall, if the paper be steeped not in common, but in the astringent water, described in the falling downe of the wombe. Truely I have healed many by the helpe of such remedies, and have delivered them from the hands of Gelders, which are greedy of childrens testicles, by reason of the great gaine they receive from thence. They by a crafty cozenage, perswade the Parents, that the falling downe of the Gut into the Codde, is uncurable: which thing notwithstanding, experience convinceth to be false, if so be the cure be performed according to the forementioned manner, when the *Peritonæum* is onely relaxed, and not broken: for the processe ther- by which To what ruptures children are subject. An astringent cataplasme. *Ser. 1. Cap. 24.* The craft and covetousnesse of Gelders.

the Gut doth fall as in a steepe way, in progresse of time and age is straitned and knit rogether, whilest also in the meane time the guts grow thicker.

Another way to cure Ruptures.

A certaine Chirurgion who deserveth credit, hath told me that he hath cured many children as thus: He beates a loadstone into fine powder, and gives it in pappe, and then hee annointes with hony the Groine, by which the gut came out, and then strewed it over with fine filings of iron. He administred this kinde of remedy for ten or twelve dayes: The part, for other things, being bound up with a ligature and trusse as was fitting. The efficacie of this remedy seemeth to consist in this; that the loadestone by a naturall desire of drawing the iron which is strewed upon the Groine, joynes to it the fleshy and fatty particles interposed betweene them, by a certaine violent impetuosity, which on every side pressing and bending the loosenesse of the *Peritonæum*, yea verily adjoyning themselves to it, in processe of time by a firme adhesion intercept the passage and falling downe of the Gut or Kall; which may seeme no more abhorring from reason, than that we behold the loadstone it selfe through the thicknesse of a table, to draw iron after it any way. The same Chirurgion affirmed, that he frequently and happily used the following medicine. Hee burnt into ashes in an Oven red Snailes, shut up in an earthen pot, and gave the powder of them to little children in pappe, but to those which were bigger, in broath.

The reason of this cure.

Another medicine.

But we must despaire of nothing in this disease, for the cure may happily proceede in men of full growth, as of fortie yeare old, who have filled the three demensions of the body, as this following relation testifies.

A notable History.

There was a certaine Priest in the Parish of Saint *Andrewes*, called *John Moret*, whose office it was to sing an Epistle with a loud voice as often as the solemnitie of the day, and the thing required. Wherefore seeing he was troubled with the *Enterocele*, he came to me, requiring helpe, saying, he was troubled with a grievous paine, especially then, when he stretched his voice in the Epistle.



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 hollownesse betweene them in the middest, that they may not too straitly presse the sharebone, and so cause paine. 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 downe of the Gut and Kall.

A. *Shewes the shoulder band which is tied before and behinde to the girdle of the Trusse.*

B. *The Trusse.*

C. *The Cavitie left in the midst of the Tuberosities.*

When I hr' seene the bignesse of the *Enterocele*, I perswaded him to get another

to

to serve in his place; so having gotten leave of M. *Curio* Clearke, and Deacon of Divinity, he committed himselfe unto me: I handled him according unto Art, and commanded him he should never goe without a Trusse; and he followed my directions. When I met him some five or sixe yeares after, I asked him how he did, he answered very well, for he was wholy freed from the disease with which he was formerly troubled; which I could not perswade my selfe of, before that I had found that hee had told mee the truth, by the diligent observation of his genitals. But some sixe moneths after, he dying of a Pleurisie, I came to *Curio's* house where hee 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 witnesse, that I found a certaine fatty substance about the processe of the *Peritonæum* about the bignesse of a little egge, and it did sticke 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 chiefe of the cure consists in this, that we firmerly stay the gut in its place, after the same manner as these two Figures shew.

We must never despaire in diseases if so be nature be associated by Art.



Another Figure of a man having a Rupture on both sides, shewing by what meanes, what kinde of Trusse, and what shoulder-band he must be bound on each groine.

A. *Sheweth the shoulder-band divided in the middest for the putting through of the head.*

B. *The Trusse, with two bolsters, betweene which is a hole for putting through the yard. The forme of both bolsters ought to be the same with the former.*

In the meane time we must not omit diet. We must forbidde the use of all things, which may either relaxe, dilate, or breake 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 hardened in them: In this case they must not be too violently forced, but the Patient must be kept in his bed, and lying with his head low, and his knees higher up; let the following Cataplasmes be applied.

℞. *rad. alth. & lil. ana.* ℥ij. *seminis lini. & fœnug. an.* ℥ß, *fol. malvæ, viol. & pariet. an. m.* ß. Let them be boiled in faire water, afterwards beaten, and drawne through a searse

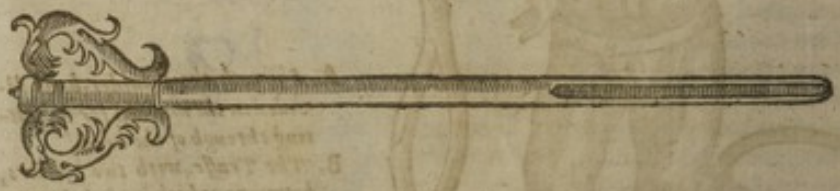
A Cataplasme to soften the excrements.

fearſe, adding thereto of new Butter without ſalt, and oyle of Lillies, as much as ſhall ſuffice. Make a Cataplaſme in the forme of a liquid pultis. Let it be applied hot to the Codde, and bottome of the belly; by the helpe of this remedy when it had beene applied all night, the guts have not ſeldome beene ſeene of themſelves, without the hand of a Chirurgion, to have returned into their proper place. The windineſſe being reſolved, which hindered the going backe of the excrements into another gut, whereby they might be evacuated and expelled. But if the excrements will not goe backe thus, the flatulencies, yet reſiſting and undiſcuſſed, an emollient and carminative Clyſter is to be admitted with a little Chymicall oyle of Turpentine, Dill, Iuniper or Fennill. Clyſters of Muſcadine, oyle of Wallnuts and *Aqua vitæ*, and a ſmall quantitie of any the aforeſaid oyles, are good for the ſame purpoſe.

Chymicall oyle.

It often happens that the guts cannot yet be reſtored, becauſe the proceſſe of the *Peritonæum* is not wide enough. For when the excrements are fallen downe with the gut into the codde; they grow hard by little and little, and encreaſe by the acceſſe 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 downe: whereby it happens that by putrifaction of the matter there contained, come inflammations, and a new acceſſe of paine; and laſtly, a vomitting 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 helpe this ſymptome, you muſt rather aſſay extreame 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 will binde the Patient lying on his backe, upon a Table or Bench; then preſently make an inciſion in the upper pard of the codde, not touching the ſubſtance of the guts; then we muſt have a ſilver Cane or Pipe, of the thickneſſe 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 codde, all the length of the production; that ſo with a ſharpe knife we may divide the proceſſe 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 ſeeme ſufficient, that by that paſſage made more ſtraight, nothing may fall into the Codde, after it is cicatrized.

But if there be ſuch abundance of excrements hardned, either by the ſtay or heate 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 regreſſe of the guts into the belly. Then ſow it up as is fit, and the way will be ſhut up againſt the falling downe of the guts or kall; the proceſſe of the *Peritonæum* being made more ſtraight, by reaſon of the future; for the reſt, the wound ſhall be cured according to Art. But before you undertake this worke, conſider diligenly 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.

Chap. XVI.

Of the golden Ligature, or the Punctus Aureus, *as they call it.*

IF the Rupture will not be cured by all theſe meanes, by reaſon of the great ſolution of the continuity of the relaxt, 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. The Chirurgicall cure by the golden Tye.

For which purpoſe a Chirurgion which hath a skilfull and ſure hand, is to be imploied. 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 proceſſe of the *Peritonæum*, and by lifting it up, ſeparate it from the the adjoining fibrous, and nervous bodies, to which it adheres; then preſently draw aſide the ſpermatique veſſels, with the *Cremaſter*, or hanging muſcle of the teſticle; which being done, he ſhall draw aſide the proceſſe it ſelfe: And he ſhall take as much thereof, as is too lax, with ſmall and gentle mullets, perforated in the middeſt, and ſhall with a needle, having five or ſixe threeds, thruſt it through as neere as hee can to the ſpermaticke veſſels, and cremaſter muſcles. But the needle alſo muſt be drawne againe into the middeſt of the remnant of the proceſſe, taking up with it the lipps of the wound; then the threed 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 threed will of it ſelfe be diſſolved by little and little by putrefaction: neither muſt it be drawne out before that nature ſhall regenerate and reſtore fleſh into the place of the ligature, otherwiſe all our labour ſhall be ſpent in vaine.

And laſtly, let the wound be cleanſed, filled with fleſh, and cicatrized, whoſe callous hardneſſe may withſtand the falling of the gut, or kall.

There are ſome Chirurgians who would performe this golden Ligature after anothe manner. They cut the skinne above the ſhare-bone where the falling downe commonly is, even to the proceſſe of the *Peritonæum*, and they wrap once or twice about it, being uncovered, a ſmall golden wyre, and onely ſtraiten the paſſage as much as may ſuffice, to amend the looſeneſſe of this proceſſe, leaving the ſpermatique veſſels at liberty. Then they twiſt the ends of the wyre twice or thrice with ſmall mullets, and cut off the remnant thereof; that which remaines after the cutting, they turne in, leaſt with the ſharpneſſe it ſhould prick the fleſh growing upon it. Then leaving the golden wyre there, they cure the wound like to other ſimple wounds, and they keepe the Patient ſome fifteene or twenty day in his bed, with his knees ſome thing higher, and his head ſome thing lower. Another manner thereof.

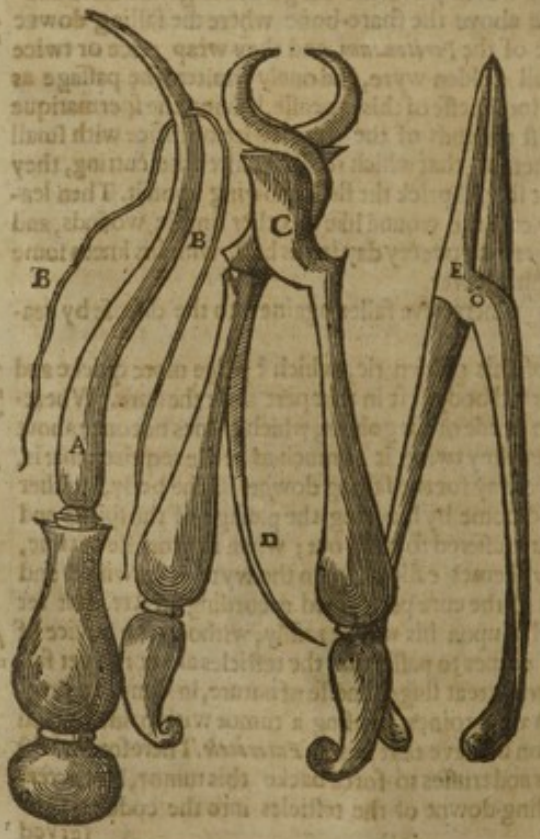
Many are healed by this meanes; others have fallen againe into the diſeaſe by reaſon of the ill twiſting of the wire.

There is alſo another manner of this golden tie, which I judge more quicke and ſafe, even for that there is no externall body left in that part after the cure. Wherefore they wrappe a leaden wyre in ſteade of the golden, which comes but once about the proceſſe of the *Peritonæum*, then they twine it as much as neede requires, that is, not too looſely, leaſt it ſhould leave way for the falling downe of the body, neither too ſtraitly, leaſt a Gangrene ſhould come by hindring the paſſage of the ſpirits and nouriſhment. The ends thereof are ſuffered to hang out; when in proceſſe of time, this contraction of the *Peritonæum* ſeemes callous, then the wyre is untwiſted and gently drawne out. And the reſt of the cure performed according to Art. But let not the Chirurgion thruſt himſelfe upon his worke raſhly, without the advice of the Phyſition, for it diverſe times comes to paſſe, that the teſticles are not as yet fallen downe into the Codde by the too great ſluggiſhneſſe of nature, in ſome of a pretty growth, but remaines long in the groines, cauſing a tumor with paine, which thing may make a good Chirurgion beleeve that it is an *Enterocele*. Therefore whilſt he labours by repelling medicines and truſſes to force backe this tumor, he encreaſeth the paine, and hinders the falling downe of the teſticles into the codde. I obſerved The third manner thereof. A thing to be noted.

A History. ſerved this not long agoe in a Boy, which an unskilfull Chirurgion 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 Codde, and knew the Boy was never gelt, I bid them caſt away the plaſters, and truſſes, and wiſht his Parents that they ſhould ſuffer him to run and leape, that ſo the idleing ſtone might be drawne into the Codde, which thing by little and little, and without paine, had the event, as I foretold. That the reaſon of this affect may be underſtood, we muſt know a man differs from a woman, onely in efficacie of heat; but it is the nature of ſtrong heat to drive forth, as of cold to keepe in. Hence it is that the ſtones in men hang forth in the codde, but in women they lie hid in the lower belly. Therefore it happens that in ſome males more cold by nature, the teſticles are thut up ſome certaine time, untill at length they are forc'ſt downe into the codde by youthfull heat. But that we may returne to our former treatiſe of the codde, although that way of curing ruptures wants not paine 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 feare leaſt when the cure is finiſhed, the relaxation may remaine, pull with violence the proceſſe of the *Peritonæum* from the parts to which it adheres, and together with it a nerve of the ſixth conjugation which runnes to the ſtones; they offer the ſame violence to the ſpermaticke veſſels; by which things enſue great paine, convulſion, effluxe of bloud, inflammation, putrefaction, and laſtly death, as I have obſerved in many whom I have diſſected, having died a few dayes 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 mankinde. Through which occaſion *Galen* hath not feared to preferre them before the heart; becauſe the heart is the beginning of life, but the teſticles of a better life; for it is farre more noble to live well, than ſimply and abſolutely to live; therefore Eunuches degenerate into a womaniſh nature, for they

Lib de arte medica.

Lib. de ſem.



A. *Shewes a croked needle, having an eye not farre from the point, through which you may put the golden wyre.*

B. B. *The golden wyre put through the eye of the needle.*

C. *The mullets or Pincers, to cut away the waſt or ſuperfluous ends of the wyre.*

D. *The ſpringe of the mullets.*

E. *The mullets to twiſt the ends of the wyre together.*

remaine

remaine without beards, their voice is weake, their courage failes them, and they turne 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, unlesse a *Sarcocele* or Gangrene invade them. But that the way of performing the *Punctus aureus* may be better knowne, 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.

THeodoricke and *Guido* have invented another way of performing this operation. They put backe into their places the Gut and Kall being fallen downe, 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 spermaticke vessels, and cremaster muscle to the *Ischium*; then by applying a caustick fitted to the age and disease, they burne the other part of the processe, directly perpendicular to the share-bone, where the Gut did fall downe. Then they pull off the eschar thus made with a knife even to the quicke, 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 processe. And afterwards they heale the ulcer which remaines, which presently contracting somewhat a thicke *Callus*, so keeps up the Guts and Kall, that it bindes them from falling down into the Cod. This way of restoring the Gut and Kall, though it be safer and more facile; yet the Chirurgion must not attempt it, if the Guts or Kall sticke so fast, agglutinated to the processe of the *Peritonæum*, that they cannot be severed, nor put backe into their places (for from the guts so burnt and violated, greater mischiefe would ensue) if by the broken and too much dilated processe, the bodies thereby restrained, make an exceeding great tumor by their falling downe; if the testicle yet lying in the groine as in a *Bubonocele*, a kinde of *Enterocele*, being not yet descended into the *Scrotum* or Codde; if the Patients be not come to such age as they can keepe themselves from stirring, or hold their excrements whiles the operation is performed. *Lib.3.Cap.33.*

Chap. XVII.

Of the cure of other kinds of Ruptures.

Epiplocele is the falling downe of the Kall into the Groine, or Codde, it hath the same causes as an *Enterocele*. The signes have beene explained. It is not so dangerous, nor infers a consequence of so many evill symptomes, as the *Enterocele* doth, yet the cure is the same with the other.

Hydrocele is a waterish tumor in the Codde, which is gathered by little and little betweene the membranes encompassing the testicles, especially the *Dartos* and *Erythroides*; it may be called a particular dropsie, for it proceeds from the same causes, but chiefely from the defect of native heate. The signes are a tumor encreasing slowly without much paine, heavy, and almost of a glassie clearenesse, which you may perceive by holding a candle on the other side, by pressing the Codde above, the water flowes downe, and by pressing it below, it rises upwards, unlesse peradventure in too great a quantity it fills up the whole capacity of the Codde, 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 Cyste, or bagge; it is distinguished from a *Sarcocele*, by the smoothnesse 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 followes I have often tried and with good successe. what a *Hydrocele* is. The signes. The cure.

℞. *Vng. comitissæ, & desiccat. rub. an.* ℥ij. *malaxentur simul*; and make a medicine for your ease. The water by this kinde 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 neede of Chirurgery A medicine to draw forth the contained matter.

rurgery; 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 skeane of silke; 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 twise or thrise a day, that the humor may drop downe, and be evacuated by little and little. But if the paine 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 symptomes.

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 halfe fingers breadth long, penetrating even to the contained water; alwayes leaving untouched the substance of the Testicles and vessels, and they keepe the wound open, untill all the water seemes evacuated; truly by this onely way the cure of a watery rupture whose matter is contained in a Cyste, is safe, and to be expected; as wee have said in our Treatise of Tumors in generall.

What a *Pneumatocele* is.

The *Pneumatocele*, is a flatulent tumor in the Codde, generated by the imbecility of heate residing in the part.

The Cure.

It is knowne by the roundnesse, lenity, renitencie 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, Fænugreeke, *Agnus Castus*, Rue, *Origanum*, other things set downe by *Avicen* in his Treatise of Ruptures. I have often used with good successe for this purpose, *Emplastrum Vigonis cum mercurio*; and *Emplastrum Diacalcitheos*, dissolved in some good wine, as Muscadine, with oyle of Bayes.

What a *Sarcocele* is.

A *Sarcocele* is a tumor against nature, which is generated about the stones by a schyrrhus flesh. Grosse and viscide humors breed such kind of flesh, which the part could not overcome and assimulate to it selfe; whence this over-abundance of flesh proceeds, like as Warts doe. *Varices*, or swollen veines often associate this tumor; and it increases with paine. It is knowne by the hardnesse, asperitie, inequality, and roughnesse. It cannot be cured but by amputation or cutting it away; but you must diligently observe, that the flesh be not growne too high, and have already seazed upon the Groine, for so nothing can be attempted without the danger of life.

The signes. Prognosticks.

But if any may thinke, 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 evill sure worse than the former; but if the tumor be either small or indifferent, the Chirurgion taking the whole tumor, that is, the testicle, tumefied through the whole substance, with the processe encompassing it, and adhering thereto on every side, and make an incision in the Codde, even to the tumor; then separate all the tumid body, that is, the testicle from the Codde: then let him thrust a needle with a strong thred in it, through the middest of the processe above the region of the swolne testicle; and then presently let him thrust it the second time through the same part of the processe; 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 processe with the testicle comprehended therein. But the ends of the thred, with which the upper part of the processe was bound, must be suffered to hang some length out of the wound, or incision of the Codde. 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 formely mentioned.

The cure.

What a *Cirsocele* is.

The *Cirsocele* is a tumor of veines dilated, and woven with a various and mutuall implication about the testicle and codde, and swelling with a grosse and melancholy bloud. The causes are the same as those of the *Varices*. But the signes are manifest.

The Cure.

To heale this tumor, you must make an incision in the codde, the bredth of two fingers to the *Varix*. Then you must put under the varicous veine, a needle having a double thred in it, as high as you can, that you may binde the rootes thereof: then

let

let the needle be againe put after the same manner about the lower part of the same veine, leaving the space of two fingers betweene the Ligatures. But before you binde the thread of this lowest Ligature, the *Varix* must bee opened in the middest, almost after the same manner as you open a veine in the arme to let bloud: 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 remaines shall be cured by the rules of Art after the manner of other wounds: Leaving the threads in it, which will presently fall away of themselves. To conclude then, it being growne callous especially in the upper part thereof, where the veine was bound, it must be Cicatrized, for so afterwards the bloud cannot be strained, or run that way.

Hernia Humoralis is a tumor generated by the confused mixture of many humors in the Cod or betweene the tunicles which involue the testicles, often also in the proper substance of the testicles. It hath like causes, signes and cure as other tumors. While the cure is in hand, rest, trusses, and fit rowlers to sustaine and beare up the testicles are to be used. *Hernia Humoralis.*

Chap. XVIII.

Of the falling downe of the Fundament.

When the muscle called the *Sphincter* which ingirts the Fundament is relaxed, then it comes to passe that it cannot sustaine the right gut. This disease is very frequent to Children by reason of the too much humidity of the belly; which falling downe upon that muscle mollifieth and relaxeth it or presseth it downe by an unaccustomed weight, so that the muscles called *Levatores Ani* or the lifters up of tha Fundament, are not sufficient to beare up any longer. A great bloudy flux gives occasion to this effect. A strong endevour to expell hard excrements, the *Hæmorrhoides*, which suppressed doe over-loade the right gut, but flowing relaxe it: Cold as in those which goe without breeches in winter, or sit a long time upon a cold stone, a stroake or fall upon the Holy-bone: a palsie of nerves which goe from the Holy-bone to the Muscles the lifters up of the fundament: the weight of the stone being in the bladder. The causes.

That this disease may be healed, we must forbid the Patient too much drincking, 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 Pomegranetts, galls, myrtles, knotgrasse, sheapheards purse, Cypresse nutts, Alume, and common salt boyled in smiths water or red wine. After the fomentation, the gut be annointed with oyle of Roses or myrtles, and then let it bee gently put by little and little into its place, charging the childe if he can understand your meaning, to hold his breath. When the gut shall be restored, the part must bee diligently wiped least the gut fall downe againe by reason of the slipperinesse of the unction. Then let the powder prescribed for the falling downe of the wombe be put into the fundament as farre as you can: Then you must straitly binde the loynes with a swathe, to the middest whereof behinde let another be fastned which may be tied at the *Pubes* comming along the *Perinæum*, so to hold up to the fundament; the better to containe it in its place, a spunge dipt in the astringent decoction. The Patient if he be of sufficient age to have care of himselfe, shall be wished when hee goes to stoole that he sit upon two peeces of wood being set some inch a sunder, least by his strayning hee thrust forth the gut together with the excrement; but if he can doe it standing, he shalll never by strayning thrust forth the gut. The cure.

But if the gut cannot by the prescribed meanes bee restored to its place, *Hippocrates* bids that the Patient hanging by the heeles be shaken, for so the gut by that shaking will returne to his place: but the same *Hippocrates* wisheth to annoint the fundament, because that remedie having a drying faculty, hath also power *Hippocrates* his cure.

to resolve the flatulent humors without any acrimony, by reason of which the gut was the lesse able to be contained in his place.

Chap. XIX.

Of the Paronychia.

What the Paronychia is.

THe *Paronychia* or *Panarù* is a tumor in the ends of the fingers, with great inflammation, comming of a maligne and venemous humor, which from the bones by the *Periostium* is communicated to the tendons and nerves of that part which it affecteth, whereof cruell symptomes doe follow, as pulsifique paine, a feaver, restlessenesse, so that the affected through impatiencie of the paine are variously agitated like those tormented with Carbuncles: for which cause *Guido* and *Iohannes 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 meane time the Surgeon, 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 joynt 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 paine, which I have often and happily tried immediatly at the beginning, before the perfect impression of the virulencie.

Lib. 2. cap. 4. tract. 8.

But the wound being made you must suffer it to bleede well, then presently let him dip his finger in strong and warme vinegar, in which some treakle being dissolved may draw forth the virulencie. But to appease the Paine, the same remedies must be applyed to the affected part as are used in Carbuncles, as the leaves of Sorrell, Henbane, Hemlocke, Mandrake roasted under the Embers and beaten in a Morter with new *Vnguentum Populeon*, or oyle of Roses or new butter without salt: for such like medicines also helpe forward supppuration, whilest by their coldnesse, they represse the extraneous heat affecting the part; and so strengthen the native heate being the author of suppuration: which reason moved the ancient Physitians to use such medicines in a Carbuncle: but if by reason of the fearefulnesse of the patient, or unskilfulnesse of the Surgion, no incision being made, a Gangren and Sphacel shall possesse the part, it remaines that you cut off with your cutting mulletts as much of the part as shall be corrupt, and performe the rest of the cure according to Art. Yet it doth not seldome happen that there may bee no neede to cut off such a finger, because it being corrupted together with the bone doth by little and little dissolve into a purulent or rather sanious and much stincking filth. But in this affect there is often caused an Eschar by the adustion of putredinous heat, and superfluous flesh indued with most exquisit sence groweth underneath it, which must in like manner be cut off with the Mulletts that the part may receive comfort, the paine being aswaged by the copious effusion of blood.

Chap. XX.

Of the swelling of the knees.

Gal. comm. ad sent. 2 ser. 4. lib. 6 Epid. Gal. Com ad sent. 67. sect. 2. post.

AFter long and dangerous diseases there oftentimes arise Tumors in the knees, and also in plethoricke bodies and such as have evill juyce after labours and exercise. This kinde of disease is frequent because the humor easily falles into the part which hath beene heated by Labour. But if such

such tumors follow long diseases, they are dangerous and difficult to cure, and therefore not to bee neglected; for bitter paine accompanieth them, because the humor falling thither distends the Membranes, which being many involve the part; besides that this humor participateth of a certaine virulent and maligne quality whether it be cold or hot, when it hath setled into those parts, being such as wee finde in the paines of the joynts, and in the bitings of venemous creatures.

For the cure, if the tumor bee caused by blood, let a slender and refrigerating diet be appointed, and phlebotomy for the revulsion of the antecedent cause; diverse locall medicines shall be used according to the variety of the foure times. But for to asswage the paine, *Anodyne* or mitigating medicines shall be appointed: of all which wee have sufficiently treated in the Chapter of the cure of a Phlegmon. The cure.

And because these parts are of exact sence, if there be necessity to open the tumor, yet must we not doe it rashly or unconsiderately, for feare of paine and evill accidents.

This kinde of tumor is oft times raised by winde contained there; in which case the Chirurgion must bee very provident, that hee bee not deceived with the shew of flowing of the humor, which hee seemes to perceive by the pressure of his fingers, as if there were matter and humor contained therein, and so bee brought to open the tumor. For the winde breaking forth in stead of the humor, causeth evill symptomes by reason of the section rashly made in a part so sensible.

But if watrish humors shall tumifie the part, the body shall first be purged with medicines purging flegme: And then inciding, attenuating, rarifying, discussing and very drying locall medicines shall be used.

Of which wee have abundantly spoken in the Chapter of the *Oedema*. Yet this humor, divers times lyes deepe betweene the whirle bone and the joynt, which causeth it that it cannot be discussed and resolved by reason of the weakenesse of the part and defect of heate, so that the adventitious humor often moves and excludes the bones from their seate. 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.

I Cannot chuse, but explaine in this place those things which may bee spoken of that kinde of tumor against nature, which by the ancients is called *Dracunculus*. The matter and reason of these hath beene variously handled by diverse Authours, so that hitherto wee have nothing written of them to which wee may by right and with good reason adhere as a firme foundation of their essence. It is not as yet sufficiently knowne what *Dracunculi* are.

For first for *Galens* opinion, *Lib. 6. de Loc. affect cap.* 3. The generation, saith he, of those hayres which are evacuated by the Vrine is worthy no lesse admiration than the *Dracunculi*, which as they say, in a certaine place of *Arabia* breede in the legges of men being of a nervous nature and like wormes in colour and thickenesse.

Therefore seeing I have heard many who have sayd they have seene them, but I my selfe never saw them, I cannot conjecture any thing exactly neither of their originall nor essence.

Lib. 4. cap. ult. *Paulus Ægineta* writes that the *Dracunculi* are bred in *India* and the higher parts of *Ægypt*, like wormes in the muſculous parts of mans body, that is, the armes, thighes and legges, and alſo creepe by the intercoſtall muſcles in children with a manifeſt motion.

But whether they be creatures indeede, or onely have the ſhape of creatures, they muſt bee cured with a hot fomentation, by which the *Dracunculus* raiſed to a juſt tumor, may put forth it ſelfe, and be pluckt away peece meale with the fingers: alſo ſuppurating Cataplaſmes may be applyed, compoſed of water, honey, wheate and barly meale.

The cure out of *Egineta.*

Cap 21. lib. 4. fenn. 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 certaine 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 wormes, and that they are found ſometimes great, ſometimes ſmall, and that their generation is not unlike to that of flat wormes, which are bred in the guttes, for they move under the skinne without any trouble, but in proceſſe of time, the place becomes ſuppurate about the end of the *Dracunculus*. The skinne openeth, and the head thereof is thruſt forth.

But if the *Dracunculus* bee pulled, it cauſeth great greefe; eſpecially if it bee broken by too violent pulling. For that which is left cauſeth moſt vehement paine. Wherefore that the creature may not runne backe, the arme muſt bee bound with a ſtrong threed, and this muſt bee done every day, that the *Dracunculus* going forward by little and little, may bee intercepted by this binding, but not broken off.

The cure out of *Actius.*

The place muſt bee bathed with *Aqua Mulſa* and oyle in which wormewood or ſouthernewood hath beene boyled, or ſome other of thoſe medicines which are preſcribed for the wormes of the belly.

But if the *Dracunculus* going forward of its owne accord, may be eaſily drawne forth, we muſt doe nothing elſe: but if it bee turned to ſuppuration wee muſt not leave off the Cataplaſmes, the *Aqua Mulſa* and anointing with oyle: It was uſuall with him after the taking away of the Cataplaſmes, to apply *Emplaſtrum E Baccis Lauri*: but when it is come to ſuppuration the skinne muſt bee opened long wayes, and the *Dracunculus* ſo layd open muſt be taken away, but the skinne muſt be filled with lint, and the reſt of the ſuppurative cure uſed, ſo that the creature being ſuppurated and drawne forth, the wound may bee incarnated and cicatriſed.

Tractat. 7. cap. 34. *Rhaſis* writeth, that when the part is lifted up into a bliſter, and the veine haſteneth its egreſſe, it is good for the patient to drinke the firſt day halfe a dramme of *Aloes*, the next day a whole dramme, the third day two drammes; and in like manner the place affected muſt bee fomented with *Aloes*, for ſo that which lyes hid will breake forth: that which ſhall come forth muſt be rolled in a pipe of lead, which may equall the weight of a dramme ſo that it may hang downe, for the veine drawne by the weight will come more forth; and when that which ſhall come forth is growne much and long, it muſt be cut off, but not by the roote, but ſo that a portion thereof may remaine and hang forth, to which the leaden pipe may be faſtned, for otherwiſe it would withdraw it ſelfe into its skinne and its lurking hole, and ſo cauſe a putrid and maligne ulcer.

The cure out of *Rhaſis.*

Therefore wee muſt gently meete with this diſeaſe, and the veine muſt be drawne 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 veine as ſhall bee come forth ſhall be cut off by the rootes, then the ulcer muſt be opened long wayes with an inciſion knife, and that ſo that whatſoever remaines thereof may bee wholy taken away. Then for ſome dayes the part muſt be annointed with butter untill whatſoever of ſuch a ſubſtance adheres, being conſumed with putrifaction ſhall flow away. Then the ulcer muſt be cured with ſarcoticke things.

There-

Therefore *Rhasis* thus in the same text expresseth the same thing by diverse names, and armed with Iron and Lead, hee comes to the cure thereof, as if hee meant to encounter with some fierce beast. His opinion of them.

Soranus the Physitian, who lived in the times of *Galen*, was of a quite contrary opinion, as *Paulus Ægineta* in the place being before cited, relates of him; as who denies the *Dracunculus* to be a living creature, but onely a condensation of a certaine small nerve, which seemes both to the Physitions and Patients to have some motion under the skinne. *Soranus* his opinion.

Wherefore *Soranus* seemes to have come neerer the truth than the rest, but yet not so, as throughly to understand, and know the essence of this disease, as we shall demonstrate hereafter.

Manardus writes, that the *Dracunculi* are generated of evill and unlaudable blood, grosse, hot, and melanckolicke, or of adust phlegme very much dryed. *Epist. 2. lib. 7.*

Gorraus a most learned Physition of our time, *Lib. de Definitionib. medic.* denies any of our Physitions 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 paine, when increasing by little, and little, it begins to bee moved: Therefore to bee cured after the same manner, and by the same method of Section and incision, as the *varices* are. Which thing chiefely seemes to have moved *Guido* to referre this kinde 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 diverse names have beene imposed upon this disease by severall writers, yet they all have expressed it by the name of a veine: for it is called by *Avicen* and *Guido*, *Vena Meden*, because it is a disease frequent in the Citty *Medina*: by *Albucrasis*, *vena civilis*. *Haliabbas* hath called it *vena famosa*; others have called it *Vena Cruris* or the legge veine. Truely the contrariety of so many opinions repugnant not onely 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 Physitions have written any things thereof. For although *Iacobus Dalechamphius* a man most conversant in every part of Physicke, hath written much of this matter in his booke of the French Surgery which he set forth some yeares agoe: Yet he hath left us no amplier testimony of his industry, than that hee was very diligent in collecting the writings of the Ancients concerning this thing, interposing no judgement of his owne, the better to assure us of a thing so controverted.

But my modesty cannot so containe 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 remaine longer ambiguous and undecided. Therefore for the present, I will thus order it, that refuting the opinions of the Ancients I may strengthen by certaine reasons, my opinion of the essence and cure of this disease.

For first, that *Dracunculi* are no living things, nor like unto wormes, nor of like generation as the flat wormes of the belly, which was the opinion of *Aetius*, is easie to disprove both by his writings, as also by reason it selfe. For he writes that the broad worme which hee calls *Tænia*, is as it were a certaine *Metamorphosis* or transmutation of the inner tunicle of the small guttes, into a quicke living and moveable body. *Aetius* opinion confuted. *Tetrab. 3. serm. 1. cap. 40.*

But no man ever sayd, neither will he confesse that the *Dracunculi* have the materiall causes of their beginning from the tunicle of the veine, in which they are closed, or from the fibers of a nervous body, to which often they are adjoyned; but much lesse from the skinne under which they lie, may they draw their materiall causes of their originall.

Moreover, neither can there bee any generation of wormes, nor of any other living creatures whatsoever, who have their originall from putrifaction,

4. *Meteorolog.*

unlesse by the Corruption of some matter, of whose better and more benigne 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 concurre as assistants to the principalls in the action. And it is meete 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 proceedes from an humor melancholicke, terrestriall and grosse, which by its qualities both by the first coldnesse and drinesse, as also by the second, that is Aciditie, is not onely thought most unfit of all others for putrefaction, but also is judged to resist putrefaction, as that which is caused by heate and superfluous heate humidity. Besides, if the materiall cause of this disease should be from an humor putrifying 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 wormes are generated, doe smell or stinke.

Naturall Melancholicke humor is most unapt to putrifie.

Stinke an unseparable companion to putrifaction.

Therefore that which exhales from their bodies which are troubled with the *Dracunculi*, should be stincking, as it happens to those sicke of the *Pthiriasis* or *Lowsie-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 raysed in the places next under the skin, by the efficacy whereof such a creature may be formed of a matter melancholicke and most unapt to putrifie, 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 skinne, as also by the benefit of insensible transpiration, and breathed with the coolenes of the Aire incompassing us. But now the materiall and efficient causes being defective, or certainely very weake, for the generation of so laborious an effect; what coadjutory cause can yeeld assistance? Can the humidity of meates? for those bodies which are fed with warme and moyst meates, as milke, Cheese, Summer fruits, usually breed wormes, as we are taught by experience in Children.

What things usually breed wormes.

But on the Contrary, *Avicen* in the place before cited writeth, that meats of a hot and drie temper chiefely breed this kinde of disease, and that it is not so frequent to moyst bodies and such as are accustomed to the Bath, moyst meats and wine moderatly taken. But whether may the condition of the Aire of those regions in which it is as it were, an Endemiall disease, conferre any thing to the generation of such creatures? Certainely for this purpose a cloudy warme and thicke ayre, such as useth to be at the beginning of the Spring when all places resound with frogges, toades and the like creatures bred of putrifaction.

Cap. 83. Chir. Gallu.

But on the Contrary *Iacobus Dalechampius* by the opinion of all the Phisitions that have written of the *Dracunculi*, writes that this disease breedes in the drie and Sun burnt regions of *India* and *Arabia*; but if at the least that part of our body which is next under the skinne should have any opportunity to engender and nourish such creatures, they may be judged to have written that the *Dracunculus* is a living creature with some probability, But if there bee no opportunity for generation in that place, nor capacity for the nourishment of such like creatures as in the guts, if that region of the body be breathed upon with no warmenesse and smothering heat, if it be defiled with none of the grosse excrements, as the gutts usually are, but onely by the subtiller exhalation, which have an easie and insensible transpiration by the pores of the skin, which may seeme to be a just cause of so monstrous and prodigious an effect; but we shall little profit with these engines of reason unlesse we cast downe 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 answere, because in Physicke names are often imposed upon diseases rather by similitude than from the truth

of

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 Crabb, Polypus, or living Elephant may breede in the Body by such like diseases, but because this by its propagation into the adjacent parts represents the feete and clawes of a Crabbe: the other represents the flesh of the Sea-Polypus in its substance; and the third because such as have the Leprosie have their skinne wrinckled, rough, and horrid with scales and knots, as the skinne of a living Elephant. So truely this disease of which wee now enquire seemes by good right to have deserved the name *Dracunculus*, because in its whole conformation, colour, quality and production into length and thicknesse 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 subtill and hot, and so runnes with violence into the part whence it may seeme to move. But when the *Dracunculi* are separated, why doe they put their heads as it were out of their holes? we answer, in this the ancients have beene very much deceived, because after the suppuration the ulcer being opened, some nervous body being layde bare, thrust forth and subjected it selfe to the sight, which by the convulsive and shaking motion might expresse the crooked creeping of a Serpent. But they will say, paine happens not unlesse to things indued with sence and life, but this *Dacunculus* when he is drawne too violently especially if hee be broken, thereby will cause extreame paine: we doe answer, that the conclusion doth not follow and is of no consequence, for these paines happen not unlesse when the unprovident Surgeon drawes or pulls insteed of the *Dracunculus* some nervous or membranous body swolne and repleate with an adust humor, whence there cannot but be great paine that part being pulld which is the author of sence. But it is childish to say that the *Dracunculus* feeles, for that it causeth sharpe paines to the living body in which it is. Therefore that at last we may determine something of the nature, essence and generation of these *Dracunculi*, I dare boldly affirme it is nothing else but a tumor and abscesse bred from the heat of the bloud in a venenate kinde. Such bloud driven by the expulsive facultie through the veines to the Externall parts, especially the limits, that is the Armes and Legges, causeth a tumor round and long often stretched from the joynt of the shoulder even to the wrist, or from the groine even to one of the Anckles with tension, heat, renitency, pricking paine, and a feaver. But this tumor is somewhiles stretched forth straight, otherwhiles into oblique and crooked tumors, which hath beene the cause that many taken with this kind of disease, and having their limbes 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 owne country.

Why they are called *Dacunculi*.

For the cure, it is not unlike to the cure of a Phlegmon arising from a defluxion, for heere also in like manner the remedies must bee varied according to the foure 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 Plegmon.

The Cure.

The mention of the *Dracunculi* calls to my memorie another kinde of Abscesse, altogether as rare. This our French men name *Cridones*, I thinke *a Crinibus*. i. from hayres: it chiefly troubles children and prickes their backes like thornes. They tosse up & downe being not able to take any rest. This disease ariseth from small haires which are scarce of a pins length, but those thicke and strong. It is cured with a fomentation of water more than warme, after which you must presently apply an oyntment made of honey and wheaten flower; for so these haires lying under the skin are allured and drawne forth; and being thus drawne, they must be plucked out with small mullets. I imagine this kinde of disease was not knowne to the ancient Phisitions.

So the *Malum pilare* in *Aristotle cap.* 11. *lib.* 7. *hist. animal.*

The End of the Eighth Booke.

Lib. 8. Of Particular Tumors against Nature. 319

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So the *Malum pilare* in *Aristotle*, 11. lib. 7. hist. animal.

The End of the Eighth Booke.

Ex Libris Pro am: Heath

Quisquis Librum hunc furatur Male morte moriatur

Templum qui stat in agro vel nil est

OF VVOUNDS IN GENERALL.

THE NINTH BOOKE.

CHAP. I.

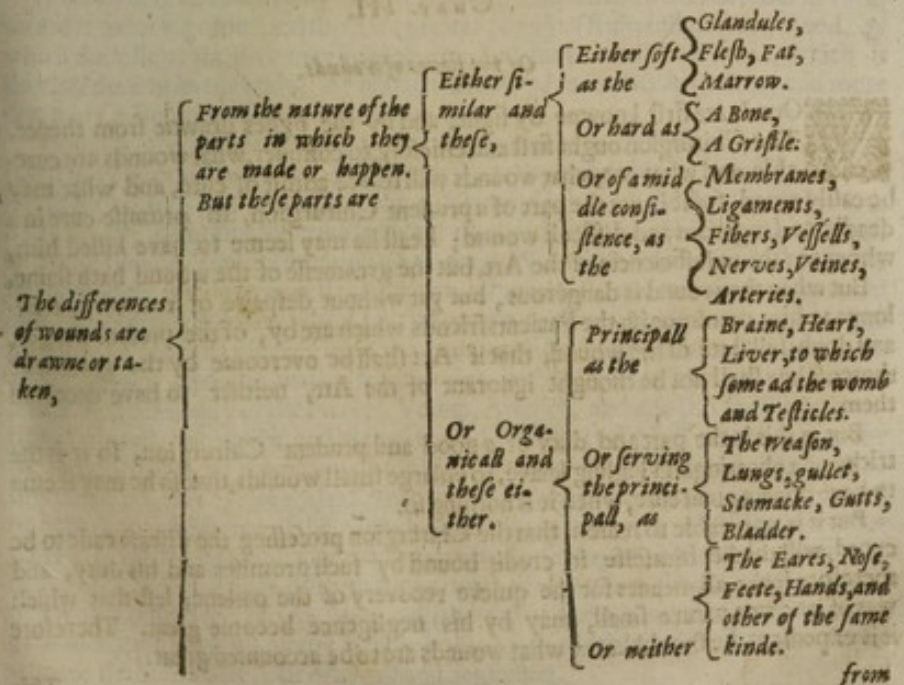
What a Wound is, what the kindes and differences thereof are, and from whence they may be drawne, or derived.

A Wound is a solution of Continuity, caused by a stroake, fall, or bite, newly done, bloody, and with putrifaction, 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 the parts, it hath divers names amongst the Greekes. For in the flesh it is called *Helcos*, in the bone *Catagma*, in the nerve *Spasma*, in the ligament *Thlasma*, in the vessells *Apospasma*, in the Muscles *Regma*; and that solution of continuity, which happens in the vessells, their mouths being open, is termed *Anastomasis*, that which happens by erosion, *Anauro sis*; that which is generated by sweating out and transcolation, *Diapedesis*. That these may bee 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.



from

- From their proper essence, from whence they are called,
  - Simple wounds — When there is no complication of any other disease or symptome besides.
  - Or compound, — 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; — Long, Broad, Deepe.
  - Indifferent, — Short, Narrow, Superficiarie.
  - Little,
- From their figure, according to which they are named,
  - Straight,
  - Oblique,
  - Cornered.

Chap. II.

Of the causes of Wounds.

Divers denominations from their causes,

ALL things which may outwardly assayle the body with force and violence, may be counted the causes of wounds; which are called greene, and properly bloody. These things are either animate, or inanimate. The animate, as the bitings, and prickings of beasts. The Inanimate, as the stroake of an arrow, sword, clubb, gunne, 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 sharpe 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 signes of wounds.

A caution for making reports of Wounds.

WOunds are first knowne by sight, and by the signes drawne from thence. The Chirurgion ought first and chiefely, 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 Chirurgion, to promise cure in a deadly or dangerous and difficult wound; Least he may seeme to have killed him, whom not the unsufficiencie of the Art, but the greatnesse of the wound hath slaine.

But when the wound is dangerous, but yet without despaire 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, hee shall not be thought ignorant of the Art, neither to have deceived them.

A lugling cheating Chirurgion.

But as this is the part and duty of a good and prudent Chirurgion, so it is the tricke of a cheating and jugling knave, to enlarge small wounds, that so he may seeme to have done a great cure, when it is nothing so.

But it is agreeable to reason, that the Chirurgion professing the disease easie to be cured, will thinke himselfe in credit bound by such promises and his duty, and therefore seeke all meanes for the quicke recovery of the patient; lest that which was of its owne nature small, may by his negligence become great. Therefore it is expedient, he should know what wounds are to be accounted great.

This

This (as *Galen* saith) is three wayes to be knowne; The first is by the magnitude and principallity of the part affected; for thus the wounds of the Braine, Heart, and of the greater vessells, 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 malignitie; through which occasion the wounds of the joynts are accounted great, because for the most part, they are ill condition ed.

Lib.4. Meth. cap.6.1.

Wounds are called great out of three respects.

Chap. IIII.

Of Prognostickes to be made in Wounds.

THose Wounds are thought dangerous, wherein any large Nerve, Veine, or Artery are hurt. From the first there is feare of convulsion, but from the other large effusion of the veinous, or arterious blood, whence the powers are debilitated; also these are judged evill, which are upon the arme pitts, groines, leskes, joynts and betweene the fingers; and likewise those which hurt the head or taile of a Muscle. They are least dangerous of all other which wound onely the fleshy substance. But they are deadly which are inflicted upon the Bladder, Braine, Heart, Liver, Lungs, Stomacke and small guts. But if any Bone, Gristle, Nerve or portion of the cheeke or prepuce, shall be cut away, they cannot bee restored. Contused wounds are more difficult to cure, than those which are onely from a simple solution of continuity; for before you must thinke to heale them up, you must suppurate and clense 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 extremes and lipps are the further dis-joyned, which happens to round Wounds. Contrary to these are cornered wounds or such as are made alongst the fibers, as such as may bee easily healed.

What wounds are dangerous.

What least dangerous. What deadly. *Hip aphor.19. Lib.6.*

Why round Wounds are difficult to heale.

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 fruitefull, 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 languide.

Wounds received in the Spring, are not altogether so difficult to heale as those taken in Winter or Summer. For all excesse of heate and cold is hurtfull to them; it is ill for a convulsion to happen upon a Wound, for it is a signe that some Nervous body is hurt; the braine suffering together therewith, as that which is the originall of the Nerves. A Tumor comming upon great Wounds is good; for it shewes the force of nature is able to expell that which is harmefull, and to ease the wounded part. The organicall parts wholly cut off cannot againe be united: because a vitall part once severed and plucked from the trunke of the body cannot any more receive influence from the heart as from a roote without which there can bee no life. The loosed continuity of the Nerves, Veines, Arteries, and also the bones, is sometimes restored, not truely, 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 fleshie parts by converting the Alimentary bloud 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 owne preservation, substitutes in place of that which is lost: for thus the body, which restores and agglutinats, 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.

Hip. lib. de ulcer. Hip. aph. 66. lib. 5.

What a *Callus* is and whence it proceedes.

This

This humor, when it ſhall come to the place of the fracture, agglutinateth the ends of the bones together, which otherwiſe could never bee ſo knit by reaſon of their hardneſſe. The bones of children are more eaſily and ſpeedily united by reaſon of the pliantneſſe of their ſoft and tender ſubſtance. Laſtly wee muſt here admoniſh the Chirurgion, that ſmall Wounds and ſuch as no Artiſan will judge deadly, doe divers times kill by reaſon of a certaine occult and ill diſpoſition of the wounded, and incompaſſing bodies; for which cauſe we reade it obſerved by *Hippocrates*, that it is not ſufficient for the Phyſition to performe his duty, but alſo externall things muſt be rightly prepared, and fitted.

Small and contemptible Wounds often prove mortall

Aphor. 1. ſect. 1.

Chap. V.

Of the Cure of Wounds in generall.

The Generall Indication of Wounds.

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 knowne even by the vulgar: for that which is diſ-joyned deſires to bee united, becauſe union is contrary to diviſion. But by what meanes ſuch union may be procured, is onely knowne to the skilfull Artiſan. Therefore we attaine unto this chiefe and principall Indication by the benefit of nature as it were the chiefe Agent, and the work of the Chirurgion as the ſervant of nature. And unleſſe nature ſhall be ſtrong the Chirurgion ſhall never attaine to his conceived, and wiſhed for end: therefore that he may attaine hereto, he muſt performe five things; the firſt is, that if there bee 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 ſtucke in the wound, he muſt take them away, for otherwiſe there is no union to be expected.

Five things neceſſary for uniting wounds.

Another is, that he joyne together the lippes of the Wound; for they cannot otherwiſe be agglutinated and united. The third is, that he keepe cloſe together the joyned lippes. 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 Phyſition is often forced to change the order of the cure.

All ſtrange and externall bodies muſt bee taken away, as ſpeedily as is poſſible, becauſe they hinder the action of nature intending unity, eſpecially if they preſſe or pricke any Nervous body, or Tendon, whence paine or an Abſceſſe may breede in any principall part, or other ſerving the principall.

Yet if by the quicke and too haſty taking forth of ſuch like bodies there bee feare of cruell paine or great effuſion of bloud, it will bee farre better to commit the whole worke 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 contayned in the wounded part. But if there ſhall be danger in delay, it will bee fit the Chirurgion fall to worke quickely, ſafely, and as mildely as the thing will ſuffer: for effuſion of blood, ſwooning, convulſion and other horrid ſymptomes, follow upon the too rough and boyſtrous handling of Wounds, whereby the patient ſhall be brought into greater danger than by the wound it ſelfe.

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 ſelfe, ſoft, hard, or deepe, in which theſe bodies are faſtened more ſtraitly or more looſely;

and

and then for feare of inferring any worſe harme, as the breaking of ſome Veſſell; but how wee may performe this firſt intention, and alſo the expreſſion of the inſtruments neceſſary for this purpoſe, ſhall be ſhowne in the particular treaties of wounds made by Gun-ſhot, Arrowes and the like.

Ligatures and Sutures for to conjoyne and hold together the lippes of wounds.

But the Surgeon ſhall attaine to the ſecond and third ſcope of curing wounds by two and the ſame meanes, that is, by ligatures and ſutures: which notwithſtanding before hee uſe, hee muſt well obſerve whether there be any great fluxe of blood preſent, for he ſhall ſtoppe it if it be too violent; but provoake it, if too ſlow, (unleſſe 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 leſſe ſubject to inflammation. Therefore the lippes of the wounds ſhall be put together, and ſhall bee kept ſo joyned by ſuture and ligatures: Not truly of all, but onely 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 neede of the Ligature which we call incarnative, eſpecially, if it be in the Armes or Legges; but that which divides the Muſcles tranſverſly, ſtands in need of both Suture and Ligature; that ſo the Lippes which are ſomewhat farre diſtant from each other, and as it were drawne towards their beginnings, and ends, may bee conjoyned.

If any portion of a fleſhy ſubſtance by reaſon of ſome great cut ſhall hang downe, 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 doe not eaſily admit a Ligature, by reaſon of the figure and ſite of the part in which they are, as the Eares, Noſe, Hairy-ſcalpe, Eie-liddes, Lippes, Belly and Throat.

Three ſorts of Ligatures.

There are three ſorts of Ligatures, by the joynt 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, greene, and yet bloody wounds. This conſiſts of two ends, and muſt ſo be drawne, that beginning on the contrary part of the wound, wee may ſo goe upwards, partly croſſing it, and going downewards againe, we may cloſely joyne together the lippes of the Wound. But let the Ligature be neither too ſtrait, leaſt it may cauſe inflammation or paine; nor too looſe, leaſt it be of no uſe, and may not well containe it.

What an incarnative Ligature is.

What an expulſive.

The Expulſive Ligature is fit for ſanious and fiſtulous ulcers, to preſſe out the filth contained in them. This is performed with one Rowler, having one ſimple head; the beginning of binding muſt bee taken from the bottome of the *Sinus*, or boſome thereof; and there it muſt be bound more ſtraightly, and ſo by little and little going higher, you muſt remit ſomething of that rigour, even to the mouth of the Vlcer. That ſo (as we have ſaid) the ſanious matter may be preſſed forth.

What the retentive.

The Retentive Ligature is fit for ſuch parts as cannot ſuffer ſtraight binding, ſuch are the Throat, Belly, as alſo all parts oppreſſed with paine; For the part vexed with paine, abhorreth binding. The uſe thereof, is to hold to locall Medicines. It is performed with a Rowler, which conſiſts ſome whiles 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 ſhall bee applyed; the indication of their largeneſſe being taken from their magnitude, figure and ſite. As wee ſhall ſhew more at large in our Tractates of Fractures and Diſlocations.

What the rowlers muſt bee made of.

Why and how the temper of the wounded part muſt be preſerved.

The Chirurgion ſhall performe 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 Phyſition, by uſing univerſall and locall Medicines. A ſlender, cold, and moyſt 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 bee fed ſparingly, eſpecially if he be plethorick; he ſhall abſtaine from ſalt and ſpiced fleſh, and alſo from wine; If he ſhall be of a Cholerick or Sanguine nature: In ſteed of wine he ſhall uſe the decoction of Barly or Liquerice, or Water and Sugar. He ſhall keepe himſelfe quiet; for reſt is (in *Celſus* opinion) the very beſt Medicine. Hee ſhall avoyde Venery, Contentions, Brawles, Anger, and other perturbations of the

mind. When hee ſhall ſeeme to bee paſt danger, it will bee time to fall by little and little to his accuſtomed maner of diet and life. Vniverſall remedies are Phlebotomies and purging, which have force to divert and hinder defluxion, wherby the temper of the part might be in danger of change.

In what wounds blood letting is not neceſſary.

For Phlebotomy it is not alwayes neceſſary, as in ſmall wounds and bodies, which are neither troubled with ill humours, nor plethoricke: But it is onely required in great wounds, where there is feare of defluxion, paine, *Delirium*, Raving and unquietneſſe; and laſtly in a body that is Plethoricke, and when the joynts, tendons, or nerves are wounded. Gentle purgations muſt bee appointed, becauſe the humours are moved and inraged by ſtronger; whence there is danger of defluxion and inflammation: wherefore nothing is to be attempted in this caſe, without the advice of a Phyſition.

What medicines are to be judged agglutinative.

The Topick and particular Medicines are Agglutinative, which ought to be induced with a drying and aſtrictive 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 greatneſſe of the diſeaſe. The Simple Medicines are *Olibanum*, *Aloes*, *Sarcocolla*, *Bole-Armenick*, *Terra ſigillata*, *Sanguis Draconis*, Common and Venice Turpentine, Gumme *Elemni*, Plantane, Horſe-tayle, the greater Comfery, *Farina Volatilis*, and many other things of this kind, which wee ſhall ſpeake 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 Chirurgion have much to doe; For he is often forced to omit the proper cure of the diſeaſe, ſo to reſiſt the accidents and ſymptomes, as bleeding, paine, inflammation, a feaver, convulſion, palſie, talking idly, or diſtraction, and the like. Of which wee ſhall treat briefly and particularly, after we have firſt ſpoken of Sutures as much as we ſhall thinke fitting for this place.

Chap. VI.

Of Sutures.

What wounds ſtand in no need of a ſuture

When Wounds are made alongſt the thighes, Legs, and armes, 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 drawne towards the ſound parts; whereby it comes to paſſe that they part the further each from other; wherefore that they may be joyned and ſo kept, they muſt be ſowed, and if the wound be deepe, you muſt take up much fleſh with your needle; for if you onely take hold of the upper part, the wound is onely ſuperficially healed: but the matter ſhut up, and gathered together in the bottome of the wound, will cauſe abſceſſes and hollow Vlcers: Wherefore now wee muſt treate of making of Sutures.

The firſt manner of ſuture.

The firſt, called *Interpunctus*, leaves the diſtance of a fingers breadth, and therfore is fit for the greene wounds of the fleſhy parts, which cannot be cured with a Ligature, and in which no heterogeneous or ſtrange body remaines; It is performed after this manner. You muſt have a ſmooth needle with a threed in it, having a three ſquare point, that ſo it may the better enter the skin, with the head of it ſome what hollowed, that the threed may lie therein; for ſo the needle will the better goe through. You muſt alſo have alittle pipe with a hole or window in the end, which you muſt hold and thruſt againſt the lip of the wound, that it bee not moved to the one ſide or other, whileſt you thruſt thorough the needle: And that wee may ſee thorough that window when the needle is thruſt thorough, and alſo draw it together with the threed, and withall hold the lip of the wound in more firmly, that it follow not at the drawing forth of the needle and threed. Having thus pierced the lips of the wound, tie a knot, neere to which cut off the threed; leaſt that if any of it bee left

The forme of your needle.

The forme of the pipe, with a window in it.

below

below the knot, it may so stick to the Emplasters that it cannot be plucked and separated from them without paine, 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 betweene the midst and one of the ends; but when you have made your stitches, the lips of the wound must not be too closely joyned, but a little space must be left open betweene them, that the matter may have free passage forth, and the inflammation and paine may be avoyded: otherwise if they shall be closely joyned together without any distance betweene, a tumor after arising when the matter shall come to suppuration, the lips will be so much distended that they may easily be broken by the stiffnesse of the threed. 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 paine and inflammation. And besides leaves an ill favoured scarre. Yet in deepe 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; least the thred drawne away by the weight of the flesh not taken hold of, may bee broken. But oft times wounds are seene made in such places as it will be needfull, the Chirurgion should have a crooked needle and pipe, otherwise the Suture will not succeede 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 second Suture is made just after the same manner as the Skinners sowe their fels or furrs. 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 2. manner of Suture.

The third Suture is made by one or more needles having threed in them, thrust through the wound, the threed being wrapped to and againe at the head and the point of the needle, as boyes use to fasten their needle, for feare 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 third manner of Suture.

The fourth kind of Suture is tearmed *Gastroraphia*, invented for the restoring and uniting the great Muscles of the *Epigastrium*, or lower belly, cut with a great wound together with the *Peritonæum* lying under them. The manner whereof we will shew in due place. The 4. kind of Suture termed *Gastroraphia*.

The fifth kind is called the Dry Suture, which we use onely in the wounds of the face, which also we will describe in its proper place. The 5. kind called the Dry Suture.

Chap. VII.

Of the Flux of blood, which usually happens in wounds.

The signes of bood flowing from an artery

OFt times great bleeding followes upon wounds, by reason of some vessell cut, broken, or torne, which there is neede to heale and helpe diligently, because the blood is the treasure of nature, without which life cannot consist. The Blood which floweth from an Artery, is thus knowne. 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 Veine is more grosse, blacke, and slow. Now there are many wayes of stenching blood.

The first way of staying bleeding.

The first and most usuall is that, by which the lips of the wound are closed, and unlesse it be somewhat deepe, are contained by Medicines which have an astringent, cooling, drying, and glutinous faculty; As *terræ sigill. Boli Armeni, ana.* ℥ ß. *thuris, Mastichis, Myrrhæ, Aloes, ana.* ʒ. ij. *Farinæ volat. molend.* ℥. j. *Fiat pulvis qui albumine ovi excipiatur.* ℞ Or ℞. *Thuris & Aloes, ana. partes æquales.* Let them bee mixt with the white of an Egge, and the downe of a hare, and let the pledgets bee dipped in these Medicines, as well those which are put unto the wound as those which are applied about it. Then let the wound be bound up with a double clop and fit Ligature, and the part bee so seated as may seeme the least troublesome and most free from paine.

The 2. manner of stanching it.

But if the blood cannot be stayed by this meanes, when you have taken off all that covereth it, you shall presse the wound and the orifice of the Vessell with your thumbe, so long untill the blood shall bee concrete about it, into so thick a clott as may stop the passage.

The 3. way by binding of the vessels.

But if it cannot be thus staied, then the Suture (if any be) must be opened, and the mouth of the Vessell towards the originall or roote, must bee taken hold of, and bound with your needle and threed, 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 performe this worke, wee are often forced to divide the skin which covereth the wounded Vessell. For if the Iugular veine, or Artery be cut, it will contract and withdraw it selfe upwards and downwards. Then the skinne it selfe must bee laid open under which it lieth, and thrusting a needle and threed under it, it must be bound as I have often done. But before you loose the knot, it is fit the flesh be growne up, that it may stop the mouth of the Vessell, least it should then bleed.

An admonition

The 4. way by Escharoticks.

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 Allume; and Cawsticks which cause an Escar. The falling away of which must be left to Nature, and not procured by art, least it should fall away before that the orifice of the Vessel shall be stopt with the flesh, or clotted blood.

The 5. way by cutting off the vessels.

But some times it happens that the Chirurgion is forced wholly to cut off the vessell it selfe, that thus the ends of the cut vessell withdrawing themselves, and shrincking upwards and downewards, being hidden by the quantity of the adjacent and incompassing parts, the fluxe of blood, which was before not to bee staid, may bee stopped with lesse labour. Yet this is an extreame remedy and not to bee used, unlesse you have in vaine attempted the former.

Cha.

Chap. VIII.

Of the paine which happens upon wounds.

THe paines which followes upon wounds ought to be quickly aſwaged, beeauſe nothing ſo quickly dejects the powers; and it alwayes cauſes a defluxion, of how good ſoever a habite and temper the body be of; for Nature ready to yeeld aſſiſtance to the wounded part, alwayes ſends more humours to it, than are needfull for the nouriſhment thereof, whereby it comes to paſſe that the defluxion is eaſily encreaſed, either by the quantity, or quality, or by both.

Paines weaken the body, and cauſes defluxions.

Therefore to take away this paine the author of defluxion, let ſuch Medicines bee applyed to the part as have a repelling and mitigating faculty; as R. *Olei Myrtini, & Roſarum, ana* ℥. ij. *Ceræ alb.* ℥. j. *Farinæ hordei,* ℥. ß. *Bolı armeni, & terræ ſigillat. ana.* ʒ. vj. Melt the Waxe in the Oyles, 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. *liquefiant ſimul*, and let a Medicine be made for the fore mentioned uſe. Irrigations of oyle of Roſes and Mirtiles, 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 cloathes moiſtened 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 paine. But if the paine yeld not to theſe, we muſt come to narcoticke Medicines, ſuch as are the Oyle of Poppy, of Mandrake, a Cataplaſme of Henbane and Sorrell, adding thereto Mallowes and Marſh-mallows, of which we ſpoke formerly in treating of a Phlegmon.

Divers Anodines or medicines to aſſwage paine.

Laſtly, we muſt give heed to the cauſe of the paine, to the kind and nature of the humour that flowes 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 paine, it will be aſwaged by application of cooling things; and the like reaſon obſerved in the contrary; if Nature intend ſuppuration, you muſt helpe forwards its endeavours with ſuppurating Medicines.

Chap. IX.

Of Convulſion by reaſon of a wound.

A Convulſion is an unvoluntary contraction of the Muſcles (as of parts moveable at our pleaſure, towards their originall, that is, the Braine and Spinall Marrow, for by this the Convulſed member or the whoſle 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 onely 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 Greekes, *Tetanos*, when as the whole body growes ſtiffe like a ſtake that it cannot be moved any way.

Three kinds of an univerſal Convulſion.

The ſecond is called *Opiſthotanos*, which is when as the whole body is drawn backwards.

The third is termed *Emproſthotonos*, 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 paine cauſe a Convulſion. Abundance of humours cauſe Repletion, dulling the body by immoderate eating and drinking, and omiſſion of exerciſe, or any accuſtomed evacuation, as ſuppreſſion of

Three cauſes of a convulſion. Cauſes of Repletion.

the Hemorrhoids and Courses: for hence are such like excrementious humours drawne into the Nerves, with which they being replete and filled, are dilated more than is fit, whence necessarily becoming more short, they suffer Convulsion. Examples whereof appeare in Leather and Lute or Viol-strings, which swolne with moysture in a wet season are broken by repletion.

Causes of Inanition.

Immoderate vomitings, fluxes, bleedings, cause Inanition or Emptinesse, wherefore a Convulsion caused by a wound, is deadly: as also by burning feavers. For by these and the like causes, the inbred and primigeneous humidity of the Nerves is wasted, so that they are contracted like leather which is shrunke up, by being held too neere the fire, or as fidle strings which dryed 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 bee proportionall to the strength of the convulsifique cause, and the Convulsion proceede from Repletion; for the abundant and grosse humour causing the Convulsion is digested and wasted by the feaverish heat.

Aph. 26. sec. 2.

Causes of convulsion by constat of paine.

The causes of a Convulsion by reason of paine, are either the puncture of a Nerve, whether it be by a thing animall, as by the biting of a venemous beast; or by a thing inanimate, as by the prick of a needle, thorne, or pen-knife: or great and piercing cold, which is hurtfull to the wounds, principally of the nervous parts; whereby it comes to passe, that by causing great and bitter paine in the nerves they are contracted towards their originall, that is, the Braine, as if they would crave succour from their parents in their distressed estate. Besides also, an ill vapour carried to the braine from some putrefaction so vellicateth it, that contracting it selfe, it also contracteth together with it all the Nerues and Muscles, as we see it happeneth in those which have the falling sickneſſe. By which it appeares that not onely the braine it selfe suffereth together with the Nerves, but also the Nerves with the Braine. The signes of a Convulsion are difficult, painefull and depraved motions, either of some part or of the whole body, turning aside of the Eyes and whole Face, a Contraction of the Lippes, a drawing in of the Cheekes as if one laughed, and an Vniversall swear.

Signes of a convulsion.

Chap. X.

The cure of a Convulsion.

The cause of a Convulsion by Repletion.

THe cure of a Convulsion, is to bee 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 Inanition, and that which proceeds of paine, otherwise than eyther 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, sulphurious Baths and other things appointed by the prescription of some learned Physition which shall oversee the cure, which may consume the superfluous and excrementitious humours that possesse the substance of the Nerves, and habit of the body. The locall remedies are Oyles, Vnguents and Liniments, with which the Neck, Back-bone and all the contracted parts shall be annointed. The Oyles are, the Oyle of Foxes, Bayes, Camomill, Wormes, Turpentine, of *Costus*, of *Castoreum*: The Oyntments are *Vnguentum Arragon, Agrippæ, de Althæa, Martiatum.* This may be the forme of a Liniment; R. *Olei Chamam. & Laurin. ana.* ℥.ij. *Olei Vulp.* ℥.j. *Vnguenti de Althæa & Marti. an.* ℥.ß. *Axungiæ vulpis*, ℥.j. *Aquæ vitæ*, ℥.j.ß. *Ceræ quantum sufficit.* Make a Liniment for your use, or R. *Olei Lumbric. de Spica & de Castoreo, ana.* ℥.iij. *Axng. hum.* ℥j. *Sulphuris vivi*, ℥.ß. *Ceræ quantũ sufficit.* Make a Liniment, or R. *Vnguenti Martiati & Agrip. an.* ℥.iij. *Olei de Terebinth.* ℥.j.ß. *Olei Salvia*, ℥.ß. *Aquæ vitæ* ℥.j. *Ceræ* ℥.j.ß. *fiat linimentum.* But this disease is cured by slender diet, and sweating with the Decoctions of *Guiacum*, because by these remedies the grosse, tough, and viscide excrements, which are in fault, are digested.

A Convulsion proceeding of Inanition is to be cured by the use of those things, which

which doe wholesomly and moderately nourish. And therefore you must prescribe a diet consisting of meats full of good nourishment, as broaths and cullices of Capons, Pigeons, Veale, and 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. *Lactucæ, Bugloss. & portul. ana. M.j. quatuor seminum frigid. major. an.* ℥ß. *seminis Barberis*, ℥.j. Let them al be boiled with a Chicken, and let him take the broath every morning. If thirst oppresse him, the following Iulep will be good. R. *Aquæ rosar.* ℥.iv. *Aquæ viol.* ℔.ß. *Saccari albissimi* ℥.vj. *fiat Iulep, utatur in siti.* If the patient be bound in his body, emollient and humecting Clysters shall bee appointed, made of the decoction of a sheeps head and feet, Mallowes, Marsh Mallowes, 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 Oyle and Milke. Topick remedies shall be Liniments and Bathes. Let this be the example of a Liniment. R. *Olei Viol. & Amygdal. dulc. ana.* ℥ ij. *Olei Lilior. & Lumbric. ana.* ℥.j. *Axungiæ porci recentis*, ℥.iij. *Cæræ novæ quantum sufficit, fiat Linimentum*, with which let the whole spine and part affected be annointed: This shall bee the forme of an emollient and humecting Bath. R. *Fol. Malvæ, Bis Malvæ, Pariet. ana. M.* vj. *Seminis Lini & fœnug. ana.* ℔ ß. *Coquantur in Aqua communi, addendo Olei Lillior.* ℔.viij. Make a Bath: Into which let the patient enter when it is warme. When he shall come forth of the Bath, let him be dried with warme Clothes, or rest in his bed avoyding sweat. But if the patient be able to undergoe the charge, it will be good to ordaine a Bath of Milk, or Oyle alone, or of them equally mixt together.

The cure of a Convulsion caused by inanition.

An Emolient Liniment for any Convulsion.

An Emolient and humecting Bath.

CHAP. XI.

Of the cure of a Convulsion, by sympathy and paine.

A Convulsion which is caused both by consent of paine and Communication of the affect, is cured by remedies which are contrary to the dolorifique cause. For thus if it proceede from a puncture or venemous bite, the wound must be dilated and inlarged 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 & dissolve the virulency, as Treacle & Mithridate, dissolved in *Aqua vitæ*, with a little of some Mercuriall powder: for this is a noble Antidote. Also cupping glasses and scarrifications will be good. Lastly the condition of all dolorifique causes, shall bee oppugned by the opposition of contrary remedies, as if paine by reason of a pricked Nerve or Tendon, shall cause a Convulsion, it must presently be resisted by proper remedies, as Oyle of Turpentine, of *Euphorbium*, mixt with *Aqua vitæ*, and also with other remedies appropriated to punctures of the Nerves. If the paine proceede from excesse of cold, because cold is hurtfull to the Braine, the Spinall marrow, and Nerves; the patient shall bee placed in a hot aire, such as that of a Hot-house or Stoave, all the Spine of his back and Convulsed parts, must be annoynted with the hot Liniments above mentioned: For that is much better, than suddenly to expose him from the conceaved convulcifique, cause to a most hot fire or warme Bath. In the meane time the Chirurgion must take diligent heede, that as soone as the signes of the Convulsion to come, or already present, or at hand, doe shew themselves, that he put a sticke betweene the patients teeth, least they bee fast locked by the pertinacious contraction of the Iawes: for many in such a case have bit off their tongues, for which purpose he shall bee provided of an instrument called *Speculum Oris*, which may be dilated and contracted according to your mind by the meanes 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.

What a Palsie is.

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 therof, as of the right or left side. And such is properly named the Palsie: for otherwise and lesse properly the resolution of some one member is also called the Palsie: For when the whole body is resolved, it is an Apoplexy. Therfore the Palsie sometimes takes halfe the body, otherwhiles the uper parts which are betweene the navell and the head, otherwhiles the lower which are from the navell to the feet; somtimes the tongue, gullet, bladder, yard, eyes, and lastly any of the particles of the body.

The differences thereof.

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 remaines perfect in a Convulsion. There are some which have a pricking, and as it were great paine in the part.

How it differs from a Convulsion.

The causes.

The causes are internall or externall, the internall are humors obstructing one of the ventricles of the braine, or one side of the spinall marrow, so that the Animall faculty, the worker of sense and motion, cannot by the Nerves come to the part to performe its action. The external causes are a fall, blow, and the like injuries, by which oft times the joynts are dislocated, the spinall marrow wrested aside, and constrictions and compressions of the *Vertebræ* arise, which are causes that the Animall spirit cannot come to the Organes in its whole substance. But it is easy by skill in Anatomy perfectly to understand by the resolved part the seat of the morbifique 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 braine, or spinall marrow; but if the parts of the head being untoucht, either of the sides being wholly resolved, the fault remaines in the Originall of the spinall marrow; if the armes bee taken with this disease, we may certainly think that the matter of the disease lies hid in the 5. 6. and 7. *Vertebra* of the neck. But if the lower members languish, we must judge the Paralitick cause to be contained in the *Vertebra* of the loynes 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 proceedes from a Nerve cut,

or

or exceedingly bruised, is incurable, because the way to the part by that meanes 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 inveterat palsie which hath long possest the part, neither that which succeeds an Apoplexy, yeeld us any better hope of cure. It is good for a feaver to come upon a Palsie, for it makes the dissipation of the resoloving 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 weakenesse of the afflicted part, which suffers it selfe to be defrauded of its nourishment, all the provision flowing to the sound or opposite side.

It is good for a feaver to happen upon a Palsie.

Chap. XIII.

Of the cure of the Palsie.

IN the cure of the Palsie we must not attempt any thing, unlesse we have first used generall remedies, diet and purging; all which care lyeth upon the learned and prudent Physition. 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 unprofitable to put about the resolved members, bricks heated red hot in the fire and quenched in a decoction of Wine, Vineger, and resolving herbs, or also stone bottles, or Oxe and Swines bladders, halfe filled with the same decoction; for such heat which is actuall resuscitateth & strengtheneth the heat of the part, which in this disease is commonly very languid: Then the Patient shall go into a Bathing-tub, which is vailed or covered over just as we have described in our Treatise of Bathes, that so he may receave the vapour of the following Decoction. R. *Fol. Salvia, Lavend. Lauri major. Absinth. Thym. Angelicæ, Rutæ, ana M.ß. Florum Chamæm. Melil. Anethi, Anthos. ana. P.ij. Baccar. Laur. & Iuniper. Conquassatar. ana ℥.j. Caryophyl. ʒ.ij. Aquæ fontanæ & Vini albi, ana. ℔.iv.* Let them be all put in the Vessell mentioned in the Treatise lately described for use. The patient shall keepe 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 againe, bee dried and rest. Then let him be presently anointed with the following ointment, which *Leonellus Faventinus* much commends, R. *Olei Laurini & de Terebinth. ana ℥.iij. Olei Nardini & petrolei, ana ℥.j. Vini malvatici, ℥ iv. Aquæ vitæ, ℥.ij. Pyrethri, Piperis, Synap. Granor. Iunip. Gummi hederæ, anacard. Ladani puri, an. ℥ j.ß. Terantur & misceantur omnia cum Oleis & Vino: bulliant in vasi duplici usque ad Vini consumptionem, facta forti expressione, adde Galbani, Bdellii, Euphorbii, Myrrhæ, Castorei, adipis ursi, Anatis, Ciconiæ, an. ʒij.* Make an ointment in forme of a liniment, adding a little wax if need shall require. Or you shall use the following remedy approved by many Physitions, R. *Myrrhæ & aloes, Spicænardi, Sanguinis draconis, thuris, opopanacis, Bdellii, Carpobalsami, amomi, sarcocollæ, croci, mastic. gummi arabici, styrac. liquidæ, ladani, castorei, ana ℥.ij. Moschi, ʒ.j. aquæ vitæ, ℥.j Terebinthinæ venetæ, ad pondus omnium, pulverabuntur pulverisanda & gummi eliquabuntur cum aqua vitæ & aceti tantillo.* And let them all be put in fit vessels, that they may be distilled in *Balneo Mariæ*, and let the spine of the back, and paralytick limbes 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, ℥.j. Calami aromat. Cinam. Caryophil. nucis Moscb. macis, ana ʒ.ij. Salviæ, major. Iuæ arthriticæ, Lavend. rorism. saturciæ, puleg. calament. mentastri, ana. M.ß. florum chamæm. melil. hyperic. anthos, flachad. 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 moistened with the distilled liquor, of which also you may give the patient a spoone full to drinke in the morning with some Sugar. For thus the stomach will be heated, and much phlegme contained therein as the fuell of this disease, will be consumed.

The decoction of Guaiacum is good for a Palsie.

Things actually hot good for to be applied to paraliticke members.

Leon. Faventi. his ointment.

An approved ointment for the Palsie.

A distilled water good to wash them outwardly, & to drinke inwardly.

You

Exercises and frictions.

Chymicall oyles.

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 oyles of Rosemary, Tyme, Lavander, Cloves, Nutmegs, and lastly of all spices, the maner of extracting, whereof we shall hereafter declare in a peculiar Treatise.

Chap. XIV.
Of Sowning.

What Sowning is.

Three causes of sowning.

Sowning is a suddaine and pertinacious defect of all the powers, but especially the Vitall; In this the Patients lie without motion and sense, so that the Ancients thought that it differed from death onely 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 feare which causeth a suddaine and joint retirement of the spirits to the heart. Whence followes an intermission of the proper duty as also of the rest of the faculties, whilest 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 Braine 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 a feare, 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 ill humors, and in poysonous wounds. The signes of Sowning are Palenes, a dewy and sudden sweat arising, the failing of the pulse, a sudden falling of the body upon the ground without sense & motion, a coldnesse possessing the whole body, so that the Patient may seeme rather dead, than alive. For many of these who fall into a sowne dye unlesse they have present helpe.

The cure of sowning caused by dissipation of spirits.

The cure of sowning caused by a venenate aire.

The cure of Sowning caused by oppression and obstruction.

Therefore you shall helpe them, if when they are ready to fall, you sprinckle 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 dipt in wine to hold and chew in their mouths. But if it be caused by a putrid vapour and poysonous aire, you shall give them a little Mithridat or Treacle in *Aqua vitæ* with a spoone, as I usually do to those which have the plague, or any part affected with a Gangreene, or sphacell. But if the patients cannot be raised out of their sownes, by reason of the pertinatious oppression and compression of the spirits about the heart, you must give them all such things as have power to diffuse, call forth and resuscitat the spirits, such as are, strong wines to drink, sweet perfumes to smell: You must call them by their owne name, lowd in their eare, and you must pluck them somewhat hard by the haires of the Temples, and neck. Also rub the temples, nostrils, wrests and palmes of the Hands with *Aqua vitæ*, wherin Cloves, Nutmegs, and Ginger have beene steeped.

Chap. XV.
Of Delirium (i.) Raving, *Talking idly or Doting.*

What a Symptomaticall *Delirium* is.

The causes thereof.

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 paine, and a feaver, when as the nervous parts as the joynts, stomach, and middriffe shall be violated.

Why the brain suffers with the midriffe.

For the Ancients did therefore call the Middriffe *Phrena*, because when this is hurt as if the mind it selfe were hurt, a certaine phrensie ensues, that is, a perturbation of the Animall faculty, which is imployed in ratiocination; by reason of the community which the *Diaphragma* hath with the Braine, by the nerves, sent from the sixth

Conjuga-

Conjugation, which are carried to the ſtomach. Therefore doting happens by too 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 venemous beaſt, or from ſeed retained or corrupted in the womb, or from a Gangreen or Sphacel, from a venenate and putrid aire carried up to the braine, or from a ſudden tumult and feare. Laſtly, what things ſoever with any diſtemper eſpecially hot, do hurt and debilitate the minde. Theſe may cauſe doting by the afflux of humors, ſpecially cholerick, by diſſipation, oppreſſion or corruption of the ſpirits. Therefore if it ſhall proceede from the inflammation of the braine, and *Meninges* or Membranes therof; after purging and blood letting by the preſcription of a Phyſition, the haire being ſhaved or cut off, the head ſhall be fomented with roſe vineger, and then an Emplaſter of *Diacalcitheos* diſſolved in oyle and vineger of Roſes, ſhall be laid thereupon. Sleep ſhall be procured with Barley creames, wherein the ſeeds of white Poppy have been boyled, with broaths made of the Decoction of the cold ſeedes of Lettuce, Purſlaine, Sorrell and ſuch like. Cold things ſhall be applyed to his noſtrils, as the ſeeds of Poppy gently beaten with Roſe-water and a little vineger. Let him have merry and pleaſant Companions that may divert his mind from all cogitation of ſorrowfull things, and may eaſe and free him of cares, and with their ſweet intreaties may bring him to himſelfe againe. But if it happen by default of the ſpirits, you muſt ſeeke remedy from theſe things which have beene ſet downe in the Chapter of Sowning.

The Cure.

The End of the Ninth Booke.

OF THE GREENE AND BLOODY VVOVNDS OF EACH PART.

THE TENTH BOOKE.

CHAP. I.

Of the kinds or differences of a broken Scull.

NOw that we have briefly treated of wounds in generall, that is, of their differences, signes, causes, prognosticks and cure, and also shewed the reason of the accidents and symptomes which usually follow and accompany them; it remaines that we treate 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 hayry scalpe 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 Scull, is sometimes superficiary, sometimes it descends even to the *Diploe*, sometimes it penetrats through the 2. Tables, and the Meninges into the very substance of the Braine; besides, the braine is oft times moved and shaken with breaking of the internall veines, and diverse symptomes happen when there appeares no wound at all in the head: of all, and every of which we will speak in order, and adde their cure, especially according to the opinion of the divine *Hippocrates*. He in his Booke of the wounds of the head, seemes to have made 4. or 5. kinds of fractures of the Scull. 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 adde it) you may call a Counterfissure, or as the interpreter of *Paulus* cals it, a *Resonitus*. As when the bone is cleft on the contrary side, to that which receaved the stroake. There are many differences of these 5. kinds of a broken Scull. For some fractures are great, some small, and others indifferent; some runne 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 thorough both the Tables of the Scull; some run in a right line, others in an oblique and circular; some are complicated amongst themselves, as a fissure is necessarily and alwayes accompanied with a Collision or Contusion; and others are associated with diverse accidents, as paine, heat, swelling, bleeding and the like. Sometimes the Scull 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 fals off. All which differences are diligently to be observed, because they force us to vary the cure, and therefore for the helpe of memory, I have thought good to describe them in the following Table.

The differences of a broke head.

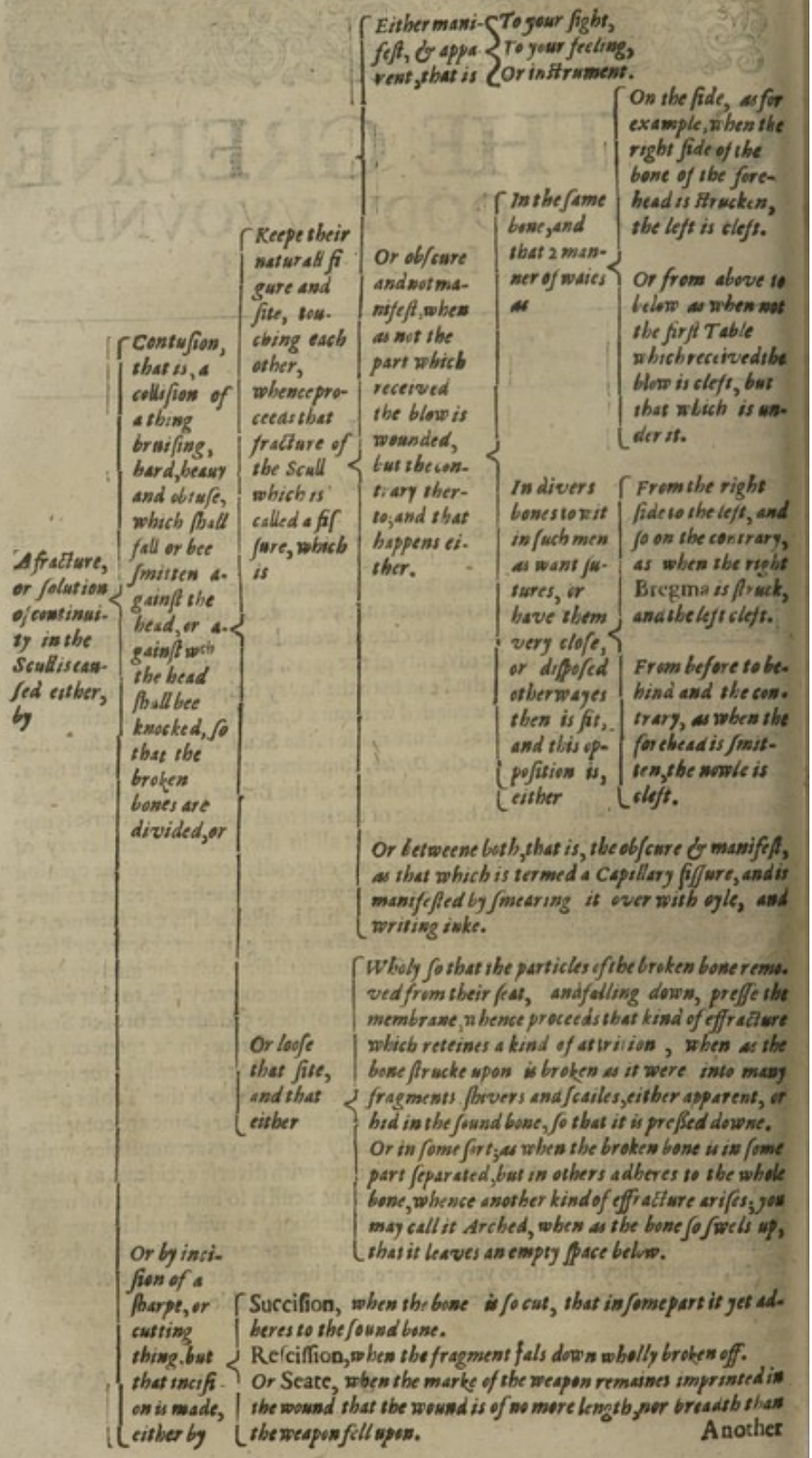
The kinds of a broken Scul out of *Hippocrates*.

Differences from their quantity.

Differences from their figure.

From their complication.

A Table of the fractures of the Scull.



Another

Another Table of the differences of a fractured Scull.

- *The differences of fractures common to these of all other parts are drawne, either from*
  - *Their nature, according which fractures are cald,*
    - *Simple, as when they are found solitary and by themselves.*
    - *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, paine, heat, bleeding, convulsion and the like.*
  - *Their Quantity whence they are called, great, indifferent and small, according to the triple 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 backe, or the right or left, or the upper or lower part; or superficiary and profound.*
  - *The part, whence it is called a Fracture of the Forehead, Nowle,* Bregma, *and Stony bones; and hence it is judged, what may bee deadly, or hopefull of recovery, easie or difficult to cure.*

Chap. II.

Of the causes and signes of a broken Scull.

THe causes of a broken Scull are externall, as a fall, a blow or stroake with any kind of weapon, sharpe, obtuse, heavy, hard, the bitings of Beasts, and many other things of the like kind. But the signes by which we come to know that the Scull 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 eye and hand. The externall causes.

The Rationall signes shew by these things which have happened upon the thing it selfe, whether it be, and of what sort it is. For you may know the Scull is broken, if the patient shall fall down with the stroake, or if he shall fall headlong from a high place upon some hard thing. If for some time after the stroake, he shal lie without speaking, sight, and hearing, if he shall have felt and feele much paine, so that he is often forced to put his hand to the wound. But also the weapon is to be considered, that is, whether it be heavy, obtuse, pricking or sharpe. Also we must consider with what & how great strength the stroake was given, and with how great anger and from what distance the weapon fell. Also he must consider whether the patient receaved the blow with his head unarmed and naked; whether he fell into a sowne presently after the blow; whether when he came to himselfe, he was in his right senses; whether his eies were blinded, whether he was troubled with a giddines or dizines, and whether he bled at the nose, mouth, eares, or eyes, and lastly whether he vomited. For *Hippocrates* writes, that those who have their braine cut, must necessarily have a feaver 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 braine. Rationall causes. *Aphor. 50. sec. 6.*

Also a dull sound as from a broken vessell comming from the skull, (the hairy scalpe and *Pericranium* being taken off) and it being lightly smitten upon with an Iron probe, is sayd to be a signe of a fracture thereof, as it is recorded by *Paulus Ægineta*. Truely all these signes make a great conjecture or rather assuredness that the skull is wounded, and the braine hurt, as which cannot happen unless the bone be broken, as *Celsus* hath written. Yet many have had their sculles broken, who had no such signe immediatly after the blow; but this is very seldome. But I doe not thinke fit amongst so many signes, here to omit that which is set downe by *Guido*. If any (saith he) will know in what place the scull is broke, let the patient hold fast betweene his foreteeth, 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 bee certainely admonished, or perfectly perceive the part of the scull that is broken, and as orecome and forest by this sence of paine, will by lifting up his hand make demonstration thereof. As yet I have not beene able to finde the truth hereof by experience, although I have made triall of it in many. Wherefore I cannot say any thing certainely of this signe, as neither of that which is mentioned by *Hippocrates* in *Coais Præs.* In such as you doubt, whether the bones of the scull be broken, or not, you must judge by giving them the stalke of Asphodill, to chaw on both sides of their jawes, but so that you bid them withall observe, whether thoy perceive any bone to crackle, or make a noyse in their heades, for these which are broken seeme to make a noyse.

Lib. 3. cap. 9.

Hippocrates and *Guidoes* conjecturall signes of a broken scull.

But passing over these things, now let us come to these signes, which may be obvious to our senses.

CHAP. III.

Of the signes of a broken skull, which are manifest to our sense.

Sensible signes of a broken scull before the dividing of the skinne.

THese signes are here sayd to be manifest to sense, which when the bone is bared, manifest the wound to our eyes, fingers and probe. But if the haires stand upon one end in the wound, you may know the bone is broke, because the haire which yeelds to the violence of the blow, cannot be so cut, the bone which resists the stroake 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 selfe, suspect by a probable conjecture, that the Scull is broken, and perswade the beholders or standers by so much.

Lib. de vulner. cap.

Moreover we may, before we have cut the skinne acrosse, or baid bare the bone, give a guesse by our feeling, whether the scull be broken, or no, if wee by pressing downe our fingers neere the wound shall perceive the bone either to stand up, or be pressed downe otherwise than it should naturally be.

What a probe must be used in searching for a fracture.

The skinne being cut crossewise and the bone laid bare, if the fracture be not obvious to the eye, you must trye with your probe, which must neither be too thinne nor too sharpe, least by falling into some naturall cranyes, 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 meetes with nothing but that which is smooth and slippery, it is a signe that it is whole.

But on the contrary, if you finde it any thing rough, specially where there is no suture, it shewes the bone is broken. But let the Chirurgion consider, that the fractures are not seldome upon the sutures; and that the sutures have not alwayes one and their naturall site; as also it often comes to passe that the broken clefte, or cut bone can neither be perceived by your sight, nor instrument; wherefore if you thinke there is any such thing, by the rationall signes above mentioned, annointe the place with writing Incke, and oyle, and so you shall find the cracke or clift, by the meanes we shall shew you hereafter.

When you are certaine of the fracture, then you must diligently consider the great-

nesse

nesse of the disease, and apply medicines speedily. Verily when a fracture chances to light upon any suture, the disease is hard to be knowne, unlesse the fracture be very great, because the sutures by their clifts and roughnesse resemble fractures; wherefore *Hippocrates* saith that he was deceived by them. Now having briefely delivered the differences and signes of a broken scull, it is time to come to the severall kindes thereof, with a Fissure.

Lib. 5. Epid. in Autonomus of Omnium Hippocrates was deceived by the sutures.

CHAP. IIII.

Of a Fissure, being the first kinde of a broken scull.

IF the Chirurgion by the forementioned signes shall know that the scull is broken, or crackt, and if the Wound made in the musculous skin shall not be thought sufficient for ordering the fissure, then must he shave off the haire, and cut with a razour, or incision knife, the musculous skinne with the *Pericranium* lying under it, in a triangular or quadrangular figure to a proportionable bignesse, alwayes shunning, as much as in him lies, the sutures and temples; neither must he feare any harme to ensue hereof; for it is farre better to bare the bone by cutting the skinne, then to suffer the kinde and nature of the fracture to remaine unknowne, by a too religious preservation of the skinne; for the skinne is cured without any great adoe, though pluckt off to no purpose.

Vpon what occasion the hairy scalpe must be cut.

Celsus.

For it is much more expedient (in *Hippocrates* opinion) to cure diseases safely and securely though not speedily; than to doe it in a shorter time with feare of relapse and greater inconveniencies. Let this dissection bee made with a razour, or sharpe knife, and if there be any Wound made in the skinne by the weapon, let one of your incisions be made agreeable thereto.

Hippocrates.

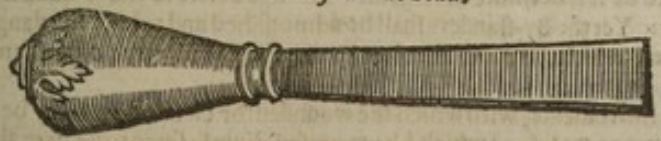
A Razour, or Incision knife.



Now therefore the Musculous skinne together with the *Pericranium* must be divided and cut with a sharpe razour pressed and guided with a strong and steddy hand; then must it be so pluckt from the bone, or scull lying under it, that none thereof remaine upon the bone; for if it should be rent or torne with the Trepane, it would cause vehement feavers with inflammation. You must beginne to pull it backe at the corners of the lines crossing each other with right angles, with this Chissell whose figure you see here expressed.

The manner how to pull the hairie scalp from the broken scull.

A Chissell or Instrument to pull backe or separate the Pericranium *from the Scull.*



Then you must fill all the wound with boulsters of fine soft linte, that so the lippes may be kept further a sunder. But you shall apply upon it medicines fit to stanch blood. But if it come so to passe that the blood flowes forth so violently, that it can be stayed by no meanes, the vessell it selfe must be bound, after this manner

First thrust thorough the musculous skinne on the outside with a needle and thred, then thrust the needle backe againe; then tye the thred on a knot on the outside, but first put some lint rolled up to the bignesse of a Goose quill betweene the thred and the hairy scalpe on both sides thereof, least the strait twitching of the thred

The manner to binde a vessell in case of too much bleeding.

thred which may serve to stay the bleeding, may cut and teare the skinne, or cause paine: then must you raise his head somewhat higher.

A History. I have lately tried, and performed this upon a certaine Coach-man, who throwne from the Coach upon his head on a pavement of freestone, exceedingly bruised the hind part of the *Bregma*, for which cause it was fit to open the Musculous skinne, with a crosse incision, both that the congealed blood might bee 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 hee could not stirre himselfe in his bed, or scarce speake: 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 die for a childish feare of pricking him.

But that we may returne to our former matter, the Chirurgion shall the next day consider with what kinde of fracture the bone is hurt; and if no signes of hurt appeare to the eyes, nor be perceived with your fingers and probe, yet some of the rationall signes may cause one to have a conjecture that there is a fracture: Then you must annoint as we told you before, the bared bone with writing Inke, and a little oyle of Roses; that the cleft or cracke may be dyed or coloured therewith, if that there be any there. Then the next dressing you must drie the bone with a linnen cloth, and scrape off the Inke, and oyle, with scraping Instruments made for the purpose: if any part thereof, shall be suncke into the bone; for if there be any cracke, it will bee black; Wherfore you must continue scraping untill no signe of the fissure remaine, or else untill you come even to the *Dura Mater*. But that he may be more certaine whether the fissure pierce thorough both the Tables of the scull, he must bid the Patient, that stopping his nose & mouth, he strive to breathe with a great endevour. For then bloody matter or *sanies* will sweat thorough the fissure: For the breath driven forth of the chest, and prohibited passage forth, swells and lifts up the substance of the braine, 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 bee convenient to follow it all the extent thereof: for nature will repaire 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 braine, as the scull. Therefore it shall suffice to make a passage, whereby the blood and *Sanies* may passe and be drawne forth, least that matter being suppressed may corrupt the bone, and cause an inflammation in the braine. But the broken bone must bee taken forth within three dayes if it be possible, especially in Sommer for feare of inflammation. Yet I have oftentimes taken forth with a Trepan and with Scrapers the bones of the scul, after the seaventeenth day, both in Winter & Sommer; and that with happy successe. Which I have the rather noted, least any should, at any time, suffer the wounded to be left destitute of remedie: for it is better to trie a doubtfull remedie than none: Yet the By-standers shall be admonished and told of the danger, for many more die who have not the broken bones of the scull taken out, than those that have.

A way to finde a fracture in the scull, when it presents not it selfe to the view at the first.

A signe that both the Tables are broken.

You may use the Trepan after the tenth day.

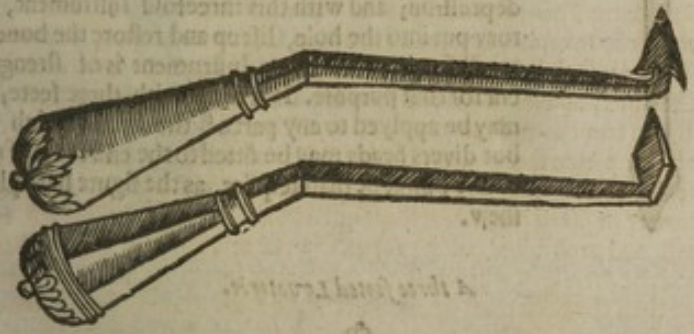
But the Instruments, with which the wounded or cleft bones may be cut out are called *Scalpri* or *Radula*, of which I have caused diverse sorts to be here decyphered, that every one might take his choice, according to his minde, and as shall bee best for his purpose. But all of them may be scrued into one handle, the figure whereof I have here exhibited.

Radulæ

Radulæ *or* Scalpri *(i) Shavers or Scrapers.*



Radulæ *of another forme, for the better cutting of the greater bones.*



To conclude, when the ſcull ſhall be wounded or broken with a ſimple fiſſure, the Chirurgion muſt thinke he hath done ſufficient to the patient; and in his *Art*, if hee ſhall divide the bone and dilate the fiſſure or cleft with the deſcribed Inſtruments, though he have uſed no Trepan, although the fiſſure pierce thorough both the Tables. But if it doth not exceed the firſt Table, you muſt ſtay your ſcrapers as ſoone as you come to the ſecond, according to the opinion of *Paulus*: but if the bone ſhall be broken, and ſhivered into many peeces, they ſhall be taken forth with fit Inſtruments, uſing alſo a Trepan if neede 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* onely and not to Trepan it.

Chap. V.

Of a Contuſion, which is the ſecond ſort of fracture.

What an *Ecchymoſis* is.

AN *Ecchymoſis*, that is, an effuſion of blood, preſently concreating under the muſculous skinne, without any wound, is oft cauſed by a violent Contuſion. This Contuſion if it ſhall be great, ſo that the skinne be devided from the ſcull, it is expedient, that you make an inciſion, whereby the blood may bee evacuated and emptied. For in this caſe you muſt wholy deſiſt from ſuppurative medicines, (which otherwiſe would be of good uſe in a fleſhy part) by reaſon that all moyſt things are hurtfull to the bones, as ſhall be ſhowne hereafter.

How a contuſion of the ſcull muſt be cured.

Such like Contuſions more frequently happen in children, being eaſily perceived by the ſoftneſſe, 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

Different cures of a deepressed scull.

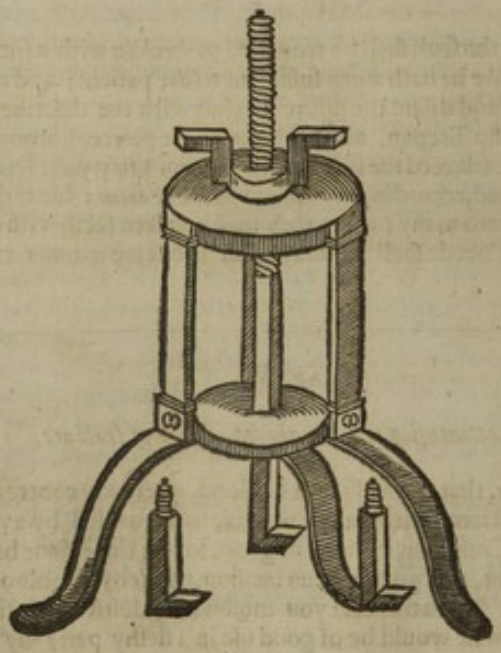
issued. The residue of the cure is perfected by moderate compression of the part, and drying medicines. Moreover the scull of a child, may bee pressed downe, by a great contusion, even as wee see it happens in thin vessels of brasse, lead, or pewter, for oft times by the pressure of your finger, they are so dented in, that the print thereof remaines; yet sometimes they fly backe of themselves, and againe acquire their former plainesse and equabilitie, which also happens, in the bones of children, women, and such as are soft, humide and phlegmaticke. But if the bones doe not spring backe of themselves, you must apply a cupping glasse with a great flame; withall commaund the patient, to force his breath up as powerfully as he can, keeping his mouth and nose close shut; for thus there will be hope, to restore the depressed bone to its place, by the spirits forst upwards to the braine and scull, by the powerfull attraction of the cupping glasse. But if so bee that the bone cannot by this meanes be restored, then you must make an incision in the skinne, and fasten such a Trepan,



as you see heere deliniated, into the depresst, or setled part of the bone, and so pull it directly upwards, just as wee see Coopers raise the staves of their caske, when they are sunke too much in.

But if the bone shall be too strong, thicke, and dense, so that this Instrument will not serve to plucke it forth; then you must perforate the scull, 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 feete, 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 businesse shall require, as the figure here placed doth shew.

A three footed Levatorie.



A deliniation of other Levatories.



A A. *Shewes the point or tongue of the Levatory, which must be somewhat dull, that so it may bee the more gently and easily put betweene the* Dura Mater *and the scull, 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 bee foure 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.*

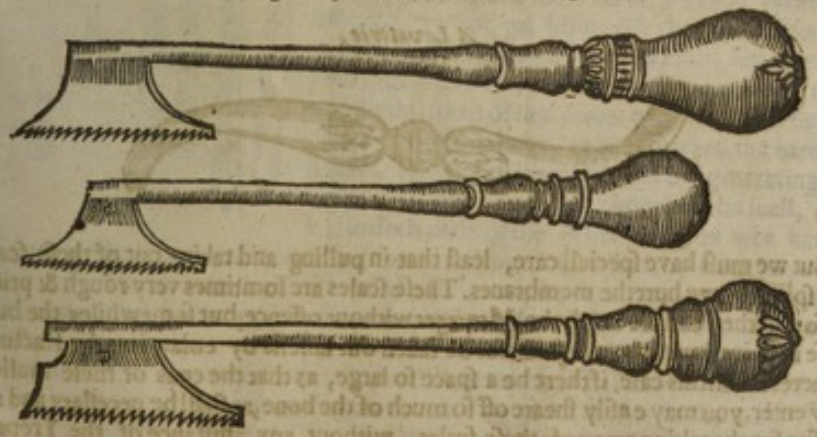
The use thereof is, thus; put the point or tongue under the broken or depressed bone, then lift the handle up with your hand, that so the depressed bone may bee elevated.

C. *Shewes the first Arme of the other Levatory, whose crooked end must bee gently put under the depressed bone.*

D. *Shewes the other Arme, which must rest on the sound bone, that by the firme standing thereof, it may life up the depressed bone.*

But if at any time it comes to passe, that the bone is not totally broken or depresst, but onely 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 devide the scull with little sawes like these, which ye see here expressed, for thus so much of the bone, as shall be thought needefull, may be cut off without compression, neither will there be any danger of hurting the braine or membrane with the broken bone.

The Figures of Sawes fit to divide the scull.



But if by such signes as are present, and shall appeare, wee perceive or judge that the contusion goes but to the second Table, or scarse so farre; the baring or taking away of the bone, must go no further than the contusion reaches, for that will bee sufficient to eschew and divert Inflammation and divers other symptomes. And this

this ſhall be done with a ſcaling or Deſquamatory Trepan (as they terme it) with which, you may eaſily take up as much of the bone, as you ſhall thinke expedient: And I have here given you the figure thereof.

A Deſquamatorie or Scaling Trepan.



Chap. VI.

Of an Effracture, depreſsion of the bone, being the third kinde of Fracture.

BEfore I come to ſpeake of an Effracture, I thinke it not amiſſe 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 ſpeake of a Contuſion; I inſerted many things of a Depreſſion; ſo alſo in this chapter of an Effracture, I intend to intermixe ſomething of a Contuſion; wee doe not this through any ignorance of the thing it ſelfe; for wee know that it is called a contuſion, when the bone is depreſt and cruſht, but falles not downe. But an Effracture is when the bone falls downe and is broken by a moſt violent blow. But it can ſcarſe come ſo to paſſe, 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 ſcarſe ſee a Contuſion without an Effracture, or this without that. Therefore the bones are often broken off and driven downe with great and forcible blowes, with clubbes whether round or ſquare, or by falling from a high place directly downe, more or leſſe according to the force of the blow, kinde of weapon, and condition of the part receiving the ſame: Wherefore you muſt bee provided with diverſity of remedies and Inſtruments to encounter therewith. Wherefore admit the bone is preſſed downe, and ſhivered it to many peeces, now for that theſe ſplinters needs not be taken out with a Trepan: you may do the buſineſſe with Levatories made and neatly faſhioned for that purpoſe; ſuch as theſe, which are here expreſt.

What a contuſion is.

What an Effracture is.

The cauſes of Effractures.

The cure.

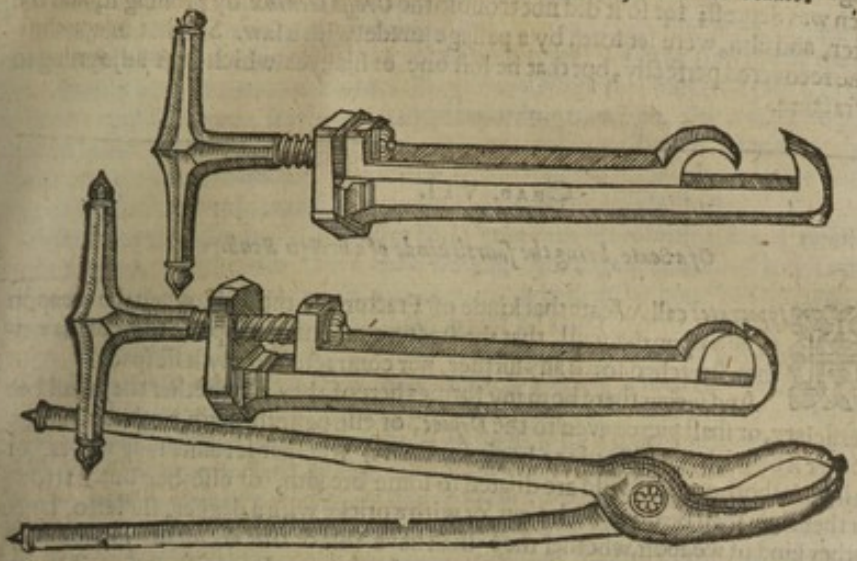
A Levatorie.



But we muſt have ſpeciall care, leaſt that in pulling and taking out of theſe ſcales and ſplinters, we hurt the membranes. Theſe ſcales are ſomtimes very rough & prickly, ſo that they cannot touch the *Meninges* without offence; but ſomewhiles the buſineſſe is ſo intricate, that they cannot be taken out unleſſe by enlarging the fracture. Wherefore in this caſe, if there be a ſpace ſo large, as that the ends of theſe mullets may enter, you may eaſily ſheare 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 ſucceſſe; for the operation performed by theſe mullets is far more ſpeedy and ſafe, than that with the Trepan; and in the performance of every operation, the chiefe commendation is given to ſafeneſſe and celeritie.

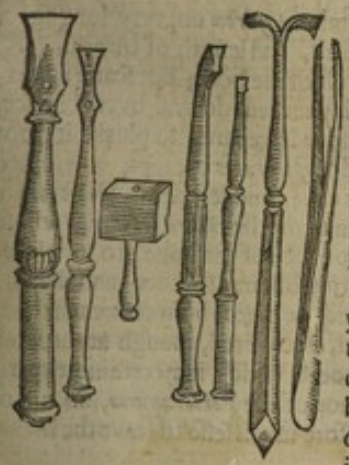
Cutting

Cutting Mullets, commonly called, Roſtra Pſittaci, *or Parrots-beakes.*



Moreover I have thought good here to give you the figures of chiſſells, ſcrapers, and Pincers, together with a leaden mallet, becauſe ſuch Inſtruments are not onely very neceſſary to take forth the ſcales of bones which are broken, but alſo to plaine, and ſmooth thoſe which remaine whole.

The Figures of Scrapers, Pincers, a Leaden Mallet, &c.



But here you muſt note, that a Trepan nor Levatorie muſt never bee applyed to a bone quite broken, leſt the membranes lying under it bee hurt by the compreſſion thereof. Therefore you muſt apply them to a ſound bone, but as neare as you can to the fracture, ſo that you take away as little of the ſcull as is poſſible, leaſt the braine deſpoiled of its bonie cover, take ſome harme thereby. Neither Effractures, nor yet fiſſures if they bee of ſome length, muſt be followed to their ends, but thinke your ſelfe well, if you have made a paſſage for the iſſuing forth of the *Sanies* or filth, and have drawne forth that bone, which pricked the membranes. For nature is accuſtomed by generating a *Callus* to ſouder, or unite the bones of the ſcull, as it alſo doth theſe of the other parts; as wee have read it written by *Hippocrates* and *Galen*; for which purpoſe it hath by ſingular providence repleniſhed both the Tables of the ſcull, with a certaine alimentarie and bloody matter, that with this, as with marrow it might repaire the loſſe and defect of the bone.

Hip. lib. de Vuln. cap. Gal. lib. 6. meth. cap. ult.

The truth hereof was lately manifeſted in the ſervant of Maſter *Grolo*, who had an Effracture on the coronall bone, by a greevous blow, given him with the foote of a Mule; which when I underſtood, I devided the muſculous skinne 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 endevoured to plucke it forth, being already divided with the Trepan; I perceived a fearefull production of an Effracture; by the moveableneſſe of the bone ſhaking under my hand; for it reached from the midſt of the forehead, to the leſſer corner of the eye.

A Hiſtory.

eye. Wherefore omitting both my determination and endeavour to pull it forth, I thought I should doe sufficiently for the patient: if I should only raise up the bone which was depresst; 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 adjoyning to the fracture.

CHAP. VII.

Of a Seate, being the fourth kinde of a broken Scull.

What a seate is.

Hippocrates calls a seate that kinde of Fracture of the scull, when the weapon so falls upon the scull, that the fracture reteining the print thereof, is neither stretched forth any further, nor contracted to any lesse space.

The cure.

And seeing there be many formes hereof, they all whether they shall bee superficiary, or shall pierce even to the *Diploe*, or else passe through both the Tables, whether it be with any losse of the bonie substance, whether it runne long wayes, or else be but short; or otherwise are dilated to some breadth, or else bee but narrow; whether they shall be done with a cut, or with a pricke with a dagger, stellerto, lance or other kind of weapon, whether they shall have this or that accident joyned 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 Instuments and meanes. Yet this must be noted, which as yet wee have not remembred, that if it happen by a violent stroake, and great wound, that a portion of the bone is wholy so cut off, that it is cleane severed from the rest of the scull, and hang only by the *Pericranium* and musculous skinne; yet you must not plucke it from the *Pericranium*, and cast it away as unprofitable, but restore it to its proper seate and place, so by the force of nature, to be glewed by a *Callus*, as *Celsus* hath observed.

Lib. 8. cap. 4.

A History.

I have tryed the truth of this experiment, in captaine *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 sharpe sword, that it stucke not to the rest of the bone; but scarse adhearing to the *Pericranium* and musculous skinne; but lay turned downe over his face, so that the *Dura Mater* was plainely seene; wherefore I prepared to plucke it from the skinne, and cast it away, but that I remembred *Hippocrates* precept, where hee bids, that the Braine 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 plainely 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 stitches; and that the residue of the matter might have passge forth, I filled the places betweene each stitch with linte; by this meanes, he by the mercy of God, recovered, though at the same time he received many other large wounds in his bodie; which is a certaine experiment, that we must cast away no part of the scull, nor of the *Pericranium*, no not of the musculous skinne, unlesse necessity urge; therefore much lesse to leave the braine naked and despoiled of its coverings.

CHAP. VIII.

Of a Resonitus, *or Counter-fissure, being the fifth kinde of Fracture.*

What a *Resonitus* is.

Sometimes the fracture is made in the part opposite to that which received the blow; as if the right side be strucke, the left is cloven; this kinde of fracture is very dangerous, because wee cannot finde it out by any certaine signe, as it is written by *Hippocrates Lib. de vuln. Capitū.* Wherefore if at any time the patient dye of such a fracture, the Chirurgion must be pardoned.

And

And although *Paulus Ægineta* laugh at this kinde of fracture and thinkes that it cannot happen to a mans head, as that which is hard and full, as it happens in empty glasse bottles, yet I have sometimes seene and observed it. *Lib. 6. cap. 90.*

Neither is their reason of any validity, who thinke 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 seeme one bone growne together of many; This shall be made manifest by recitall of the following Historie. *In whom this fracture may take place in diverse bones of the scull.*

A servant of *Massus* the Poste-master had a greevous blow with a stone, upon the right *Bregma*, which made but a small wound, yet a great contusion and Tumor: Wherefore that it might more plainely appeare, whether the bone had received any harme, and also that the congealed blood might be pressed forth, the wound was dilated, the skinne being opened by *Theodore Hereus* the Chirurgion, who as hee was a skillfull workeman and an honest man, omitted nothing which Art might doe for his cure. When he had divided the skinne, the bone was found whole, although it was much to bee 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 & twentieth day of his sicknes. But I being called to learne, & search how he came by his death, deviding the scul with a saw, found in the part opposite to the blow, a great quantity of *Sanies* or bloody matter, and an Abscesse in the *Crassa meninx*, and also in the substance of the very braine, but no sutures, but the two scaly ones. Therefore that is certaine which is now confirmed by the authority of *Hippocrates*; as also by reason and experience, that a blow may bee 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 firmely united and closed, that they are scarse apparent. *A History.*

Neither is it absurde, that the part, opposite to that which received the stroake, of the same bone and not of diverse 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 bee the better understood, we must note that the opposite part of the same bone may be understood two manner of wayes. 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 certaine Gentleman a Horsman of Captaine *Stempans* troope; He in defending the breach of the wall of the Castle of *Hisdin* was strucke with a Musket bullet upon the *Bregma*, but had his helmet on his head; the bullet dented in the Helmet but did not breake it, no nor the musculous skinne, nor scull, for as much a could be discerned, yet notwithstanding hee died apoplecticke upon the sixt day after. *The Resonitus may be in the same bone of the scull.* *A History.*

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 nedles the substance of the braine 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 Queenes chiefe Phisitions in the expedition of *Roane*.

But *Hippocrates* prescribes no method of curing this fifth 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 & conjecture of such a fracture; if it shall at any time happen. Wherefore having first diligently shaved away the haire, we must apply an Emplaister of Pitch, Tarre, Waxe, Turpentine, the powder of *Iris*, or floure deluce rootes, and mastich; now if any place of the head shall appeare more moyst, soft and swollne, it is somewhat likely that the bone is cleft in that place, so that the patient, though thinking of no such thing, is now & then *Why Hippocrates set downe no way to cure a Resonitus.* *The manner to know when the scull is fractured by a Resonitus.*

forcst to put his hand to that part of the scull. Confirmed with these and other signes formerly mentioned, let him call a counsell of learned Physitions; and foretell the danger to the Patients friends which are there present, that there may no occasion of calumnie remaine, then let him boldely perforate the scull; for that is far better, than forsake the patient ready to yeelde to the greatnesse of the hidden disease, and so consequently to dye within a short while after. There are foure sorts, or conditions of fractures, by which the Chirurgion may be so deceived, that when the scull is broken indeed, yet he may thinke 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 onely 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 Braine.

Gal. lib. 2. de comp. medic. cap. 6. & 3. Com. ad Aph. 58, sect. 7.

BEsides the mentioned kindes of fractures by which the braine also suffers; there is another kinde of affect besides nature, which also assailes it by the violent incursion of a cause, in like manner, externall; they call it the Commotion or shaking of the braine, whence Symptoms like those of a broken scull ensue. Falling from aloft upon a solide and hard body, dull and heavie blowes, as with stones, clubbes, staves, the report of a peece of Ordinance, or cracke 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, & when she came home, she fell presently into a great Feaver, her head aked, and her face grew red. The seaventh day after there came forth some two or three Ounces of stincking and bloody matter about her right eare, and shee seemed some what better and to be at somewhat more ease. The feaver encreased againe, and she fell into a heavie sleepinesse, and lost her speech, and the right side of her face, was drawne 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 dyed. 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 onely these which passe through the sutures, but also those which are dispersed betweene the two tables in the Diploe, both that they might binde the *Crassa Meninx* to the scull, that so the braine might move more freely, as also that they might carry the alimentary juice to the braine wanting marrow, that is, blood to nourish it, as we have formerly shewed in our Anatomie.

The vessels of the braine broken by the commotion thereof.

signes.

Celsus.

But from hence proceeds the effluxe of blood running betweene the scull, and membraines, or else betweene the membraines and braine; the blood congealing there, causeth vehement paine, and the eyes become blinde, vomitting is caused, the mouth of the stomacke suffering together with the braine, by reason of the Nerves of the sixt conjugation, which runne from the braine thither, and from thence are spread over all the capacitie of the ventricle; whence becomming a partaker of the offence it contracts it selfe, and is presently as it were overturned; whence first, these things that are conteined therein are expelled, and then such as may flow, or come thither from the neighbouring and communne parts, as the Liver and Gall; from all which choler, 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 scull and concussions of the Braine.

The cause of vomiting when the head is wounded.

Within a short while after inflammation seizes upon the membranes and braine it selfe, which is caused by corrupt and putrid blood proceeding from the vessels broken

ken by by the violence of the blow, and so spread over the substance of the braine. Such inflammation communicated to the heart, and whole body by the continuation of the parts, causes a feaver. But a feaver, by altering the braine 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 evills, a sphacell, and corruption of the braine ensue, together with a great difficulty of breathing, by reason of the disturbance of the Animall faculty, which from the braine imparts the power of moving to the muscles of the Chest, the instruments of respiration, then death must necessarily follow. *Aphor. 14. sect. 7*

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 hee himselfe running in the Tilt-yard, with a blunt lance received so great a stroake 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 skinne of the fore-head was torne even to the lesser corner of the left eye, many splinters of the same trunchion being strucke into the substance of the fore mentioned eye, the bones being not touched or broken; but the braine was so moved and shaken, that he dyed the eleaventh day after the hurt. His scull being opened after his death, there was a great deale of blood found betweene the *Dura*, and *Pia Mater*, poured forth in the part opposite to the blow, at the middle of the future of the hinde part of the head; and there appeared signes by the native colour turned yellow, that the substance of the braine was corrupted, as much as one might cover with ones thumbe. Which things caused the death, of the most Christian King, and not onely the wounding of the eye, as many have falsly thought. For wee have seene many others, who have not dyed of farre more greevous wounds in the eye. A History. What was the necessary cause of the death of King Henry the second of France. A History.

The history of the Lord Saint *Iohns* is of late memory: he in the Tilt-yarde, 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 peircing some three fingers bredth deepe into the head; by my helpe and Gods favour hee recovered, *Valeranus* and *Duretus* the Kings Physitions and *Iames* the Kings Chirurgion assisting me. A History.

What shall I say of that great and very memorable wound of *Francis* of *Loraine* the Duke of *Guise*? He in the fight of the Citty of *Bologne* had his head so thrust thorough with a Lance, that the point entring under his right eye by his nose, came out at his necke betweene his eare and the *vertebræ*, the head or Iron being broken and left in by the violence of the stroke, which stuck there so firmely, that it could not be drawn or plucked forth, without a paire of Smiths pincers. But although the strength & 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 learne, that many die 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 mankinde; but secondarily to the variety and condition of temperaments. And thus much of the commotion or concussion of the braine; whereby it happens that although all the bone remaines perfectly whole, yet some veines broken within by the stroake, may cast forth some bloud upon the membranes of the braine, which being there concreate may cause great paine, by reason whereof it blindes the eyes; if so be that the place can be found against which the paine is, and when the skinne is opened, the bone looke pale, it must presently be cut out, as *Celsus* hath written. Now it remaines, that we tell you how to make your prognostickes, in all the forementioned fractures of the scull. Why some die of small wounds and others recover of great.

Chap. X.

Of Prognostickes to be made, in fractures of the scull.

Hippoc. de vul. cap.

WEE must not neglect any wounds in the head, no not these which cut, or bruise but onely the hairy scalpe; but certainely much lesse, these which are accompanied by a fracture in the scull; for oft times all horride symptomes follow upon them, and consequently death it selfe, especially in bodies full of ill humors, or of an ill habite, such as are these which are affected with the *Lues venerea*, leprosie, dropsie, Pthisicke and consumption; for in these, simple wounds are hardly or never cured; for union is the cure of wounds, but this is not performed, unlesse by strength of nature, and sufficient store of laudible blood: but those which are sicke of hecticke feavers and consumptions, want store of blood and those bodies which are repleate with ill humors, and of an ill habite have no affluxe or plenty of laudible 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.

Those wounds which are brused are more difficult to cure, than those which are cut. When the scull is broken, than the continuity of the flesh lying over it must necessarily be hurt & broken, unlesse 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 owne nature they may be more easily healed, (because they are more soft, whereby it comes to passe, that they may bee more easily agglutinated, neither is there fit matter wanting for their agglutination by reason of the plenty of blood laudible 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 bloud is serous, and consequently a more unfit bond of unitie and agglutination; yeroft times through occasion of the symptomes which follow upon them, that is putrefaction and corruption, which sooner arise in a hot and moyst body, and are more speedily encreased in a soft and tender, they usually are more suspected and difficult to heale.

Whether the wounds of children, or old people are better to heale.

The Patient lives longer of a deadly fracture in the scull, in Winter than in Summer, for that the native heat is more vigorous in that time than in this; besides, also the humors putrifie sooner in Summer, because unnaturall heat is then easily enflamed and more predominant, as many have observed out of *Hippocrates*.

Aph. 15. sect. 1.

The Wounds of the braine 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 & intercepted, whence death insues. If a swelling happening upon a wound of the head presently vanish away, it is an ill signe, unlesse 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 Aphorismes. If a feaver ensue presently after the beginning of a wound of the head, that is, upon the fourth or seaventh day, which usually happens, you must judge it to bee 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 seaventh day, in which time it ought to be determinated; but if it happen upon the tenth or foureteenth day with cold or shaking, it is dangerous, because it makes us conjecture that there is putrefaction in the braine, the *Meninges*, or scull, through which occasion it may arise, chiefely if other signes shall also concurre, which may shew any putrifaction, as if the wound shall be pallide and of a faint yellowish colour, as flesh lookes after it is washed.

Aphor. 55. sect. 5

Aph. 17. sect. 2.

Wounds which are dry, rough, livide and black are evill.

For, as it is in *Hippocrates Aphoris. 2. sect. 7.* It is an ill signe if the flesh looke livide, when the bone is affected; for that colour portends the extinction of the heate, through which occasion, the lively, or indifferently red colour of the part, faints and dyes, and the flesh thereabouts is dissolved into a viscide *Pus* or filth.

Com-

Commonly another worſe affect followes hereon, wherein the wound becomming withered and dry, lookes like ſalted fleſh, ſends forth no matter, is livide and blacke, whence you may conjecture, that the bone is corrupted, eſpecially if it become rough, whereas it was formerly ſmooth and plaine; for it is made rough when *Caries* or corruption invades it; but as the *Caries* encreaſes, it becomes livide and blacke, ſanious matter withall ſweating out of the *Diploe*, as I have obſerved in many: all which are ſignes that the native heat is decayed, and therefore death at hand; but if ſuch a feaver be occaſioned from an *Eryſipelos* which is either preſent or at hand, it is uſually leſſe terrible. But you ſhall know by theſe ſignes, that the feaver is cauſed by an *Eryſipelas* & confluxe of cholericke matter; if it keepe the forme of a Tertian, if the fit take them with coldnes and end in a ſweat; if it be not terminated before the cholerike matter is either converted into *Pus* or elſe reſolved; if the lips of the wound be ſomwhat ſwolne, as alſo all the face; if the eyes be red and fiery; if the necke and chappes bee ſo ſtiffe, that he can ſcarſe bend the one, or open the other; if there be great exceſſe of biting and pricking paine, and heate, and that farre greater than in a *Phlegmon*. For ſuch an *Eryſipelous* diſpoſition generated of thinne and hot blood, chiefely aſſailes the face, and that for two cauſes.

The ſignes of a feaver cauſed by an *Eryſipelas*.

The firſt is, by reaſon of the naturall levity of the cholericke humor; the other becauſe of the rarity of the skinne of theſe parts.

Why an *Eryſipelas* chiefely aſſailes the face.

The cure of ſuch an affect muſt be performed by two meanes, that is, evacuation, and cooling with humectation. If choler alone cauſe this tumor, we muſt eaſily bee induced to let blood, but we muſt purge him with medicines evacuating choler. If it be an *Eriſipelas phlegmonodes*, you muſt draw blood from the Cephalicke veine of that ſide, which is moſt affected, alwayes uſing adviſe of a phiſition. Having uſed theſe generall meanes, you muſt apply refrigerating and humecting things, ſuch as are the juice of Night-ſhade, Houſleeke, Purſlaine, Lettuce, Navell wort, Water Lentill, or Ducks-meate, Gourdes; a liniment made of two handfulls of Sorrel boiled in faire water, then beaten and drawne through a ſearſe, with ointment of Roſes, or ſome *vnguent. Populeon* added thereto, will bee very commodious. Such and the like remedies muſt be often and ſo long renued untill the unnaturall heat be extinguiſhed. But we muſt be carefull to abſtaine from all unctuous and oyly thing, becauſe they may eaſily be enflamed, 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 returnes from without inwards, as experience and the Authority of *Hippocrates* teſtifie: If when the bone ſhall become purulent, puſtles ſhall breake out on the tongue, by the dropping downe of the acride filth or matter by the holes of the pallate upon the tongue, which lyes under. Now when this ſymptome appeares, few eſcape. Alſo it is deadly when one becomes dumbe and ſtupid, that is, Apolecticke by a ſtroake or wound on the head; for it is a ſigne that not onely the bone, but alſo the braine it ſelfe is hurt. But oft times the hurt of the Braine proceedes ſo farre, that from corruption it turnes to a Sphacell, in which caſe, they all have not onely puſtles on their tongues, but ſome of them dye ſtupide and mute, otherſome 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 braine tainted with a Sphacell, as it hath appeared when their ſculls haue beene opened after their death.

Why oyly things muſt not be uſed in an *Eryſipelas* of the face.

Aph. 25. ſect. 6

Deadly ſignes in wounds of the head.

CHAP. XI.

Why, when the braine is hurt by a wound of the head, there may follow a Convulſion of the oppoſite part.

A convulſion is cauſed by dryneſſe.

MAny have to this day enquired, but as yet as farre as I know it hath not bin ſufficiently explained, why a convulſion in wounds of the head ſeazes on the part oppoſite to the blow. Therefore I have thought good to end that controverſie in this place. My reaſon is this, that kinde of Symptome happens in the ſound part by reaſon of emptineſſe and

A twofold cauſe of convulſiue dryneſſe.

dryneſſe; but there is a twofold cauſe, and that wholy in the wounded part, of this emptineſſe and dryneſſe of the ſound or oppoſite part; to wit, paine, and the concourſe of the ſpirits and humors thither by the occaſion of the wound, and by reaſon of the paines drawing and natures violently ſending helpe to the afflicted part.

The ſound part exhauſted by this meanes both of the ſpirits and humors, eaſily falls into a Convulſion.

Lib. 4. de uſu partium.

For thus *Galen* writes; God the creatour of nature, hath ſo knit together, the triple ſpirituous ſubſtance of our bodies, with that tye, and league of concord, by the productions of the paſſages; to wit of Nerves, Veines, 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 axiome hath no truth in the veſſells and paſſages of the body. For it hath not every where doubled the veſſels, for there is but one onely veine, appointed for the nouriſhment of the braine, 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 dryneſſe; Verily it is true, that when in the oppoſite parts, the muſcles of one kinde are equall 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 braine.

For the two parts of the braine, the right and left, each by its ſelfe performes that which belongs thereto, without the conſent, conſpiration, or commerce of the oppoſite part; for otherwiſe it ſhould follow, that the Palſie properly ſo called, that is of halfe the body, which happens by reſolution, cauſed either by mollification or obſtruction reſiding in either part of the braine, ſhould inferre together with it a Convulſion of the oppoſite part. Which notwithſtanding dayly experience convinces as falſe. Wherefore wee muſt certainely thinke, that in wounds of the head wherein the braine is hurt, that inanition and want of nouriſhment are the cauſes, that the ſound and oppoſite part ſuffers a convulſion.

Opinion of *Champius*.

Francis Dalechampius in his French Chirurgiry renders another reaſon of this queſtion; That, (ſaith he) the truth of this propoſition may ſtand firme and ratified, we muſt ſuppoſe, that the convulſion of the oppoſite part mentioned by *Hippocrates* doth then onely happen, when by reaſon of the greatneſſe of the inflammation in the hurt part of the braine, which hath already inferred corruption; and a Gangræne to the braine and membranes thereof, and within a ſhort time is ready to cauſe a ſphacell in the ſcull, 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, aswe ſee it happens in other Gangrænes, through the extinction of the native heate. Beſides, the paſſages of the animall ſpirit muſt neceſſarily bee ſo obſtructed by the greatneſſe 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 braine; and if it ſhould flow thither, it will be unprofitable to carry the ſtrength and facultie of ſenſe and motion, as that which is infected and changed by admixture of putred and Gangrænous vapours. Whereby it cometh to paſſe, 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 ſeaſed upon, or contracted by a Convulſion.

It furthermore comes to paſſe, 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 palſie; for a palſie is cauſed either by the cutting or obſtruction of a Nerve, or the madefaction, or mollification thereof by a thinne 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 knowne and granted by all, that a convulſion is cauſed either by repletion which ſhortens the Nerves by diſtending them into bredth, or by inanition, when as the native and primitive

heate

heate of the Nerves being wasted, their proper substance becomming dry is wrinckled up and contracted; or else it proceedes from the vellication, and acrimonie of some vapour, or sanious and biting humor, or from vehemencie of paine. So wee have knowne the falling sickneſſe caused by a venenate exhalation carried from the foote to the braine. Also wee know that a convulsion, is caused in the puncture of the Nerves, when as any acride and sanious humor is shut up therein, the orifice thereof being closed; but in wounds of the Nerves when any Nerve is halfe cut, there happens a convulsion by the bitterneſſe of the paine.

But verily in the opposite part, there are manifestly two of these causes of a convulsion; that is to say, a putride and carionlike vapour, exhaling from the hurt, and Gangrænate part of the braine; and also a virulent acride and biting *Sanies*, or filth, sweating into the opposite sound part, from the affected and Gangrænous; the malignitie of which *Sanies*, *Hippocrates* desirous to decipher, in reckoning up the deadly signes of a wounded head, hath expressed it by the word *Ichor*; and in his booke of fractures he hath called this humor *Dacryodes et non Pyon.* [*that is, weeping and not digested.*] Therefore it is no mervaile if the opposite and sound part endewed with exquisite and perfect sense, and offended by the flowing thereto of both the vaporours and sanious matter, using its own force, contend and labour as much as it can, for the expulsion of that which is trouble somethereto. This labouring or concussion is followed (as we see in the falling sickneſſe) by a convulsion, as that which is undertaken in vaine, 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 *Avicen.*

But he addes further, in wounds of the head, which are not deadly, practitioners observe that sometimes the hurt part is taken with the palsie, and the sound with a convulsion; otherwhiles on the contrary, the wounded part is seazed by a Convulsion and the sound by a Palsie; otherwhiles both of them by a convulsion or Palsie; and somewhiles the one of them by a convulsion or Palsie, the other being free from both affects; the causes of all which belong not to this place to explaine. Thus much *Dalechampius.*

Chap. XII.

A Conclusion of the deadly signes in the Wounds of the head.

NOw that we may returne to our former discourse; you may certainely foretell the patient will dye; when his reason and judgement being perverted, hee shall talke idly, when his memory failes him; when he cannot governe his tongue, when his sight growes darke and dimme, his eares deafe, when he would cast himselfe headlong from his bed, or else lyes therein without any motion; when he hath a continuall feaver with a *delirium*, when the tongue breakes out in pustles, when it is chopt, and become blacke, by reason of too much dryneſſe; when the wound growes dry, and casts forth little or no matter, when as the colour of the wound which was formerly fresh, is now become like salted flesh yellow and pale; when the Vrine, and other excrements are suppresst; when the Palsie, convulsion, apoplexie; and lastly often sowning, with a small and unequall pulse, invade him. All such signes sometimes appeare presently after the wound, otherwhiles some few dayes after; therefore when as the braine is hurt and wounded by the violence of the incision, or fissure, of the contusion, compression, puncture, concussion or any other fracture, the forementioned signes appeare presently in the first dayes; but when they doe not appeare till many dayes after the blow, you may know that they rise and appeare, by reason of an inflammation and phlegmon in the braine, occasioned by the putrefaction of the blood poured forth upon it.

The signes of a deadly wound from the depraved faculties of the minde.

From habite of the body.

From the time that such signes appeare.

But we must observe this by the way, which also belongs to the prognostickes, 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 lyes betweene the eye-browes, so that

Celsus lib. 8. cap. 4.

that it will be ulcerated ever after, and must be covered with a plaister. I beleeve that, in that place there is an internall cavity in the bone, full of ayre 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 scarse sufficient juice sweat forth, which may suffise for the regeneration of flesh; adde hereunto a great confluxe of excrements flowing to this ulcer, which should otherwise bee evacuated by the eyes and nose, which hinder by that meanes the drynesse of the ulcer, and consequently the healing thereof.

Hence certainely it comes to passe, that if you desire the patient thus affected to breathe, shutting his mouth and nose, the ayre or breath will come forth of the ulcer with such force, as it will easily blow forth a lighted candle of an indifferent bignesse held thereto. Which thing I protest, I observed in a certaine man, whom I was forced to trepan in that place, by reason the bone of the forehead was broken and depressed.

Chap. XIII.

Of salutarie signes in wounds of the head.

BVt on the contrary these are salutary signes, when the patient hath no feaver, is in his right minde, is well at the application or taking of any thing, sleepes well, hath his belly soluble, the wound lookes with a fresh and lively colour, casts forth digested and laudible matter, the *Crassa Meninx* hath its motion free and no way hindered.

When the patients are out of danger.

Yet we must note, which also is observed by the Ancients and confirmed by experience; that we must thinke none past danger, and free from all chance, until the hundreth day be past. Wherefore the Physitian ought so long to have a care of his patient, that is, to consider how he behaves and governes himselfe in meate, drinke, sleepe, venerie and other things.

The patient must beware of cold.

But let the Patient diligently avoyd and shunne cold, for many when they have beene cured of wounds of the head, by careleſse taking cold have beene brought into danger of their lives. Also you must know that the *Callus* whereby the bones of the scull are knit together, requires almost the space of fortie or fifty dayes to its perfect coagmentation and concretion. Though in very deed one cannot set downe a certaine 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 prognostickes. Now will we treat as breefely 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 sixe things not naturall.

Chap. XIIII.

Of the generall cure of a broken scull, and of the Symptomes usually happening thereupon.

How the ayre ought to be.

THe first cure must bee, to keepe the patient in a temperate aire; and if so bee, that it bee not such of it selfe and its owne proper nature, it must be corrected by Art. As in winter he must have a cleare fire made in his chamber, lest the smoake cause sneesing and other accidents; and the windowes and doores must be kept shut to hinder the approach of the cold ayre and winde. All the time the wound is kept open to bee dreſt, some body standing by shall hold a chafendish full of coales or a heated Iron barre over the wound, at such a distance, that a moderate heate may passe thence to the wound; and the frigidity of the encompassing ayre may be corrected by the breathing of the diffused heate. For cold according to the opinion of *Hippocrates*, is an enemie to the Braine, Bones, Nerves, and spinall marrow; it is also hurtfull to ulcers, by suppressing their excrements, which suppreſt

Aphor. 18. sect. 5.

doe

doe not onely hinder ſuppuration, but alſo by corroſion makes them ſinuous. Therefore *Galen* rightly admoniſheth us, to keep cold from the braine, not only in the time of Trepaning, but alſo afterwards. For there can no greater, nor more certaine harme befall the fractured ſcull, than by admitting the aire, by ſuch as are unskilfull. For if the ayre ſhould be hotter than the braine, then it could not thence be refrigerated; but if the braine ſhould be layd open to the ayre, in the midſt of Summer, when it is at the hotteſt, yet would it be refrigerated, and unleſſe it were releeved with hot things, take harme: this is the opinion of *Galen*, whereby you may underſtand that many who have their ſculls broken, dye more through default of skill in the curing, than by the greatneſſe of the fracture.

Lib. 2, de uſu part. ca. 2.

The Aire though in ſummer is colder than the braine.

But (when the wound is bound up with the pledgers, clothes, and rowlers as is fit) if the ayre chance to be more hot, than the patient can well endure, let it be amended by ſprinkling, and ſtrawing the chamber with cold water, oxycrate, the branches of Willowes and Vine. Neither is it ſufficient to ſhunne the too cold ayre, unleſſe alſo you take heed of the over light, chiefely untill ſuch time as the moſt feared and maligne ſymptomes are paſt.

The diſcommodities of too much light.

For a too great light diſſipates the ſpirits, encreaſes paine, ſtrengthens the feaver and ſymptomes. *Hippocrates* wholy forbids wine, therefore the patient in ſteed thereof muſt drinke, Barly water, faire water boyled and tempered with Iulep of Roſes, ſyrupe of Violets, vinegar and the like: water wherein bread crummes have beene ſteeped, water and ſugar, with a little juyce of Lemons, or pomecitron added thereto, and ſuch like as the abilitye and taſte of the patient ſhall require. Let him continue ſuch drinkes, untill he be free from maligne ſymptomes, which uſually happen within foureteene dayes.

What his drink muſt be.

Almonds encreaſe the paine of the head.

His meat ſhall be pappe, ptiſan, ſhunning Almond milkes; (for Almonds are ſayd to fill the head with vapours and cauſe paine) ſtued damaske Prunes, Raiſons and Currance, ſeaſoned with ſugar, and a little cinamon (which hath a wonderful power to comfort the ſtomack, and revive and exhilarate the ſpirits) Chickens, Pidgeons, Veale, Kid, Leverets, birds of the fields, Pheaſons, blacke-birds, Turtles, Partridges, Thruſhes, Larkes and ſuch like meates of good digeſtion, boiled with lettuce, purſlaine, ſorrell, borage, bugloſſe, ſuccory, endive and the like, are thought very convenient in this caſe. If he deſire at any time to feed on theſe meates roaſted, he may, only dipping them in verjuice, in the acide juices of Oranges, Citrons, Lemons, or Pomegranets, ſometimes in one, and ſometimes in another, according to his taſte and ability. If any have a deſire to eate fiſh, he muſt make choyce of Troutes, Gudgions, Pikes and the like, which live in running and cleare waters, and not in muddy; hee ſhall eſchew all cold ſallets and pulſe, becauſe they flye up and trouble the head: it will be convenient after meate to uſe common drige powder; or Aniſeed, Fennell-ſeed or Coriander comfits, alſo conſerve of Roſes, or Marmilate of Quinces to ſhut up the orifice of the Ventricle, leſt the head ſhould bee offended with vapoures ariſing from thence.

What fiſh he may eate.

Children muſt eate often, but ſparingly; for children cannot faſt ſo long as thoſe which are elder, becauſe their naturall heate is more ſtrong, wherefore they ſtand in neede of more nouriſhment; ſo alſo in winter all ſorts of people requite more plentifull nouriſhment, for that then their ſtomackes are more hot than in Summer.

Aphor 13. & 14 ſect. 1.

When the foureteenth day is paſt, if neither a feaver, nor any thing elſe forbid, hee may drinke wine moderately, and by little and little, encreaſe his dyet, but that reſpectively to each ones nature, ſtrength and cuſtome. He ſhall ſhunne, as much as in him lyes, ſleepe on the day time, unleſſe it happen that a *Phlegmon* ſeaze upon the braine or *Meninges*. For in this caſe it will bee expedient to ſleepe on the day time, eſpecially from morning till noone, 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 knowne, that it need not be ſpoken, that the blood when wee are awake is carryed into the habite and ſurface of the body; but on the contrary by ſleepe it is called into the noble parts, the Heart and Liver. Wherefore if that the blood by the force of the Sunne caſting his beames upon the earth, at his riſing is carryed into the habite of the body, ſhould againe bee more and more diffuſed by the ſtrength

Aphor. 15. ſect. 2

Why ſleepe upon the day-time is good for the braine being enflamed. *Lib. 2. Epidem.*

strength and motion of watching, the inflammation in the braine and *Meninges* would be much encreased. Wherefore it will bee better, especially then to stay by sleepe the violence of the blood running into the habite of the body, when it shall seeme to rage and more violently to affect that way. Watching must in like manner be moderate; for too much depraves the temper of the braine and of the habit of the whole body; it causes crudities, paines and heavinesse of the head, and makes the wounds dry and maligne.

The discommodities ensuing immoderate Watching.

But if the patient cannot sleepe by reason of the vehemencie of the inflammation of the braine and *Meninges*, *Galen* wishes, to wash, besmeare and annoint the head, nose, temples and eares with refrigerating and humecting things, for these stupifie, and make drowsie the Braine and membranes thereof, being more hot than they ought to be. Wherefore for this purpose let the temples bee anointed with *Vnguentum populeon*, or *Vnguentum Rosatum* with a little rose vinegar, or oxycrate; Let a spunge moistened in the decoction of white or blacke poppie seed, of the rinds of the rootes of Mandrages, of the seedes of Henbane, lettuce, purslaine, plantaine, night-shade and the like. He may also have a broath or barly creame, into which you may put an emulsion made of the seedes of white poppye, or let him have a potion made with ℥j. or ʒiß. of the syrupe of poppie, with ʒij. of lettuce water; Let the patient use these things 4 houres after meate, to procure sleepe. For sleepe doth much helpe concoction, it repaires the effluxe of the triple substance caused by watching, aswageth paine, 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.

Gal. Meth. 13.

Medicines procuring sleepe.

The commodities of sleepe.

If the patient shall bee plethoricke, let the plenitude be lessened by blood-letting, purging and a slender diet, according to the discretion of the Phisition who shall oversee the cure.

But we must take heed of strong purgations, in these kindes of wounds, especially at the beginning, lest the feaver, inflammation, paine, and other such like symptomes be increased by stirring up the humors.

Lib. 4. Meth.

Phlebotomie according to *Galens* opinion, must not onely be made respectively to the plenty of blood, but also agreeable to the greatnesse of the present disease, or that which is to come, to divert, and draw backe that humor which flowes downe, by a way contrary to that which is impact in the part; and which must be there evacuated, or drawne to the next. Wherefore for example, if the right side of the head be wounded, the Cephalicke veine of the right arme shall be opened, unlesse 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 bee opened, although the body is not plethoricke.

The like course must be observed in wounds of the left side of the head; for that is farre better by reason of the straightnesse 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, unlesse a Physition be present, to whose judgement you must then commit all that businesse. For the pulse is, in *Galens* opinion, the certainest shewer of the strength. Wherefore we must consider the changes and inequalities thereof, for as soone as we finde it to become lesser and more slow, when the fore-head beginnes to sweate a little, when he feeles a paine at his heart, when he is taken with a desire to vomit, or goe to stoole, or with yawning, and when hee shall change his colour and his lips looke pale, then you must stop the blood as speedily as you can; otherwise there will be danger lest hee poure forth his life together with his blood. Then he must bee refreshed with bread steeped in wine, and put into his mouth, and by rubbing his temples and nosethrilles with strong vinegar, and by lying upon his backe.

Lib. de cur. per sanguinis Miss.

But the part shall bee eased and freed from some portion of the impact and conjunct humor by gently scarifying the lippes of the wound, or applying of Leaches. But it shall bee diverted, by opening these veines which are nighest to the wounded part, as the *Vena Puppis*, or that in the middest of the forehead, or of the temples, or these which are under the tongue; besides also cupping-glasses shal be

applyed

applied to the shoulders 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 backe 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 bee made manifest by this following and notable example, how powerfull blood-letting is, to lessen and mitigate the inflammation of the Braine, or the membranes thereof in wounds of the head. I was lately called into the suburbs of Saint *German*, there to visite a young man twenty eight yeeres old, who lodged there in the house of *John Martiall*, at the signe of Saint *Michaell*. This young man, was one of the houshold servants of Master *Doncader*, the steward of the Lady *Admirall* of *Brion*. He fell downe headlong upon the left *Bregma*, upon a marble pavement, whence he received a contused wound, without any fracture of the scull, and being he was of a sanguine temperature, by occasion of this wound, a feaver tooke him on the seaventh day with a continuall *delirium* and inflammation of phlegmonous tumor of the wounded *Pericranium*. This same tumor possessing his whole head and necke by continuation and sympathy of the parts, was growne to such a bignesse, that his visage was so much altred, that his friends knew him not; neither could he speake, heare, or swallow any thing but what was very liquide. 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 Agace* Barber-surgion of the same suburbs; yet considering the integrity and constancie of the strength of the patient, I thought good to bleed him againe; wherefore I drew from him foureteene saucers at that one time; when I came to him the day after, and saw that neither the feaver, nor any of the fore mentioned symptomes were any whit remitted, or aswaged, I forthwith tooke from him foure saucers more, which in all made two & twenty; the day following when I had observed, that the symptomes were no whit lessened, I durst not presume by my owne onely advice, to let him the fourth time blood as I desired. Wherefore I brought unto him, that most famous Physition Doctor *Violene*, who as soone as he felt his pulse, knowing by the vehemencie thereof, the strength of the Patient, and moreover considering the greatnesse of the inflammation and tumor which offered its selfe to his sight, hee bid mee presently take out my Lancet and open a veine. But I lingred on set purpose, and told him, that hee had already twenty two saucers of blood taken from him: Then sayd he, Grant it be so, and though more have beene drawne, yet must we not therefore desist from our enterprise, especially seeing the two chiefe Indications of blood-letting yet remaine, that is, the greatnesse of the disease, and the constant strength of the Patient. I being glad of this, tooke three saucers more of blood, hee standing by, and was ready to take more but that he wished mee to differ it untill the after noone; wherefore returning after dinner I filled two saucers more, so that in all, this young man to his great benefit, lost twenty seaven saucers of blood at five times, within the space of foure dayes. Now the ensuing night was very pleasing to him, the feaver left him about noone, the tumor grew much lesse, the heat of the inflammation was aswaged in all parts, except in his eyelids, and the lappes of his eares, which being ulcerated cast forth a great quantitie 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 appeare how speedy and certaine a remedy it is in inflammations of the head and braine. A History. The two chiefe Indications in blood letting.

Now to returne from whence we digressed, you must note that nothing is so hurtfull in factures and wounds of the head, as venery; not onely 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, & the greatest part thereof flowes from the braine; 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 beene agglutinated and united. The discommoditie of venery in wounds of the head.

All

All passions of the minde must in like sort be avoided, because they by contraction and dissipation of the spirits cause great trouble in the body and minde. Let a place be chosen for the Patient as farre from noise as can be, as from the ringing of bells, beatings and knockings of Smithes, Coopers, and Carpenters, and from high-wayes through which they use to drive Coaches; for noyse encreases paine, causes a feaver, and brings many other symptomes.

How hurtfull noyse is to the fractures of the scull.

A History.

I remember when I was at *Hisdin* at the time that it was beseiged by the forces of Charles the fifth, that when the wall beaten with the Cannon, the noise of the Ordinance caused grievous torment to all those which were sicke, 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 strucken with staves on that part which was wounded; and verily their wounds were so angred herewith, that they bledde much, and by their paine and feavers encreased, were forced with much sighing to breathe their last.

Thus much may serve to be spoken of the cure in generall, now we will out of the monuments of the ancients, treate of the particular.

Chap. XV.

Of the particular cure of Wounds of the head, and of the musculous skinne.

Of a simple wound of the flesh and the skinne.

LEt us beginne with a simple wound, for whose cure the Chirurgion must propose one onely scope, to wit, Vnion; for unlesse the wound pierce to the scull, 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 chiefest care must bee had of the more urgent order and cause.

Therefore if the wound shall be simple and superficiary, then the haire must first bee shaven away, then a plaister applied made of the white of an egge, bole Armenicke and Aloes. The following day you must apply *Emplastrum de Lanua*, or else *de gratia Dei*, untill the wound be perfectly healed. But if it be deeper and penetrate even to the *Pericranium*, the Chirurgion shall not doe amisse, if at the second dressing he apply a digestive medicine (as they call it) which may be made of Venice Turpentine, the yolkes of egges, oyle of Roses and a little saffron, and that shall be used so long, untill the wound come to maturation; for then you must adde honey of Roses and Barly floure to the digestive. Hence must we passe to these medicines, into whose composition no oyly, or unctious bodies enters, such as this; ℞ *Terebinth. venetæ* ℥ij. *syrupi rosar.* ℥j. *pul. aloes, Myrrhæ, & mastich. an* ℥ß. Let them all be incorporated and made into an unguent, which shall be perfectly regenerated; then it must bee cicatrised with this following powder. ℞ *Aluminis combusti, corticis granatorum combust. an.* ℥j. *Misceantur simul & fiat pulvis*: but if the wound be so large that it require a suture, it shall have so many stitches with a needle, as need shall seeme to require.

A digestive medicine.

A sarcoticke Medicine.

An Epuloticke.

A History.

Whilest I was at *Hisdin*, a certaine soldier, by falling of the earth whilest he undermined, had the Hairy scalpe so pressed downe even to the *Pericranium*, and so wholly separated from the beginning of the hinde 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*, Mastich and Aloes; then I restored the hanging skinne to its former place, and there stayed it with some stitches being neither too strait, nor too close together, for feare of paine and inflammation, (which two chiefely happen whilest the wound comes to suppuration) but onely as much as should serve to stay it on every side, and to keepe forth the ayre, which by its entrance doth much harme to wounds:

What things we must observe in sowing.

the

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 cataplasme to all the head. ℞. *farina hord. & fabarum an* ℥vj. *olei rosati* ℥iij, *aceti quantum sufficit, fiat cataplasma ad formam pultis*; this hath a faculty to dry, coole, repell mitigate paine and inflammation, and stay bleeding.

When we must not let blood in wounds.

I did not let him bood, because hee had bled much, especially at certaine arteries which were broken neere his temples; he being dressed after this manner grew well in a short time.

A History.

But if the wound bee made by the biting of a wilde beast, it must bee handled after another manner, as shall appeare 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 feirceſt of them broke the things wherein he was tyed, and leaping amongst the company, he with his pawes threw to the ground a Girle of some twelve yeeres old, and taking her head in his mouth, with his teeth wounded the musculous skinne in many places, yet hurt not the scull. She scarle at length delivered by the Master of the Lyons from the jawes of Death and the Lyon, was committed to the cure of *Rowland Claret* Chirurgion; who was there present by chance at the same time; some few dayes after, I was was called to visite her; she was in a feaver, her head, shoulders, breſt and all the places where the Lyon had set his teeth, or nailes, were swolne, all the edges of the wounds were livide, and did flow with a watrish, acride, virulent, cadaverous, darke greene and stinking matter, so that I could scarse endure the smell thereof; she was also oppreſt with pricking, biting and very great paine; which I observing, that old saying came into my minde which is: That all wounds made by the bitings of beasts, or of men also, doe somewhat participate of poyson. Wherefore there must principally great care bee had of the venenate impression left in the wounds by the nailes and teeth, and therefore such things must bee applyed, as have power to orecome poison. Wherefore I scarrifyed the lips of the wounds in divers places, and applyed Leaches to sucke 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.

The bitings of man and beasts are venenate.

℞. *Mithrid.* ℥j *theriac.* ℥ij. *egyptiac.* ℥ß. *dissolvantur omnia cum aqua vitæ, & Cardui ben.* Let the wounds be fomented and washed with it warme; 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 Bugloſſe dissolved in the water of Sorrell and *Carduus benedictus*, potions were made to strengthen the heart and vindicate it from maligne vapours.

Theriacall and sicke Medicines.

A Cordiall Epithema.

For which purpose also this following *Epithema* was applyed to the region of her heart. ℞. *aquæ rosar. & nenuphar, an.* ℥iiij. *aceti scillitici* ℥j. *corallorum, santalorum alborum & rubrorum, rosar rub. pulveris spodij. an.* ℥j. *Mithridatij, theriacæ, an.* ℥ij. *flo. cordial. pulverisatorum p. j. croci* ℈j. dissolve them altogether, make an Epitheme and apply it to the heart with a scarlet cloth or spunge, and let it bee often renued. Verily she dreſt after this manner, and the former remedies but once used, paine, inflammation and all the maligne symptomes were much lessened; to conclude shee recovered, but lingred and was leane some two yeares after, yet at lengh 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.

The cure of the Hairy scalpe when it is contused.

But now that we may prosecute the other affects of the hairy scalpe; say that it is contused with a blow without a wound, that which must bee first and alway done, (that so the affect may better appeare, and the remedies which are applyed may take more effect) the haire must be shaven away, and at the first dressing a repelling medicine applyed, such as is this following *Oxyrhodinum*. ℞. *ol. ros.* ℥iij. *albumin. ovorum nu.* ij. *pulveris nucum cypressi, balaust. alumin. rochæ, rosar. rub. an.* ℥j. Let them be all incorporated, and make a medicine for the former use, or in steed thereof, you may apply the cataplasme prescribed before consisting of *Farina hordei, fabarum, aceto & oleo roſaceo.* But such medicines must be often renued. When the paine and defluxion

A repelling medicine.

A discussing Fomentation.

are appeased, wee must use discussing medicines for the dissipation of that humor which remaines impacted in the part; R *Emplastri de mucilagin.* ℥ij. *oxicrocei, & emp. de meliloto, an.* ℥j. *olei chamaem. & anethi, an.* ℥ß. *malaxentur simul & fiat emplastrum ad usum dictum.* Such a fomentation will also be good. R *vini rub. lib.* iiij. *lixiui* ℥j. *com. lib.* ij. *nuces cupressi contus. nu.* x. *pul. myrtillorum* ℥j. *rosar. rub. absinth. sol. salviæ, majoranæ, stachados, florum chamæm. melil. an.* M. ß. *aluminis rochæ, radicis cyperi, calami aromatici an.* ℥ß. *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 dryed & more discussing things applyed such as the Cerate described by *Vigo* called *de minio,* which hath an emollient and digestive faculty in this forme. R *Olei chamam. lilior. an.* ℥x. *olei mastich.* ℥ij. *pinguedinis verveecis lib.* j. *litharg. auri,* ℥viij. *minij* ℥ij. *vini boni cyathum unum, bulliant omnia simul baculo agitando, primum quidem lento igne, mox verò luculentiore, donec tota massa colorem nigrum vel subnigrum contrahat; adde in fine coctura 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 tumor must be quickely opened, for when the flesh is inflamed and putrifyed through occasion of the conteined humor, the bone under it putrifies also by the contagion of the inflammation and the acrimony of the matter falling upon the bone. When you have opened it, wash away the filth of the ulcer with this following detersive medicine. R. *syrupi ros. & absinth. an.* ℥j. *terebinth.* ℥ß. *pul. ireos, aloes, mastichis, myrrhæ, farinæ hordei an.* ℥ß. In steed hereof if there be great putrifaction *Ægyptiacum* either by it selfe, or mixt with an equall quantity of *Vnguentum apostolorum* may be put into the ulcer. When the ulcer is clensed it will be time to use Iscarcotike and cicatrizing medicines.

Ceratum de Minio.

Detersive or clensing medicines.

Chap. XVI.

Of the particular cure of a fractured or broken scull.

Why the *Pericranium* hath such exquisite sense.

IF the scull be be broken, so that it be needefull to trepan it, or to elevate and lift it up, or scrape it away, the musculous skinne being cut as wee formerly noted, the *Pericranium* shall be plucked from the scull, as wee sayd before; which because it can hardly bee done without great paine, by reason of its exquisite sense and connexion with the membranes of the braine, we must labour to mittigate the paine for feare of inflammation and other accidents. Therefore the first dressing ended and 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 yolke of an egge, and oyle of Roses, but you must apply no humide thing to the bone, because we desire to keepe it sound and whole. For *Galens* opinion is, that bared bones must not be touched with unctuous things; but rather on the contrary all dry things must bee applyed to them, which may consume the superfluous humidity. Therefore we must lay some linte and the cephalicke 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 the ayre, or touch of humide 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 according to the plenitude and strength of the patient; for thus the feaver, and together therewith the rest of the symptomes are diminished.

Gal. 6. Meth.

The bones are offended with the application of humide things.

Lib. de ulcer.

For in the opinion of *Hippocrates,* in every greene wound it is good to cause often bleeding, except in the bellies; for thus the vehemencie of paine, inflammation and other accidents will bee lesse troublesome; also it is not amisse too for old ulcers to bleed much, for so they are freede from the burden of the impact humors. When you thinke it hath bled sufficiently, it may be stanched with this following medicine described by *Galen.*

Gal. 6. Meth.

R *pulveris Aloes* ℥ij, *thuris, mastiches an.* ℥ß. *albumina ovorum nu.* ij.

agitentur

agitentur simul cum pilis leporinis minutim incisis, fiat medicamentum. When the bleeding is stayed, you shall for the aswaging of paine, droppe upon the *Meninx* some Pidgions blood, yet warme by opening a Veine under the wing, then it shall bee strewed ouer with this following powder, ℞ *Aloes, thuris, myrrhæ, sanguinis draconis an.* ℥j. *Misce, fiat pulvis subtilis.* Also you may make an irrigation with Rose Vinegar, or some repelling medicine; such as is a cataplasme *ex farinis, & oleo roseceo.* Which may bee applyed untill the fourth day to aswage and mittigate paine.

Vigoes Cerate will be of good use in this case, as that which in my opinion is most fit for fractures of the scull, because it drawes powerfully, resolves and dries moderately, and by reason of the smell refreshes the animall spirits, and strengthens the braine and membranes thereof, as you may easily perceive by things which enter into the composition thereof. *Vigoes Cerate good for a broken scull.*

℞ *Olei ros. Omph. resinæ pini. gummi Elemi. an* ℥ij. *Mastiches* ℥iß. *pinguedinis vervecis castrati* ℥ijß. *foliorum beton. caprifol. anthos an. M.* j. *ammoniaci* ℥ß. *granorum tinctorum* ℥x. *liquata pinguedine terenda 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.* ℥iiij. *cera albæ quantum sufficit, fiat cerotum molle ad usum prædictum.* Also let the necke, and all the spine of the backe bee annointed with a liniment, which hath force of mollifing the Nerves, left they should suffer convulsion; such is this.

℞ *Rutæ, marrubij, roris mar. ebulor, saluiæ, herb. paralys. an. M. s. rad. Ireos, cyperi, baccarum lauri. an.* ℥j. *florum chamæ. melil. hyperici, an. M.* j. *pistentur & macerentur omnia in vino albo per noctem, deinde coquantur in vase duplici cum olei lumbricorum, liliorum, de terebinthina, axungia, anseris & hum. an.* ℥ij *usque ad consumptionem vini, postea colentur & in colatura adde terebinth. venet.* ℥iij. *aquæ vitæ* ℥ß. *cera quantum sufficit. fiat linimentum secundum artem.* A liniment good against convulsions.

But when the paine is aswaged, we must abstaine from all such unctuous things, lest they make the wound become sordide and maligne, and putrifie the adjacent parts, and consequently the *Crassa Meninx* and scull; for the integrity of all parts may be preserved by their like, and such are dry things in a fracture of the scull. Wherefore all humide and oyely things must be shunned in the cure thereof, unlesse peradventure there shall bee some neede to mitigate paine and bring the humor to suppuration.

For according to *Galen*, wee are oft forcst for a time to omit the proper cure of the disease, so to resist the symptomes; furthermore *Hippocrates* would have us not to foment the scull, no not with wine, but if we doe, to let it be but with very little. *Vidius* interprets that little to be, when there is feare of inflammation; for wine if it be red, tart and astringent, hath a repressing refrigerating and drying facultie: for otherwise all wine although it heates and dries by its faculty, yet it actually humects and cooles, both which are very hurtfull in wounds of the head, or a fractured scull, especially when the bone is bare; for from too much cooling of the braine there is feare of a convulsion, or some other evill symptome. *Gal. 4. Meth.*

How farre humide things are good for a fractured scull.

Wherefore let this be ratified, that is, We must not use humide and unctuous medicines in wounds of the head, except for curing of an inflammation, or the mitigation of paine caused thereby. Therefore let the bared scull bee strewed with catagmaticke and cephalicke powders, (being so called by the ancients, for that they are convenient and good in fractures of the scull & the rest of the bones) for by their dryncsse they consume the superfluous humiditie, and by that meanes helpe nature in the separating of the broken bones, and the regenerating of flesh. Such powders usually consist of such things as these ensuing.

Why Cephalicke or Catagmaticke powders are good.

Thus, radix Iridos florent. farina Hordei, & 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 paine, inflammation and apostumation bee past; that is then, when the membranes must be clensed, the bones scaled, and the flesh generated. When to used.

For the ſcull 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 quickneſſe of ſenſe comes farre ſhort of theſe two. Wherefore when you would apply the forementioned cephalicke pouders to the *Meninges*, they muſt be aſſociated and mixed with honey, ſyrupe of roſes or of wormewood and ſuch other like, that ſo their too violently drying faculty may be alayed and tempered.

How to be mixed when they are to bee applyed to the Meninges.

CHAP. XVII.

Why we uſe Trepaning, in the Fractures of the ſcull.

THere are foure cauſes of this remedy. The firſt is, to raiſe up the depreſt bones, and take forth their fragments, which preſſe upon the *Meninges*, or alſo upon the ſubſtance of the braine. The ſecond is, that the *Sanies* or matter may bee evacuated, clenſed, waſted, and dryed up, which by the breaking of any veſſell is poured forth upon the Membraines, whereby they are, and not they onely, but the Braine alſo is in great danger of corruption. The third is, for the fitter 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, and 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; and then the denſity and hardneſſe of the interpoſed ſcull is a meanes 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 bee bound without great paine, and danger of Inflammation.

Why a repelling Ligature cannot be uſed in fractures of the Scull.

For by ſuch a compreſſion the pulſation of the Arteries would be intercepted, and the effluxe of the fuliginous excrements which uſeth to paſſe through the ſutures of the ſcull, would be ſuppreſt, by reaſon of the conſtriction of theſe ſutures.

Beſides alſo, the blood would thus bee forced from the wounded part without, to within into the Membranes and Braine; whence paine, Inflammation, a Feaver, Abſceſſe, Convulſion, Palſie, Apoplexie, and laſtly death it ſelfe would enſue.

And theſe are the chiefe cauſes, that Trepaning is neceſſary in fractures of the ſcull, and not ſo in the fractures of other bones.

How the patient muſt be placed when you Trepan him.

But before you apply or put to your Trepan, the Patient muſt bee 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 ſinke downe any further, but remaine firme and ſteddy.

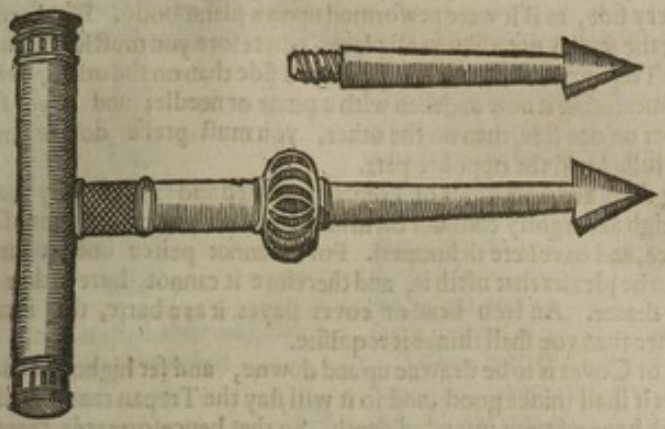
Then you muſt ſtoppe the patients eares with Cotton-wooll, that ſo hee may not heare the noiſe made by the Trepan, or any other Inſtrument.

What to be done before the application of the Trepan.

But before you put to your Trepan the bone muſt be pierced with an Inſtrument, having a three ſquare point, that ſo it may bee the more ſpeedily and certainely perforated. The point thereof muſt be no bigger then the pin of the Trepan, that ſo the Trepan which is forthwith to bee applyed may ſtand the more firmer, and not play to and againe in too wide a hole.

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 peircer to perforate the ſcull, before the ſetting too of the Trepan.



A. *Shewes the handle.*
B. *The points which may be ſcrewed and fitted into the handle.*

Chap. XVIII.

A deſcription of Trepans.

TRepans are round ſawes, which cut the bone circularly more or leſſe according to their greatneſſe; they muſt have a pinne ſtanding in the middle a little further out than their teeth, ſo to ſtay and hold faſt the Trepan that it ſtirre neither to this ſide nor that, untill it bee entred and you have cut through the firſt table at the leaſt: then you muſt take forth the pinne, leſt going quite through the bone, it may pricke or hurt the *Craſſa Meninx.*

Wherefore when you have taken forth the pinne, you may ſafely turne it about untill you have cut through both the tables; Your Trepans muſt alſo have a cappe, or ſomewhat to engirt or encompaſſe them, leſt no way hindred they cut more of the bone than we would, and in concluſion runne into the *Meninx.*

They muſt alſo be anointed with oyle, that ſo they may cut the more readily and gently; for thus Carpenters uſe to greaſe their ſawes. But you muſt, during the time of the operation, often dippe them in cold water, leſt the bone by attrition become too hot: for all hard ſolide bodies by quicke 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 ſcailes and falls away.

The harme the bone receives by being heated with the Trepan.

Now you muſt know that the bone, which is touched with the Trepan, or the Aire, alwayes caſts off ſcailes, for the ſpeedier helping forwards whereof, you muſt ſtrew upon it pouders made of Rocket, Briony, wilde Coucumber and *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 to harden it with dryneſſe convenient to its kinde.

What things haſten the ſcailing of the bone.

℞ *Pulver. Ireos Illyricæ, Aloes, Mannæ thuris, Myrrhæ, ariſtolochiæ an.* ℥j. Fleſh being by this meanes generated, let it be cicatrized by ſtrewing upon it the rindes of Pomegranats and Alome burnt.

Neither ſhal the Chirurgion forcibly take away theſe ſcales, but commit that whole worke to nature, which uſeth not to caſt them off before that it hath generated fleſh under them. For otherwiſe if he doe any thing raſhly, hee brings new corruption to

The bone muſt not be forcibly ſcailed.

the bone; as we ſhall more at large declare, when wee come to treate of the *Caries* or Rottenneſſe of bones.

A caution in Trepaning. 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 unpoſſible to cut the bone ſo equally on every ſide, as if it were performed upon a plane body. Furthermore the thickneſſe of the ſcull is not alike in all places; wherefore you muſt looke, and marke whether the Trepan goe not more deepe on one ſide than on the other, which you may doe by meaſuring it now and then with a pinne or needle; and if yee finde that it is cut deeper on one ſide, than on the other, you muſt preſſe downe the Trepan more powerfully upon the oppoſite part.

A ſafe and convenient Trepan. But ſeeing there are many ſorts of Trepans invented and expreſſed by many men, yet if you weigh and rightly conſider them all, you ſhall finde none more ſafe, than that I invented, and have here delineated. For it cannot peirce one jot further into the ſcull, than he pleaſes that uſeth it, and therefore it cannot hurt either the *Meninges* or the Braine. An Iron head or cover ſtayes it as a barre, that it can penetrate no further than you ſhall thinke it requiſite.

This head or Cover is to be drawne up and downe, and ſet higher and lower, as he which uſes it ſhall thinke good, and ſo it will ſtay the Trepan that it ſhall not goe a haires bredth beyond your intended depth. So that henceforwards there ſhall be no Chirurgion, howſoever ignorant in the performance of his Art, which by the benefit of ſuch a Trepan may not performe this operation without any danger or feare of danger of touching the *Dura Mater*; the hurting whereof, puts the life in jeopardie.

The figure of our Trepan opened and taken in peeces.



A. *Shewes 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 pinne.*

F. *The Trepan furniſhed with its pinne.*

The figure of the ſame Trepan fitted and put together.



A. *Shewes 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 Braine.*

D. *The Trepan with its cover or cap upon it.*

E. *The ferule.*

F. *A ſcrew pin by the twining whereof the Trepan is faſtened in the Brace.*

G. *Another ſcrew pin which faſtnes the ferule cloſer to the Trepan.*

H. *The Three ſquare point.*

In

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 *Crooke*.



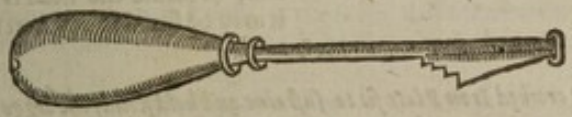
A Terebellum *or Gimblet conſiſting of three branches.*

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 expreſt, that is, ſcrewing the point thereof into the hole made by the threeſquare pin; the handle of this Inſtrument may alſo ſerve in ſteed of a Levatorie.

When with the Gimblet you have drawne or taken forth that part of the ſcull which was cut away by the Trepan; if there ſhall bee any ſharpe ſplinters in the ſecond table, which may hurt and pricke the *Meninx*, when it is heaved up by the motion of the braine, 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 pricke the membrane in the ſmoothing thereof.



A Lentill-like cutting Scraper.



But if by reaſon of the thickneſſe, the ſcull cannot bee 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 braine as little as may be. But you muſt diligently with your mullets take forth the ſharpe ſplinters, and peeces of the bone. But if the fractured part of the ſcull bee 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 ſutures; then in the ſteed of one Trepan, two or three muſt be applyed, if the neceſſity of the preſent caſe ſo require, and that within a very ſmall compaſſe; but they muſt not bee applyed to the fractured part, but nigh thereto, as we ſhall ſhew more at large in the following chapter.

The uſe of a Leaden Mallet.

Why a Trepan muſt not be applyed to the ſutures.

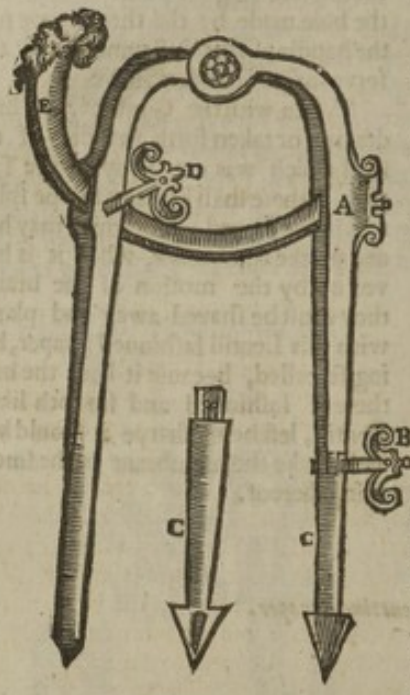
But the Trepans ſhall be applyed ſo neere to each other, that the ring of the ſecond may be joyned with the ring of the firſt and third. But if a fracture ſhall happen to light upon a ſuture, then you muſt not apply a Trepan to it, but uſe two thereto on each ſide; he that ſhall doe otherwiſe, ſhall teare in ſunder the nervous and membranous fibers, and alſo the veines and arteries by which the *Dura Mater* is faſtned to the ſcull, and yeelds matter to the *Pericranium*. He which ſhall apply one Trepan, that

Why two Trepans are to be uſed to a fractured ſuture.

that is, but upon one side of the future, he shall not bee able to get forth all the *Sanies* which is fallen downe on both sides by reason of the partition of the *Crassa Meninx* which lyes betweene, and rises up by the sutures of the scull.

To conclude, when for what cause soever we cannot make use of a Trepan, we may imploy this instrument, if so bee as much of the bone bee bared as is needfull. It is made in forme of a paire of Compasses, and by meanes of a screw may bee opened more or lesse as you please. You as need shall require may change the points, and put other in their places, for they may bee fitted to one side of the compasse with a screw.

A paire of cutting Compasses to cut forth the scull.



A. *Shewes the one legge of the cutting compasses, which as you carry it about cuts the scull.*

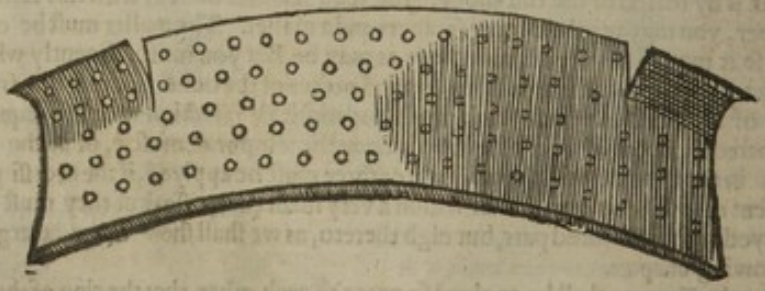
B. *The screw which fastens the point to the legge of the compasses.*

C.C. *Two different points which may bee screwed to the legge of the Compasses, as neede shall require.*

D. *A great screw which fastens upon an Iron string, alongst which the one of the legges of the Compasse running, may bee widened and straitned as you please.*

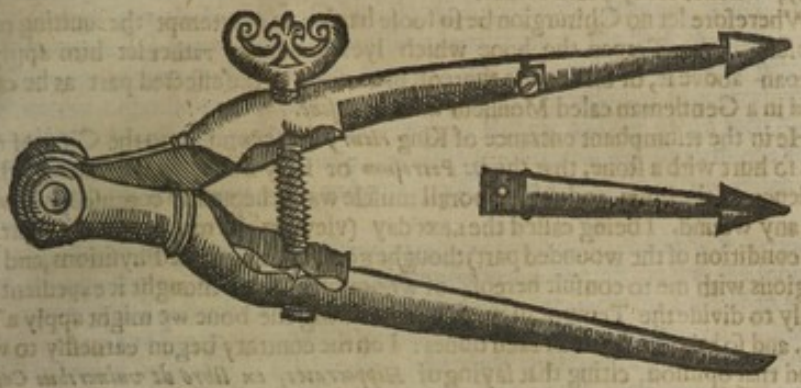
Moreover it is fit that the one legge of such cutting compasses should stand firme and steddy, whilest the other is drawne circularly to cut. Wherefore it is fit you have an Iron plate made full of little holes, wherein you may firmely stay that legge of the compasse, least it waver against your will; it is requisite that this plate be crooked, (because the head is round) that so it may be fitted to any part thereof.

A crooked Iron Plate fit to sustaine and hold steddy one legge of the Compasse upon the head.



Another

Another paire of Commpasses of the like nature and use, which may be widened and straightned by a screw.



CHAP. XIX.

Of the places of the scull whereto you may not apply a Trepan.

FIrst of all, you shal not apply a Trepan, to a bone that is so broken that it is wholy, or in the greater part thereof divided from the scull by the violence of the stroake, least by your weight and pressing of the Trepan, you force it downe upon Membrane.

A bone almost severed from the scull must not be Trepaned.

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 scull it selfe, a large cavitie repleniſhed with a certaine white and tough humor, as also with a certaine spirituous and ayrie substance, placed there by nature, to prepare the aire which ascends to the braine by the Nose-thrills: unlesse the Chirurgion observe and be mindfull hereof, he may bee deceived, supposing this cavity to be an Effracture of the bone and a depression thereof.

A notable cavitie in the forehead bone.

Fourthly, neither in the lowest parts of the scull, lest the marrowy substance of the Braine, 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 soliditie, to endure the impression of a Trepan.

Sixtly, 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 looses its proper action, that is, to move and lift up the lower Iaw; 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 drawes the same Iaw to it, whereupon the mouth and all the parts of the face are drawne awry, and suffer a Convulsion towards the sound part, the other being resolved according to *Hippocrates* his rule.

Lib. de Sal. 9.

For as often as the muscles of one kinde are equall in number, magnitude and strength on each side, the resolution of the one part, causes the Convulsion of the other.

A rule out of *Hippocrates*.

Neither doth this danger alone arise from the cutting of the Temporall muscle, but also another, which is, that this muscle when we eate and speake, is in perpetuall motion, whereby it comes to passe, that being once cut, it is scarse ever united againe, besides also the commissure or joyning together of the stonie bones lye under it.

What discommodities arise from cutting the temporall muscle.

But by the second caution we are forbid to Trepan upon the sutures; moreover also

alſo many Veines, Arteries and Nerves are ſpred over the ſubſtance thereof, ſo that by cutting of them, there is danger of many and maligne ſymptomes, as paine, inflammation, a feaver, a convulſion not onely of the part it ſelfe, but alſo of the whole body, whence laſtly death enſues.

Wherefore let no Chirurgion be ſo foole hardy, as to attempt the cutting of this muſcle, ſo to Trepan the bone which lyes under it; rather let him apply his Trepan above it, or on the ſide thereof, or as neere to the affected part as he can, as I did in a Gentleman caled Monſieur *de la Breteſche.*

A hiſtory. He in the triumphant entrance of King *Henry* the ſecond, into the Citty 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, and the condition of the wounded part) thought good to bring ſome Phyſitions, 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 feare of the forementioned ſymptomes; alſo I cited experience, how that I had often obſerved all thoſe which had this muſcle cut, dyed with a convulſion; but that it ſhonld be farre better, that neere 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 skinne 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 tooke out ſome foure ſplinters of the broken bone; and I put in a plaine leaden pipe, by which (I wiſhing the patient ever when I dreſt him to hold downe his head, to ſtoppe 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 betweene the ſcull and *Craſſa Meninx*. Other filth which ſtucke more faſt, I waſhed out with a detergent decoction, injected with ſuch a ſyring as is heere expreſt; And I did ſo much, God bleſſing my endeavours, that at length he recovered.

A Plane leaden pipe for to carry forth the Sanies *gathered under the ſcull.*

A little ſyring fit to make injections withall.



A hiſtory. The like chance and fortune befell Monſieur *de Pienne* at the ſeige of *Metz*. For he as hee fought at the breach of the wall, had the bone of his Temples broken with a ſtone ſtrucke out of the adjacent wall, by a peece of Ordinance ſhot from the Emperours campe; he preſently fell downe with the blow, and caſt blood out of his mouth, noſe and eares, with much vomiting, and remained dumbe & as it were ſenſeleſſe almoſt foureteene dayes, ſo that he knew none of the by-ſtanders. He had often palpitations, and convulſiue twitchings, and his face was ſwollne. 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 bee hindred by Cathæreticke pouders, yet at the length he recovered.

The Ancients called this kinde of growing fleſh a *Fungus* [*i.* a Muſhrome] for that it is ſoft, and growes with a ſmall roote and broad top like a muſhrome: but it encreaſes and decreaſes, according to the plenty of the flowing matter, and induſtry of the Chirurgion hindring by art the growth thereof.

This fleſh ſtinkes exceedingly, they commonly call it *Pious ſanctæ Piacry* [*i.* the figge

Figge of S. *Fiacrye.*] This disease commonly hath its originall after this manner. Even as in the bodies of Trees from the excrements of nourishment, a certaine halfe putrid grosse and viscous humor sweats through the barke, and gathered together by little and little growes into a Mushrom, so blood melancholly both in temper and consistence, springs from the broken vessells of the scull and *Crassa Meninx*, which also is sent sometimes by nature for the necessary repairing of the flesh in these parts, whereupon a certaine *fungus* breedes, which in *Galens* opinion, savors or partakes of the nature and condition of the parts to which it growes; though in generall it bee of the nature of maligne warts, or excrescences. But for to take away such *Fungi*, you must apply medicines which have a specifick faculty to waste superfluous flesh; such are these which strongly dry, and gently waste and eate, such as this which followes. The generation of a *Fungus*.

℞ *Sabinæ* ℥ij. *æruæ* ℥j. *pulverisentur simul, aspergatur caro excrescens.* or else. ℞ *Hermodactylorum combustorum* ℥ß. make a pouder for the same use. But if so be that this fungous flesh come to such growth, (as it often happens,) as to equall the bignesse of an egge, it must be tyed and straite twitched, close to the roote with a silken thred; and when it shall fall away by reason of this binding, the place must be strewed with the forementioned powders, for so it will be more certainely cured, than with more acride cathæretickes.

Chap. XX.

Of the corruption and Caries, *or rottennesse of the bones of the Head.*

There sometimes followes a corruption and Sphacell of the fractured bones of the scull upon wounds of the head; which happens either because they are touched by the ayre, which they are not sensible of; or for that the *Sanies* putrifying and detained under them, hath infected them with like putrifaction; or by the cure unskillfully handled, they by the rash application of suppurating and oyly medicines becoming more moyst, and so undergoing an unnaturall change of their proper complexion and native temper, as we shall shew more at large when we shall treate 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, livide and black; partly also by putting downe a probe; when as it meets with nothing smooth and slippery, but feeles rough in many places, and besides also when it enters and easily penetrates with a small thrusting downe into their substance, as if it were fungous. Yet this last signe may often deceive you, for I have diverse times observed rotten bones, which being bare had long suffered the injury of the ayre, to become so hard that a Trepan would scarse peirce them; for it is putride humidity which makes the bones soft and fungous; but the ayre by drying them exhausts this humiditie and lastly dryes it, whence followes such contumacious hardnesse. This signe will bee farre more certaine, if the flesh which is growne upon the bone be more soft than is fit, loose and have little or no sense or feeling. You may correct and amend this corruption of the bone with cauteries aswell actuall, as potentiall, or with the powders of Aloes, Gentian *Aristolochia*, centaury, *cortex pini*, as, Why when the scull is broken the bones sometimes become foule or rotten. The signes of foulenesse of the bone. Corrupt bones are sometimes hard.

℞ *radic. Ireos, Flor. aristolochiæ an.* ℥j. *centaur.* ℥ij. *corticis pini* ℥ß. *Misce & fiat pulvis subtilissimus ossi inspergendus.* But if it be much corupted, it must bee scraped forth with your *Scalpra*. And you must expect the falling or scailing of the corrupt bone from the sound, and not forcibly procure it; for otherwise the sound bone, which lyes under it, being as yet covered with no flesh growing over it, would be corrupted by the appulse, or touch of the ayre. Yet you shall by little and little gently move and shake rotten bones with your probe, that so they may more easily scaile and with lesse trouble to nature. But note by the way, that the scailing of the bone which hath environed the Trepan, is commonly performed in the space of fortie or fifty dayes. So long also will that caused by the unusuall appulse or touch of

of the aire, or application of a Cautery, or the aſperſion of Cephalicke pouders; 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 ſcarre, yet ſometimes ſooner, ſomewhiles latter according to the variety of the ages, tempers and habits of divers men.

The benefit of a vulnerary potion.

But if the *Caries* or *Rottennes* can neither by theſe fore mentioned remedies be orecome and amended, neither the looſed continuity agglutinated nor united, you muſt give the patient a vulnerary potion, for hence I have found happy ſucceſſe in many. But ſometimes not onely a certaine portion of the bone, is taken with a *Caries*, but alſo the whole is often ſeazed upon with ſphacell, and all falls out. For in *Hippocrates* opinion, *Lib. de vulneribus capitis*, the bone of the ſcull being broken falls from the ſound more or leſſe, according to the violence of the blow; which alſo is confirmed by experience.

A Hiſtory.

For which purpoſe I thinke good in this place to recite a Hiſtory, whereof I was an eye witneſſe, whilſt I ſerved as Chirurgion in *Piemont* under the Marſhal *de Montejan* (who was the Kings Leiſtenant 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 paſſe that a company of *Gaſcoine* ſouldiers his countreimen came to *Turin*, with whom one morning he eate plentifully Tripe fryed with Onions and ſpices, & drunke a great quantitie 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 Phyſitions advice) given him a Gliſter, and applyed to his head ſuch things as were fit, and alſo I laboured with Frictions and Ligatures of the extreame parts to draw the humors downewards; yet for all this the part of the head which was formerly affected begun to impoſtumate; which being opened, there came forth a great quantity of matter, and at the length the muſculous skinne and *Pericranium* ſincking downe, both the Tables of the ſcull became putrified and rotten, as you might know by their blackneſſe and ſtench. Now to take away this coruption, I applyed at certaine times actuall cauteries, both to amend the corruption and ſeparate that which was altered: but marke, after ſome months ſpace, a great number of wormes came forth by the holes of the rotten bones from underneath the putrified ſcull; 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 largeneſſe of ones thumbe filled with wormes about the bigneſſe of a points tagge, with blacke heads, diverſly wrapped amongſt themſelves. The bone which nature ſeparated was of the bigneſſe of the palme of ones hand, ſo that it was ſtrange that ſo large a portion of the ſcull ſhould bee 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 ſcarre 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 ſcarre is a thing more denſe than the skinne, 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 ſcull is wanting, you may there by putting too of your hand perceive and feele the beating of the Braine, wherefore the ſcull muſt needes bee much weaker in that place. Now to helpe this infirmity, I wiſhed this Lackey to weare a Cap made of thicke leather, ſo more eaſily to withſtand externall injuries, and verily thereby he grew much better.

A great falling away of a corrupt bone.

Aph. 45. Sect. 6

The covetous craft of impoſtors.

Now I thinke good in this place to lay open the deceite 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 ſcull is loſt, perſwade the patient and his friends, that they muſt put a plate of gold in the place of the ſcull which is wanting. Wherefore they hammer it, in the preſence of the patient, and tyme it divers wayes and

apply

apply it to the part, the better to fit it; but presently after they sliely convey it into their purses, and so leave the patient thus cosened. Others bragge that they are able to put the dryed rinde 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 farre 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 lyes there for many yeeres without any harme to the patient; for although lead have a certaine familiarity with mans body, yet is it at length (unlesse 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 rottennesse and corruption of fractured bones; now must we speake of the discommodities which befall the *Meninges* by wounds whereby the scull is broken.

CHAP. XXI.

Of the discommodities which happen to the Crassa Meninx *by fractures of the scull.*

MAny discommodities chiefely happen to the *Crassa Meninx* by a fracture of the scull and rash Trepaning thereof; for it sometimes chances to bee cut and torne. 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 barly floure. In steed whereof this following powder having the like faculty may take place.

Remedies for the lacerated *Meninx*.

℞ *Colophon.* ℥iij. *Myrrhæ, aloes, mastiches, sanguinis Dracon. an.* ℥j. *croci, sarcocollæ an.* ℈ß. *misce & fiat pulvis subtilis.* But to purge the blood and matter which is gathered and lyes betweene the *Crassa Meninx* and scull, you shall put in a Tent made of a ragge twined up some foure or five double, and steeped in syrupe of Roses or wormewood and a little *aquæ vitæ*; for thus you shall presse downe both the *Crassa Meninx*, lest lifted up by the accustomed and native pulsation of the braine, it should be hurt by the edges of the scull yet rough by reason of the sharpe splinters of the bone lately Trepaned, and give freer passage forth for the matter there contained. But as oft as you shall dresse the patient, you shall renue the forementioned Tent, untill all the matter be purged forth. And so often also you shall presse downe 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 Instument wherewith you shall hold downe the *Dura Mater*, must have the end round, polisht and smooth as it is here expresst.

A fit Instrument to presse and hold downe the Dura Mater, *so to make way for the passage forth of the* Sanies *or Matter.*



And let there be layd upon the *Dura Mater* strewed over with the formerly mentioned powder, a spunge moystened and wrung forth of a drying decoction made of aromaticke and cephalicke things, such as this which followes.

℞. *Fol. salviæ, majoran. betonicæ, rosar. rub. absinth. Myrtil. florum chamæm. melil. stœchad. utriusque an. M.* iij. ß. *rad. cyperi, calam. aromat. ireos, caryophyllatæ; angelicæ, an.* ℥ß. *bulliant omnia secundum artem cum aquæ fabrorum & vino rubro, fiat decoctio ad usum dictum.* And in stead hereof you may use claret with a little *aquæ vitæ*, that so the conteyned matter may bee evacuated and dryed up. A spunge is fitter for this purpose to draw than a linnen ragge or any other thing, both because it is good of its selfe to draw forth the humidity, as also for that by its softnesse it

A spunge fit to foment with all.

yeelds to the pulsation of the Braine. Then apply to the wound and all the adjoyning parts, an emplaster of *Diacalcitheos* dissolved with vinegar, or wine, or oyle of Roses, that so the plaster may be the more cold and soft. For in *Hippocrates* opinion, nothing which is any thing heavie or hard must be applyed to wounds of the head, neither must it be bound with too straite, or hard a ligature, for feare of paine and inflammation.

Lib. de Vuln. cap.

For *Galen* tells (as he had it from *Mantias*) that a certaine man lost his eyes by inflammation and impostumation arising, for that an Apothecarie had used too straite a ligature to his head and face; for this straite ligature so pressed the sutures, that the suliginous vapoures, which used to passe through them and the pores of the scull, were stopped from passing that way; besides, the beating of the Arteries was intercepted and hindred; by which meanes the paine and inflammation so encreased, that his eyes were rent and broke in sunder and fell forth of their orbe.

Lib. de fascijs.

The discommodities of too straite binding of the head.

Wherefore *Hippocrates* rightly commends an indifferent ligature, also hee fitly wisheth us to let the emplaisters bee soft which are applyed to the head, as also the cloathes wherewith it is bound up, to bee of soft and thinne 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 hee can, to lye upon the wound, and now and then by fits to strive to breathe, stopping his mouth and nose, that so the braine lifted and swolne upwards, the matter may bee the more readily cast forth; otherwise suffer him to lye so in his bed, as he shall best like of, and shal be least troublesome to him.

What cloathes we must use.

How the patient must lye in his bed.

You may with good successe put upon the *Crassa Meninx* oyle of Turpentine with a small quantity of *aqua vitæ* and a little Aloes and Saffron finely powdred, to cleanse or draw forth the *Sanies*, or matter. Or else,

℞. *Mellis rosar.* ℥ij. *farinæ hord. pulver. aloes, Mastich. & ireos Florent. an.* ℨß. *aquæ vitæ parum*; let them be incorporated together and make a detersive medicine for the foresayd use.

Paulus lib. 6. cap. 90.

Sometimes also the *Crassa Meninx* is inflamed after Trepaning, and swolne by a *Phlegmon*, that impatient of its place, it rises out of the hole made by the Trepan, and lifts its selfe much higher than the scull, whence grievous symptomes follow. Wherefore to prevent death, of which then wee ought to bee afraid, wee must inlarge the former hole with our cutting mullets, that the matter contained under the scull, by reason of whose quantity the membraine swells, may the more freely breathe and passe forth; and then we must goe about by the prescript of the Phisition to let him bleed againe, to purge and diet him. The inflammation shall bee resisted by the application of contrary remedies, as this following fomentation.

Remedies for the inflammation of the *Crassa Meninx.*

℞ *Sem. lini, althæ, fœn. psillij, ros. rub. an.* ℥j. *solani, plantag. an. M.* j. *bulliant in aquæ tepidæ communi, ex qua fiat fotus.* Anodyne and repelling medicines shall bee dropped into his eares; when it is exceedingly swolne, that the tumor may subside, you shall cast upon it the meale or floure of lentills, or vine leaves beaten with Goose grease. 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 and outwards, for so the matter will be poured forth and the substance of the braine not hurt nor touched. Many other Chirurgions, and I my selfe have done this in many patients with various successe.

How we must open the *Crassa Meninx* when it is impostumate

For it is better in desperate causes to try a doubtfull remedy than none at all; also it oft times happens whither 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 putrifaction of the proper substance, that the *Dura Mater* it selfe becomes blacke. Of which symptome the Chirurgion must have a great and speciall care.

The causes and remedies of the blacknesse of the *Dura Mater.*

Therefore that thou mayst take away the blacknesse, caused by the vehemencie of the contusion, you shall put upon it oyle of egges with a little *Aqua Vitæ*,

Remedies for contusion.

and

and a ſmall quantity of Saffron and Orris roots in fine powder: you ſhall alſo make a fomentation of diſcuſſing and aromaticke things boiled in water and wine; and *Vigoes* Cerat formerly deſcribed ſhall bee applyed. But if the harme come from congealed blood, you ſhall withſtand it with this following remedie.

For congealed blood.

℞ *Aquæ Vitæ* ℥ij. *granor. tinctorum in tenuem pulverem tritorum* ℥iß. *croci*, ℈ i. *Mellis roſat.* ℥ß. *ſarcocol.* ℥iij. *Leviter & ſimul bulliant omnia, & de colatura infundatur, quouſque nigrities fuerit obliterata.* If this affect come by the touch of the ayre, it ſhall bee helped with this following remedie.

For the hurt received by the ayre.

℞ *Tereb. ven.* ℥iij. *Mellis roſ.* ℥ij. *Vitellum ovi unum, farin. hordei* ℥iij. *croci.* ℈j. *ſarcocol* ℥j. *aq. vitæ* ℥j. *Incorporentur ſimul, & bulliant paululum.* This remedy ſhall be uſed untill the blackneſſe be taken away, and the membrane recover its priſtine colour.

What medicines make the *Craſſa Meninx* blacke.

But if this affect proceedes from the raſh uſe of medicines, it muſt bee helped by application of things contrary. For thus the offence cauſed by the too long uſe of moyſt and oyly medicines, may be amended by uſing catagmaticke & cephalick powders; but the heate and biting of acride medicines, ſhal be mitigated by the contrary uſe of gentle things; for both humide and acride things ſomewhat long uſed make the part looke blacke, that truely by generating and heaping up filth, but this by the burning and hardening heate. But when ſuch blackneſſe proceedes from putrifaction, *Iohn de Vigo* commends the following remedie.

Medicines againſt that putrefaction of the *Meninx*.

℞ *aquæ vitæ* ℥ij *mellis roſat.* ℥ß. But if the affect be growne ſo contumacious that it will not yeeld to this gentle remedy, then this following will bee convenient.

℞ *Aq. vitæ* ℥iij. *mellis roſ.* ℥j *pulver. Mercur.* ℥j. *unica ebullitione bulliant ſimul ad uſum dictum.* Or ℞ *aquæ vit.* ℥ß. *ſyrup. abſinth & mellis roſat. an.* ℥ij. *unguenti ægyptiaci* ℥ijß. *ſarcocol. myrrhæ, aloes, an.* ℥j. *vini albi boni & odoriferi,* ℥j. *bulliant leviter omnia ſimul, colentur ad uſum dictum.* But if the force of the putrefaction be ſo ſtubborne, that it will not yeeld to theſe remedies, it will be helped with *Ægyptiacum* (made with plantaine water in ſteed of Vinegar) uſed alone by its ſelfe, or with the powder of Mercury alone by it ſelfe, or mixt with the powder of Alome. Neither muſt we bee afraid to uſe ſuch remedies eſpecially in this extreame diſeaſe of the *Dura Mater*; for in *Galens* opinion the *Craſſa Meninx* after the ſcull is Trepaned delights in medicines that are acride, that is, ſtrong and very drying, eſpecially if it have no *Phlegmon*; and this for two reaſons; the firſt is, for that hard and dry bodies, ſuch as membranous bodies are, be not eaſily affected unleſſe by ſtrong medicines; the other is, which muſt be the chiefe and prime care of the Phyſition, 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 Braine, but alſo touching the Nerve which deſcends into it from the braine, ſuffer moſt vehement medicines, though it be placed ſo neere; certainely the *Craſſa Meninx* will endure them farre more eaſily and without harme.

Why the *Craſſa Meninx* eaſily endures acrid medicines.

But if by theſe meanes the putrifaction be not reſtrained, and the tumor bee encreaſed ſo much, that the *Dura Mater* riſing farre above the ſcull, remaines unmoveable, blacke and dry, and the patients eyes looke fiery, ſtand forth of his head and rowle up and downe with unquietneſſe 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 gangræne of a noble part, as alſo by extinction of the native heate.

Signes of death at hand.

Chap. XXII.

Of the cure of the Braine being ſhaken, or moved.

What the concuſſion of the braine is.

WEe have formerly declared the cauſes, ſignes and ſymptomes of the concuſſion, or ſhaking of the Braine, without any wound of the muſculous skinne, or fracture of the bone; wherefore for the preſent I will treate of the cure.

Therefore in this caſe, for that there is feare that ſome veſſell is broken under the ſcull, it is fit preſently to open the cephalicke veine. And let bloud bee 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 Phyſition.

Then when you have ſhaven away the haire, you ſhall apply to the whole head and often renue the forementioned cataplaſme, *Ex farinis, oleo roſaceo, oxymelite*, and other like cold and moyſt repelling medicines. But you muſt eſchew dry, and too aſtringent medicines muſt bee ſhunned, ſuch as are *Vnguentum de bolo* and the like; for they obſtruct too vehemently, and hinder the paſſage forth of the vapours both by the ſutures and the hidden pores of the ſcull. Wherefore they doe not onely not hinder the inflammation, but fetch it when it is abſent, or encreaſe it, when preſent. The belly ſhall bee looſed with a gliſter, and the acride vapours drawne from the head; for which purpoſe alſo it will bee good, to make frictions from above downewards, to make ſtraight ligatures on the extreame parts, to faſten large cupping-glaſſes with much flame to the ſhoulders and the originall of the ſpinall marrow, that ſo the revulſion of the blood running violently upwards to the braine, and ready to cauſe a phlegmon, 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 veines of the braine, and ſhutting the mouth and noſe to ſtrive powerfully to breathe. For thus the membranes ſwell up, and the blood gathered betweene them and the ſcull is thruſt forth; but not that which is ſhut up in the braine and membranes, of which if there be any great quantity, the caſe is almoſt deſperate, unleſſe nature aſſiſted with ſtronger force, caſt it forth turned into *Pus*. But alſo after a few dayes the *vena frontis* or forehead veine may be opened, as alſo the Temporall Arteries and Veines under the tongue, that the conjunct matter may bee drawne forth by ſo many open paſſages.

The opening of the *Vena Puppis*.

In the meane ſpare the Patient muſt keepe a ſpare diet, and abſtaine from wine, eſpecially untill the fourteenth day, for that untill that time the fearefull ſymptomes commonly reigne. But repelling medicines muſt be uſed untill the fourteenth day be paſt, then we muſt come to diſcuſſing medicines, beginning with the more milde, ſuch as is this following decoction.

A diſcuſſing fomentation.

℞. *rad. Alth.* ℥vj. *ireos, cyperi, calami arom. an.* ℥ij. *fol. ſalviæ, Majoran, betonic. flor. chamæm. melil. roſ. rub. ſtœchad. an. M.* ß. *ſalis com.* ℥iij. *bulliant omnia ſimul ſecundum artem cum vino rub. & aqua fabrorum, fiat decoctio.* Let the head bee waſhed therewith twiſe a day with a ſpunge. But yet when you doe this, ſee that the head bee not to much heated by ſuch a fomentation, or any ſuch like thing, for feare of paine and inflammation.

A caution in fomenting the head.

Then you ſhall apply the cerate of *Vigo* which hath power to diſcuſſe indifferently, to dry, and draw forth the humors which are under the ſcull, and by its aromaticke force and power to confirme and ſtrengthen the braine; it is thus deſcribed.

A deſcription of *Vigoes* Cerate.

℞. *Furfuris bene triturati* ℥iij. *farin. lentium* ℥ij. *roſ. myrtillor. foliorum & granorum ejus, an.* ℥j. *calam. aromat.* ℥iß. *chamæmel. melil. an. M.* ß. *nuces cupreſſi num.* vj. *olei roſacei, & chamæm. an.* ℥iij. *cereæ albæ* ℥iiß, *thuris, maſtichis, an.* ℥iij. *myrrhæ* ℥ij. *In pulverem quæ redigi debent redactis, & liquefactis oleis cum cera,*

omnia

omnia misceantur simul, & fiat mixtura, quae erit inter formam emplastri & ceroti.

Vigo saith, that one of the Duke of *Vrbins* Gentlemen found the virtue hereof to his great good. Hee fell from his horse with his head downewards upon hard Marble, he lay as if hee had beene dead, the blood gusht out of his nose, mouth and eares, and all his face was swollen and of a livide colour; hee remained dumbe twenty dayes, taking no meat but dissolved gellies, and Chicken, and Capon broths with sugar; yet he recovered, but lost his memorie, and faultered in his speech all his life after. To which purpose is that Aphorisme of *Hippocrates*; Those which have their Braine shaken by what cause soever, must of necessity become dumbe; yea also, as *Galen* observes in his commentary, loose both their sense and motion. That Cerat is not of small efficacie, but of marvellous and admirable force, which could hinder the generating of an abscesse, which was incident to the braine by reason of the fall.

A History. *Aph. 58 sect. 7.*

Yet there be many men so farre from yeelding to reason, that they stifly denie, that any impostumation can be in the braine, and augmenting this errour with another, they deny that any who have a portion of the braine cut off can recover, or rise againe; but the authority of ancient writers and experience doe abundantly refell the vanitie of the reasons whereon they relye. Now for the first in the opinion of *Hippocrates*; If those which have great paine in their heads have either *pus*, water or blood flowing from their Nose, mouth or eares, it helpes their disease.

That there may be an abscesse in the braine. *Aph. 10. sect. 5.*

But *Galen*, *Rhasis* and *Avicen* affirme that *Sanies* generated in the braine disburdens its selfe by the nose, mouth or eares; and I my selfe have observed many who had the like happen to them.

Gal. lib. de ma. aquat. intemp. Rhas. cap. 4. continent. Avicen. cap. de extr. fen. 3. lib. 4. cap. 20.

I was told by *Prethais Coulen* Chirurgion to Monsieur *de Langey*, that he saw a certaine young man in the towne of *Mans*, who often used to ring a great bell; hee once hanging in sport upon the rope, was snatch up therewith and fell with his head full upon the pavement: he lay mute, was deprived of his senses and understanding; and was besides hard bound in his belly. Wherefore presently a feaver and *delirium* with other horrid symptomes assayled him, for he was not Trepaned because there appeared no signe of fracture in the scull: on the seaventh day hee fell into a great sweate with often sneesing, by the violence whereof a great quantity of matter and *Pus* flowed forth of his eares, mouth and nose, then hee was eased of all his symptomes, and recovered his health.

A History.

Now for the second, *Galen* affirmes that he saw a Boy in *Smirna* of *Ionia* that recovered of a great wound of the braine, but yet such an one as did not penetrate to any of the ventricles.

Lib. 8. de. usu part. & com. ad aph. 18. sect. 6.

But *Guido* of *Caulia* saith, he saw one which lived and recovered after a great portion of the braine fell out by reason of a wound received on the hind part of his head.

In the yeare of our Lord 1538. while I was Chirurgion to the Marshall of *Montejan* at *Turin*, I had one of his Pages in cure, who playing at quoites received a wound with a stone upon the right *Bregma* with a fracture, and so great an effracture of the bone, that the quantity of halfe a hasell Nut of the braine came forth thereat. Which I observing, presently pronounced the wound to bee deadly; a Physition which was present contradicted my opinion, affirming that substance was no portion of the braine, but a certaine fatty body. But I with reason and experience in presence of a great company of Gentlemen, convinced the pertinacie of the Man; with reason; for that fat cannot be generated under the scull, for although the parts there contained be cold, yet because they are heated by the abundance of the most hot and subtle animall spirits, and the heate of vapours rising thither from all the body, they doe not suffer fat to concreate about them. But with experience, for that in the dissecting of dead bodies, there was never any fat observed there; besides also fat will swimme on the top of water; but this substance as marrowie, cast into the water presently sunke to the bottome.

Why fat cannot be generated under the scull.

Lastly, fat put to the fire becomes liquide and melts; but this substance being layd upon a hot Iron, became dry, shrunke up and contracted it selfe like a peece of leather; but dissolved not at all. Wherefore all those which were present cryed out, that my judgement was right of that substance that came forth of the scull. Yet

Signes of a fatty substance.

though it was cut away, Page recovered perfectly, but that he continued deafe all his life after.

Chap. XXIII.

Of the wounds of the face.

Why we treat in particular of wounds of the face.

HAving treated of the wounds of the head by their causes, signes and cure, it followes that we now speake of the wounds of the face, if but for this, that when they are carelessely handled, they leave deformed scarres in the most specious and beautifull part of the body. The causes are the same which are incident to the scull, that is, externall. But this may bee added to the kindes and differences of the wounds, that the life may be out of danger though any one whole part of the face, (as the eare, eye, nose, lippe) may bee cut away by a wound, but not so in the head or scull. Wherefore beginning at the wounds of the eye browes, wee will prosecute in order the wounds of the other parts of the face.

A thing to be observed in wounds of the eye-browes.

This is chiefely to bee observed in wounds of the eye-browes, that they are oft times cut so overthwart, that the muscles, and fleshy pannicle which moove and lift them up, are wholy rent and torne. In which case the eye liddes cannot be opened, and the eyes remaine 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 looke upon any thing, he is forc'd to hold up the eye-lids with his hand; with which infirmity I have seene many troubled, yet oft times not so much by the violence of the wound, as by the unskilfulnesse of the Chirurgion who cured them; that is, by the negligent application of boulsters, an unfit ligature and more unfit future. In this case the skilfull Chirurgion which is called to the patient shall cut off as much of the skinne and fleshy pannicle as shall serve the eyelids, that so they may by their owne strength holde and keepe open, without the helpe 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 poure thereon some of the balsome of my description, and shall lay such a medicine to the neighbouring parts.

R *Olei rosar.* ℥ß. *album. ovor. nu.* ij. *boli armeni, sanguinis Draconis Adastich. an* ℥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, Diacalcitheos,* or some other like, untill the wound be cicatrized. But such like and all other wounds of the face may be easily healed, unlesse they either bee associated with some maligne symptomes, or the patient body be repleate with ill humors.

Lagophthalmia is a quite contrary to the falling downe of the eye-lids.

There sometimes happens a quite contrary accident in wounds of the eye-browes, that is, when the eye-lids stand so up that the patient is forc'd to sleepe with his 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 kinde of abscesse, as a blow or stroake. It shall be cured by a crooked or semicircular incision made above the eye-liddes, but so that the extreames of the semicircle bend downewards, that they may be pressed downe and ioyned as much as is needefull to amend the stiffenesse of the eye-lidde. 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 bee performed as is fit.

CAHP.

CHAP. XXIIII.

Of the wounds of the eyes.

WOunds of the eyes are made by the violence of things prickings 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 soone as you can, lifting and turning up the eyelid with the end of a *spatula*. But if you cannot discerne this moate or little body, then put three or foure seedes of *Clary*, or *Oculus Christi* into the pained eye. For these seedes are thought to have a faculty to cleanse the eyes and take out the moats, which are not fastned deepe in, nor doe too stubbornely adhere to the membranes. For in this case, you shall use this following instrument, for heerewith wee open the eyelids the further, putting it betweene them and the eye, and also keepe the eye steddy, by gently pressing it, that so with our mullets wee may pull out the extraneous body; this is the figure of such an Instrument.

The deliniation of a Speculum oculi, fit to dilate and hold asunder the eyelids, and keepe the eye steddy; it is so made, that it may be dilated and contracted according to the greatnesse of the eyes.



All strange bodies taken out, let this medicine be put into the eye. Take the straines of a dozen egges, let them be beaten in a lead Mortar with a little Rose water, and so put into the eye; but let this repercussive be layd upon the eye and the neighbouing parts. R. *albumin. ovor. nu.* iiij. *pulver. aluminis rocha combusti* ℥ij. *sanguinis Draconis* ℥j. *aquae rosar. & plantag. an.* ℥ij. *agitentur simul*, make a repercussive, which you may frequently use. Or else apply cheese 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. R. *gum. arab & tragac. an.* ℥ij *pistij cydon. semin. portul. plant. sumach. an.* ℥ij *fiat mucag. cum aqua plantag. solan. & rosar. continuetur collyrium*, of which you may drop some both within and about the eye.

A repercussive to be put into the eye.

Divers repercussives to be applyed to the eye.

But note, that all such remedies must be applyed warme, both that they may the better penetrate by their moderate heate, 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 knowne many who have become dull of sight by the frequent using of medicines actually cold to the eyes.

Things actually cold are hurtfull to the eyes.

I have on the contrary seene 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 watrish humour ran forth thereat.

The milke of a woman which suckles a girle (for that is reputed the cooler) mitigates paine and cleanses, if it bee milked out of the Dug into the eye; to which purpose also the blood of Turtles, Pidgeons or Chickens much conduces, being dropt into the eye by opening a veine under their wings. Also this following cataplasme asswageth paine and inflammation, and hinders defluxion, being applyed to the eye and

Anodyne medicines for the eyes.

and the adjacent parts. R *Carnis pomorum ſub cinere calido decoctorum* ℥v. *vitellos ovorum num.* iij, *caſiæ fiſtulæ recenter extractæ* ℥ß, *mucaginis pſilij, althea & cydon. an.* ℥j. *farin. hordei parum, incorporentur omnia ſimul, fiat cataplaſma.*

Alſo ſheepes lungs boyled in milke and applyed warme, and changed as they grow cold, are good to aſwage paine. But if the too violent heate and paine ſhall not yeeld to ſuch medicines, but require more vehement, then *Foliorum Hyoſcyami, m.* j. *ſub cineribus coquatur, atque in mortario cum mucagine ſeminis pſilij, & cydonior, extract. in aquis ſolani & plantag. piſtetur*: then let this medicine be wrapped in a linnen cloath and applyed to the eyes and temples. The mucilages of *Pſilium*, or Flea-wort, and Quince ſeedes 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 neede of detergent and ſarcoticke medicines, then R *ſyrup. roſar. ſiccar.* ℥j. *aq. fenic. & rutæ an.* ℥ij, *aloes lotæ, olibani an.* ℥ß. mixe them for the foreſayd uſe. The galls of Scates, Hares, and Partridges diſſolved in eye-bright and fennell water, are fit for cleanſing ſuch wounds; as alſo this following *Collyrium*.

Narcotickes.

Detergent medicines.

R *Aquæ hordei* ℥j. *mellis deſpumati* ℥ij. *aloes ter lotæ in aqua plantaginis* and *ſacchari cand. an* ℥j. *fiat collyrium.* Alſo this enſuing medicine is very ſarcoticke.

A ſarcoticke medicine for the eyes.

R *mucagin. gummi olibani, arabici, tragacanth. & ſarcocol. in aq. hordei extract. an.* ℥ij. *aloes ter lotæ in aq. roſarum* ℥j. *ceruſ. uſtæ & lotæ, tutiæ præpar. an.* ℥ß *fiat collyrium.*

But here you muſt note, that the coate *Adnata* often ſwells ſo much by reaſon of a wound or ſome other injurie, and ſtands ſo forth by the falling downe of humores, acceſſe 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 lookes very red; ſo that the eye can neither bee ſhut nor opened.

Wherewith a young Chirurgion being deceived, determined to cut away this protuberancie of the *Adnata*, as though it had beene ſome ſuperfluous fleſh, and then to waſte it with cathæreticke powders, had I not forbidden him, telling him of the certaine danger of blindneſſe which would thereupon befall the patient. Wherefore I preſcribed a fomentation of chamomile, melilote, Roſe leaves, wormewood, rue, fennell, and aniſeedes boyled in milke with the rootes of Orris and marigolds. Then I preſently added this following fomentation, being more powerfull and drying.

A drying fomentation.

R *Nucis cupreſſi, gallar. balauſt. an.* ℥j. *plantag. abſinth. hippuris, flo. chamam. roſ. rub. an. M.* ß. *bulliant ſimul cum aqua fabrorum, & fiat decoctum pro fotu cum ſpongia.*

Beſides alſo you may apply a cataplaſme made of barly and beane flowre, the powders of Maſticke, Mirrhe, 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 layd egge in Embers untill it be hard, then pill off the ſhell, take forth the yolke, and in place thereof put a ſcruple of Roman Vitriol in fine powder, then put it in a linnen cloath and wring it hard forth into ſome cleane thing, and droppe thereof for ſome dayes into the eye, with a little ſmithes water wherein Sumach and Roſe leaves have beene boyled. I have found by experience the certaine force of this remedy; but if notwithſtanding there be a true fleſhy excreſcence upon the coate *Adnata*, it may be taken away by this following powder.

A medicine to conſume a fleſhy excreſcence without biting.

R *Oſſis ſepiæ, & teſtæ ovorum calcinatæ an.* ℥j, *fiat pulvis.* Calcined Vitriole, burnt Alome and the like may bee commodiouſly uſed to this purpoſe. Yet you muſt warily make uſe of all ſuch things, and alwayes lay repercuſſives about the eye, that no harme enſue thereof.

For diverſe times acride humors fall downe into the eye with ſuch violence, that they breake the Horny coate, 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 keepe ſhut not only the pained, but alſo the ſound eye, becauſe reſt is alwayes neceſſary for the grieved part. But one eye cannot bee moved without ſome motion of the other by reaſon of the connexion they have by their opticke and moving nerves, both the *Meninges*, the *Pericranium*, Veines, and Arteries; which is

the

the cauſe that when the one ſuffers, the other in ſome ſort partakes therewith.

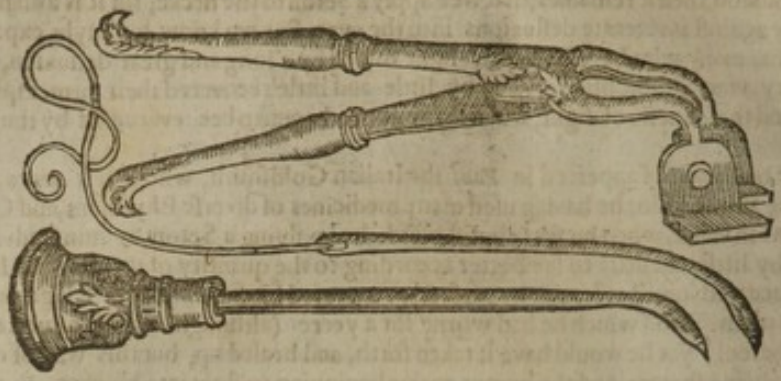
But if we cannot prevaile by all theſe formerly preſcribed medicines fit to ſtay the defluxion, then it remaines, that wee apply a Seton to the necke; for it is a ſingular remedy againſt inveterate defluxions into the eyes. For we know by dayly experience, that many who have had their ſight dulled by a long and great defluxion, ſo that they were almoſt blinde, have by little and little recovered their former ſplendour and ſharpeneſſe of ſight, when matter once begun to bee evacuated by the Seton. A Seton a good remedy againſt inveterate defluxions into the eyes.

The truth hereof appeared in *Paul* the Italian Goldſmith, who dwelt neere the Auſtine Friers. For he having uſed many medicines of diverſe Phyſitions, and Chirurgions in vaine, when he was almoſt blinde, 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 wearie of the Seton which he had worne for a yeere (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 againe beginning to flow into his eyes, ſo that he was in danger to become blinde, hee called me and made me againe to apply the Seton in his necke. Whereby recovering his former ſoundneſſe and perfection of ſight, he yet weares the Seton. A Hiſtory.

I alſo once freed by this kinde of remedy, by the appointment of the moſt learned Phyſition *Holleritus*, a certaine young man of twenty yeeres old, from the falling ſickeneſſe, who before had many fits thereof; the Ichorous humors the feeders of this diſeaſe being by this meanes, as it is moſt probable, drawne away and evacuated. A Seton good againſt the falling ſickeneſſe.

Wherefore ſeeing a Seton is of this uſe, I have thought good in this place to ſet downe in writing and by figure, the manner of making thereof, for the behoofe of young practitioners. Wiſh the patient to ſit on a low ſtoole, and to bend downe his head, that ſo the skinne and fleſhy pannicle may be relaxed; then muſt you with your fingers plucke up and ſever the skinne from the muſcles, and take hold of as much hereof as you can with your pincers, not touching the muſcles of the necke for feare of a convulſion and other ſymptomes; you ſhall then twitch the skinne which is held in the pincers moſt hard, when you ſhall thruſt the hot Iron through the holes made in the midſt of them; that alſo the nerves being ſo twitched, the dolorificke ſenſe may the leſſe come to the part. The wound muſt be made or burnt in long wayes and not tranſwharting, that ſo the matters may be the better evacuated by the ſtraight fibers. But the cauteryor hot Iron muſt have a three or elſe a foure-ſquare point and that ſharpe, 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 foure doubled threed of Cotton [or rather a skeane of ſilke] moiſtned in the white of an egge and oyle of Roſes; then after you have applyed pledgets dipped in the ſame medicine, binde up the part with a convenient ligature. The day following the necke muſt be annointed with oyle of Roſes, and the pledgets dipped in the former medicine applyed for ſome dayes after. But it will bee convenient to moiſten the Seton with a digeſtive made of the yolke of an Egge and oyle of Roſes, untill the ulcer caſt forth much matter; then you ſhall annoint the Cotton thred with this following remedie. R *terebinthinæ ven.* ℥iiij. *ſyrupi roſat. & abſinthij an.* ℥ß. *pulveris Ireos, diacrydij, agarici trochiſcati, & Rhei, an.* ℥ß. *incorporentur omnia ſimul & fiat medicamentum.* Which you ſhall uſe ſo long, as you intend to keepe open the ulcer. For it hath a facultie to draw the humors from the face, and cleanſe without biting. The manner of making a Seton.

A figure of the Pincers, actuall Cautery and Needle used in making a Seton.



I have found not long since by experience, that the apertion made with a long thicke Triangular needle of a good length like to a large Pack-needle, is lesse painefull, than that which is performed with the actuall cautery, which I formerly mentioned. Wherefore I would advise the young Chirurgion, that hee no more use the foresayd actuall cauterie. I have here given you the figure of the Needle.

The Figure of a Triangular Needle.



Chap. XXV.

Of Wounds of the Cheeke.

The use of a dry future.

SEeing a wound of the cheeke seemes to require a future, it must have a dry future (as they terme it) least that the scarre should become deformed. For that deformity is very greevous to many, as to women who are highly pleased with their beauties. Therefore you shall spread two peeces of new cloath of an indifferent fineneſſe, and proportionable bigneſſe with this ensuing medicine.

How to make a dry future.

℞ *pulveris mastichini, sanguinis Draconis, thuris, farinæ volatilis, tragacanthæ contusæ, gypsi, picis, sarcocollæ an.* ℥ij. *picis nigræ* ℥iß. *albumina ovorum quæ sufficiant, fiat medicamentum.* Apply the peices of cloath spread with this on each side of the wound one, some fingers breadth asunder, and let it alone till it be hard dryed to the skinne. Then you shall so draw them together with your needle and thred, that the fleſh by their sticking may also follow, and bee mutually adjoyned, as you may see it here expreſt. The wound shall be agglutinated by this meanes, together with the use of fit medicines, pledgets, ligatures. But all the ligatures and stayes which shall be used for that purpose must be fastened to the patients night-lappe.

A future fit for hare-lips.

The manner thereof.

But when the wound is great and deep, and the lips thereof are much distant the on from the other, there can be no use of such a dry future. Wherefore you must use a three or foure 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, and then wrappe the thred to and againe 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 hatts or capps, that they may not lose them.

The



The needle thus fastened, shall bee there untill the perfect agglutination of the wound; this kind of suture 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 suture will helpe nothing to agglutination, if there lye or remaine any skin betweene the lips of the wound; Wherefore you shall cut away whatsoever thereof shall be there, other-wise you must expect no union. Other kinde 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 thrid would cut the flesh; for which reason you shall take up much flesh with such Needles mentioned in this last described kinde of Suture, as this following figure shewes.

What harts lips are

The figure of the suture fit for cloven or Hare lips, as also the dilineation of the Needle about whose ends the thrid is wrapped over and under, to and againe.



To

A History.

To this purpose I will recite a history, to the end, that if any such thing happen to come to your hands, you may doe the like. A certaine Gascoine 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 stanke exceedingly, because he could get no Chirurgion untill three dayes after he was hurt. Wherefore I washed it with a decoction of wormewood, Aloes and a little *Ægyptiacum*, both to kill the wormes, and to fetch away all the putride matter; I discussed the tumor with a dissolving fomentation and cataplasme, I joyned together the lippes of the wound with the last described future. But I applyed this following medicine to the whole part.

A decoction good to wash away putrefaction.

℞ *Terebinth. veneta* ℥vj. *gummi elemi.* ℥ij. *pulveris boli armeni, san. drac. Mastiches, myrrhæ, aloes an.* ℥ß. *incorporentur simul. fiat medicamentum.* The wound was agglutinated within a few dayes, but that there remained a certaine little whole at the joyning of the lower jaw with the upper, wherein you could scarse put the head of a pinne; out whereof nevertheless much serous and thinne moysture flowed, especially when he either eate or spake; which I have also observed in many others. But for staying of this watrish humidity I dropped *Aqua fortis* into the bottome of the ulcer, and divers times put therein a little of the powder of burnt vitriole. Thus by Gods grace he recovered and became whole.

A small hole remaining after the cure of great wounds.

Chap. XXVI.

Of the wounds of the Nose.

How many wayes the nose may be hurt.

THe Nose many wayes suffers solution of continuity; as by a wound, fracture and contusion, and it is sometimes battered and broken on the upper part; which when it happens, you shall restore the depresst bones to their native seat and figure, with the end of a *spatula* or fit sticke wrapped about with towe, cotton or a linnen ragge. Then with pledgets dipped in an astringent medicine composed *ex albumine ovi, mastich, bolo armeno, sanguine drac. & Alumine usto*, and applyed to the side of the nose, hee shall labour to strengthen the restored bones, and then binde 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 unskilfulnesse of Chirurgions. Then must you put little pipes into the nose-thrills, and these not exactly round, but somewhat flat and depresst, tyed to the night-cappe on each side with a thred, least they should fall out. By the helpe 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 exspiration. But if all the nose, or some portion thereof shall bee wholy cut off, wee must not hope to restore it.

The cure of a broken nose.

The use of pipes in broken noses.

But if the Nose bee 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, depresst and wrested aside, seeing it is gristly; but it cannot be broken as the other which is of a bony nature.

The

The Figure of pipes to be put into the Nose-thrills.



Chap. XXVII.

Of the Wounds of the tongue.

THe tongue may bee so wounded, that either it may bee wholely cut off and deprived of some portion of the substance, or onely slit long wayes or atwhart. The losse of the substance cannot bee rapaired, 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, *A privatione ad habitum non est regressus.* But when it is cut or slit longwayes or sideways, it is easily restored by suture, if so bee that the cloven part yet adhere to the living body from whence it may draw both matter and forme of life. Therefore carefull servant shall straitly hold with a soft and cleane linnen cloth the body of the tongue, least it should slip away by reason of its slipperinesse, whilst the Chirurgion stitch it above and below; when he thinkes hee hath sufficiently sowed it, let him cut off the threed as neere to the knot as he can, least being left too long it might bee tangled with the teeth as hee eates, and so cause a hurtfull laceration or rending of the sowed parts. In the meane time let the patient eate barly creames, almond milkes, Gelleyes, cullisses and broathes, and the yolkes of egges; and let him often hold in his mouth Sugar of Roses and syrupe of Quinces; for such things besides their nourishing faculty, performe the part of an agglutinating and detergent medicine.

How many wayes the continuity of the tongue may be loosed.

The cure of a cloven tongue.

I have learned these things I have here set downe, neither from my Masters whom I have heard with atention, nor by reading of bookes, but they have beene such as I have tryed with happy successe in many; as in the sonne of Monsieur *de Marigny* president of the Inquisition, in *Iohn Piet* a Carpenter dwelling in the suburbs of Saint *German.*

But most apparently in a child of three yeeres old, the sonne of the great Lawyer Monsier *Comet*, 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 betweene 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 plucke it quit away; yet I changed that determination by considering the losse 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 physition in curing diseases.

A History.

I also thought thus with my selfe, the flesh of the tongue is soft, loose, fungous and spungie, neither is it altogether obvious to the externall injuries of the ayre; wherefore after that I had once or twise thrust through the needle and thred upwards and downewards, and for the rest ordered the child to be used and dieted after the man-

Nature oft doth strange things in the cures of diseases.

manner I lately mentioned, he grew well within a short time, and yet remaines so, speaking well and distinctly.

Chap. XXVIII.

Of the Wounds of the Eares.

How many wayes the unity of eares may be violated.

How to sow a wounded Eare.

THe eares are sometimes wholly cut off, sometimes but in part, otherwhiles they are onely slit, so that the rent portion as yet adhearing to the rest, is joyned 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 gangræne 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 performe the rest of the cure with pledgets and ligatures artificially fitted, and shall resist inflammation and other symptomes with fit medicines. But you must take speciall care that no superfluous flesh grow in the auditory passage, which may hinder the hearing; wherefore you shall keepe that passage free by stopping it with a peece of spunge. But you shall procure agglutination and consolidation of the gristly part (and therefore next to a bone most dry) with dry medicines. But those who have their eares quite cut off, can doe nothing but hide the deformity of their misse-hap with a cap, stuffed with Cotton on that side.

Chap. XXIX.

Of the Wounds of the necke and throate.

The differences of wounds of the necke and throate.

THe Wounds of the necke and throate are somewhiles simple, as those which onely use the continuity of the muscles; other whiles compound, such as those which have conjoyned with them a fracture of the bones, as of the *Vertebræ*, or hurt of the internall and externall jugular Veines, or sleepy Arteries; sometimes the *Trachea Arteria*, or Weazon, and the *œsophagus* or gullet are wounded; sometimes wholy cut off, whence present death ensues: Wherefore let not the Chirurgion meddle with such wounds, unlesse he first foretel the danger of death, or the losse 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 necke, whence a palsie ensues, and that absolutely incureable, 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 chiefely of the latter by reason it is grisly and without blood. The wounds of the gullet are knowne, by spitting of blood, by the breaking forth of meate and drinke 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 downewards. But we know the weazon is hurt, by casting up blood at the mouth with a continuall cough, and by the comming forth of the breath or winde by the Wound. The Wounds of the jugular Veines and sleepy Arteryes, if they be great, are usually deadly, because they cannot bee straitely bound up; for you cannot binde the throate hard without danger of choaking or strangling the patient. But for defect of a straite ligature in this case the fluxe of blood prooves deadly. If the recurrent Nerve of either side be cut, it makes the voyce 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 *Larinx*. For the cure if the wound be small, & not associated with the hurt of any norable vessell, nor of the Weazon and gullet, it is speedily and easily cured; and if there shall be neede you shall use a suture, then you shall put therein a sufficient quantity of Venice Turpentine mixed with bole-Armenicke; or else some of my Balsame of which this is the receipt. R. *Terebinth. venet.* ℔ ß *ſſ. gum. elemi* ℥iiij. *olei hypericonis* ℥iij. *boli armeni, & sang. draconis an.* ℥j. *aquæ vitæ* ℥ij. *liquefiant simul omnia lento igne, & fiat Balsamum ut artis est, addendo pulveris ireos Florent. aloes, Masticches, myrrhæ, an.* ℥j. I have done wonders with this Balsame in the agglutination of simple wounds, wherein no strange body hath beene.

The palsie followes upon wounds of the necke.

Signes that the gullet is wounded.

The wounds of the iugular veines and sleepy Arteries are deadly by accident.

By hurting the recurrent Nerve the voyce is hurt.

The discuption of the Authors Balsame.

Now

Now when you have put it in, lay upon it a plaister of *Diacalcitheos* dissolved in oyle of Roses and vinegar, as that which hath power to represse the flowing downe of humors, and hinder inflammation, or in steede thereof you may apply *Emp. de Gratia, Dei*, or *Emp. de Ianua.* The faculty of *Diacalcitheos.*

But if the jugular veines and sleepy Arteries bee cut, let the bleeding bee stayed, as we have shewed in a chapter, treating thereof. When the Weazon or Gullet are wounded, the Chirurgion shall sow them up as neatly as hee can; and the patient shall not endeavour to swallow any hard thing, but be content to bee fed with gellyes and brothes. When a gargarisme is needfull, this following is very good. The cure of the wounded Weazon and gullet.

R. *hordei M.* j. *florum rosar. p.* j. *passul. mund.* jujubarum *an.* ℥ß, *glycyrhizæ* ℥j. *bulliant omnia simul, addendo mellis ros. & Iulep. ros. an.* ℥ij. *fiat gargarisma, ut artis est.* A gargarisme.

With which being warme the Patient shall moysten his mouth, and throate, for it will mittigate the harshnesse of the part, aswage paine, cleanse and agglutinate, and make him breathe more freely. But that the Chirurgion 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 workes of nature are, if they be assisted by Art. The manifold use thereof.

A certaine servant of Monsieur *de Champaigne*, a gentleman of *Anjou*, was wounded in the throat with a sword, whereby one of the jugular veines was cut together with his Weazon. Hee bled much and could not speake, and these symptomes remained, untill such time as the wound was sowed up, and covered with medicines. But if the medicines at any time were more liquid, hee as it were sucked them by the wound and spaces betweene the stitches, and presently put forth at his mouth that which he had sucked or drawne in. Wherefore more exactly considering with my selfe, the greatnesse of the Wound, the spermaticke, and therefore dry and bloodlesse nature unapt to agglutination, of the affected part, but cheefely of the Weazon & jugular veine; as also for that the rough Artery is obnoxious to these motions which the gullet performes in swallowing, by reason of the inner coate, which is continued to the coate of the gullet, by which meanes these parts mutually serve each other with a reciprocall motion, even as the ropes which runne to the wheele of a pulley; furthermore weighing that the Artery was necessary for the breathing, and tempering the heate of the heart, as the jugular veines served for the nourishment of the upper parts; and lastly weighing with my selfe 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 neere and certainely at hand. And yet beyond expectation, rather by divine favour than our Art, he recovered his health. A History.

Equally admirable is this history following. Two Englishmen walked out of the Citty of *Paris* for their recreation to the wood of *Vincenne*; but one of them lying in waite to rob the other of his money and a massie chaine of gold which hee wore, set upon him at unawares, cut his throate 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 Weason and gullet. A strange History.

This murderer came backe to the citty; the other halfe dead, crawled with much adoe to a certaine Peasants house, and being dressed with such medicines as were present and at hand, he was brought to the Citty, and by his acquaintance committed to my cure to be cured.

I at the first, as diligently as I could, sowed up the Weason 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 downe into the stomacke, then I bound up the wound with medicines, pledgets and fit ligatures. After he was thus drest he begun to speake, and tell the name of the villaine the author of this fact, so that hee was taken and fastened to the wheele, and having his limbes broken lost his wretched life, for the life of the innocent wounded man who dyed the fourth day after he was hurt.

The like hurt befell a certaine Germane; who laye at the house of one *Peruts* in Another History.

the ſtreete of Nuts; he being franticke in the night cut his throate 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 recovering his ſpeech, which before could not utter one ſillable, freed from ſuſpition of the crime and priſon the ſervant, who lying in the ſame chamber with him, was upon ſuſpition committed to priſon, and confeſſing the thing as it was done, lived foure dayes after the wound, being nouriſhed with broathes put into his fundament like clyſters, and with the gratefull vapour of comfortable things, as bread newly drawne out of the Oven and ſoked in ſtrong wine.

Having thus by the Art of Chirurgery made the dumbe ſpeake 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 behinde, ſome penetrate more deepe, others enter not into the capacity thereof, other ſome peirce even to the parts contained therein, as the *Mediaſtinum*, Lungs, heart, midriffe, hollow veine, 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 winde breakes through the wound with noyſe, ſo that it may diſſipate, or blow out a lighted candle being held neere it. If the patient can ſcarſe either draw, or put forth his breath, which alſo is a ſigne that there is ſome blood fallen downe 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 bee little and faint, if the colour become pale, if a cold ſweate and frequent ſowning aſſayle him, and the extreame parts become cold, then death's at hand.

A Hiſtory.

Yet when I was at *Turin* I ſaw a certaine 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 ſtrucke ſome blowes afterwards, and followed his flying Enemie, ſome two hundred paces untill hee fell downe dead upon the ground; having opened his body, I found a wound in the ſubſtance of the heart, ſo large as would containe ones finger; there was onely much blood poured forth upon the midriffe.

Signes that the Lungs are wounded.

Theſe are the ſignes that the Lungs are wounded, for the blood comes foamie or frothy out of the wounds the patient is troubled with a cough, hee is alſo troubled with a great difficulty of breathing and a paine in his ſide, which hee formerly had not; he lyes moſt at eaſe when he lyes upon the wound, and ſometimes it comes ſo to paſſe, that lying ſo he ſpeakes more freely and eaſily, but turned on the contrary ſide, he preſently cannot ſpeake.

Signes that the midriffe is wounded.

When the *Diphragma* or midriffe is wounded, the party affected is troubled with a weight or heavineſſe in that place, hee is taken with a *Delirium*, or raving by reaſon of the ſympathy of the Nerves of the ſixth conjugation which are ſpread over the midriffe; difficulty of breathing, a cough and ſharpe paine trouble the patient, the Guts are drawne upwards; ſo that it ſometimes happens by the vehemency of breathing, that the ſtomacke and gutts are drawne through the wound into the capacity of the Cheſt; which thing I obſerved in two.

A Hiſtory.

The one of theſe was a Maſon, who was thruſt though the midſt of the midriffe, where it is Nervous, and dyed the third day following. I opening his lower belly, and not finding his ſtomacke, thought it a monſtrous thing; but at length ſearching diligently, I found it was drawne into the Cheſt, though the wound which was ſcarce

an

an inch broade. But the ſtomacke was full of winde, but little humidity in it.

The other was called captaine *Francis d'Alon* a Native of *Xantoigne*, who before *Rochell* was ſhot with a musket bullet, entring by the breaſt-bone neere to the ſword-like Griſtle, and paſſing through the fleſhy part of the midriffe, went out at the ſpace betweene the fifth and ſixth baſtard ribbes. The wound was healed up on the out ſide, yet for all that there remained a weakeneſſe of the ſtomacke, whereupon a paine of the gutts like to the colicke tooke 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 paine raging more violently in his belly than it was accuſtomed, hee dyed; though for the mitigating of the vehemency thereof *Simon Malmedy* and *Anthony du Val* both learned Phyſitions, omitted no kinde of remedy. The body of the diſeaſed was opened by the skilfull Chirurgion, *Iames Guillemeau*, who found a great portion of the collicke gut ſwelled with much wind gotten into the Cheſt, through the wound of the *Diaphragma*, for all it was ſo ſmall that you could ſcarſe put your little finger in thereat. But now let us returne 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 encreaſing feaver, the ſtinking of the breath, the caſting up of blood at the mouth, and other ſymptomes which uſually happen to theſe who have putrified and clotted blood poured out of the veſſells into the belly, infecting with the filthy vapour of the corrupt ſubſtance, the parts to which it ſhall come. Signes that there is blood poured into the capacity of the Cheſt.

But alſo, unleſſe the patient cannot lye upon his backe, he is troubled with a deſire to vomite, and covets now and then to riſe, whence hee often falls into a ſwoond, the vitall faculty which ſuſteines the body being broken and debilitated both by reaſon of the wound, and concreate or clotted blood; for ſo putting on the quality of poyſon, it greatly diſſipates and diſſolves the ſtrength of the heart.

It is a ſigne the ſpinall marrow is hurt, when a convulſion or Palſie, that is, a ſuddaine loſſe of ſenſe and motion in the parts thereunder, an unvoluntary excretion of the Vrine and other excrements, or a totall ſuppreſſion of them, ſeazes upon the Patient: Signes that the ſpine is wounded.

When the hollow veine and great Artery are wounded, the patient will dye in a ſhort time, by reaſon of the ſuddaine and aboundant effuſion of the blood and ſpirits, which intercepts the motion of the lungs and heart, whence the party dyes ſufforaced.

CHAP. XXX.

Of the cure of the Wounds of the Cheſt.

WE have read in *Iohn de Vigo*, that it is diſputed amongſt Chirurgions concerning the conſolidation of wounds of the Cheſt. For ſome thinke that ſuch wounds muſt bee cloſed up, and cicatrized with all poſſible ſpeed, leaſt the cold ayre come to the heart, and the vitall ſpirits flye away and bee diſſipated. Others on the contrary thinke 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 Chirurgery, that ſo the blood powred forth into the capacity of the Cheſt may have paſſage forth, which otherwiſe by delay would putrefie, whence wound enſue an increaſe of the feaver, a fiſtulous ulcer, and other pernicious accidents. *Vigo tract. de vulnerib. cap. 10.*

The firſt opinion is grounded upon reaſon and truth, if ſo bee 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 leaſt I may ſeeme raſhly to determine, I thinke it not amiſſe to ratifie each opinion with a hiſtory thereto agreeable.

A Hiſtory. Whileſt I was at *Turin*, Chirurgion to the Marſhall of *Montejan*, the King of France his Generall, I had in cure a ſouldier of *Paris*, whoſe name was *L'eveſque*, he ſerved under captaine *Renouart*. He had three wounds, but one more greevous than the reſt, went under the right breſt, ſomewhat deepe into the capacity of the Cheſt, whence much blood was powred forth upon the midriffe, which cauſed ſuch difficulty of breathing, that it even tooke away the liberty of his ſpeech; beſides, though this occaſion he had a vehement feaver, coughed up blood, and a ſharpe paine on the wounded ſide. The Chirurgion which firſt dreſt him, had ſo bound up the wound with a ſtraite and thicke 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 mee to cauſe the patient to lye halfe out of his bed, with his head downewards, and to ſtay his hands on a ſettle which was lower than the bed, and keeping himſelfe in this poſture, to ſhut his mouth and noſe that ſo his lungs ſhould ſwell; the midriffe be ſtretched forth, and the intercoſtall muſcles and thoſe of the *Abdomen* ſhould be compreſſed, that the blood powred into the Cheſt might be evacuated by the wound; but alſo that this excreſcion might ſucceede more happily, I thruſt my finger ſomewhat deepe into the wound, that ſo I might open the Orifice thereof being ſtopped up with the congealed blood; and certainely I drew out ſome ſeaven or eight ounces of putrified and ſtinking blood by this meanes. When he was layd 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 turne firſt on the one, and then on the other ſide and then, againe to lye out of his bed as before; for thus he evacuated ſmall, but very many clots of blood, together with the liquor lately injected; which being done, the ſymptomes were mittigated, and left him by little and little. The next day I made another more detergent injection, adding thereto wormewood, centaury, and Aloes; but ſuch a bitterneſſe did riſe up to his mouth together with a deſire to caſt, that he could not longer endure it. Then it came into my mind that formerly I had obſerved the like effect of the like remedy in the Hoſpitall of *Paris*, in one who had a fiſtulous ulcer in his Cheſt. Therefore when I had conſidered with my ſelfe that ſuch bitter things may eaſily paſſe into the Lungs, and ſo may from thence riſe into the Weazon 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 meanes recovered his health beyond my expectation.

Why bitter things muſt not be caſt in to the Cheſt.

But on the contrary, I was called on a time to a certaine *Germaine* gentleman who was runne with a ſword into the capacity of his Cheſt; the neighbouring Chirurgion had put a great tent into the wound at the firſt dreſſing, which I made to bee taken forth, for that I certainly underſtood there was no blood powred forth into the capacity of the Cheſt becauſe the patient had no feaver, no weight upon the *diaphragma*, nor ſpitted forth any blood. Wherefore I cured him in few dayes by onely dropping in ſome of my balſame and laying a plaſter of *Diacalcitheos* upon the wound.

Reade the Hiſtory of *Marylius* in *Galen, lib. 7. de Anatom. adminiſtra.*

The like cure I have happily performed in many others. To conclude, this I dare boldly affirme, that wounds of the Cheſt by the too long uſe of tents degenerate into Fiſtula's.

What harme enſues the too long uſe of tents.

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 ſhal finde that the patient is troubled with no or very little paine, and that the midriffe is preſſed downe with no weight, and that he breathes freely, then let the tent be taken forth, and the wound healed up as ſpeedily as you can by covering it onely with lint dipped in ſome balſame which hath a glutinative faculty, and layd ſomewhat broader than the wound; never apply liniments to wounds of this kinde, leſt the patient by breathing draw them into the capacity of the Cheſt. Wherefore alſo you muſt have

No liniments muſt be uſed in wounds of the Cheſt.

a care that the tent put into those kindes of wounds may be fastened to the Pledgets, and also have somewhat a large head, lest they should be drawne as we sayd into the capacity of the Chest, for if they fall in, they will cause putrifaction and death.

Let *Emplast. Diacalcitheos* or some such like bee applyed to the wound. But if, on the contrary, you know by proper, and certaine signes, that there is much blood fallen into the spaces of the Chest, then let the orifice of the wound bee kept open with larger tents, untill all the *Sanies* or bloody matter, wherein the blood hath degenerated, shall bee exhausted. But if it happen at any time, as assuredly it sometimes doth, that notwithstanding the Art and care of the Physition, the wound degenerates into a *Fistula*, then the former evill is become much worse. For *Fistula's* of the Chest, are scarse cured at any time, and that for divers causes. The first is, for that the muscles of the Chest are in perpetuall motion; Another is, because they on the contrary inside are covered onely with the membrane investing the ribbes, which is without blood. The third is, for that the wound hath no stay, by meanes whereof it may be compressed, sowed, and bound, whereby the lips being joyned together, the wound may at length be repleniished with flesh, and cicatrized.

Wounds of the Chest easily degenerate into a *Fistula*.

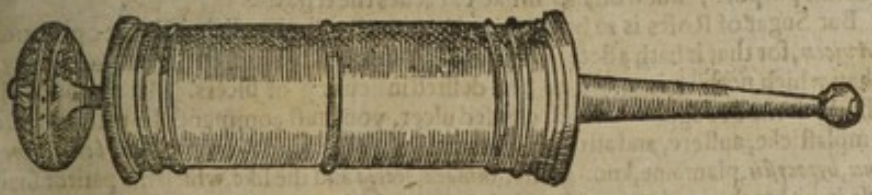
But the reason why wounds of the Chest doe every day heape up and poure forth so great a quantity of matter, seemes to be their vicinity to the heart, which being the fountaine of blood, there is a perpetuall effluxe ther eof from thence to the part affected. For this is natures care in preserving the affected parts, that continually and aboundantly without measure or meane it sends all its supplyes, that is, blood and spirits, to the ayde. Ad hereto, that the affected parts by paine, heate and continuall motion of the Lungs and midriffe, 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 affluxe of blood, there is a continuall effluxe of matter or filth, which at the last brings a man to a consumption; because the ulcerated part like a ravenous wolfe consumes more blood by the paine, heate and motion than can be ministred thereto by the heart. Yet if there bee any hope to cure and heale the *Fistula*, it shall bee performed, (after the use of diet, phlebotomie, and according to the prescript of the Physition) by a vulnerary potion, which you shall finde described when we treate of the *Caries* or rottennesse 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 doe I, if the putrefaction bee great, feare to mixe therewith *Ægyptiacum*. But you must have a care to remember and observe the quantity of the injected liquor, that you may know whether it all come forth againe after it hath performed its detergent office. For if any thereof remaine behinde in the corners and crooked passages, it hurts the part, as corrupted with the contagion thereof.

Why there flowes 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 forme of a Syring fit to make injection, when a great quantity of liquor is to be injected into any part.



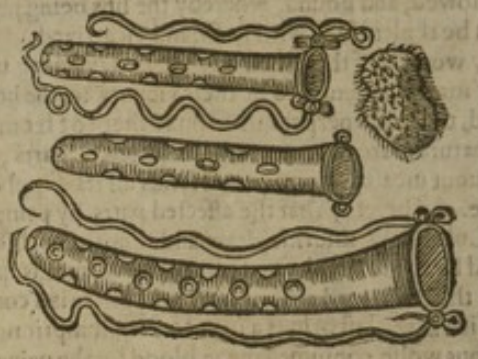
After the injected liquor is come forth, a pipe of gold, silver or lead, shall bee put into the fistulous ulcer; and it must have many holes in it, that so the filth may passe forth at them; it must be fast tyed with strings, that it may not fall into the capacity of the Chest.

A great spunge steeped in *aqua vitæ* and wrung forth againe, shall bee layd hot to the end or orifice thereof, both to hinder the entrance of the ayre into the Fistulous ulcer, as also to draw forth the filth thereof by its gentle heate, the which thing the patient

Patient ſhall much further if often times both day and night hee hold his breath, ſtopping his mouth and noſe, and lying upon the diſeaſed ſide, that ſo the *Sanies* may bee the more forcibly evacuated; neither muſt wee leave putting in the pipe, before that this fiſtulous ulcer ſhall bee 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 ſayd before in an *Empyema*.

The delineation of the pipes with their ſtrings and ſponges.

The reader muſt note that the pipes which are fit for this uſe, neede not have ſo many holes as theſe here expreſt; but onely 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 paine.



What wounds of the Lungs curable.

A wound made in the Lungs admits cure, unleſſe it bee very large; if it bee without inflammation; if it bee on the skirts of the Lungs, and not on their upper parts; if the patient conteine himſelfe 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 againe endeavour to expell by coughing, by which meanes they are onely able to expell that which is hurtfull and troubleſome to them, the ulcer is dilated, the inflammation augmented, the Patient waſtes away, and the diſeaſe becomes incureable.

The harme that enſues upon coughing in wounds of the Lungs.

How *Eclegma's* muſt be ſwallowed.

There have beene many *Eclegma's* deſcribed by Phyſitions for to clenſe the ulcer; which when the patient uſeth, he ſhall lye on his backe, to keepe them long in his mouth, ſo to relaxe the muſcles of the *Larinx*; for thus the medicine will fall by little and little alongſt the coates of the Weazon, for if it ſhould fall downe in great quantity, it would be in danger to cauſe coughing. Cowes, Aſſes, or Goates milke with a little honey, leaſt they ſhould corrupt in the ſtomacke, are very fit remedies for this purpoſe; but womans milke exceedes the reſt.

The utility of Sugar of roſes in ulcerated or wounded Lungs.

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 aſtrictive and ſtrengthening faculty, than which nothing is more to bee deſired in curing of ulcers. When you ſhall thinke it time to agglutinate the clenſed ulcer, you muſt command the patient to uſe emplaſticke, auſtere, and aſtringent medicines, ſuch as are *Terra ſigillata*, *bolus armenus*, *hypocyſtis*, plantaine, knot-graſſe, *Sumach*, *acacia* and the like, which the patient ſhall uſe in his brothes 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 hecticke feaver eaſily follows upon theſe kindes of wounds, and alſo upon the affects of the Cheſt and lungs, it will not be amiſſe to ſet downe ſomewhat concerning the cure thereof, that ſo the Chirurgion may know to adminiſter ſome helpe to his patient, whilſt a Phyſition is ſent for, to overcome this diſeaſe with more powerfull and certaine remedies.

CHAP.

Chap. XXXII.

Of the differences, causes, signes and cure of an Hecticke feaver.

A Hecticke feaver is so called; either for that it is stubborne and hard to cure and loose, as things which have contracted a habite; for *Hexis* in Greeke signifies a habite; or else for that it seazes upon the solide parts of our bodies called by the Greekes *Hexeis*; both which the Latine word *Habitus* doth signifie. The reason of the name.

There are three kindes, or rather degreees of this feaver. The first is when the hecticke heate consumes the humidity of the solide parts. The second is, when it feeds upon the fleshy substance. The third and uncureable is, when it destroyes the solide parts themselves. For thus the flame of a lampe first wastes the oyle, then the proper moysture of the weeke. Which being done there is no hope of lighting it againe what store of oyle soever you poure upon it. This feaver very seldome breeds of its selfe, but commonly followes after some other. The differences thereof.

The causes.

Wherefore the causes of a hecticke feaver are, sharpe and burning feavers not well cured, especially if their heate were not represled with cooling epithemes applyed to the heart and *Hypochondria*. If cold water was not fitly drunke. It may also succeede a Diary feaver which hath bin caused and begun by some long, great and vehement greef or anger, or some too violent labour, which any of a slender and dry body hath performed in the hot sunne. 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, stomacke, mesentery, wombe, kidneyes, Bladder, of the guts *Iejunum* and *Colon*, and also of the other Guts, of if the *Phlegmon* succeed some long *Diarrhœa*, *Lienteria* or bloody flix; whence a consumption of the whole body, and at last a hecticke feaver, the heate becomming more acride, the moysture of the body being consumed.

The signes.

This kinde of feaver as it is most easely to bee knowne, so is it most difficult to cure; the pulse in this feaver is hard, by reason of the dryenesse of the Artery which is a solide part; and it is weake 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 heate of the heart, which for that it cannot by reason of its weakenesse cause a great pulse to coole its selfe, it labours by the oftennesse to supply that defect.

Why in hecticks the heate is more acride after meate.

But for the pulse, it is a proper signe of this feaver, that one or two houres after meate the pulse feeles stronger than usuall; and then also there is a more acride heate over all the patients body. The heate of this flame lasts untill the nourishment bee distributed over all the patients body; in which time the dryenesse of the heart in some sort tempered and recreated by the appulse of moyst nourishment, the heate increases no otherwise than lime which a little before seemed cold to the touch, but sprinkled and moystned with water growes so hot, as it smoakes and boyles up. At other times there is a perpetuall equallity of heate and pulse in smallnesse, faintnesse, obscurity, frequency, and hardnesse, without any excerbation, so that the patient cannot thinke himselfe to have a feaver, yea hee cannot complaine of any thing, hee feeles no paine, which is another proper signe of an hecticke feaver.

The signes of a hecticke joyned with a putride feaver.

The cause that the heate doth not shew its selfe is, it doth not possesse the surface of the body, that is, the spirits and humors, but lyes as buried in the earthy grossenesse of the solide parts. Yet if you hold your hand somewhat long, you shall at last perceive the heate more acride and biting, the way being opened thereto by the skinne rarifyed by the gentle touch of the warme and temperate hand. Wherefore if at any time in these kinde of feavers the Patient feele any paine, and perceive himselfe troubled with an inequality and excesse of heate, it is a signe that the hecticke feaver is not simple, but conjoyned with a putride feaver, which causeth such inequality, as the heate doth more or lesse seaze upon matter subject to putrefaction; for a hecticke feaver of its selfe is void of all equality, unlesse it proceede from some externall cause,

as

as from meate; Certainely if an Hippocratique face may be found in any diſeaſe, it may in this, by reaſon of the colliquation, or waſting away the triple ſubſtance.

The cure. 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;

A ſymptomaticall hectick. as long as the diſeaſe the cauſe thereof, remaines uncured; as if an ulcer of the guts occaſioned by a bloody flixe 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 feedes the ſymptomes, as the cauſe the effect. But if it be a ſimple and eſſentiall hectick feaver,

An eſſentiall hectick. for that it hath its eſſence conſiſting in an hot and dry diſtemper, which is not fixed in the humors, but in the ſolide parts, all the counſell of the Phyſition muſt be to renue the body, but not to purge it; for onely the humors require purging, and not the defaults of the ſolide parts. Therefore the ſolide parts muſt bee refrigerated and humected; which wee may doe by medicines taken inwardly and applyed outwardly.

Things to bee taken inwardly. The things which may with good ſucceſſe bee taken inwardly into the body for this purpoſe, are medicinall nouriſhments. For hence we ſhall finde more certaine and manifeſt good, than from altering medicines, that is, wholly refrigerating and humecting without any manner of nouriſhment.

The benefit of medicinall nourithments. For by reaſon of that portion fit for nutriment which is therewith mixed, they are drawne and carried more powerfully to the parts, and alſo converted into their ſubſtance: whereby it comes to paſſe that they doe not humect and coole them lightly and ſuperficially, like the medicines which have onely power to alter and change the body, but they carry their qualities more throughly even into the innermoſt ſubſtance.

Of theſe things ſome are herbes, as violets, purſlaine, bugloſſe, endive, duckſ-meat, or water lentill, mallowes, eſpecially when the belly ſhall be bound. Some are fruits, as gourds, cowcumbers, apples, prunes, raiſons, ſweete almonds, and freſh or new pine-apple kernells. In the number of ſeedes are the foure greater and leſſer cold ſeedes, and theſe new, for their native humidity, the ſeedes of poppyes, berberries, quinces. The floures of bugloſſe, violets, water lillies, are alſo convenient; of all theſe things let broth be made with a chicken, to bee taken in the morning for eight or nine dayes, after the firſt concoction.

The choyce of meates. For meates; in the beginning of the diſeaſe, when the faculties are not too much debilitated, hee ſhall uſe ſuch as nouriſh much and long, though of hard digeſtion; ſuch as the extreame parts of beaſts, as the feete of Calves, Hoggs feete 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 Snailes, and ſuch as have beene gathered in a vineyard, of frogs, river Crabs, Eeles taken in cleere waters and; welcooked, hard egges eaten with the juice of Sorrell without ſpices, Whitings and ſtockfiſh. For al ſuch things becauſe they have a tough and glutinous juice, are eaſily put & 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 feede upon meats of eaſiy digeſtion, and theſe boyled rather than roaſted; for boyled meats humect more, and roaſted more eaſily turne into choler. Wherefore hee may uſe to eate Veale, Kid, Capon, Pullet, boyled with refrigerating and humecting hearbes; hee may alſo uſe Barly creames, Almond milkes, as alſo bread crummed and moyſtened with roſe water and boyled in a decoction of the foure cold ſeedes with ſugar of roſes; for ſuch a Panada cooles the liver, and the habite of the whole body, and nouriſheth withall.

The Teſticles, wings, and livers of young cockes, as alſo figges and raiſons. But if the patient at length begin to loathe and grow weary of boyled meates, then let him uſe roaſt, but ſo that he cut away the burnt and dryed part thereof, and feed onely on the inner part thereof, and that moyſtned in roſe water, the juice of Citrons, Oranges or Pomegranats. Let him abſtaine 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

rockes

rockes beaten upon by the waves. Asses milke newly milked and seasoned with a little salt, sugar, honey, or fennell, that it may not corrupt, nor grow sowre in the stomacke; or womans milke sucked from the dug by the patient, to the quantity of halfe a pint is much commended; verily womans milke 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 habite of body. For so it is very good against the gnawings of the stomacke, and ulcers of the Lungs, from whence a Consumption often proceeds. Let your milch Asse be fed with barly, oates, oake leaves; but if the patient chance to bee troubled with the fluxe of the belly, you shall make the milke somewhat astringent, by gently boyling it, and quenching therein pebble stones heated red hot. But for that all natures cannot away with Asses milke, such shall abstaine from it, as it makes to have acrid belchings, difficulty of breathing, a heate and rumbling in the *Hypochondria*, and paine of the head. Let the patient temper his wine with a little of the waters of Lettuce, purslaine and water-lillies, but with much bugloss water, both for that it moystens very much; as also for that it hath a specificke power to recreate the heart, whose solide substance in this kinde of disease is greivously afflicted. And thus much of things to be taken inwardly.

How Asses milke must be used in a hecticke.

Womans milke more wholsome than Asses.

These things which are to be outwardly applyed, are inunctious, bathes, epithemes, clysters. Inunctions are divers, according to the various indication of the parts whereto they are applyed. For *Galen* annoints all the spine with cooling & moderate astringent things, as which may suffice to strengthen the parts, and hinder their wasting, and not let the transpiration; for if it should bee letted, the heate would become more acride, by suppressing the vapours. Oyle of roses, water lillies, Quinces, the mucilages of Gumme tragacanth and arabicke extracted in water of nitghshade, with some small quantity of camphire, and a little waxe if neede require; but on the contrary, the parts of the breast must be annoynted with refrigerating and relaxing things; by refrigerating I meane things which moderately coole, 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 oyle of Violets, willowes, of the seeds of lettuce, poppyes, water-lillyes, mixing with them the oyle of sweete almonds to temper the astriction which they may have by their coldnesse. But you must have great care that the Apothecarie for covetousnesse in steed of these oiles newly made give you not old, rancide and salted oiles, for so in steed of refrigerating, you shall heate the part; for wine, honey and oyle acquire more heate by age; in defect of convenient oyles, we may use butter well washed in violet and nightshade water. The use of such inunctions, is to coole, humect and comfort the parts whereto they are used; they must be used evening and morning, chiefely after a bath.

Things to be outwardly applyed.

A caution in the choyse of Oyles.

Now for Bathes, we prescribe them either onely to moysten, and then plaine warme water wherein the flowres of Violets and water lillyes, willow leaves and barly have beene boyled, will be sufficient; or else not onely to moysten, but also to acquire them a fairer and fuller habite, and then you may adde to your bath the decoction of a sheepes head and Gather, with some butter. But the patient shall not enter into the bath fasting, but after the first concoction of the stomack, that so the nourishment may be drawne by the warmenesse of the bath into the whole habite of the body, for otherwise he which is sicke of a consumption and shall enter the bath with his stomacke empty, shall suffer a greater dissipation of the triple substance, by the heate of the bath, than 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 hecticke drynesse; then let him eate to his dinner some solide meats about nine of the clocke; and let him about foure of the clocke eate somewhat sparingly, meates of easie digestion to his supper. A little after midnight let him sup of some chicken broth or barly creame, or else two reare egges tempered with some rose water and sugar of roses in steed of salt. Some 4. or 5. hours after, let him enter into the bath, these things which I have set downe, being observed. When he comes out of the bath, let him be dryed and gently rubbed, with soft linnen cloathes, and annointed as I formerly

The differences of bathes.

Why the patients must not enter the Bath fasting.

How to prepare the body for the Bath.

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ly preſcribed, then let him ſleepe if he can for two of three houres in his bed. when he wakes let him take ſome Ptiſan, or ſome ſuch like thing, and then repeate his bath after the foreſayd manner. He ſhall uſe this bath thrice in ten dayes; But if the patient be ſubject to crudities of the ſtomacke, ſo that hee cannot ſit in the bath without feare of ſowning and ſuch ſymptomes, his ſtomacke muſt be ſtrengthened with oyle of Quinces, Wormewood and Maſtich, or elſe with a cruſt of bread toſted, and ſteeped in muskedine, and ſtrewed over with the powders of Roſes, Sanders, and ſo layd to the ſtomacke, or behinde neare to the thirteenth *vertebra* of the backe, under which place, Anatomie teaches, that the mouth of the ſtomacke lyes. Epithemes ſhall be applyed to the liver and heart, to temper the too acride heate of theſe parts, and correct the immoderate dryneſſe by their moderate humidity.

Things ſtrengthening the ventricle.

Epithemes.

Now they ſhall be made of refrigerating and humecting things, but chiefely humecting; for too great coldneſſe would hinder the penetration of the humidity into the part lying within. The waters of Bugloſſe, and Violets, of each a quarterne with a little white wine is convenient for this purpoſe. But that which is made of French barly, the ſeedes of gourds, pompions, or Cowcumbers of each three drams in the decoction, and mixed with much tempering with oyle of Violets, or of ſweete almonds, is moſt excellent of all other. Let clothes be dipped and ſteeped in ſuch epithemes, and layd upon the part, and renued as oft as they become hot by the heate of the part. And becauſe in hecticke bodies, by reaſon of the weakeneſſe of the digeſtive facultie, many excrements are uſually heaped up, and dryed in the guts, it will be convenient, all the time of the diſeaſe to uſe frequently gliſters made of the decoction of cooling and humecting hearbes, flowres, and ſeedes wherein you ſhall diſſolve *Caſſia* with ſugar and oyle of Violets, or water-lillies. But becauſe there often happen very dangerous fluxes in a confirmed hecticke feaver, which ſhew the decay of all the faculties of the body, and waſting of the corporeall ſubſtance, you ſhall reſiſt them with refrigerating and aſiſting medicines; and meates of groſſer nouriſhment, as Rice, and Cicers; and application of aſtringent and ſtrengthening remedies; and uſing the decoction of Oates or parched barly for drinke. Let the patient be kept quiet and ſleeping as much as may be, eſpecially if he be a child.

What a flux happening in a hecticke feaver indicates.

How children be cured.

For this feaver frequently invades children by anger, great and long feare, or the too hot milke of the nurſe, overheating in the Sunne, the uſe of wine and other ſuch like cauſes; they ſhall be kept in a hot and moyſt ayre, have another Nurſe, and bee anoynted with oyle of violets; to conclude, you ſhall apply medicines which are contrary to the morbificke cauſe.

Chap. XXXIII.

Of the wounds of the Epigaſtrium *and of the whole lower belly.*

Their differences.

THe wounds of the lower belly are ſometimes before, ſometimes behind, ſome onely 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 conteined parts; others grievouſly offend theſe parts, the liver, ſpleene, ſtomacke, guts, kidneyes, wombe, bladder, vreters, and great veſſells, ſo that oft times a great portion the of Kall falls forth. We know the Liver is wounded, when a great quantity of blood comes forth of the wound, when a pricking paine reaches even to the ſwordlike griſtle, to which the Liver adheares. Oft times more choler is caſt up by vomit, and the patient lyes on his belly with more eaſe, and content.

Signes of a wounded liver.

Signes that the ſtomacke and ſmaller guts are wounded.

When the ſtomacke or any of the ſmall guts are wounded, the meate and drinke break out at the wound, the *Ilia* or flankes ſwell and become hard, the hicket troubles the patient, and oft times he caſts up more choler, and greevous paine wrings his belly, and hee is taken with cold ſweates, and his extreme parts waxe cold.

Signes to know when the greater guts are wounded.

If any of the greater gutts ſhall bee hurt, the excrements come forth at the wound:

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When the Spleene is wounded, there flowes out thicke and blacke blood, the patient is oppreſſed with thirſt, and there are alſo the other ſignes, which wee ſayd uſe to accompany the wounded Liver. A difficulty of making water troubles the patient whoſe reines are wounded, blood is piſſed forth with the Vrine, and he hath a paine ſtretched to his groines and the regions of the Bladder and Teſticles. Signes that the Kidneyes are hurt.

The Bladder or Vreters being wounded, the flankes are pained, and there is a Tenſion of the *Pecten* or ſhare, blood is made in ſtead of vrine, or elſe the vrine is very bloody, which alſo divers times comes forth at the wound. When the wombe is wounded, the blood breakes forth by the privities, and the Symptomes are like thoſe of the Bladder. Signes that the Bladder is wounded. Signes that the wombe is wounded.

The wounds of the liver are deadly, for this part is the worke houſe of the blood, wherefore neceſſarie for life; beſides by wounds of the liver the branches of the Gate or Hollow veines are cut, whence enſues a great flux of blood not onely inwardly, but alſo outwardly, and conſequently a diſſipation of the ſpirits and ſtrength. Prognoſticks.

But the blood which is ſhed inwardly amongſt the bowels putrefies and corrupts, whence followes paine, a feaver, inflammation, and laſtly death. Yet *Paulus Ægineta* writes, that the lobe of the Liver may be cut away without neceſſary conſequence of death. *Lib. 6. cap. 88.* Alſo the wounds of the Ventricle and of the ſmall Guts, but chiefely of the *Iejunum* are deadly; for many veſſells runne to the *Iejunum* or empty Gut, and it is of a very nervous and ſlender ſubſtance, and beſides it receives the cholericke humour from the bladder of the Gall. So alſo the wounds of the Spleene, Kidneyes, Vreters, Bladder, Womb and Gall, are commonly deadly, but alwayes 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 lie in the innermoſt part of the body, ſo that they doe not eaſily admit of medicines. Furthermore, all wounds which penetrate into the capacitie of the belly, are judged very dangerous, though they doe not touch the conteined bowells; for the encompaſſing and new ayre entring in amongſt the bowells, 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 minde of the Chirurgion, whereby it happens, they divers times turne into Fiſtula's, as we ſaide of wounds of the Cheſt, and ſo at length by collection of matter cauſe death. Yet I have dreſſed many who by Gods aſſiſtance and favour have recovered of wounds paſſing quite through their bodies.

I can bring as a witneſſe the ſteward of the Portingall Embaſſadour, whom I cured at *Melun*, 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. A Hiſtorie.

Not long agone *Giles le Maiſtre* a Gentleman of *Paris* was runne quite through the body with a Rapier, ſo that he voyded 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. Another Hiſtorie.

Chap. XXXIIII.

The cure of wounds of the lower belly.

THe firſt cogitation in curing of theſe wounds ought to be whether they pierce into the capacitie of the Belly; for thoſe which paſſe no further than to the *Peritonæum* ſhall be cured like ſimple wounds which onely requre 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 ſeame as Furriers or Glovers uſe, as we formerly told you; and then you muſt put upon it a pouder made of The cure of a wounded Gut.

Maſtich, Myrrhe, Aloes and Bole. Being ſowed up, it muſt not bee 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 fallne downe 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 downe, and 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 downewards by ſuch a ſite, may give way to theſe which are fallne out through the wound. But often in this caſe, the Guts having taken cold by the encompaſſing aire, ſwell up & are diſtended with winde, the which you muſt diſcuſſe before you put them into their place, with a fomentation of the decoction of camomill, melilote, aniſeeds and fennell applyed with a ſponge, or conteined in a bladder; or elſe with chickens, or whelpes cut alive in the midſt and layd upon the ſwelling; for thus they doe not onely diſcuſſe 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 returne the more freely to their place.

The cure when the Kall falls out.

If the Kall ſhall fall out, it muſt be ſpeedily reſtored to its place, for it is very ſubject to putrifie; for the fat, whereof for the moſt part it conſiſts, being expoſed to the aire, eaſily looſes its native heate, which is ſmall and weake, whence a mortification enſues. Hence is that of *Hippocrates*; If the Kall fall out, it neceſſarily putrifies. The Chirurgion ſhall know whether it putrifie, or not, by the blackneſſe and the coldneſſe you may perceive by touching it; neither muſt you when it putrifies preſently reſtore it to its place, for ſo the contagion of the putrifaction would ſpread to the reſt of the parts: but what ſoever 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 its good after cutting of it away to leave the ſtring ſtill hanging thereat, that ſo you may plucke and draw forth whatſoever thereof may by being too ſtraight bound fall away into the capacity of the belly. Some thinke it to be better to let the Kall thus bound to hang forth untill that portion thereof which is putrified fall away of it ſelfe, 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 *Gaſtroraphia*; but this kind of ſuture is thus made. The needle at the firſt putting in muſt onely take hold of the *peritonæum*, & then on the oppoſite ſide onely of the fleſh, letting the *peritonæum* alone, and ſo goe along putting the needle from without inwards, and from within outwards, but ſo that you onely take the muſculous fleſh and skinne over it, and then onely the *peritonæum*, untill you have ſowed up all the wound. Hee which doth otherwiſe ſhall undergoe this danger, that whereas the coate *peritonæum* is of it ſelfe without blood, it being devided, or wounded cannot of it ſelfe be united to it ſelfe, therefore it requires an intercourſe of fleſh: otherwiſe unleſſe it be thus united by the benefit of the fleſh intermixed therewith, there would remaine an uncurable Tumour after the wound is cicatrized on the outſide. But that which wee ſayd before according to *Galens* minde, 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 certaine ſmall vent by which the quitture may paſſe forth, which being wholly clenſed and exhauſted, the wound muſt be quite healed up. But the wounds which ſhall penetrate into the ſubſtance of the liver, ſpleene, ventricles, and other bowells, the Chirurgion ſhall not ſuffer them to be without medicines as if they were deſperate, but here ſhall ſpare neither labour nor care to dreſſe them diligently. For doubtfull hope is better than certaine deſpaire. The bladder, wombe, and 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 referre the cure thereof to the wounds of the Muſcles. Yet I will ſay this by the way, that wounds of the fat how deepe ſoever they be, if they be onely ſimple, may be dreſſed without putting in of any Tent, but onely dropping in ſome of my balſame, and then laying upon it a plaiſter of *Gratia Dei*, or ſome ſuch like, for ſo they will heale in a ſhort time.

Hip. Aph. 58. ſect. 6.

Lib. 6. Meth. cap. 4.

The cure of the wounded fat.

Chap.

Chap. XXXV.

Of the wounds of the Groines, Yard and Testicles.

When the Groines and neighbouring parts are wounded, we must first consider whether they pierce to within: and if they doe penetrate, to what inward parts the come, whether to the bladder, the wombe, or right gut: for these parts are such neare 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 keepe all things quiet at home, therefore the Chirurgion 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 varyed 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 Legges.

Wounds which have beene received on the inside of the Thighes, have often caused suddaine death, if they have come to the veine *Sephena*, or the great Artery, or the Nerves the associates of these vessells. 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 proverbe is true. *La mano al petto, la gamba al letto*, [that is, the hand on the breast, and the legge on the bed.] But when they penetrate more deepely into the substance of the part, they bring horrid and fearefull symptomes, as an inflammation, an absceese, from whence oft times such aboundance of matter issues forth, that the Patient falls into an *Atrophia* and consumption. Wherefore such wounds and ulcers require a carefull and industrious Chirurgion, who may fitly make incisions necessary for the corrupt parts, and callosity of the fistulous ulcer. Some Chirurgions have beene so bold as to sowe together the end of the Tendons of the Ham, and of other joynts, when they have beene quite cut asunder. But I durst never attempt it for feare of paine, convulsions and the like horrid symptomes. For the wounds of that large Tendon which is composed in the calfe of the Legge by the concourse of three muscles, and goes to the heele, I have observed that when it hath beene cut with a sword, that the wounds have beene long and hard to cure; and besides when at the last they have beene healed, as soone as the Patient hath got out of his bed, and endeavoured to goe, they have growne ill and broke open againe. Wherefore in such like wounds let the Patient have a care that he begin not to goe, or too boldly to use his hurt leg before it be perfectly cicatrized and the scarre growne hard. Therefore that the patient may be in more safety, I judge it altogether necessary, that he use to goe with Crutches, for a good while after the wound is perfectly healed up.

Why wounds of the inside of the Thigh are oft times deadly.

The large Tendon of the heele 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 externall things; as by things which contuse, batter and grinde in sunder, as by the blow of a stone, cudgell, hammer, lance, bullet out of a gun, or crossebow; 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 venemous thing, as of a Sea Dragon; or the edge of some cutting thing, as a sword or Rapier; or of stretching things which violently teare 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 superficiary

Differences drawne from things wounded.

perficiary and ſhort, others deepe and long; ſome runne alongſt the nervous body, others runne broadwayes; ſome cut the part quite aſunder, others onely a portion thereof. The ſymptomes which follow upon ſuch wounds are, vehement paine, and deſluxion, inflammation, abſceſſe, feaver, *delirium*, ſowning, convulſion, gangrene, ſphacell; whence often death enſues by reaſon of that ſympathy, which all the nervous parts have with the braine. Amongſt all the wounds of the nervous parts, there is none more to be feared than a puncture, or pricke, nor any which cauſeth more cruell and dangerous ſymptomes. For by reaſon of the ſtraitneſſe of the wound, medicines can neyther be put in, nor the ſanious matter paſſe forth: now the ſanious matter by long ſtay acquires virulencie, whereby the nervous parts are tainted and ſwollne, ſuffer paine, inflammation, convulſions and infinite other ſymptomes; of theſe the wounds are moſt dangerous, by which the nervous and membranous bodies are but halfe cut aſunder. For the portion whereof which remaines whole, by its drawing and contracting its ſelfe towards the originall, cauſeth great paine and convulſion by ſympathy. The truth hereof is evident in wounds of the head, as when the *pericranium* is halfe cut, or when it is cut to apply a Trepan. For the cutting thereof infers farre greater paine, than when it is cut quite aſunder. Wherefore it is ſafer, to have the nervous body cut quite off, for ſo it hath no cõmunity, nor conſent with the upper parts, neither doth it labour, or ſtrive to reſiſt the contraction of its ſelfe; now this contrariety, and as it were fight, is the cauſe of paine; yet there ariſes another miſery from ſuch a wound, for the part whereinto the nerve which is thus cut inſunder paſſes, thence forwards looſeth its action.

Their ſympe tomes.

Why a puncture of a nerve is deadly.

Chap. XXXVIII.

Of the cure of wounds of the nervous parts.

A wound of the nervous parts indicates contrary to the generall cure of wounds.

MOſt is the ancient doctrine of the ancient Phiſitions, 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, chiefely if they be too ſtraite, 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 paſſe freely forth and the medicine enter well in. Yet I in many cures have not followed this counſell, but rather that which the common indication requires.

A Hiſtorie.

That cure is in freſh memory which I performed upon Monſieur *le Cocq*, a Proctor of the ſpirituall court, who dwelt in our Ladies ſtreete; 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 beefe, 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 balſame warme, & putting about it a repelling & aſtringent medicine, & by this meanes 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 doe well in a plethoricke body, or in a body replete with ill humours, or endued with exquiſite ſenſe. Therefore in ſuch a caſe it will be ſafer to follow the courſe here ſet downe. For wounds of the nerves doe not onely differ from other wounds, but alſo among themſelves in manner of curing. For although all medicines which draw from farre, and waſte ſanious humors, may be reputed good for the wounds of the nerves; yet thoſe which muſt be applyed to punctures and to thoſe nerves which are not wholly laid open, ought to be far more powerfull, ſharpe and drying, yet ſo that they be not without biting, that ſo penetrating more deepe they may draw forth the matter, or elſe conſume and diſcuſſe that which eyther lies about the nerves, or moiſtens their ſubſtance. On the contrary when the ſinewes are bared from fleſh and the adjoyning particles, they ſtand in neede but of medicines, which may onely dry. Here you may furniſh your ſelves with ſufficient ſtore of medicins good for the nerves howſoever pricked. As R. *Terebinth. ven. & olei veteris* aa. ℥j. *aquæ vitæ parum.* Or R. *olei Terebinth.* ℥j. *aquæ vitæ* ℥j. *euphorb.* ℈ß. Or R. *radices Draconiæ, Brioniæ, valerianæ, & gentianæ exſiccatas, & in pulverem redactas, miſce cum decocto centaurij,*

Medecines fit for wounds of the nerves.

aut

aut oleo, aut exungia veteri; drop hereof warme into the wound as much as shall suffice. Or else put some Hogges, Goose, Capons, or Beares grease, old oile, oile of Lillyes or the like, to *Galbanum*, pure Rozin, *opopanax* dissolved in *aqua vitæ* and strong vinegar. Or R. *olei hypericonis, sambuci, & de euphorbio an.* ʒj. *sulphuris vivi subtiliter pulverisati* ʒß *gummi ammoniaci, bdellij, an.* ʒij. *aceti boni* ʒij. *vermium terrest. præparat.* ʒj. *bulliant omnia simul ad consumptionem aceti.* Let as much hereof as shall suffice be dropped into the wound; then apply this following cerate, which drawes very powerfully. R. *olei suprà scripti* ʒj. *terebinth. venet.* ʒß. *diachylonis albi cum gummi,* ʒx. *ammoniac. bdellij in aceto dissolutorum an.* ʒij. *resin pini, gum. elemi, picis navalis an.* ʒv. *ceræ quod sufficit, fiat ceratum satis molle.* We must use somewhiles one, somewhiles another of these medicines in punctures of the Nerves with choise and judgement, according to their conditions, manner, depth, and the temperaments and habit of the wounded bodies. But if the paine 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, thinne and virulent matter or filth, then you shall poure into it scalding oyle, and shall touch three or foure times not onely the surface of the wound but the bottome thereof with a ragge 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 paine will be eased. So in the most grievous paines of rotten teeth, the thrusting of an hot iron into their roots, or stopping them with cotten dipped in oyle of Vitrioll, or *aqua vitæ*, gives most certaine ease; for by burning the Nerve which is inserted into their roots, the sense and so consequently the paine is taken away. So also in malignant, gnawing, eating, and spreading ulcers, which are alwayes associated with much paine, the paine ceases by applying an Escharoticke, as the pouder of Alume, or Mercury, or *ægyptiacum* made somewhat more strong than usuall. That the yong Chirurgion may be more ready for this practise and the use of the former remedies, I have thought good to insert the following History both for the lateneſse of the thing and the pleasing memory of the most laudible Prince.

what wounds of the Nerves must be burnt.

A certaine Anodyne in paine of the teeth.

Why Escharoticks must be used to spreading ulcers.

Charles the ninth the French King being sicke of a feaver, Monsieur *Chapellan* and *Castellan* his Phisitions thought it fit hee should be let blood; for the performance whereof, there was called a Chirurgion wondrous famous for that businesse; but when as he by chance had pricked a nerve in stead of a veine, the King cryed out, that he felt a mighty paine in that place. Then I bid, that the ligature should straightwayes be loosed, otherwise the arme would presently be much swelled. But he going slowly about it, behold the arme begun to swell with such contraction, that he could not bend it, nor put it forth, and cruell paine molested not onely the pricked particle, but all the whole member besids. I forthwith laid upon the wound a plaister of *Basilicõ*, to hinder the agglutination thereof, & then I wrapped all the arme in a double linnen cloth dipped in oxycrate, putting upon it an expulsive ligature, which beginning at the wrist & ending at the top of the shoulder, might keepe the blood and spirits from feare of defluxion and inflammation. This being thus performed, we went aside to consult what was necessary to be done, both to asswage the paine, as also to divert the other symptomes, which usually happen upon punctures of the nerves. I being desired, thus delivered my opinion, that in my minde, there were nothing better, than presently to drop into the wound some oyle of Turpentine warmed and mixed with a little *aqua vitæ*. And then all the arme should be covered with a plaister of *Diacalcitheos* dissolved in vinegar and oyle of Roses, bound over and besides with the expulsive ligature, which we formerly mentioned. For the oyle and *aqua vitæ* have a faculty to penetrate into the bottome of the wound, & to exhaust and dry up, the serous and virulent humour, which sweats from the substance of the pricked nerve; and also to mitigate the paine by its actuall heate. Furthermore the emplaster *Diacalcitheos* hath a faculty to dissolve the humour which hath already fallen downe into the arme, and to hinder the entrance and defluxion of any new matter. And the ligature is such as by its moderate astriction would serve to strengthen the muscles, and to presse out and repell the humours which were fallen downe into the upper part, and to prohibite that which is ready to fall downe. Mine advice being approved of the Physitions

A famous history.

both in word and deede, the paine was mitigated. But the humour ſtayed in the part, for the diſſolving and drying whereof, this following remedy was uſed.

A diſcuſsing and drying cata, laime.

℞ *far. hordei & orobi, an.* ℥ij. *flor. chamæm. & melilot. an.* p. ij *butyr. recentis ſine ſale* ℥jß. *lixivij barbitonſoris quod ſufficit, fiat cataplaſma ad formam pultis.* By theſe remedies the King at the laſt after three months ſpace was perfectly healed, ſo that there remained no ſigne of the depraved action in the part. But if at any time there ſhall be ſo great contumacie, that it will not yeeld to theſe meanes, but that there is immi. nent danger of a convulſion; it will bee 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 indeede 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 paine which afflicted the King would not yeeld to the preſcribed remedies, eyther to poure in ſcalding oyle, or elſe to cut the ſinew quite aſunder.

A Hiſtorie.

For the late and ſad memory of Miſtris *Courtin* dwelling in the ſtreete of the holy-Croſſe was in our mindes, who of a veine not well opened in her arme fell into a Gangræne and totall mortification of that whole part, of which ſhee died, becauſe ſhee was not dreſſed with the formerly mentioned medicines. Yet wee muſt abſteine from theſe too powerfull remedies, when the pricked nerve ſhall lye bare, for elſe the paine would be encreaſed, and more grievous ſymptomes follow. Wherefore as I have formerly wiſhed, more milde medicines muſt be applyed, which may dry up the ſerous humour without biting or acrimonye, as ℞. *terebinth. venet. in aq. roſ. lotæ* ℥ij. *boli armen. ſubtiliter pulveriſati,* ℥ij. *incorporentur ſimul.* Our Baſſame alſo is excellent in this caſe, and this of *Vigoes* which followes.

An anodyne and Sarcotick Baſſame.

℞. *olei roſar. omphacini* ℥jß. *olei de terebinth.* ℥iij. *ſucci plantag.* ℥ß. *ſemin. hypericonis aliquantulũ contriti. m.* ß. *tutiæ præpar.* ℥iij. *calcis decies lotæ cum aqua plantagin.* ℥ij. *antimonij* ℥i. *ſevi bircini, & vitulini, an* ℥v. *vermium terreſtrium cum vino lotorum* ℥jß. *bulliant omnia ſimul dempta tutia in cyatho decoctionis hordei, ad conſumptionem aquæ & vini, colentur, rurſumq; igni admoveantur, addendo tutiam, & fiat linimentum cum cera alba, &* ℥ß. *croci.* This liniment aſſwages paines, and covers the bared nerves with fleſh. This cure of punctured nerves, may with choiſe and judgement and obſerving the proportion of the parts be transferred to the pricked Tendons and membranes. But take this as a generall and common rule, that all nervous bodies howſoever hurt, are to bee comforted by anointing them with hot oyles, ſuch as the oiles of Bayes, Lillies, of Wormes, 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 armepits and groines. Neither doe I thinke it fit in this place to omit an affect which ſometimes happens to the large Tendon of the heele, of which we formerly made mention. For it oft times is rent or torne by a ſmall occaſion without any ſigne of injury or ſolution of continuity apparent on the outſide as by a little jumpe, the ſlipping aſide of the foote, the too nimble getting on horſeback, or the ſlipping of the foote out of the ſtirrop in mounting into the ſadlde. When this chance happens it will give a cracke like a Coachmans whip above the heele, where the tendon is broken, the depreſſed cavity may be felt with your finger, there is great paine in the part, & the party is not able to goe. This miſchance may be amended by long lying and reſting in bed, and repelling medicines applied to the part affected in the beginning of the diſeaſe, for feare of more grievous ſymptomes; & then applying the Blacke plaiſter, or *Diacalcitheos* or ſome other ſuch, as neede ſhall require; neither muſt we hereupon promiſe to our ſelves or the patient certaine or abſolute health. But on the contrary at the beginning of the diſeaſe we muſt foretell, that it wil never be ſo cured but that ſome reliques may remaine, 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 thickeneſſe and contumacie cannot eaſily be adjoyned, nor being adjoyned, united.

A generall rule for all wounds of all Nervous parts.

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. Indeede 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 engirt, and into which the Nerves are inserted: whereby it comes to passe, that the exquisite sense of such like parts will easily bring maligne symptomes, especially if the wound possesse an internall, or as they terme it, a domestique part of them; as for example, the armepits, the bending of the arme, the inner part of the wrist, and ham, by reason of the notable Veines, Arteries and Nerves of these parts, the loosed continuity of all which brings a great flux of blood, sharpe paine and other malignant symptomes; all which we must resist according to their nature and condition, as a flux of blood with things staying bleeding; paine with anodynes. If the wound be large and wide, the severed parts shall be joyned with a future, leaving an orifice in the lower part, by which the quitture may passe forth. This following pouder of *Vigoes* description must be strewed upon the future.

Why wounds of the joynts are malignant.

The cure.

℞. *thuris, sang. draconis, boli armen. terræ sigill. an.* ℥ij. *aloes, mastich. an.* ℥j. *fiat pulvis subtilis.* And then the joynt must bee wrapped about with a repercussive medicine composed of the whites of egges, a little oyle of Roses, Bole, Mastich, and barly floure. If it be needefull to use a Tent, let it be short and according to the wound thicke, lest it cause paine: and moreover let it bee annointed with the yolke of an egge, oyle of Roses, washed turpenetine and a little saffron. But if the wound bee more short and narrow, it shall be dilated, if there be occasion, that so the humour may passe away more freely. You must rest the part, and beware of using cold, relaxing mollifying, humecting, and unctuous medicines, unlesse peradventure the sharpenesse of the paine must be mitigated. For on the contrary, astringent and desiccant medicines are good, as this following cataplasme.

An astringent and drying cataplasme.

℞. *furfur. macri, farin. hordei, & fabarum. an.* ℥iiij. *florum cham. & melil. an* m.ß. *terebinth.* ℥iij. *mellis communis* ℥ij. *ol. myrtini* ℥j *oxymelitis, vel oxycrat. vel lixivij com. quantum sufficit, fiat cataplasma ad formam pultis.* Or you may compose one of the Lees of wine, Wheate branne, the pouder of Oaken barke, cypresse nuts, galls and Turpentine and such like, that have an astringent, strengthning and drying qualitie, and thereby asswaging paine, and hindering the defluxion of humours. This following medicine is astringent and agglutinative.

℞. *Terebinth. venet.* ℥ij. *aq. vitæ parum, pulveris mastich. aloes, myrrha, boli armen. an.* ℥ij. And also our balsame will be good in this case, if so be that, you adde hereto so much pouder which dryes without acrimonie as occasion shall serve. I admonished you before to take heede of cold, and now againe; for it is hurtfull to all wounds and ulcers, but especially to these of the nervous parts; hence it is that many dye of small 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 heate, causes blackenesse, cold aguish fits, convulsions and distentions. Now divers excrements are cast forth of wounds of the joynts, but chiefely albugineous, that is, resembling the white of an egge, and mucous, and sometime a very thinne water, all which savour of the nature of that humour which nourisheth these parts. For to every part there is appropriate for his nourishment and conservation, a peculiar Balsame, which by the wound flowes out of the same part, as out of the branches of the Vine, when they are pruned, their radicall moisture or juice flowes, whence also a *Callus* proceeds in broken bones. Now this same mucous and albugineous humour, slow and as it were frozen flowing from the wounded joynts, shewes the cold distemper of the parts, which causes paine, not to be orecome by medicines onely potentially hot. Wherefore to correct

Aphor. 20. *sect.* 5.

What matter usually flowes from wounds of the joynts.

correct that, we must apply things actually hot, as beasts and swines bladders halfe full of a discussing decoction, or hot bricks quenched in wine. Such actuall heate helps nature to concoct and discusse the superfluous humour impact in the joynts, and strengthens them; both which are very necessary, because the naturall heate of the joynts is so infirme that it can scarse actuate the medicine unlesse it be helped with medicines actually hot. Neither must the Chirurgion have the least care of the figure and posture of the part, for a vicious posture increases ill symptomes, uses to bring to the very part though the wound be cured, distortion, numnes, incurable contraction; which fault least he should runne into, let him observe what I shall now say; If the forepart of the shoulder be wounded, a great boulster must be under the armepit, and you must carry your arme in a scarfe, so that it may beare up the lower part of the arme, 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 meete, you must bid the patient to moove and stirre his armes divers wayes ever and anon, for if that be omitted or negligently done, when it is cicatrized then it wil be more stiffe and lesse pliable to every motion; and yet there is a further danger least the arme should totally loose its motion. If the wound be upon the joynt of the elbow, the arme shall be placed and swathed in a middle posture, that is, which neither too straitly bowes it, nor holds it too stiffly 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 joynts of the fingers either externally or internally, the hand must be kept halfe shut, continually mooving 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 remaine halfe shut, no great inconvenience will follow thereon; for so hee may use his hand divers wayes to his sword, pike, bridle and in any thing else. If the joynts of the Hip be wounded, you must so place the patient that the thigh bone may be kept in the cavity of the hucklebone, & may not part a haires breadth therefrom, which shal be done with linnen boulsters and ligatures applyed as is fitting, and lying full upon his backe. When the wound shal begin to cicatrize, the patient shall use to moove his thigh every way, least the head of the Thigh-bone sticke in the cavity of the huckle-bone without motion. In a wound of the knee, the legge must be placed straight out, if the patient desire not to be lame. When the joynts of the feete and toes are wounded, these parts shall neither be bended in nor out, for otherwise he will not be able to goe.

Why things actually hot must be applyed to the wounded joynts.

Of the site and posture of wounded joynts.

To conclude, the site of the foote and legge, is quite contrary to that of the arme and hand.

Chap. XL.

Of the wounds of the Ligaments.

Ligaments more dry than Nerves, and without sense.

THe wounds of the Ligaments, besides the common manner of curing these of the Nerves, have nothing peculiar, but that they require more powerfull medicines, for their agglutination, desiccation and consolidating; both because the Ligamentall parts are harder, and dryer, and also for that they are voyd of sence. Therefore the foresaid cure of Nerves and joynts may be used for these wounds: for the medicines in both are of the same kinde, but here they ought to be stronger and more powerfully drying. The Theorie and cure of all the symptomes which shall happen thereupon have beene expressed in the Chapter of curing the wounds of the nervous parts, so that heere we shall neede to speake nothing of them, for there you may finde as much as you will. Wherefore here let us make an end of wounds, and give thankes to God the author and giver of all good for the happy processe of our labours, and let us pray that, that which remaines may be brought to a happy end, and secure for the health and safety of good people.

The end of the tenth Booke.

OF VVOUNDS MADE BY GVNSHOT, OTHER FIERIE ENGEINES, AND ALL SORTS OF VVEAPONS.

THE ELEVENTH BOOKE.

The Preface.

I 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 ſavouring of Gunpouder. For thus it ſhall bee knowne to all whence Guns had their originall, and how many habits and ſhapes they have acquired from poore and obſcure beginnings; and 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 engine which we terme a Gun, being induced thereto by this occaſion. He kept in a mortar covered with a tyle, or ſlate, for ſome other certaine uſes a pouder (which ſince that time for its chiefe and new knowne faculty, is named Gunpouder.) Now it chanced as hee ſtrucke fire with a ſteele and flint, a ſparke thereof by accident fell into the mortar, whereupon the pouder ſuddainly catching fire, caſts the ſtone or tyle which covered the mortar, up on high; he ſtood amazed at the novelty and ſtrange effect of the thing, and withall obſerved the formerly unknowne faculty of the pouder; ſo that he thought good to make experiment thereof in a ſmall Iron trunke framed for that purpoſe according to the intention of his minde. 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 yeare of our Lord 1380. Yet in the opinion of *Peter Meſſias*, their invention muſt have beene of greater antiquity; for it is read in the Chronicles of *Alphonſus* the eleaventh King of *Caſtile*, who ſubdued the Iſles *Argezires*, that when he beſeiged the cheefe Towne in the yeare of our Lord 1343. the beſeiged 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 *Alphonſus* who conquered *Toledo*, that in a certaine ſea fight fought by the King of *Tunis*, againſt the Mooriſh King of *Sivill*, whoſe part King *Alphonſus* favoured, the *Tunetans* caſt lightning out of certaine hollow Engines or Trunkes 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.

Lib. 2. de inuent. rerum.

Cap. 8 prim. par. Garſetti.

I thinke the deviser of this deadly Engine hath this for his recompence, that his name should be hidden by the darkenesse 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 yeares agone, when hee comes to treate of the *Suevi*, the inhabitants of Germany, brings upon the authority & credite of a certaine old Manuscript, that the Germane the inventer of this warlike Engine was by profession a monke and Philosopher or Alchymist, borne at *Friburge*, and named *Constantine Anclzen*. Howsoever it was, this kind of Engine was called *Bombarda*(*i*) a Gun, from that noise it makes, which the Greekes and Latines according to the sound call *Bombus*; then in the following ages, time, art and mans maliciousnesse added much to this rude and unpolisht invention. For first for the matter, Brasse and Copper, mettalls farre more tractable, fusible and lesse subject to rust, came as supplies to Iron. Then for the forme, that rude and undigested barrell, or mortar-like masse, hath undergone many formes and fashions, even so farre as it is gotten upon wheeles, that so it might run not onely from the higher ground, but also with more rapide violence to the ruine of mankinde; when as the first and rude mortars seemed not to bee so nimbly traversed, nor sufficiently cruell for our destruction by the onely casting forth of Iron & fire. Hence sprung these horrible monsters of Canons, double Canons, Bastards, Musquits, feild peices; hence these cruell and furious beasts, Culverines, Serpentines, Basilisques, Sackers, Falcons, Falconets, and divers other names not onely drawne from their figure and making, but also from the effects of their cruelty. Wherefore certainly I cannot sufficiently admire the wisedome of our Ancestors, who have so rightly accommodated them with names agreeable to their natures; as those who have not onely taken them from the swiftest birds of prey, as Falcons; but also from things most harmefull and hatefull to mankinde, such as Serpents, Snakes, and Basilisks. That so wee might clearely discerne, that these engines were made for no other purpose, nor with other intent, but onely to be imployed for the speedy and cruell slaughter of men; and that by onely hearing them named we might detest and abhorre them, as pernicious enemies of our lives. I let passe other engines of this ofspring, being for their quantitie small, but so much the more pernicious and harmefull, for that they nearer assaile our lives, and may trayterously and forthwith seaze upon us not thinking nor fearing any such thing; so that we can scarse have any meanes of escape; such are Pistolls and other small hand-guns, which for shortnesse you may carry in your pocket, and so privily and suddainly taking them forth oppresse the careleſse and secure. Fowling peices which men usually carry upon their shoulders, are of the middle ranke of these engines, as also Muskets and Caleevers, which you cannot well discharge unlesse lying upon a Rest, which therefore may be called Breast-guns for that they are not laid to the checke, but against the Breast by reason of their weight and shortnesse; All which have beene invented for the commodity of footemen, and light horsemen. This middle sort of engine we call in Latine by a generall name *Sclopus*, in imitation of the sound, and the Italians who terme it *Sclopetere*; the French call it *Harquebuse*, a word likewise borrowed from the Italians, by reason of the touch-hole by which you give fire to the peice, 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 shoppe and magazine of cruelty, are all sorts of Mines, Countermines, pots of fire, traines, fiery Arrowes, Lances, Crossebowes, barrells, balls of fire, burning faggots, Granats, and all such fiery engines and Inventions, which closely stuffed with fewell 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. Certainely a most miserable and pernicious kinde of invention, whereby we often see a thousand of heedelesse men blowne up with a mine by the force of gunpouder; otherwhiles in the very heate of the conflict you may see the stoutest souldiers seazed upon with some of these fiery Engines, to burne in their harnesse, no waters being sufficiently powerfull to restraine and quench the raging and wasting violence of such fire cruelly spreading over the body and bowells. So it was not sufficient to have

Who the inventor of Guns.

The reason of the name.

The danger of Pistolls.

armes,

armes, Iron and fire to mans destruction, unlesse also that the stroake might be more speedy, we had furnished them, as it were with wings, so to fly more hastily to our owne perdition, furnishing sithe-bearing death with wings so more speedily to oppresse man, for whose preservation, all things conteined in the world were created by God. Verily when I consider with my selfe all the sorts of warlike Engines which the ancients used, whether in the field in set battells, as Bowes, Darts, Crosse-bowes, Slings; or in the assault of Cities, and shaking or overturning their walls, as Rammes, Horses, woodden towres, slings and such like; they seeme to me certaine childish sports and games made onely in imitation of the former. For these moderne inventions are such as easily exceede all the best appointed and cruell Engines which can bee mentioned or thought upon, in the shape, cruelty and appearance of their operations. For what in the world is thought more horrid or fearefull than thunder and lightning? and yet the hurtfulnesse of thunder is almost nothing to the cruelty of these infernall Engines; which may easily appeare 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 bee toucht therewith.

A comparison of the ancient weapons with the moderne.

Plini. Lib. 2. Cap. 54.

Nature bestowing this honour upon him, seeing so many creatures exceede him in strength: For all things ly contrary to man; and man, unlesse hee bee overthrowne with it, doth not dye thereof. But these fire-spitting Engines doe no more spare man, than they doe other creatures, and kill without difference from whence soever they come, whither soever they are carried, and howsoever they touch. There are many, but more are said to be the remedies against thunder; for beside the charmes whereby the ancient Romans did suppose they might be driven away, they never penetrate deeper into ground than five foote, therefore such as were fearefull thought the deeper Caves most safe. Of those things which grow out of the earth they doe not touch the Bay tree, and that was the cause that it was counted a signe of victory both in ancient and moderne times. Wherefore *Tiberius Cæsar* otherwise a contemner of God and religion, as hee who indued with the Mathematicall sciences thought all things governed by fate, yet because hee exceedingly feared thunder, hee alwayes carried a Lawrell wreath about his necke when the aire was troubled, for that this kind of leafe 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 *Ioves* squire. But on the contrary, charmes, the victorious Bay, the Seale or Sea-calfe, the Eagle or any such thing profits nothing against the violence of these fiery Engines: no not a wall of tenne foote thicke will advantage. Lastly, this argues the immense violence of brasen Cannons above thunder, for that thunder may be dispersed and driven away with the noyse and ringing of Bells, the sounding of Trumpets, the tinkling of brasen kettles, yea also by the shooting of such great Ordinance; to wit, the clouds, by whose collision and fight the Thunder is caused, being dispersed by this violent agitation of the ayre, 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 certaine seasons of the yeare, so also there are certaine 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 aire is thickned with a thicker coate of clouds, and the frosty and cold exhalation of the earth extinguisheth what fiery vapours soever it receives; which thing keepes *Scythia* and the cold countries about it free from Thunder. And on the contrary, too much heate preserves Egypt. For hot and dry exhalations of the earth are condensed into very thinne, subtile and weake clouds. But as the invention, so also the harme and tempest of great Ordinance, like a contagious pestilence is spread and rages over all the earth, and the skies at all times sound againe 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 spoyle and kill an hundred men. Thunder, as a thing naturall falls by chance, one while upon an high oake, another while upon the top of a mountaine,

Seneca in Tiberio.

The wonderous force of great Ordinance.

Plin. Lib 2. Cap. 50.

taine, and somewhiles on some lofty towre, but seldome upon man. But this hellish Engine tempered by the malice and guidance of man, assailes man onely, and takes him for his onely marke, and directs his bullets against him. The Thunder by its noyse as a messenger sent before, foretells the storme at hand; but, which is the chiefe mischiefe, this internall Engine roares as it strikes, and strikes as it roares, sending at one and the same time the deadly bullet into the breast, and the horrible noyse into the eare. 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 doe 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 certaine erronious opinions which have possessed the mindes of divers; for that unlesse these be taken away, the essence and nature of the whole disease cannot be understood, nor a fitting remedy applyed by him which is ignorant of the disease.

The arguments of the following discourses.

The first Discourse which is dedicated to the Reader, resells and condemnes by reasons and examples the method of curing prescribed by *Iohn de Vigo*, whereby he cauterizes the wounds made by Gunshot, supposing them venenate; and on the contrary proves that order of curing with is performed by suppuratives, to be so salutary and gentle, as that prescribed by *Vigo* is full of errour and cruelty.

The second dedicated to the King, teaches that the same wounds, are of themselves voyd of all poison, and therefore that all their malignity depends upon the fault of the aire, and ill humours predominant in the bodies of the patients.

THE FIRST DISCOVRSE, VVHEREIN VVOVNDS MADE BY GVNSHOT, ARE FREED FROM BEING BVRNT, OR CAVTERIZED ACCORding to *Vigoes* Methode.

IN the yeare of our Lord 1536. *Francis* the French King, for his acts in warre and peace stiled the Great, sent a puissant Army beyond the Alpes, under the governement and leading of *Annas* of Mommorancie high Constable of France, both that he might releeve *Turin* with victualls, souldiers, and all things needefull, as also to recover the Citties of that Province taken by the Marquis of *Guast* Generall of the Emperours forces. I was in the Kings Army the Chirurgion of Monsieur of *Montejan* Generall of the foote. 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 cheefely with bullets. I will tell the truth, I was not very expert at that time in matters of Chirurgery; neither was I used to dresse woands 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 Gunpouder; Wherefore for their cure, it was expedient to burne or cauterize them with oyle of Elders scalding hot, with a little Treacle mixed therewith.

Lib. 1. de Vulner. Cap. 8.

with. But for that I gave no great credite neither to the author, nor remedy, because I knew that caustickes could not be powred into wounds, without excessive paine; I, before I would runne a hazard, determined to see whether the Chirurgions, 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 Oyle, at the first dressings; which encouraged me to doe 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 Oyle. Now because there were some few left to be dressed, I was forced, that I might seeme to want nothing, and that I might not leave them undrest, to apply a digestive made of the yolke of an egge, oyle of Roses, and Turpentine. I could not sleepe all that night, for I was troubled in minde, and the dressing of the precedent day, (which I judged unfit) troubled my thoughts; and I feared that the next day I should finde them dead, or at the point of death by the poyson of the wound, whom I had not dressed with the scalding oyle. Therefore I rose early in the morning, I visited my patients, and beyound expectation, I found such as I had dressed with a digestive onely, free from vehemencie of paine to have had goood rest, and that their wounds were not inflamed, nor tumifyed; but on the contrary the others that were burnt with the scalding oyle were feaverish, tormented with much paine, 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 Gun-shot. When wee first came to *Turin*, there was there a Chirurgion farre more famous than all the rest in artificially and happily curing wounds made by Gun-shot; wherefore I laboured withall diligence for two yeeres time to gaine his favour and love, that so at the length, I might learne of him, what kinde of Medicine that was, which he honoured with the glorious tittle of Balsame, which was so highly esteemed by him, and so happy and successfull to his patients; yet could I not obtaine it. It fell out a small while after that the Marshall of *Montejan* the Kings Leiftenant, Generall there in *Piemont* dyed, wherefore I went unto my Chirurgion, 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 returne to *Paris*, and that it would neither hinder, nor discredit him to teach his remedy to me, who should be so farre remote from him. When he heard this, he made no delay, but presently wished mee to provide two Whelpes, 1 pound of earthwormes, 2 pounds of oyle of Lillyes, sixe ounces of Venice Turpentine, and one ounce of *aqua vitæ*. In my presence he boyled the Whelpes put alive into that oyle, 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 repleate, and then hee boyled them in the same oyle so long, till they became dry, and had spent all their juyce therein: then hee strayned it through a towell without much pressing; and added the Turpentine to it, and lastly the *aqua vitæ*. Calling God to witnesse, that he had no other Balsame, wherewith to cure wounds made with Gunshot, and bring them to suppuration. Thus he sent me away as rewarded with a most pretious gift, requesting me to keepe it as a great secret, and not to reveale it to any.

What chance may doe in finding out of remedies.

The description of oyle of Whelpes.

When I came to *Paris*, I went to visite *Silvius* the Kings professor of Physicke well knowne by name to all schollers 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 Gun-shot, and combustions occasioned by Gunpowder. Then I affirmed to him that Gun-pouder 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 seene many soldiers, who would drinke a great quantity of this powder with wine, because they were perswaded, that this drinke would free them from maligne symptomes when they were wounded, yet I give no credit to this perswasion; and lastly for that many without

Gun-pouder not poisonous.

out any harme, strew this pouder upon rebellious ulcers. For the Bullets, I affirme,
Bullets shot out of a Gun doe not burne.
that they cannot conceive such heate, as to become causticke. For if you shoot them out of a Gun against a hard stone, yet you may presently take them up without any harme in your hands, though by striking upon the stone, they should become more hot. For the combustions caused by Gunpouder, I observed no speciall nor peculiar remedy, which might make their cure different from other combustions. To which purpose I related this ensuing history.

A Historie.
One of the Marshall of *Montejan* his Kitchin boyes, fell by chance into a Caldron of Oyle being even almost boyling hot; I being called to dresse him, went to the next Apothecaries to fetch refrigerating medicines commonly used in this case: there was present by chance a certaine old countrey woman, who hearing that I desired medicines for a burne, perswaded mee at the first dressing, that I should lay to raw Onions beaten with a little salt; for so I should hinder the breaking out of blisters or pustules, as shee had found by certaine and frequent experience. Wherefore I thought good to try the force of her Medicine upon this greasy scullion. I the next day found those places of his body whereto the Onions lay, to bee free from blisters, but the other parts which they had not touched, to be all blistered.
A medicine hindering blistring in burnes, or scalds.

A Historie.
It fell out a while after, that a German of *Montejan* his guard had his flasque full of Gunpouder 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 medicines usually applyed to burnes. At the second dressing I observed the part dressed with the Onions quite free from blisters and excoriation, the other being troubled with both; whereby I gave credit to the Medicine. 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 patients in the same posture and site, as hee was when hee received his hurt. Which things when I had told him, together with many other handled at large in this worke, the good old man requested mee to publish in print my opinions concerning these things, that so the erronious and hurtfull opinion of *Vigo* might bee taken out of mens minds. To whose earnest entreaty when I had assented, I first of all caused to be drawne and carved many Instruments fit to draw forth Bullets and other strange bodies; then a short while after I first published this worke in the yeare of our Lord 1545. which when I found to bee well liked and approved by many, I thought good to set it forth the second time somewhat amended in the yeare 1552. And the third time augmented in many particulars in the yeare 1564. For I having followed many warres, and detained as Chirurgion in besieged Citties, as *Metz* 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 Physitions, 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 skillfull 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 knowne very few, who any thing seene in this kind of operation eyther by study, or experience in Warres, who have not thought that wounds made by Gunshot ought to be dressed at the first with suppurative medicines, and not with scalding and Caustick Oyle.
Wounds made by Gunshot must be dressed with suppuratives.

For this I affirme, 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 bee made by contusing things. But in the parts of the body where the bullet meets with bones and nervous particles, both because it teares and rends into small peeces those things which resist, not onely where it touches, but further also, through the violence of the blow, therefore it causeth many and greevous symptomes, which are stubborne and difficult, and oft times impossible to cure, especially in bodies replete with ill humors, in an ill constitution of the heaven and ayre, such as is hot, moyst and foggy weather,
The causes of difficultie in this cure.

ther, which therefore is subject to putrifaction; and in like manner a freezing and cold season, which uses to mortifie the wounded parts not onely of those that are hurt with Bullets, but in like sort with any other weapon; nor onely 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 Gunpouder, but the foulenesse of the patients bodies, and the unseasonableneſſe of the aire.

A Historie. For proofe whereof, I will set downe, that which I not long agone observed in a Scottish Nobleman the Earle of *Gordon*, Lord of *Achindon*, whom I cured at the appointment of the Queene 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 hee had neither feaver nor any other symptome which came upon the wound. Whereof there are worthy witnesses, the Archbishop of *Glasco*, the Scottish Embassadour, *Francis Brigart* and *John Altine*, Doctors of Physicke, as also *James Guillemeau* the Kings Chirurgion, and *Giles Buzet* a Scottish Chirurgion, who all of them wondred that this Gentleman was so soone healed, no acride medicine being applyed. This I have thought good to recite and set downe, that the Readers may understand, that I for 30. yeares agoe had found the way to cure wounds made by Gunshot, without scalding oyle or any other, more acrid medicine; unleſſe by accident the illneſſe of the patients bodies and of the aire caused any maligne symptomes, which might require such remedies besides the regular and ordinary way of curing, which shall bee more amply treated of in the following discourse.

What makes Chirurgions sometimes use caustick in curing wounds made by Gunshot.

ANOTHER DISCOVRSE OF THESE THINGS, WHICH KING CHARLES THE NINTH, RETURNING from the expedition and taking of *Rouen*, enquired of me concerning wounds made by Gunshot.

The occasion of writing this discourse. FOr that it pleased your Majestie one day, together with the Queene Mother, the Prince of the *Rocke upon Yon*, and many other Noble-men and Gentlemen, to enquire of mee, what was the cause that the farre greater part of the Gentlemen and common Souldiers which were wounded with Guns, and other warlike Engines, all remedies used in vaine, either dyed, or scarse and that with much difficultie recovered of their hurts, though in appearance they were not very great, and though the Chirurgions 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 mee, as being the Kings chiefe Chirurgion, (which place being given me by *Henry* the second, *Charles* the ninth, a sonne most worthy of such a father, had confirmed) neither make I any question, but that many who too much insist upon their owne judgement, and not throughly consider the things themselves, will

The argument of this discourse.

marvaile, and thinke it farre from reason; that I departing from the steps of my ancestors, and dissenting wholly from the formerly received opinions, am farre from their Tenents, who lay the cause of the malignitie of wounds made by Gunshot, upon the poyson brought into the body by the Gunpouder, or mixed with the Bullets whilst they are tempered or cast. Yet for all this, if they will courteously and patiently weigh my reasons, they shall eyther thinke as I doe, or at least shall judge this my endeavour and paines taken for the publike good, not to be condemned nor contemned.

For I shall make it evident by most strong reasons drawne out of the writings of the Ancient both Philosophers and Physitions, and also by certaine experiments of mine owne, and other Chirurgions, that the malignitie and contumacie which we frequently meete withall in curing wounds made by Gunshot, is not to be attributed eyther to the poyson carryed into the body by the Gunpouder or Bullet, nor to burning imprinted in the wounded part by the Gunpouder. Wherefore to come to our purpose, that opinion must first bee confuted, which accuseth wounds made by Gunshot of poyson; and wee must teach, that there is neither any venenate substance, nor qualitie in Gunpouder, neyther if there should bee any, could it empoyson the bodies of such as are wounded. Which that wee may the more easily performe, wee must examine the composition of such pouder, and make a particular enquiry 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 bee apparently manifest.

Gunpouder is not poysonous.

Of what it is made.

The simples which enter the composition of Gunpouder are onely three, Charcoales of Sallow or Willow, or of Hempe stalkes, Brimstone, and salt Peter, and sometimes a little *aqua vitæ*. You shall finde each of these, if considered in particular, voide of all poyson and venenate quality. For first, in the Char-coale you shall observe nothing but dryenesse, and a certaine subtlety of substance, by meanes whereof it fires so suddainly, even as Tinder. *Sulphur* or Brimstone is hot and dry, but not in the highest degree, it is of an oyly and viscide substance, yet so that it doth not so speedily catch fire as the coale, though it reteine 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 drunke, or supped out of a reare Egge to such as are Asthmaticke, troubled with the Cough, (spit up purulent matter, and are troubled with the yellow laundise.) But *Galen* applies it outwardly to such as are bitten by venemous Beasts, to scabs, teaters, and leprosyes. For the *aqua vitæ*, it is of so tenuious a substance that it presently vanisheth into aire, and also very many drinke it, and it is without any harme used in frictions of the exteriour parts of the body. Whence you may gather, that this pouder is free from all manner of poyson, seeing these things whereof it consists and is composed, want all suspition thereof.

Lib. 5. Cap. 73. Lib. 9. simpl. cap. 36.

Therefore the Germane horsemen, when they are wounded with shot, feare not to drinke off cheerefully halfe an ounce of Gunpouder dissolved in wine; hence perswading themselves freed from such maligne symptomes as usually happen upon such wounds; wherein whether they doe right or wrong I doe not here determine; the same thing many French Souldiers forced by no necessity, but onely to shew themselves more couragious, also doe without any harme; but divers with good successe use to strew it upon ulcers, so to dry them. Now to come to these, who thinke that the venenate quality of wounds made by Gunshot, springs not from the pouder, but from the Bullet wherewith some poyson hath beene commixt or joyned, or which hath beene tempered or steeped in some poysonous liquor.

Bullets cannot be poysoned.

This may sufficiently serve for a reply; that the fire is aboundantly powerfull to dissipate all the strength of the Poyson, if any should bee poured upon

or

or added to the Bullet. This much confirmes mine opinion, which every one knowes; The Bullets which the Kings souldiers used to shoote against the Townsemen in the seige of Rouën, were free from all poyson, and yet for all that they of the Towne thought that they were all poysoned, when they found the wounds made by them, to be uncurable and deadly. Now on the other side the Townsemen were falsly suspected guilty of the same crime by the Kings Army, when as they perceived all the Chirurgions labour in curing the wounds made by the Bullets shot from Rouën, to be frustrated by their contumacy and maligne nature; each side judging of the magnitude and malignitie of the cause from the unhappy successe of the effect in curing. Even as amongst Physitions 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 poysonous qualitie, but by default of some common cause, as the ill complexions of the patients, the infection of the aire, and the corruption of meats and drinkes. For by these causes wounds acquire an evill nature and become lesse yeelding to medicines. Now we have by these reasons convinced of errour that opinion which held wounds made by Gunshot for poisonous; let us now come to overthrow that which is held concerning their combustion.

As *Galen* notes *ad sent. 20. et 21. sect. 3 lib. 3. Epid.*

First it can scarce be understood how bullets which are commonly made of Lead, can attaine to such heate, but that they must be melted; and yet they are so far from melting, that being shot out of a Musket they will peirce through an armour and the whole body besides, yet remaine whole, or but a little diminisht. Besides also if you shoote them against a stone wall, you may presently take them up in your hand without any harme, and also without any manifest sence of heate; though their heate by the striking upon the stone should bee rather encreased, if they had any.

Wounds made by Gunshot are not burnt

Furthermore, a Bullet shot into a barrell of Gunpouder, would presently set it all on fire, if the Bullet should acquire such heate by the shooting, but it is not so. For if at any time the pouder be fired by such an accident, wee 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 oppose or meets therewith, whence sparkes of fire proceeding as from a flint, the pouder is fired in a moment. The like opinion wee have of thatched houses, for they are not fiered by the bullet which is shot, but rather by some other thing as linnen ragges, browne paper, and the like, which rogues and wicked persons fasten to their Bullets. There is another thing which more confirmes mee in this opinion, which is; take a bullet of Waxe, and keepe it from the fire, for otherwise it would melt, and shoote it against an inch board, and it will goe through it; whereby you may understand that Bullets cannot become so hot by shooting, to burne like a cautery. But the Orifices (may some say) of such wounds are alwayes blacke. This indeede is true, but it is not from the effect of heate brought thither by the Bullet, but the force of the contusion.

The reason why wounds made by Gunshot looke blacke.

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 thinkes not presently upon the blow, that as it were some post, or thing of the like weight, falls upon the affected member, whence great paine and stupiditie possesse the part, whereby the native heate and spirits are so much dissipated, that a Gangreen may follow.

But for the Eschar which they affirme is made by the blow, and falls away afterwards, they are much mistaken. For certaine particles of the membranes and flesh contused and torne by the violence of the Bullet beguiles them; which presently putrifying are severed from the sound parts by the power of nature and the separating heate, which thing usually happens in all great Contusions. But for all that these so many and weighty reasons may free the Pouder from all suspition of Poison, and the Bullet from all thought of burning; yet

yet there are many who insisting upon Philosophicall arguments, raise new stirrs. For (say they) the discharging a peice of Ordinance is absolutely like Thunder and Lightning, which the rent and torne 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 Lightnings generated of a grosse and viscous exhalation, breaking the cloud wherewith it is encompassed, never falls upon the earth, but brings fire with it, one while more subtile, another while more grosse, 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 objects which it touches. The other with a violent impetuosity breakes insunder and dissipates the objects, by reason it hath a more dense, compact and forcible matter, like as Whirlewinds have. The third, for that it consists of a more terrestriall matter, burnes what it touches, leaving behind it the impression of the burning. Also I know that Lightning is of a pestilent and stinking nature, occasioned by the grossenesse and viscidity of the matter whereof it is; which matter taking fire sends forth so lothsome and odious a smell that the very wilde-beasts cannot endure it; but leave their Dennes, if they chance to be touched with such a lightening. Besides also, we have read in the northerne history of *Olaus Magnus*, that in some places after a Lightning, you shall finde a whole plaine spred over with Brimstone, which Brimstone notwithstanding is extinguished, unprofitable & of no efficacie. But grant these things be thus, yet must we not therefore conclude, that the Bullets of the great Ordinance carry poyson and fire with them into the wounds. For though there be many things like in Lightning and discharging great Ordinance, yet they have no similitude either in matter or substance, but onely in effects whereby they shake, breake insunder and disperse the bodies which withstand them; For Lightning and Thunder doe it by meanes of fire, and oft times of a stone generated in them, which is therefore tearmed, a Thunderbolt; But Ordinance by the bullet carried by the force of the aire, more violently driving and forcing it forwards; Neither if any should by more powerfull arguments force me to yeeld that the matter of Lightning and shooting of Ordinance are like, 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, doe shatter in sunder all that withstands them, but doe not burne at all; others which are of somewhat a more humid nature, burne no more than the former, but onely blacke such things as they touch; Lastly others some of a more subtile and tenuous matter, whose nature (as *Seneca* saith) wee must not doubt to be divine, if but for this reason, that they will melt gold and silver, not harming the purse; a sword, not hurting the scabbard; the head of a Lance, not burning the wood, and shed wine not breaking the vessell. According to which decree I can grant, that these Lightnings which breake in sunder, melte and dissipate, and performe other effects so full of admiration, are like in substance to the shot of great Ordinance; but not these which carry with them fire and flame.

The reasons of our adversaries refelled.

Quæst. nat. lib. 2. cap. 49.

The stinking smell of lightning.

Lib. 2. cap. 51.

The wonderfull nature of some lightning.

In proofe whereof there comes into my minde the historie of a certaine Souldier, out of whose thigh I remember I drew forth a Bullet wrapped in the taffety of his breeches, which had not any signe of tearing or burning. Besides, I have seene many who not wounded, nor so much as touched, yet notwithstanding have with the very report & winde of a Cannon bullet, sliding close by their eares, fallne downe for dead, so that their members becomming livid & black, they have dyed by a Gangrene ensuing thereupon. These and such effects are like the effects of Lightnings which wee lately mentioned, and yet they beare no signe nor marke of poyson. From whence I dare now boldly conclude, that wounds made by Gunshot are neither poysoned, nor burnt. But seeing the danger of such wounds in these last civill warres hath beene so great, universall and deadly to so many worthy personages and valiant men, what then may have beene the cause thereof, if it were neither combustion, nor the venenate qualitie of the wound? This must wee therefore now insist upon and somewhat hardily explaine.

A Historie.

Why the wounds made by Gunshot some few yeares agone were so deadly.

Those

Those who have spent all their time in the learning and searching out the mysteries of Naturall Philosophie, would have all men thinke and beleeve, that the foure Elements have such mutuall sympathy, that they may bee changed each into other; so that they not onely undergoe the alterations of the first qualities which are heate, coldnesse, drynesse and moisture, but also the mutation of their proper substances by rarefaction and condensation. For thus the fire is frequently changed into ayre, the ayre into water, the water into aire, and the water into earth; and on the contrary, the earth into water, the water into aire, the aire into fire; because these 4. first bodies have in their common matter enjoyed the contrary and fighting, yet first and principall qualities of all.

The cause of the transmutation of the Elements.

Whereof we have an example in the * Ball-bellowes brought out of Germany, wch are made of brasse, 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 aire, and so they send forth winde with a great noyse, and blow strongly as soone as they grow throughly hot. You may try the same with Chesnuts, which cast whole and undivided into the fire, presently fly asunder with a great cracke; because the watry and innate humidity turned into winde by the force of the fire, forcibly breakes his passage forth. For the aire or winde raised from the water by rarifaction, requires a larger place, neither can it now bee conteined in the narrow filmes, or skinnes of the Chesnut, wherein it was formerly kept. Iust after the same manner Gunpouder being fiered, turnes into a farre greater proportion of ayre, 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 aire; and of one of aire are made ten of fire. Now this fire not possible to be pent in the narrow space of the peice, wherein the pouder was formerly conteined, endeavours to force its passage with violence, and so casts forth the Bullet lying in the way, yet so that it presently vanishes into aire, and doth not accompany the Bullet to the marke, or object, which it batters, spoiles and breakes asunder. Yet the Bullet may drive the obvious aire 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 wee formerly noted, it hath common with Lightning. We finde the like in Mines, when the pouder is once fiered, it remooves and shakes even mountaines of earth.

* These bellowes here mentioned by the Author, are Balls made of Brasse in forme of a peare, with a very small hole in their lesser ends; when you would fill them with water you must heate them very hot, and so the aire which is conteined in them will be exceedingly rarified, which by putting them presently into water will be condensate as much, and so will draw in the water to supply the place, *ne detur Vacuum*. Then put them into the fire, and it againe rarifying the water into aire will make them yeilde a strong continued and forcible blast.

In the yeare of our Lord 1562 a quantity of this pouder which was not very great, taking fire by accident in the Arcenall of Paris, caused such a tempest, that the whole Citty shoke therewith, but it quite overturned divers of the neighbouring houses, and shooke off the tyles and broke the windowes of those which were further off; and to conclude, like a storme of Lightning it laid many here and there for dead, some lost their sight, others their hearing, and othersome had their limbes torne asunder, as if they had beene rent with wilde horses; and all this was done by the onely agitation of the aire into which the fired Gunpouder was turned; Iust 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 downe, it overturnes or carries it to another place. For thus we have read that *Megara* and *Ægina* anciently most famous Citties 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 Bulles, 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.

The cause of the report and blow of a Cannon.

A Historie.

The cause of an Earthquake.

Amongst things necessary for life, there is none causes greater changes in us than the aire; which is continually drawne into the Bowells appointed by nature, and whether we sleepe, wake, or what else soever we doe, 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 keepes in quiet peace all things

things contained therein, friendly conspiring with the starres from whom a divine vertue is infused therein. For the aire diversly changed and affected by the starres, doth in like manner produce various changes in these lower mundane bodies. And hence it is that Philosophers and Physitions doe so seriously wish us to behold and consider the culture and habite of places, and constitution of the aire, when they treate of preserving of health, or curing diseases. For in these the great power and dominion of the aire is very apparent, as you may gather by the foure seasons of the yeare; for in summer the aire 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 detriment thereby, if so be that the seasons reteine their seasonablenesse; from whence if they happen to digresse, they raise and stirre up great perturbations both in our bodies and mindes; whose malice we can scarse shunne, because they encompasse us on every hand, and by the law of nature enter together with the aire into the secret cabinets of our bodies both by occult and manifest passages. For who is he, that doth not by experience finde both for the commodity and discommodity of his health, the various effects of winds, (wherewith the aire is commixt) according as they blow from this or that Region, or Quarter of the world. Wherefore seeing that the South winde is hot and moist; the North wind cold and dry; the East wind cleare and fresh; the West winde cloudy; it is no doubt but that the aire which we draw in by inspiration carries together therewith into the bowells the qualities of that winde which is then prevalent. When wee reade in *Hippocrates*, that changes of times, whether they happen by different windes, or vicissitude of seasons, chiefly bring diseases; For northerly winds doe condense, and strengthen our bodies, and makes them active, well coloured and daring, by resuscitating and vigorating the native heate. But southerne windes resolve and moisten our bodies, make us heavy-headed, dull the hearing, cause giddinesse, and make the eyes and body lesse agile; as the Inhabitants of *Narbon* finde to their great harme, who are otherwise ranked among the most active people of France. But if wee would make a comparison of the seasons and constitutions of a yeare, by *Hippocrates* decree Droughts are more wholesome and lesse deadly than Raines; I judge for that too much humiditie is the mother of putrifaction, as you learne by these countries which are blowne upon by a winde from Sea: For in these flesh which is kept for foode, putrefies in the space of an houre; and such ulcers as in other places are easily and quickly healed, doe there by the conflux and collection of matter become inveterate and contumacious. Therefore as when the seasons of the yeare successively fall out agreeable to their nature, and when each season is seasonable, then either we are not sicke at all, or assuredly with lesse danger. So on the contrary the perfect constitution and health of our bodies becomes worse and decaies, when the seasons of the yeare are depraved and perverted in time and temper.

How the aire becomes hurtfull.

Aphor. 17. sect. 3.

Flesh quickly putrifies in maritime places.

Now seeing that these many yeares the foure seasons of the yeare have wanted their seasonablenesse, the summer wanting his usuall heate, and the winter its cold, and all things by moisture and the dominion of the southerne windes have beene humid and languide; I thinke there is none so ignorant in naturall Philosophie and Astrologie, who will not thinke that the causes of the malignitie and contumacie of those deseases which have so long afflicted all France, are not to bee attributed to the aire and Heavens. For otherwise, whence have so many pestilent and contagious diseases tirannized over so many people of every age, sex and condition? whence have so many catarrhes, coughs and heavinesses of the head, so many pleurisies, tumors, small poxes, meazells, and Iches not admitting of digestion and remedies prescribed by Art? Whence have we had so many venemous creatures, as Toades, Grashoppers, Caterpillers, Spiders, Waspes, Hornets, Beetles, Snailes, Vipers, Snakes, Lizards, Scorpions and Efts or Nutes, unlesse from excessive putrefaction which the humidity of the aire, our native heate being liquid and dull, hath caused in us, and the whole kingdome of France? Hence also proceedes the infirmity of our native heate, and the corruption of the blood and humors whereof we consist, which

the

the rainy Southwind hath caused with its sultry heate. Wherefore in these last yeares I have drawne little blood, which hath not presently shewed the corruption of its substance by the blacke or greenish colour, as I have diligently observed in all such as I have bled, by the direction of Physitions, 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 drawne the seeds of corruption from the defiled aire. Whence it fell out, that the wounds which happened with losse of substance, could be scarse 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 Cachecticke, 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 bee cured.

In what bodies ulcers and wounds are not easily cured.

Therefore seeing all these things, both the putrefaction of the Aire, and depraved humors of the body, and also the distemper of the affected parts conspired together to the destruction of the wounded, what marvaile was it, if in these late civill warres, the wounds which were for their quantity small, for the condition of the wounded parts but little, have caused so many and grievous accidents and lastly death it selfe? Especially, seeing that the Aire which encompasseth us, tainted with putrefaction corrupts and defiles the wounds by inspiration and expiration, the body and humours being already disposed, or inclined to putrefaction.

Now there came such a stincke, which is a most assured signe of putrefaction, from these wounds when they were dressed, that such as stood by could scarse endure it, neither could this stinke bee attributed to the want of dressing, or fault of the Chirurgion; for the wounds of the Princes and Nobility stunke as ill as these of the common Souldiers. And the corruption was such, that if any chanced to bee 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 putrifaction 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 arme, 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 habite of the body, it certainly otherwise disposed of it amongst the inner parts of the body; for in dissecting dead bodies, wee observed that the Spleene, 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, and so the generation of the laudible blood hindred, they languished for want of fitting nourishment. But when the Braine by vapours was drawne in to sympathize with the rest, they were molested with Ravings and Convulsions. Wherefore if any thing succeeded unprosperously in so great malignancie of wounds, the Chirurgion was not to be blamed, for that it were a crime to fight against God and the Aire, wherein the hidden scourges of the divine justice lye hid. Therefore, if according to the minde of the great *Hippocrates*, who commands to bring all contused wounds to suppuration, that so they may be healed, wee endeavoured to cure with such medicines 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 putrifactions, gangreens and mortifications which proceeded from the corrupt Aire, for all that we used not onely suppuratives, but were oft times forced to use other medicines, so long turning aside from the cure of the disease, untill we had orecome the symptomes 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 appeare in the following treatise, to which it now seemes high time that we betake our selves.

An argument of great putrifaction of the humors.

All contused wounds must bee brought to suppuration.

CHAP.

Chap. I.

A division of wounds drawne from the variety of the wounded parts, and the Bullets which wound.

A division of wounds from the variety of the wounded parts.

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 possesse eyther 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 onely superficiary, or else peirce deepe and passe 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 lesse, some betweene both; they are usually made of Lead, yet sometimes of Steele, Iron, Brasse, Tinne, scarse any of Silver, much lesse of Gold. There arises no difference from their figure; for almost all kinds of wounds of this nature are round. From these differences, the Chirurgion must take his Indications what to doe, and what medicines to apply. The first care must be, that he thinke not these horrid and maligne symptomes, which usually happen upon these kinds of wounds, to arise from combustion, or poyson 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 proceede from the vehemencie 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 onely 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, whilest I have followed the warres, and performed the part of a Chirurgion to many Noble-men and common Souldiers, according to the counsell of such Physitions as were there overseers of the cure.

From the difference of Bullets.

Wounds made by Gunshot are usually round.

Chap. II.

Of the signes of wounds made by Gunshot.

Signes of wounds from their figure.

WOunds made by Gunshot are knowne by their figure, which is usually round; by their colour, as when the native colour of the part decayes, 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, hee feeles a heavy sense as if some great stone, or peice of Timber, or some such other weightything had falne upon it; by the small quantity of blood which issues out thereat, for when the parts are contused, within some small while after the stroake they swell up, so that they will scarse admit a Tent, whence it is that the blood is stopped, which otherwise would flow forth of the orifice of the wound; by heate, which happens eyther by the violentnesse of the motion, or the vehement impulsion of the aire, or the attrition of the contused parts, as the flesh and nerves.

From their colour.

From the feeling the blow.

From the bleeding.

From the heate of the wound.

Also you may conjecture that the wounds have beene 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 spherical body, which cannot penetrate but with mighty force; whence it commeth to passe that the wound lookes blacke, and the adjacent parts livid. Hence also proceede so many grievous symptomes, as paine, Defluxion, Inflammation, Apostumation, Convulsion, Phrensie, Palsie, Gangreen and mortification, whence lastly death ensues. Now the wounds doe often cast forth virulent and very much stincking filth, by reason of the great contusion, and the rending and tearing of the neighbouring particles. A great abundance

Whence these wounds are so much contused.

of

of humors flow from the whole body, and fall downe upon the affected parts, which the native heate thereof being diminished forsakes, and presently an unnaturall heate seazes upon it. Hither also tend an universall or particular repletion of ill humours, chiefely if the wounds possesse the nervous parts as the joynts. Verily neither a Stagge with his horne, 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, peirces the body like a Thunderbolt.

CHAP. III.

How these wounds must be ordered at the first dressing.

THE wound must forthwith be enlarged, unlesse 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 farced, or otherwise contained therein; such as are peices of their cloathes, bombast, linnen, paper, peices of Maile or Armour, Bullets, Haile-shot, splinters of bones, bruised flesh and the like, all which must be plucked forth with as must celerity and gentlenesse as may bee. For presently after the receiving of the wound the paine and inflammation are not so great, as they will be within a short time after. This is the principall thing in performance of this worke, 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 turning of the Muscles will eyther hinder or straiten the passage forth of the conteined 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 bee entred somewhat deepe in, then you shall search for it with a round and blunt probe, lest you put the patient to paine; yet often times you shall scarce by this meanes finde the Bullet. As it happened to the Marshall of *Brissac* in the seige of *Parpignan*, who was wounded in his right shoulder with a Bullet, which the Chirurgions thought to have entred into the capacitie of his body. But I, wishing the patient to stand just in the same manner as hee did when hee received the wound, found at length the place where the Bullet lay, by gently pressing with my fingers the parts neare the wound, and the rest which I suspected; as also by the swelling, hardnesse, paine and blacknesse of the part, which was in the lower part of the shoulder neare unto the eight or ninth spondill of the backe. Wherefore the bullet being taken forth by making incision in the place, the wound was quickly healed and the Gentleman recovered. You shall well observe this, and rather beleeve the judgement of your fingers, than of your probe.

Strange bodies must first be pulled forth.

The manner how to draw them forth.

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 bignes; of all which sorts the Chirurgion must have divers in a readinesse, that he may fit them to the bodies and wound, and not the wounds and bodies to his Instruments.

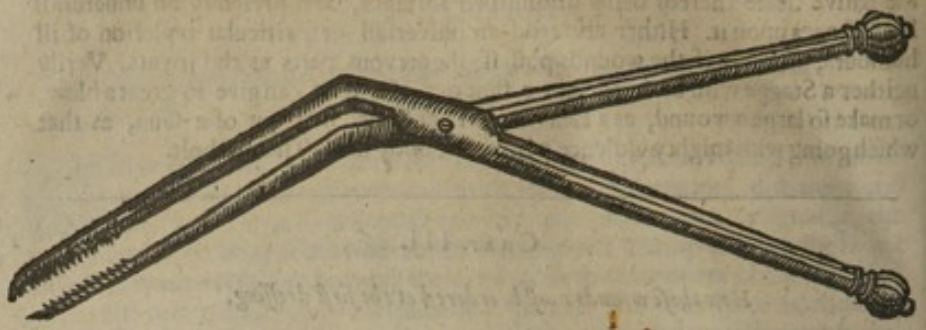
The Deliniation of such like Instruments.

A toothed Crowes-Bill.



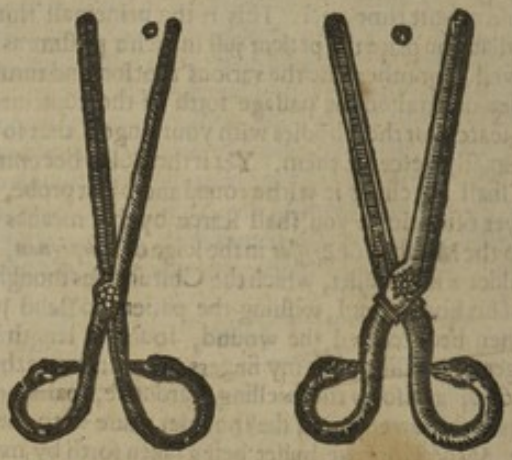
The

The crooked Cranes-bill, with teeth like a Saw.



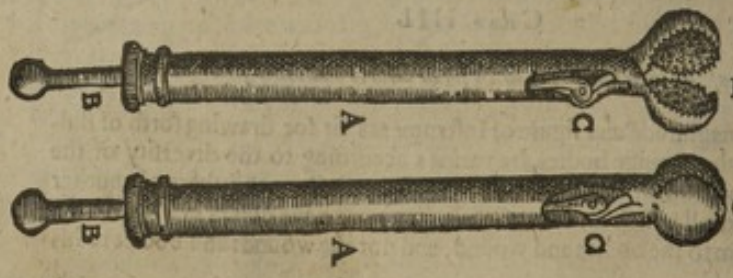
The straight Cranes-bill being also toothed, fit for drawing forth haile-shot, pieces of armour, splinters of bones, and such things ailye deepe within.

The Ducks-bill.



This Ducks bill hath a large round and toothed cavitie in the end, for so it more easily taketh hold of the Bullet when it lies amongst much Flesh.

Another Instrument fit for drawing forth of Bullets, which may be termed, a Catch-bullet.



A. *Shewes the Trunke.*
B. *Shewes the rod, or string, which opens & shuts the joynt.*
C. *The joynt.*

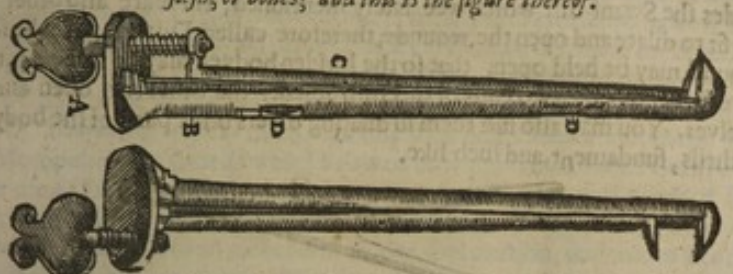


Another

Another Catch-bullet called a Lizards-nose, made for drawing out of bullets which are somewhat flatted, by striking upon a bone.



The Parrots-beake is made for drawing forth peices of maile thrust into the flesh, flesh, or bones; and this is the figure thereof.

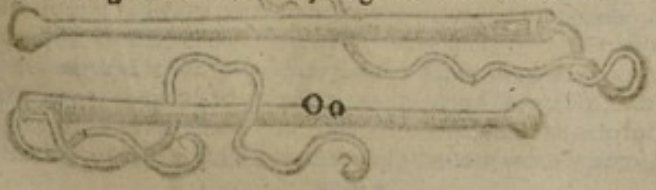


A. *Shewes the screwpin.* B. *The hollowed part which receives, the round part noted with.* C. *which is opened and shut by the screw.* D.D. *falls, or stayes, which governe the running branch.*

The Swannes bill opens with a screw: you may with this dilate the wounds, and so put in a streight Cranes-bill, as pincers to plucke forth strange bodyes. The figure of both are heere expresst.



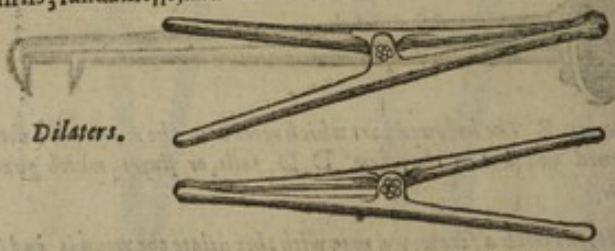
But if these strange bodyes, especially bullets and haile shot, be not too deepe in the wound, they may be taken forth with your Levatorie, or else by the helpe of these Gimblets. These Gimblets are screwed into their pipes, or canes, and enter with their screwed points into the Bullets, if that they be of Lead or Tin, and of no harder mettall; 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 wee lately mentioned, there are also other Instruments fit to dilate and open the wounds; therefore called Dilaters, by whose helpe the wound may be held open, that so the hidden bodyes may be seene; for when you presse 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 Nose-thrils, fundament, and such like.

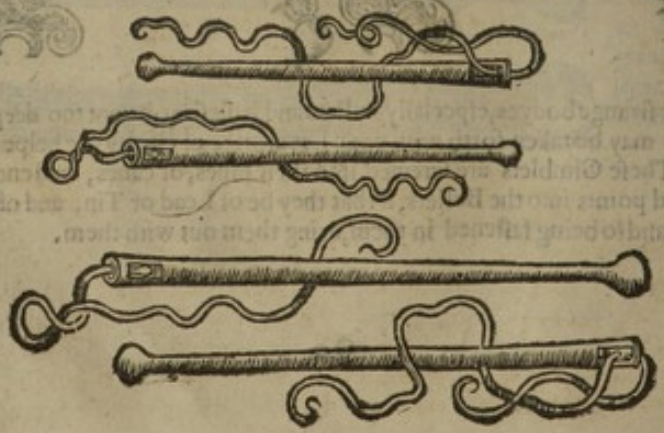


Dilaters.

The Instruments which follow are called Seton needles, or Probes; whose use is, to draw through a flamula, so to keepe 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 deepenesse of wounds, and to finde out the Bullets. For they cannot put one to much paine because they have smooth and round ends. So also all Probes wherewith we search for Bullets, must have somewhat large, smooth and round ends. For seeing that the verges of the wound meete together presently after the hurt, if the Probes be too small or slender, they will sticke in the inequality of the flesh, neither will they be able to come to the Bullet. But if they bee sharpe and pointed, they will cause and renew the paine by pricking the flesh they melt withall, and so hinder your intention of finding the Bullet; Now you must bee furnished with these Instruments of a different length, according to the various thickneese of the parts; for you cannot put any through the thigh but such as are of good length.

What probes fit to search these wounds.

Probes for to put flamulaes through a wound withall.



CHAP.

Chap. IX.

What dressing must first be used, after the strange bodies are pluckt or drawn out of the wound.

When the strange bodyes are drawne or pluckt out of the wound, by these meanes we have formerly recited, the chiefe of the cure must be to heale the contusion, and amend the distemper of the aire if it bee hot and moyst, that is, subject to putrefaction. This shal be don by medicins taken inwardly, applied outwardly, and put into the wound. Things to be inwardly used in dyet and Pharmacie I leave to the judgement of learned Physitions; for the particular and topicke medicines, (unlesse from the present constitution of the ayre, the condition of the wounded part, or from some other cause there be danger of a Gangreene) you must use suppuratives, as you usually doe in contusions; such as are oyle of Whelpes and that which we call a digestive; you must chiefely forbeare suppuratives, when as the wounded part is of a nervous nature. For al nervous parts requre dryer medicines than fleshy, as we have formerly delivered speaking of wounds of the joynts; wherefore in wounds of the joynts and nervous parts you shall use more venice Turpentine than oyle. *Laurentius Iobertus* the Kings Physition and Chancellour of the Vniversity of Mompelier, in a treatise which hee writ of wounds made with Gunshot, forbids the use of Escharotickes both actuall and potentiall, in these wounds, if simple; for that they induce paine, inflammation, a feaver, Gangræne and other deadly symptomes. Besides also an eschar will hinder suppuration, which is to bee desired in this kinde of woundes, that so the contused flesh may be severed from the sound, least it be drawne to putrefaction by contagion. Which easily happens when an Eschar is drawne, as a barre over it, for then the excrementitious humor remaines longer in the part, and the putridinous vapours hindred from passing forth, are encreased, and carryed from the lesser vessells 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 oyntment. *℞. pulver. alumin. rochæ, viridis æris, Vitrioli romani, mellis rosat. an. ℥ij. aceti boni quantum sufficit, bulliant omnia simul secundum artem, & fiat medicamentum ad formam mellis.* This by reason of the heate and subtlety of the substance, hath a faculty to induce and attenuate the humors, as also to call forth the native heate drawne in and dissipated by the violent and forcible entrance of the Bullet into the body; furthermore also it corrects the venemous 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 bee used at the first dressing must be somewhat long and thicke, that by dilating the wound, they may make way for applycation of other remedies; otherwise you may make injection with a syring, that so it may penetrate the more powerfully. But this described *Egyptiacum* shall be tempered according to the condition of the affected parts, for the nervous parts will bee offended with it as being too acride; but it may be qualified by admixture of oyle of Turpentine and Saint Iohn-wort. Also we may well be without this *Egyptiacum* when there is no such pestilent constitution of the ayre, as was seene in the late Civill warres. After the use of *Egyptiacum* you shall with emollient and lenitive medicines procure the falling away of the Eschar, and such a medicine is this following oyle, being somewhat more than warme.

A Caution in the use of suppuratives.

Why Escharotickes must be eschewed in these kinds, if they be simple.

How an Eschar may cause putrefaction.

The description of an *Egyptiacum*.

How and when to temper this *Egyptiacum*.

℞. *Olei violati lib.* iiij. *in quibus coquantur catelli duo nuper nati, usque ad dissolutionem ossium, addendo vermium terrestrium, ut decet præparatorum,* ℔. j. *coquantur simul lenti igne, deinde fiat expressio ad usum, addendo terebinth. venet.* ℥iij. *aquæ vitæ* ℥j. This oyle hath a wonderful force to asswage paine, to bring the wound to suppuration, & cause the falling away of the Eschar. This ensuing oyle is made more easily. ℞. *olei seminis lini, & lilior. an.* ℥iij. *unguent. basilic.* ℥j. *liquefiant simul & fiat medicamentum*, put of this a sufficent quality into the wound; for this being applyed indifferent hot, hath power to asswage pain, to soften and humect the orifice of the wound, and help forwards suppuration, which is the true manner of curing these kinde of wounds, according to

The oyle of Whelpes a digestive, anodyne, and fit medicine to procure the falling away of an Eschar.

Lib. de ulcer. the rule of *Hippocrates*, which wishes every contused wound to bee presently brought to suppuration, for so it will be lesse subject to a Phlegmon; and besides, all the rent and bruised flesh must putrifie, dissolve and turne to quitture, that new and good flesh may be generated in steed thereof.

Laurentius Ioubertus much commends this following medicine, of whose efficacie, as yet, I have made no triall. R. *pulver. mercur. bis calcinati*, ℥j, *adipis porci recentis, vel butyri recentis*, ℥viij. *Camphora in aqua vitæ dissolutæ*, ℥ij. *misce omnia simul, addendo tantillum olei liliorum, aut lini.* Experience taught him, and reason also shewes, that this kinde of remedy is very commendable; for the powder of Mercury, if mixed with a grosse and humecting matter, doth in a short space turne the bruised flesh into *pus*, without causing any great paine. 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 meanes of this quality the medicines enter with more facility into the affected bodyes, and performe their parts; besides also Camphire resists putrifaction. Some droppe 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 successe, when the weather is hot, moyst, and foggie. But when the wound is made very neere at hand, it cannot but be burnt by the flame of the powder; in which remedies used for burnes, will be usefull, not omitting such as are fit for contusions. But for these parts which lye next the wound, you shall not, unlesse 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 constipate the skin, which is the cause, that the putride vapours shut up and hindred from transpiration and passage forth, a gangrene and mortification easily seaze upon the part. But if the contusion be great and diffuse it selfe more largely over the flesh; the part must be much scarified; that so the contused and concreat blood, and therefore subject to putrefaction, may be evacuated. But for these parts, which somewhat further distant from the wound encompasse the contused flesh, they require refrigerating and strengthening medicines, so to hinder the falling downe and setling of the humor in that part; such is this ensuing medicine. R. *Pul. boli. armen. sanguin. Dracon. Myrrhæ. an.* ℥j. *succi solan. sempervivi, portulac. an.* ℥iß. *albumin* iiij. *ovorum. oxyrhodin. quantum sufficit; fiat linimentum, ut decet.* You may use this, and the like untill the suspected symptome, be past feare. Neither must you have lesse care, of binding up and rolling the part, than of your medicines; for it doth not a little conduce to the cure, to binde it so fitly up as it may be without paine. 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 quitture begins to flow from it, and consequently the paine and feaver are encreased, it shall be dreſt twise a day, that is every twelve houres. And when the quitture flowes more abundantly than usuall, so that the collection thereof is very troublesome to the Patient, it will be requisite to dresse it every 8 houres; that is thrise a day. Now when as this aboundant effluxe is somewhat slaked, and begins to decrease, it will suffice to dresse it twise a day. But when the ulcer is filled with flesh, and consequently casts forth but little matter, it will serve to dresse it once a day, as you did at the first.

The faculties of the powder of Mercury.

The force of calcined vitriol oil.

How wounds made by Gunshot may be combust.

Scarification.

An Astringent repelling medicine.

The binding up.

How often the wound must be dreſt in a day.

CHAP. VI.

How you shall order it at the second dressing.

AT the second and following dressings, unlesse you suspect putrifaction, and a Gangrene, you shall onely put into the wound some of the oyles formerly described, adding to them the yolkes of some egges and a little saffron; and use this medicine, untill the wound come to perfect suppuration. Here you must note this, that these kindes 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 ayre which it violently carries before it, by much bruising the flesh, on every side, dissipates the native heate, and exhausts the spirits of the part. Which things hinder

Why wounds made by Gunshot are so long before they come to suppuration.

hinder digestion, and often cause the matter to stinke, as also many other pernitious symptomes. Yet most usually *pus* or quitture appeares within three or foure dayes, sooner and later according to the various complexion, and temperament of the patients bodyes, and the condition of the ambient ayre in heate and cold. Then by little and little you must come to deterfives, adding to the former medicine some Turpentine washed in Rose, Barly, or some other such like water, which may wash away the biting thereof. If the encompassing ayre be very cold, you may to good purpose adde some *aqua vitæ*; for by *Galens* prescript, we must use hot medicines in winter, and lesse hot in summer. Then in the next place use deterfives, as R. *aquæ decoctionis hordei quantum sufficit, succi plantaginis, appij, agrimon. centaurei minoris, an.* ℥j, *bulliant omnia simul; in fine decoctionis adde terebinthinæ venetæ* ℥iij. *mellis rosat.* ℥ij. *farin. hordei.* ℥iij. *croci* ℈j. Let them be all well mixed together and make a Mundificative of an indifferent consistence. Or R. *succi clymeni, plantag. absinth. appij, an.* ℥ij. *tereb. venet.* ℥4. *syrup. absinth. & mellis ros. an.* ℥ij. *bulliant omnia secundum artem, postea colentur, in colatura adde pulver. aloes, mastiches, treos Florent. far. hord. an.* ℥j. *fiat Mundificatiuum ad usum dictum.* Or else R. *terebinth. venet. lot'æ in aq. ros.* ℥v. *olei ros.* ℥j. *mellis ros.* ℥iij. *myrrhæ, aloes, mastich. aristoloch. rotundæ, an.* ℥ß. *far. hord,* ℥iij. *misce.* Make a Mundificative, which you may put into the wound with tents, but such as are neither too long, nor thicke, lest they hinder the evacuation of the quitture and vapours, whence the wounded part will bee troubled with erosion, paine, defluxion, inflammation, abscesse, 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, unlesse small ones, and of an indifferent consistence; lest (as I sayd) you hinder the passing forth of the matter, or by their hard pressing of the part, cause paine, and so draw on maligne symptomes. But seeing tents are used both to keepe open a wound so long, untill all the strange bodyes be taken forth, as also to carry the medicines, wherewithall they are annointed: even to the bottome of the wound. Now if the wound be sinuous and deepe, that so the medicine cannot by that meanes arrive at the bottome and all the parts thereof, you must doe you businesse by injections made of the following decoction. R. *aq. hord.* lib. 4. *agrimon. centaur. minor. pimpinelle, absinth. plantag. an. M.* ß. *rad. aristoloch. rotund.* ℥ß. *fiat decoctio ad lib.* j. *in colatura expressa dissolve aloes hepatica* ℥iij. *mellis ros.* ℥ij. *bulliant modicum.* Inject some of this decoction, three or foure times into the wound, as often as you dresse the patient; and if this shall not be sufficient to cleanse the filth, and waste the spongious, putride and dead flesh, you shall dissolve therein as much *Ægyptiacum* as you shall thinke 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 lyes in the capacity of the wound; besides also it only workes upon such kind of flesh. For this purpose, I have also made triall of the powder of Mercury, and burnt Alome equally mixed together, and found them very powerfull, even almost as sublimate, or Arsenicke, (but that these cause not such paine in their operation.) I certainely much wonder at the largenesse of the Eschar which arises by the aspersiō of these powders. Many Practitioners would have a great quantity of the injection to be left in the cavityes of sinuous ulcers, or wounds; which thing I could never allow of. For this contained humor causeth an unnaturall tension in these parts, and taints them with superfluous moysture, whereby the regeneration of flesh is hindered; for that every ulcer as it is an ulcer, requires to be dryed, in *Hippocrates* opinion. Many also offend in the too frequent use of Tents; for as they change thē every houre, they touch the sides of the wound, cause pain, & renew other maligne symptomes; 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 presse a linnen boulster to the bottome of the wound, that so the parts themselves may be mutually condensed by that pressure and the quitture thrust forth; neither will it be amisse to let this boulster have a large hole fitted to the orifice of the wound & end of the hollow tent and pipe, that so you may apply a spunge for to receive the quitture, for so the matter wil be more speedily evacua-

Why Turpentine must be washed.

Gal. lib. 3. *Meth.*

A detergent medicine.

Why tents must be neither too long, nor thicke.

When you must use injections.

An Injection.

The quantity of *Ægyptiacum* to be used in an injection.

Why none of the injection must be left in the wound.

Hollow tents or pipes

The manner of binding up the wound.

evacuated and spent, especially if it be bound up with an expulsive ligature, beginning at the bottome of the ulcer, and so wrapping it up to the toppe. All the boulsters and rowlers, which shall be applyed to these kindes 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 doe not binde the wound too hard, for hence will arise paine, hindring the passage forth of the putredinous vapours and excrements, which the contused flesh casts forth; and also feare of an *Atrophia*, or want of nourishment, the alimentary juyces being hindred from comming to the part.

CHAP. VII.

By what meanes strange bodyes, left in at the first dressing, may be drawne forth.

Two causes that make strange bodies hard to be taken forth.

IT divers times happens, that certaine splinters of bones, broken and shattered asunder by the violence of the stroake, cannot be pulled forth at the first dressing, for that they either doe not yeeld or fall away, or else cannot be found by the formerly described instruments. For which purpose this is an approved medicine to draw forth that which is left behind.

℞. *radic. Ireos Florent. panac. & cappar. an.* ℥ij. *aristoloch. rotund. manna, thuris. an.* ℥j. *in pollinem redacta incorporentur cum melle rosar. & terebinth. venet. an.* ℥ij. or ℞. *resin. pini sicca* ℥iij. *pumicis combusti & extincti in vino albo, radic. Ireos, aristolochiæ, an.* ℥ß. *thuris* ℥j. *squamæ æris,* ℥ij. *in pollinem redigantur, incorporentur cum melle rosato, fiat medicamentum.*

CHAP. VIII.

Of Indications to be observed in this kinde of wounds.

THe ulcer being clensed and purged, and all strange bodyes taken forth; natures 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 drawne, 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 bee taken from the primitive cause and time; must bee understood of the time past, and the cause which is absent. And then from the principall times of the disease, the beginning, encrease, state, and declination; for each of these foure require their remedies. Others are taken from the temperament of the patient, so that no Chirurgion needs doubt, that some medicines are fit for cholericke, others some for phlegmaticke bodyes. Hither referre the indication taken from the age of the patient; also it is drawn from his dyet, for no man must prescribe any slender diet to one who is alwayes feeding, as to him who is accustomed to eate but once, or twise a day. Hence it is that a dyet consisting onely 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 dayly exercises, are referred to dyet, for other things befit husbandmen and laboures, 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 drawne from the strength of the patient; for we must presently, (all else being neglected) succour the fainting, or decaying strength; wherefore if it be needfull to cut off a member that is putrified, the operation must bee deferred if the strength of the patient be so dejected, that hee cannot have it performed without manifest danger of his life. Also indication may be drawne from the encompassing ayre, under which also is comprehended that, which is taken from the season of the yeere, region, the state of the ayre and soyle, and the particular condition of the present and lately by-past time. Hence it is we reade in *Guido*, that wounds of the head are cured

The Indication which is drawne from the strength of the patient is the chiefest of all other.

with

with farre more difficulty at *Paris*, than at *Avignion*; where notwithstanding on the contrary, the wounds of the legges are cured with more trouble, than at *Paris*; The cause is, the ayre is cold and moyst at *Paris*; which constitution seeing it is hurtfull to the braine and head, it cannot, but must be offensive to the wounds of these parts. But the heate of the ambient ayre at *Avignion*, attenuates and dissolves the humors, and makes them flow from above downewards. But if any object that experience contradicts this opinion of *Guido*, & 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 & naturall heate of the ayre, but to a certaine maligne & venenate humor, or vapour dispersed through the ayre, and raysed out of the Seas; as you may easily observe in those places of France & Italy which border upon the Mediterranean Sea. An indication may also be drawne from the peculiar temper of the wounded parts, for the musculous parts must be dressed after one, and the bony parts after another manner. The different sense of the parts, indicates and requires the like variety of remedies; for you shall not apply so acride medicines 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 needefull for the preservation of life; for oft times wounds of the braine, or of some other of the naturall and 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 certainely pronounce the whole successe of the disease; for wounds which penetrate into the ventricles of the braine, into the heart, the large vessells, the chest, the nervous part 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 repleate with ill humors, as we have formerly noted. Neither must you neglect that indication which is drawne from the situation of the part, and the commerce it hath with the adjacent parts, or from the figure thereof; seeing that *Galen* himselfe would not have it neglected. But wee must consider in taking these forementioned Indications, whether there bee a composition, or complication of the diseases; for as there is one and that a simple indication, of one & 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 paine, or bleeding. It sometimes comes to passe, that these three, the disease, cause, and symprome, concurre in one case or affect. In artificially handling of which, we must follow *Galens* 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 composure of affects, which distracts the Empericke; But on the contrary the rationall Physition hath a way prescribed in a few and these excellent words, which if hee follow in his order of cure, hee can scarse misse to heale the patient. Symptomes truely 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 followes the disease, as a shadow followes the body. But symptomes doe often times so urge and presse, that perverting the whole order of the cure, we are forced to resist them in the first place, as those which would otherwise encrease the disease. Now all the formerly mentioned indications may be drawne 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, nor union of wounds or Vlcers.

Why wounds of the head at *Paris*, and of the legges at *Avignion* are hard to be cured.

An indication to be drawne from the quicke and dull sense of the wounded parts.

Gal. lib. 7. Meth. et 2. ad Glauc.

Gal. lib. 7. Meth.

How and when we must take indication of curing from a symptome.

CHAP.

Chap. IX.

What remaines for the Chirurgion to doe in this kinde of wounds.

THe Chirurgion must first of all be skilfull and labour to asswage paine, hinder defluxions, prescribe a dyet in these sixe things we call Not naturall, forbidding the use of hot and acrid things, as also of wine; for such attenuate the humors and make them more apt for defluxion. Therefore at the first let his dyet be slender, that so the course of the humors may bee diverted from the affected part; for the stomacke being empty and not well filled, drawes from the parts about it, whereby it consequently followes, that the utmost and remotest parts are at the length evacuated; which is the cause, that such as are wounded, must keepe so spare a dyet for the next dayes following. Venery is very pernitious, for that it inflames the spirits and humors farre beyond other motions; whereby it happens that the humors waxing hot, are too plentifully carryed to the wounded and overheated part. The bleeding must not bee stanched presently upon the receiving of the wound, for by the more plentifull effluxe thereof the part is freed from danger of inflammation and fulnesse. Wherefore if the wound bleede not sufficiently at the first, you shall the next day open a veine, and take blood according to the strength and plenitude of the patient; for there usually flowes no great store of blood from wounds of this nature; for that by the greatnesse of the contusion and vehemencie of the mooved ayre, the spirits are forced in, as also I have observed in those who have one of their limbes taken away with a Cannon bullet. For in the time when the wound is received, there flowes no great quantity of blood, although there be large veines and arteries torne in sunder thereby. But on the 4, 5, 6. or some more dayes after, the blood flowes in greater abundance, and with more violence, the native heate and spirits returning into the part. The belly must be so qualified, that he may have at the least one stoole a day, either by nature, or Art; and if by Art, then rather with a glister than purging medicines taken by the mouth, for that the agitation of humors, chiefely in the first dayes of the disease, is to be suspected, least we increase the defluxion falling downe upon the wounded part. Yet *Galen* writes that both the evacuations are heere needefull, that is, blood-letting and purging, though the Patient bee neither plethoricke, nor repleate with ill humors. But the care hereof must be committed to the judgement of the learned Physition. Paine if joyned with inflammation shall be mitigated, by anointing the parts neere unto the wound with *Vnguent. nutritum*, composed with the juyce of Plantaine, Houseleeke, Nightshade and the like. *Vnguentum Diacalcitheos* described by *Galen* dissolved with vinegar, oyle of Poppyes and Roses is of no lesse efficacy; nor *unguent. de bolo*, nor divers other things of the same faculty, though properly no anodynes, as those which are not hot and moyst in the first degree, but rather cold, but yet not so as to have any narcoticke faculty. Now these forementioned things asswage paine for that they correct the hot distemper, and stay the acride and cholericke defluxions, whose violence is more than cold. After the use of repercussives, it will be good to apply this following cataplasme. ℞ *Mica panis infusa in lacte vaccino* ℔ j. ß. *bulliant parum addendo olei violacei, & rosar. an.* ℥iij. *vitellos ovorum nu.* iiij. *pulver. rosar. rub. flor. chamam. & meliloti, an.* ℥ij. *farin. fabar. & hordei, an.* ℥j. *misce. fiat cataplasma secundum artem.* Also in this case you may easily make a medicine, of bread crummes boyled in Oxycrate and oyle of Roses. The cure of Tumors, if any associate the wound, may be found in their proper place: Natures motion, whether to suppuration, or any such thing, must still be observed, and helped by the Physition and Chirurgion, as the ministers or servants thereof.

Why such as are wounded must keepe a slender Diet,

Why we must open a veine in such as are wounded by Gunshot.

Gal. Lib. 4. Meth. cap. 6.

Gal. Lib. 1 de comp. Med. secund. gen. c. 6.

An Anodyne and ripening Cataplasme

CHAP. X.

Of Bullets which remaine in the body, for a long time after the wound is healed up.

LEaden Bullets lye in some parts of the body some whiles seaven, eight or more yeares, so that they neither hinder the agglutination of the wound, neither doth any other symptome happen thereupon, as I have diverse times observed; untill at length by the strength of nature forcing them, and their proper weightines bearing them downewards, they shew themselves in some lower part, by their swelling or bunching forth, and so must be taken forth by the hand of the Chirurgion. For they say Lead hath a certaine sympathy and familiarity with mans body, chiefely the fleshy parts thereof. Wherefore it neither putrifies its selfe, nor causeth the flesh to putrifie; besides it hath an excellent faculty in cicatrizing old ulcers. But bullets of stone, Iron and of any other mettall, are of another nature, for they cannot remaine any long time in the body without hurt; for Iron will grow rusty, and so corrode the neighbouring bodyes, and bring other maligne symptomes. Yet a Leaden bullet cannot remaine any long time in nervous, or noble parts without danger.

Why Leaden Bullets lye in the body so many yeeres without doing any harme.

CHAP. XI.

How to correct the constitution of the ayre, so that the noble parts may be strengthened, and the whole body besides.

BVt because as we have formerly told you, there are some times wherein even small wounds made by Gunshot prove deadly, not by their owne fault, but the fault of the ayre; therefore also the Chirurgion must have this care, that he correct the ayre with all diligence, and reduce it to a certaine quality and moderation of substance, and strengthen the noble parts and whole body besides, which may be performed, by the following medicines, which are to be taken inwardly and applyed outwardly. In the morning three houres before meate let the Patient take some certaine quantity as the Physition shall thinke fit of the electuary *Diarhodon Abbatis, or Aromaticum rosatum, triasantalon, diamoschum, latificans Galeni*, or some such other like. And you shall apply some such Epitheme as is heere described to the heart and Liver. ℞ *aquæ rosar.* ℥iiij, *aquæ bugloss.*, *aceti boni, an.* ℥j. *coriandri præparati* ℥ß. *caryophill. cortic. citri an* 3j. *sant. rub.* 3ß. *coralli utriusque* 3ß. *camphoræ* ℈j. *croci* ℈ß. *pulver. diarhod. Abbat.* 3ij. *theriacæ & Mithridatij an.* ℥ß. *pul. flo. chamæm. & melil. an.* 3iij. *misce, fiat epithema.* Let it be applyed warme by dipping a scarlet cloath therein. You shall frequently put odoriferous and refrigerating things to the patients nose, to strengthen the animall faculty, as, ℞. *aquæ rosar. & aceti boni. an.* ℥iij. *caryophyllorum, nucis moschat, cinamomi conquassatorum & Theriacæ Galeni, an.* 3j. Let a linnen ragge 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 thereto. As ℞ *ros. rub. violar. an.* 3iij. *baccarum myrti, juniperi, santal. rub. an.* 3ijß. *styracis calamit.* 3ij. *aq. rosarum, quantum satis est: liquefiat simul cum cerâ albâ quod sufficit, fiat ceratum ad comprehendendas supradictas pulveres cum pistillo calido, & ducatur in pomum.* Or, ℞. *rad. Ireos Florent. majoran. calam. aromat. ladani, benzoini, rad. cyperi, caryophill. an.* 3ij. *Moschi, gra.* 4. *fiat pulvis cum gummi tragacanth. quod sufficit.* Or else. ℞. *ladani puri* ℥j. *Benzoini* ℥ß, *styracis calamit.* 3vj, *ireos Flor.* ℥ß *caryophyll.* 3iij. *majoran. ros. rub. calami aromat. an.* 3ß, *in pollinem redigantur omnia, & bulliant cum aqua ros. quantum sufficit; colentur, colata liquefiant cum justa ceræ albæ quantitate, styracis liquidæ*, ℥j, *fiat ad modum cerati & cum pistillo fiat pomum, addita moschi* 3j. Also you may corroborate the animall faculty by application of frontalls, as also procure sleepe, and ease the paine of the head; as,

Cordialls to strengthen the noble parts.

A cordiall Epithem.

Pomanders.

Frontalls to cause rest, and strengthen the animall faculty.

as, R. *aq. ros* ℥ij. *olei ros. & papav. an.* ℥iß. *acet i boni,* ℥j. *trochis. de camphora,* 3ß. *fiat frontale.* Linnen ragges dipped herein may be applyed to the temples of the forehead, and often renewed; otherwise by their heate, dryneſſe, and hardneſſe, they will cauſe watching in ſteed of ſleepe. Neither muſt you in the meane time binde the head too hard, leſt by intercepting and hindring the pulſation of the temporall Artery, you encreaſe the paine of the head. You ſhall make a fire, in the patients chamber of odorifferous woods, as Iuniper, Bay-tree, the prunings or cuttings of Vines, Roſemary, and Orris rootes. For the ſame purpoſe, you may ſprinkle the floore with ſweete water, if the patient be able to undergoe ſuch coſt. As, R. *majoranæ, menthæ, radic. cyperi, calami aromat. ſalviæ, lavendulæ, fanicul. thymi, Hæchad. flor. chamæm. melilot. ſatureiæ, baccarum lauri, & juniperi, an. M.* iij. *pulv. caryophyll. nucis Moſchat. an.* ℥j. *aquæ roſar. & vitæ, an. lib.* ij. *vini albi boni & odorifici.* ℔. x. *bulliant omnia in balneo Mariæ ad uſum dictum.* You may alſo make perfumes to burne in his chamber, as thus, R. *carbonis ſalicis* ℥viij. *ladani puri* ℥ij. *thuris maſculi, ligni & baccarum Iuniperi, an.* ℥j. *xyloaloes, benjoini, ſtyracis calamit. an.* ℥ß. *Nucis moſchatæ, ſantal. citrin. an.* ℥iij. *caryophill. ſtyracis liquidæ, an.* ℥ij. *zedoariæ, calami aromat. an.* ℥j. *gummi tragacanth. aquæ roſar. ſoluti, quod ſit ſatis;* Make hereof perfumes in what faſhion you pleaſe. For the rottenneſſe and corruption of bones we will treate thereof hereafter in its due place.

A ſweete water.

Perfumes to burne.

Chap. XII.

Certaine memorable Hiſtories.

HEre I thinke good for the benefit of young practitioners, to illuſtrate by examples the formerly preſcribed Methode of curing wounds made by Gunſhot. The famous and moſt valiant Count of Mansfelt, Governour of the Dutchy of *Luxembourge*, Knight of the order of Burgundy, comming to the ayde of the French King, was at the battell of Moncontour, where in the conflict, he received ſo great a wound at the joynt of the left arme with a Piſtoll bullet, that the bones were ſhivered and broken in ſo many peeces, as if they had bin layd upon an Anvill and ſtruck with an hammer: hence proceeded many maligne ſymptomes, as cruel & tormenting paine, inflammation, a feaver, an œdematous and flatulent tumor of the whole arme even to the fingers end, and a certaine inclination to a Gangræne: which to reſiſt, *Nicolas Lambert*, & *Richard Hubert* the Kings Chirurgions, had made many and deepe ſcarifications. But when I came to viſite and dreſſe him, by the Kings appointment, and had obſerved the great ſtinch, and putrifaction, I wiſhed that they would uſe lotions of *Ægyptiacum* made ſomewhat ſtronger than ordinary, & diſſolved in venegar & *aqua vitæ*, and do other things more largely ſpoken of in the chapter of a Gangreene. For the patient had alſo a *Diarrhæa* or fluxe, whereby he evacuated the purulent, and ſtinking filth which flowed from his wound. Which how it might come to paſſe wee will ſhow at large when we come to treate of the ſuppreſſion of the Vrine. For this ſeemed very abſurd to many, becauſe that if this purulent humor flowed out of the arme into the belly, it muſt needs flow backe into the veines, bee mixed with the blood, and by its pernitious and contagious paſſage through the heart and liver, cauſe exceeding ill ſymptomes, and laſtly death. Indeed he often ſwounded by the aſcent of the filthy vapours raiſed from the ulcers to the noble parts; which to reſiſt, I wiſhed him to take a ſpoonefull of *aqua vitæ* with ſome Treacle diſſolved therein. I endeavoured to repreſſe 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 & held to the part with double clothes, ſowed as ſtrait as I could. Such a compreſſion held the broken bones in their places, preſſed their *Sanies* from the ulcers, and forced backe 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 deale of feare, leaſt the native heate of the part ſhould bee ſuffocated. Neither could I otherwiſe binde up the arme by reaſon of the exceſſive paine which moleſted the patient upon the leaſt ſtirring of the Arme. There were alſo many Abſceſſes

The maligne ſymptomes which uſually happens upon wounds made by Gunſhot.

Matter may flow from the wounded limbes into the belly.

about

about his elbow and over all his arme 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 putrifaction with *Ægyptiacum* dissolved in wine or honey of roses, and so poured into the ulcers, and repressing the growth of proud flesh, with the pouder of burnt Alome, drying it after the detersion with liniments. Now this I can truely affirme and professe, that during the time of the cure, I tooke 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 hee could not put forth, or draw in his arme.

A breefe recitall 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 farre from Mounts a City of Henalt. He kept his bed seaven monthes by reason of a wound made by a Bullet the space of three fingers above his knee. When I came to him, hee was afflicted with these symptomes, intollerable paine, a continuall feaver, cold sweats, watchings, excoriation of the hippes by reason of his long lying upon them, his appetite dejected with much thirst. He oft sunke downe as if he had the falling sickneesse, had a desire to vomit, and a continuall trembing or shaking so that he could not put one hand to his mouth without the assistance of the other: he swounded frequently by reason of the vapours ascending to the noble parts. For the thighbone was broken long wayes and sidewayes with many splinters of bones, whereof some were plucked out and others remained sticking fast in. He besides also had an ulcer in his groine which reached to the midst of his thigh, and many other sinuous ulcers about his knee. All the muscles of his thigh and legge were swolne with a flegmaticke, cold and flatulent humor, so that almost all the native heate of those parts seemed extinct. All which things being considered, I had scarse any hope to recover him, so that I repented my comming 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 successe, and drew out a great quantity of matter; then I with a syring injected much *Ægyptiacum* dissolved in wine, and a little *aqua vitæ* into these incisions, so to restraine and amend the putrifaction, represse the spongie, loose and soft flesh, resolve the œdematous and flatulent tumor, asswage the paine, and stirre up and strengthen the native heate almost oppreast by the aboundance of excrementitious humors, so that it could scarsely assimulate any nourishment and adjoyne it to the parts. Then I fomented the affected part with Sage, Rose-mary, Time, Lavander, Chamomile and Melilot flowres and red-rose leaves boyled in white wine, and lye made of Oake-ashes, adding thereto as much salt and vineger as I judged requisite. This fomentation did attenuate and draw forth the morbificke humour. Now we used them long and often, so to waste the humour more by drying up and breathing thorow the passages of the skinne, 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 humour 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, & soale of his foot; but they were to be somewhat quenched, & sprinkeld with wine and vineger, with a small quantity of *aqua vitæ*. Much watrish moisture by this moist heat, did sweat out of these parts, the tumour was lessened, and the native heat by little and little restored. Then shoupes dipped in lye made of Oake-ashes, wherein Sage, Rosmarie, Lavender, salt, and cloaves, were boyled, some *aqua vitæ* added, were applyed thereto; but the rowlers were so gently, and artificially wrapped about, that he did easily endure them without any paine, and that with such happy successe, that if they were omitted but for one day, the tumor became very great. But thicke linnen boulsters were layd 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:

Horride symptomes occasioned by a wound made by Gunshot.

Incisions wherefore made.

Wherefore I used fomentations.

Mixed or round frictions, as they terme them.

A medicated Lye.

and

A discussing Cataplasme.

and sometimes this following cataplasme was applyed to resolve the tumor. R. *Far. hord. fabar. & orobi, an.* ℥vj. *mellis com. & tereb. an.* ℥ij. *flo. chamam. melil. & ros. rub. an.* ℥ß. *pulv. rad. Ireos, Flor. cyper. Mast. an.* ℥iij. *oxymel. simp. quantum sufficit; fiat cataplasma ad formam pultis satis liquidæ.* And *Emplastrum de Vigo* without mercury was applyed thereto, whereby the paine was much asswaged, and the tumor lessened: yet were they not applyed before the parts were throughly heated by the fomentation, frictions, and evaporations; for otherwayes this Emplaster could never have beene activated, by reason of the excessive coldnesse of the affected parts. Neither did we omit catagmaticke powders, fit for the taking, and 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 leane; for by these, blood together with the spirit was drawne to the parts, and the acride, and fuliginous vapours were breathed forth.

To conclude, his feaver and paines being asswaged, his appetite restored, by feeding plentifully upon good meates 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 bragge of the happy successe of those patients, which have recovered by my meanes, 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.

The occasion of writing this Apologie.

THere lately came to my hands a booke written by a certaine Physition, whereby he endeavours to disproove and overthrow, that which I have hitherto writ, of the cure of wounds made by Gunshot. Assuredly if there were no other harme, but the losse of my credit ensuing thereon, I would willingly hold my peace, and stoppe 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, least it, to the great destruction of mankind, spread and diffuse it selfe any further. The use (saith he) of suppurative medicines, have killed many who have beene but lightly wounded with Gunshot, but acride medicines, 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 kinde of wound, it requires new, and not anciently used medicines. Now the temper of the ayre changed from the naturall constitution ought not to indicate change of medicines; but much lesse must thunder and lightening bee compared to the shooting of Great Ordinance. These are the chiefe heads of this his booke, which because they dissent from the truth, & these things I have formerly delivered, I have thought good heere 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 onely according to the opinion of *Hippocrates*, but also of *Galen* and all others who have written of Physicke. Neither must we invent new remedies, for these new kindes of wounds; for the lawes of the sacred and divine Art of Physicke 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 necessitie, which constancie neither consuming time, nor age, nor tyranny can pervert. Wherefore neither these who with great prayse are Physitions to Kings and Princes, I meane *Ioubert* and *Botallus*, think it lawfull for them to depart from the rule of *Hippocrates*. And this they not only doe and follow in curing and doing the workes of Art, but much and highly commend, confirme and propound to be diligently observed by all, in their bookes which they

The chiefe heads of our adversaries Treatise.

All wounds made by Gunshot are contused.

they have publiſhed concerning the cure of theſe kinds of wounds. And yet theſe Phyſitions are ſuch, as daily converſant in Armies and Kings houſes have healed and daily cure as many wounded by Gunſhot as this Phyſition our Antagoniſt hath ſeene in all his life. Neither onely doe theſe whom I have named thus cure theſe wounds, but almoſt all that dreſſe ſuch kind of wounds doe the like, ſo that if there bee nothing which may hinder, or indicate to the contrarie they preſently apply ſuppuratives. And I wonder that hee hath not obſerved how his neighbour *Doublet* the Empericke cures deſperate wounds of this nature, with no other than a ſuppurative medicine, compoſed of Lard, the yolke of an Egge, Turpentine and a little Saffron.

A ſuppurative medicine of tryed efficacy.

In the yeare 1538. There was at *Turin* whileſt I was Chirurgion there to the Marſhall of *Montjan* the Kings Leifetenant Generall in *Piemont*, a certaine Chirurgion wondrous famous for curing theſe wounds, and yet hee uſed nothing elſe but the oyle of Whelpes, (the deſcription whereof I at length obtained of him with much intreaty and expence) and hee uſed it not ſcalding hot, as ſome have imagined, but powred it ſcarſe warme into their wounds, and ſo did mitigate their paine, and happily bring them to ſuppuration. Which afterwards almoſt all Chirurgions, after they had got the deſcription heereof, when I firſt publiſhed this Worke, have uſed and daily doe uſe with happy ſucceſſe.

But in contemning and condemning *Ægyptiacum*, I thinke hee hath no partaker; ſeeing there as yet hath beene found no medicine more ſpeedy and powerfull to hinder putrifaction, if beginning; or correct it if preſent. Now theſe wounds often degenerate into virulent, eating, ſpreading, and maligne ulcers, which caſt forth a ſtincking and carion-like filth, whence the part Gangrenates, unleſſe you withſtand them with *Ægyptiacum* and other acrid medicines, being greatly approved by the formerly named Phyſitions and all Chirurgions. But (ſaith hee) this unguent is poyſonous, and therefore hath beene the death of many who have beene wounded by Gunſhot. Verily if any diligently enquire into the compoſition of this oyntment, and conſider the nature of all and every the ingredients thereof, hee ſhall underſtand that this kind of Vnguent is ſo farre from poyſon, that on the contrary it directly oppoſes and reſiſts all poyſon and putrifaction which may happen to a fleſhy part, through occaſion of any wound.

The force of *Ægyptiacum* againſt putrefaction.

It is moſt falſe and diſſonant from the doctrine of *Hippocrates* to affirme, that the ſeaſons of the yeare ſwerving from the Law of nature, and the aire, not truly the ſimple and elementary, but that which is defiled and polluted by the various mixture of putrid and peſtilent vapours, eyther raiſed from the earth, or ſent from above, make not wounds more maligne and hard to cure at ſome times than they are at other ſome.

The force of the ayre in breeding and augmenting diſeaſes.

For the ayre eyther very hot, or cold, drawne into the body by inſpiration or tranſpiration, generates a condition in us like its qualities. Therefore why may it not, when defiled with the putredinous vapours of bodies lying unburied after great battailes, and ſhipwracks of great Armadoes, infect with the like qualitie our bodies and wounds?

A Hiſtory.

In the yeare 1562. when the civill warres concerning Religion firſt begun in France, at *Pene* a Caſtle lying upon the River *Lot*, many ſlaine bodies were caſt into a Well, ſome hundred Cubits deepe, ſo ſtinking and peſtilent a vapour aroſe from hence ſome two moneths after, that many thouſand of people dyed all over the Provence of *Agenois*, as if the Plague had beene amongſt them, the pernitious contagion being ſpred twenty miles in compaſſe; which none ought to thinke ſtrange, eſpecially ſeeing the putride exhalations by the force of the windes 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 malignitie, or perverſe cure of wounds, but to be the fault of the aire.

Therefore *Francis Daleſchampe* in his French Chirurgery, in reckoning up theſe things which hinder the healing of Vlcers, hath not omitted

that common cause which proceeds from the ayre defiled or tainted with the seedes of the pestilence. For he had learnt from his Master *Hippocrates* that the murations of times chiefely bring diseases, and he had read in *Guido*, that this was the chiefe occasion, that wounds of the head at *Paris*, and of the legges at *Avignion*, were more difficultly healed. Lastly even Barbers and such as have least skill in Chirurgery know, that wounds easily turne into a Gangreene in hot and moyst constitutions of the ayre.

Hip. Aph. 1. sect. 3.

Wherefore when the winde 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 ayre in the seige of *Rouen*, 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 Ægyptiacum* and medicines of the like faculty in steed of suppuratives, to wounds during all that season, that so I might withstand the putrefaction and Gangreene which so commonly assayled them. But if the various motion of the starres, can by their influxe send a Plague into the aire, why then may it not by depravation of their qualityes infect, and as by poysoning corrupt both wounds and wounded bodies obnoxious to their changes and that of the ayre? Wee learnt long since by experience, that all paines but principally of wounds, grow worse in a rainy and moist season, specially because in that southerly constitution the aire replete with thicke and foggy vapours, causes the humors to abound in the body, which forthwith easily fall upon the affected parts, and cause encrease of paine. 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 confesse is true; but yet I deny, that it was occasioned by applying suppuratives, or corrosives, but rather by the vehemencie and largenesse of their wounds, and the spoile 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 skinne and causes a Gangreene. If this my Gentleman had beene with mee in the seige of *Metz*, he might have seene the Legges of many souldiers to have rotted, and presently taken with a Gangreene to have fallne away, by the onely extremitie of cold; If he will not beleeve me, let him make tryall himselfe; and goe 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 hee shall learne and feele how true I speake. In the meane time I thinke it fit to confute the last point of his reprehension.

In our second discourse.

The power of the starres upon the Aire and our bodies.

Apho. 20. sect. 5.

He cavills for that I compared Thunder and Lightning with the discharging peices of Ordinance. Frst he cannot denie but that they are alike in effects. For it is certaine that the flame arising from Gunpouder set on fire, resembles Lightning; in this also that you may see it before you heare the cracke or reporr. I judge for that the eye almost in a moment perceives its object; but the eare cannot but in some certaine space of time, and by distinct gradations. But the rumbling noise is like in both, and certainly the report of great Ordinance may bee heard sometimes at forty miles distance, whilst they make any great battry in the besieging of Cities.

The similitude betweene Thunder and great Ordinance, maintained.

Besides also, Iron Bullets cast forth with incredible celerity by the fiered Gunpouder, throw downe all things with a horrid force, and that more speedily and violently by how much they resist the more powerfully by their hardnesse. They report that Lightning melts the money not hurting the purse; Now many by the onely violence of the aire agitated and vehemently mooved by shooting a peice of Ordinance, as touched with Lightning, have dyed in a moment, their bones beeing shivered and broken, no signe of hurt appearing in the skinne.

The smell of Gunpouder when it is fiered, is hurtfull, firy and sulphurous, just like that which exhales or comes from bodies killed with Lightning. For men doe not onely shunne this smell, but also wilde Beasts leave their Dennes if touched with Lightnings. Now the cruelty of great Ordinance makes

no

no lesse spoyle amongst buildings, nor slaughter amongst men and beasts, than Lightnings doe, as wee have formerly showne by examples, not onely horrid to see, but even to heare reported, as of Mines, the Arcenall of *Paris*, the Cittie of *Atalignes*. These may seeme sufficient to reach, that Thunder and Lightning have a great similitude with the shooting of great Ordinance, which notwithstanding I would not have alike in all things. For they neither agree in substance, nor matter, but onely in the manner of violent breaking asunder the objects.

Now let us see and examine what manner of cure of wounds made by Gunshot our adversarie substitutes for ours. For hee would have suppuratives used and applyed, yet such as should not be hot and most in qualitie, or of an Emplasticke consistence, but hot and dry things. For (saith hee) here is not the same reason as in Abscesses, where the Physition intends nothing but suppuration. But heere because a contusion is present with the wound, this requires to bee ripened with suppuratives, but the wound to be dryed. Our adversaries method, and manner of cure; reproved.

Now to answer this objection, I will referre him to *Galen*, who will teach him the nature of suppuratives; from whom also hee may learne that great regard is to be had of the cause and more urgent order in the cure of compound diseases; then would I willingly learne of him, whether he can heale a wound made by Gunshot, not first bringing that which is contused to perfect maturitie. If hee affirme hee can, I will be judged by whatsoever Practitioners hee will, to judge how obscure these things are. Whereby you may the better understand there is nothing more commodious than our *Basilicon* and oyle of Whelpes to ripen wounds made by Gunshot, if so bee that putrifaction, corruption, a Gangreen or some other thing doe not hinder. Then would hee have *Oxycrate* poured into these wounds to stay their bleeding, which if it cannot so bee stayed, hee would have a medicine applyed consisting of the white of an Egge, Bole Armenicke, oile of Roses and salt. But I leave it to other mens judgement, whether these medicines have power to stay bleeding if put into the wound; certainly they will make it bleede the more. For Vinegar seeing it is of a tenuious substance and biting, it is no doubt but that it will cause paine, defluxion and inflammation. *Gal. Lib. 9. simpl. 10. Method.* Vinegar put into a wound doth not stay but causes bleeding.

To which purpose I remember I put to stanch bleeding, for want of another remedie, a medicine wherein was some Vinegar, into a wound received by a Moore, an attendant of the Earle of *Roissy*, hurt with a Lance, run through his arme before *Bologne* by an English horseman. But he comes againe to mee a little after, complaining and crying out that all his arme burnt like fire; wherefore I was glad to dresse him againe, and put another medicine into his wound, and layd an astringent medicine upon the wound, but poured it not therein. A History.

And then above all other remedies hee extolls his Balsame composed of Oyle of Waxe, and Myrrhe beaten together with the white of an Egge; which hee saith is equall in operation to the naturall Balsame of *Peru*. For hee affirmes that this hath a facultie to consume the excrementitious humidity of wounds, and so strengthens the parts that no symptome afterwards troubles them. Yet hee saith, this doth not so well heale and agglutinate these wounds, as it doth others which are cut. Verily it is ridiculous to thinke that contused wounds can bee healed after the same manner as simple wounds may, which onely require the uniting of the loosed continuitie. Balmes are fit to heale simple but not contused wounds.

Therefore neither can these Balsames be fit remedies to heale wounds made by Gunshot, seeing by reason of their dryenesse they hinder suppuration, which unlesse it be procured the patient cannot be healed. Wherefore such things ought not to be put into wounds of this nature, before they be ripened, washed and cleansed from their filth. Yet can I scarse conceive, where we shall be able to finde out so many Chymists which may furnish us with these things sufficiently to dresse so many wounded souldiers as usually are in an Army, or whence the souldiers shall have sufficient meanes to beare the charge thereof. Also that which he saith is absurd, that these Balsames must bee put into the wounds without Tents; and presently forgetting himselfe, hee saith, It will not bee amisse, if there bee a little and slender Tent put into the wound, which may onely serve to hinder the agglu-

tination thereof. But how can these Balsames come to the bottomes of wounds without Tents, when as it is their chiefe propertie to carry medicines even to the innermost parts of the wounds, and alwayes keepe open a free passage for the evacuation of the quitture? But it is note worthy, that after hee hath rejected *unguentum Ægyptiacum*, hee nevertheless bids to apply it, from the beginning untill the contusion come to perfect maturation, dissolving it in a decoction of the tops of wormewood, S. *Iohn wurt*, the lesser Centory and Plantaine, and so injecting it into the wound. Besides also a little after hee gives another way of using it, which is, to boyle a quantity of Hony of Roses in plantaine water, carefully seiming it, untill it bee boiled to the consistence of Hony, and then to adde as much *Ægyptiacum* thereto, and so to make an oyntment most fit to bring these wounds to suppuration. But I leave it for any skilfull in Chirurgery to judge, whether such medicines can bee suppuratives, or whether they bee not rather deterfives. Last of all hee writes, that these wounds must bee dresst but every fourth day. And if there bee a fracture of the bone joyned with the wound, then to moove nothing after the first dressing untill the eighth day after; then presently in another place hee saith, it will bee good, and expedient, to drop ten or twelve droppes of the formerly described Balsame every day into the wound. Verily such doctrine which neyther agrees with its selfe nor the truth, cannot but much puzle a Novice and young Practitioner in Chirurgery, who is not yet versed in the Art, or the operations thereof.

Egyptiacum howsoever made is a clenser not a suppurative.

CHAP. XIIII.

Another Apologie, against those who have laboured with new reasons to proove, that wounds made by Gunshot are poysoned.

The occasion of this Apologie.

SOme few monthes agone, I visited a patient together with some learned Physitions and skillfull Chirurgions. Now they, as it oft times happens, in way of discourse, begun to argue of the condition and quality of wounds made by Gunshot, and endeavoured to proove 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 bee transfused and incorporated. The first reason is, that Lead seeing it is of a rare and spongious nature, which the easinesse of melting and softnesse argues, is very fit to drinke and soake in what liquors so ever you please. But me thinkes this conclusion is very weake; for in all mixtures made by Art, such as this is whereof wee speake, there are two things to be considered; that is to say, the matter of the things which enter into the mixture, and the forme: for the matter, such bodies must be eyther 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 concurre and bee conjoyned and united. But for their forme, there ought to be a certaine affinitie, consent and simpathy. You may perceive this by water and oyle; for each of them though of a liquid substance, and such as may easily bee mixed with divers other things, yet cannot they bee mixed the one with the other by reason of their antipathy of formes. For thus gold and silver are so agreeing with Lead, that as oft as they are molten, Lead is mixed with them. But Brasse shuns Lead as much as gold and silver fly Tinne and white Lead. If therefore Brasse and Lead being melted cannot bee mixed together, though conteined under the same *Genus*, and common nature of Mettalls; how then can it be commixt with another thing distinct in the whole kinde, much more in *species*, and forme, to wit, poyson? Their second reason is this; Iron, say they, which is more dense, solid, and lesse porous, may receive some venenate substance and quality, as the Arrowes of the Ancients which were dipped in poyson, testifie; therefore must Lead much

The reasons of our adversaries that the Bullets may be poysoned, set downe and confuted.

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 heere the question is of union, but not of annointing or inunction.

The third reason is thus framed; Though (say they) Lead casts off and purges it selfe from the drosse and unpure parts, yet that is no argument, that it will not commix, or soake its selfe in some strange liquor or body; for thus Steele, being the most solid Iron, receives the temper which hardens it by the artificiall pouring upon it or quenching it in liquors contrary thereto in their whole kind. I answer, that Steele admits into it by that quenching and tempering, none of the juices or liquors wherewith it is watred or quenched. For if that were necessary, it might be better and more easily performed, when the mettall is first cast, than when it is beaten into plates, or barres; which answer shall serve to confute their fourth reason, wherein they say, that bullets may be made so poysonous by the commixture of the juices of Muncks-hood, Oleander, Crowe-foote, and other such like things which in their whole substance are contrary to ours, that the wound which is made with them cannot but be poysoned.

But I on the contrary affirme, that mixture is onely of these things, which may not onely be put, but also sticke thereto, and be mutually united; but how can water, or any other liquid juice so much as onely sticke to Lead, as that which is a solid and firme body, it is so farre from being united therewith? You may give more certaine judgement hereof by experience, than by reason; wherefore let melted Lead be put into the foresaid juices or the like; then when the lead is cold, weigh each of them severally, and you shall finde, that both of them retaine the same weight they formerly had. Which is a most certaine argument that neither the Lead hath mixed or united it selfe with the juices, nor the juices lost any part of their substance.

Their fifth reason is thus; A Bullet shot out of a Gun against some hard stone, growes not so hot, but that you may presently without any harme take it up in your hand. Therefore it is false, that the poyson commixt and united with the Bullet can bee dissipated by the fire and flash of Gunpouder. The answer to this objection is easily. For when wee say, that although the Bullet may bee infected by poyson perfectly commixt with the Lead, yet all the force of the poyson would bee dissipated by the fire; wee would have you thus to understand us, that we doe not meane this of that fire which is made by the pouder at the discharging of the Peice, but of that by force whereof the molten head is mixed and conjoyned with the venenate juice, so to make one of many. For this fire exercising its force upon the venenate juices hindred 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 bee satisfied by these reasons, let him consult, and reade *Matthiolus*. There are (saith hee) some of these latter times wholly ignorant of things, who (if wee may say the truth) have beene so madly fooliſh, that they said it was fit and requisite to put Treacle and Mithidate and such like Antidotes amongst Gold and Silver that was melted to make Cuppes, that so receiving the faculties of the Antidote they might resist poyson. But how absurd and ridiculous their opinion is, let them judge (for it needs no clearer reproofe) who have but a little knowledge in naturall things, but chiefely in Mettalls. *In proœm. l. 6. Dioscor.*

These are my reasons, these the authorities of men excelling in learning and judgement, that confirme me in my ancient and former opinion, that wounds made by Gunshot doe not partake of any venenate qualitie.

CHAP. XV.

How wounds made by Arrowes differ from such as are made by Gunshot.

Wounds made with Arrowes and such like things, are often without contusion. But are oftentimes poysoned.

WOunds made by Arrowes and Bolts shot out of Crosse-bowes 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 Arrowes is different in it selfe, by reason of the variety and divers sorts of Darts or Arrowes.

CHAP. XVI.

Of the diversities of Arrowes and Darts.

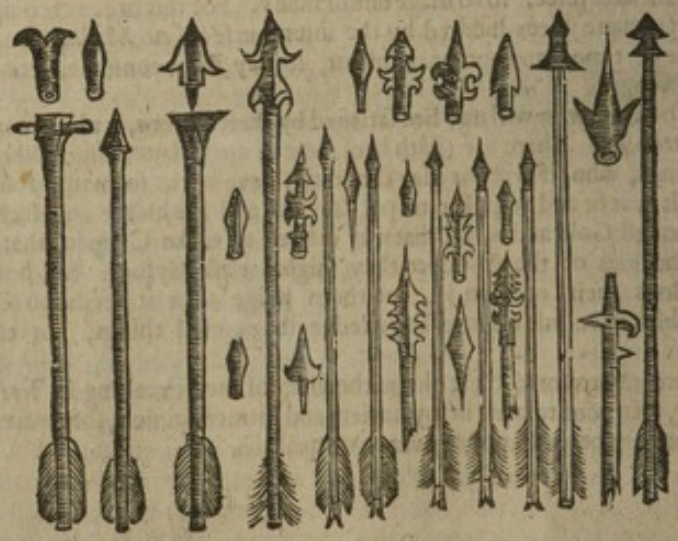
The differences of Arrowes. In matter. In figure.

In bigness. In number. In making.

In force.

ARrowes and Darts are different amongst themselves both in matter and in forme or figure, in number, making, facultie 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, Brasse, Lead, Tinne, Horne, 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 wayes; but some are broad aad cut like a Chissell. For their bigneſse, some are three foote long, some lesse. For their number, they differ in that, because some have one head, others more. But they varie in making, for that some of them 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 proceede. But they differ in force, for that some hurt by their Iron onely, others besides that, by poyson, wherewith they are infected. You may see the other various shapes here represented to you in the following Figure.

The Figures of divers sorts of Arrowes.



CHAP.

Chap. XVII.

Of the difference of the wounded parts.

THe Wounded parts are eyther fleshy or bony; some are neare the joynts, others seated upon the very joynts; some are principall, others serve them; some are externall, others internall. Now in wounds where deadly signes appeare, its fit you give an absolute judgement to that effect; least 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 worke. For it is much better to try a doubtfull remedy, than none at all.

You must not leave the weapon in the wound.

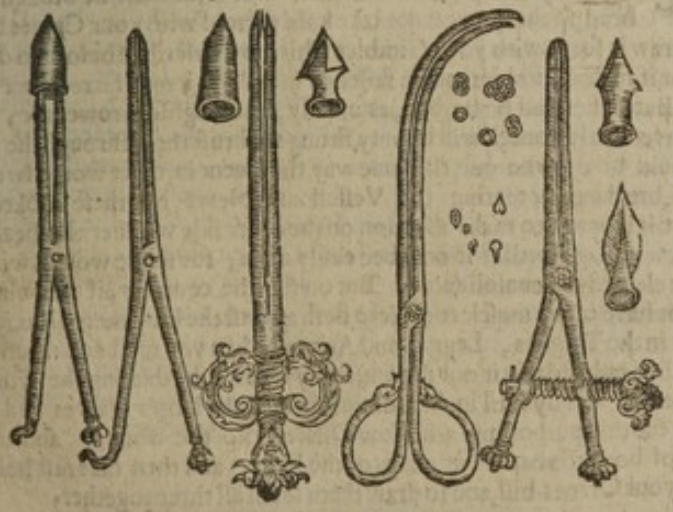
Chap. XVIII.

Of drawing forth Arrowes.

YOu must in drawing forth Arrowes shun incisions and dilacerations of Veines and Arteries, Nerves and Tendons. For it is a shamefull and bungling part to doe more harme with your hand, than the Iron hath done. Now Arrowes are drawne 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 performe, you shall set the Patient in the same posture, as hee stood when he received his wound; and hee must also have his Instruments in a readinesse, chiefely 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 screw at the end, but is larger and thicker, so to widen the pipe, that so widened it may fill up the hole of the Arrowes 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 bee 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 finde the Iron or head that lies hid by these signes, there will be a certaine roughnesse and inequalitie observable on that part if you feele it up and downe with your hand: the flesh there will be bruised, livid, or blacke, and there is heavinesse and paine felt by the patient both there and in the wound.

The manner of drawing forth Arrowes and such weapons.

A deliniation of Instruments fit to draw forth the heads of Arrowes and Darts, which are left in the wound without their shafts.



A hooked Instrument fit for to draw forth strange bodies, as peices of Maile, and such other things as it can catch hold of, which may also bee used in wounds made by Gunshot.



But if by chance either Arrowes, Darts or Lances, or any winged head of any other weapon, bee run through and left sticking in any part of the body, as the Thigh, with a portion of the shaft or staffe shivered in peices, 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 plucke forth the head, as you may see by this Figure.

Chap. XIX.

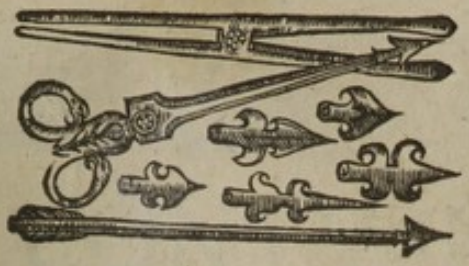
How Arrowes broken in a wound may be drawne forth.

BVt if it chance that the weapon is so broken in the wound, that it cannot bee taken hold on by the formerly mentioned Mullets, then must you draw, or plucke it out with your Crane, or Crowes bill, and other formerly described Instruments. But if the shaft be broken neare 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 fastened in Bullets, it may farre better take hold of wood. But if the head be barbed, as usually, the English arrowes are, then if it may be conveniently done, it will be very fitting to thrust them through the parts. For if they should be drawne out the same way they went in, there would bee no small danger of breaking or tearing the Vessells 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 bee easily done; for so the wound will bee the more easily clensed and consolidated. But on the the contrary, if the point tend to any bone, or have many muscles or thicke flesh against the head thereof, as it happens sometimes in the Thighes, Legges and Armes; then you must not thrust the head thorough, 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 Vessells. Therefore for this purpose put a hollow Dilater into the wound, and therewith take hold of both the barbes 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.

When to draw forth the weapon on the contrary side.

When by the same way it went in.

A Dilater hollowed on the inside, with a Cranes-bill to take hold of the barbed head.



CHAP. XX.

What to be done, when an Arrow is left fastned or sticking in a bone.

BVt if the weapon be so depact 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 moove it up and downe, if it sticke very fast in, but have a speciall care that you doe not breake it, and so leave some fragment thereof in the bone; then take it forth with your Crowes bill, or some other fit Instrument formerly described. Then presse 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 fulnesse and illnesse of humors, and lesse molested with inflammation, putrefaction and other symptomes which are customarily feared. When the weapon is drawne forth, and the wound once dressed, handle it, if simple, as you doe simple wounds; if compound, then according to the condition and manner of the complication of the effects; Certainly the Oyle of Whelpes formerly described is very good to asswage paine. 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 wee have formerly delivered concerning wounds made by Gunshot.

A Caution.

The benefit of bleeding in wounds.

CHAP. XXI.

Of poysoned wounds.

IF these wounds at any time proove poysoned, they have it from their primitive cause, to wit, the empoisoned Arrowes, or Darts of their enemies. You may finde it out both by the propertie of the paine; if that it bee great and pricking, as if continually stung with Bees, for such paine usually ensues in wounds poysoned with hot poyson, as Arrowes usually are; Also you shall know it by the condition of the wounded flesh; for it will become pale and grow livid, with some signes of mortification. To conclude, there happen many and maligne symptomes upon wounds which are empoysoned, being such as happen not in the common nature of usuall wounds. Therefore presently after you have plucked forth the strange bodies, encompasse the wound with many and deepe scarrifications, apply ventoses with much flame, that so the poyson may bee more powerfully drawne forth; to which purpose the sucking of the wound, performed by one whose mouth hath no soarenesse therein, but is filled with oyle, that so the poyson which he sucks may not sticke, nor adhere to the part, will much conduce. Lastly, it must be drawne forth by rubefying, vesicatory and caustick medicines, and assailed by ointments, cataplasmes, emplasters, and all sorts of locall medicines.

The signs of poysoned wounds.

Remedies in poysoned wounds.

The end of the Eleventh Booke.



OF CONTVSIONS AND GANGREENS.

The Twelfth Booke.

Chap. I.

A Contuſion, according to *Galen*, is a ſolution of Continuity in the fleſh or bone, cauſed by the ſtroake 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, blackneſſe & blewneſſe, the Latins tearme 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 worke in Mines, or are extreamely 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 bellies, 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 preſſe the blood out of the veſſells either by extending or breaking them. For which cauſes alſo the exteriour parts are contuſed, or bruiſed ſometimes with a wound, ſometimes without, ſo that the skinne being whole, and as farre as one can diſcerne, untoucht, the blood poures it ſelfe forth into the empty ſpaces of the muſcles, and betweene the skinne and muſcles; which affect the Ancients have tearmed *Ecchymoſis*; *Hippocrates* calls it by a peculiar name *Nauſioſis*, for that in this affect the ſwollne veines ſeeme as it were to vomit, and verily doe vomitor caſt forth the ſuperfluous blood which is conteined in them. From theſe differences of Contuſions are drawne the indications of curing, as ſhall appeare by the enſuing diſcourſe.

Gal. Lib. de arte conſtitut.

Sect. 2. lib. de fracturis.

Cauſes of Bruiſes and Sugillations.

Sect. 2. lib. de fract.

Chap. II.

Of the generall cure of great and enormous Ccontuſions.

The blood poured forth into the body, muſt bee evacuated by viſible and not viſible evacuation. The viſible evacuation may be performed by bloodletting, Cupping-glaſſes, hornes, ſcarification, horſeleeches and fit purgative medicines; if ſo bee the patient have not a ſtrong and continuall feaver; The not viſible evacuation is performed by reſol-

resolving and sudorificke potions, baths, & a slender diet. Concerning Blood-letting *Galens* opinion is plaine, where he bids, in a fall from an high place, and generally for bruises upon what part soever they be, to open a veine, though the parties affected are not of a full constitution; for that unlesse you draw blood by opening a veine, there may inflammations arise from the concreate blood, from whence without doubt evill accidents may ensue. After you have drawne blood give him foure ounces of Oxycrate to drinke; 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. R. *rad. Gentianæ* ℥iij; *bulliant in Oxycrato; in colatura dissolve rhei electi* ℥j. *fiat potio.* These Medicines dissolve, and cast forth by spetting and vomite the congealed blood, if any thereof be conteined in the ventricle or lungs; it wil be expedient to wrap the patient presently in a sheepes skinne, being hot and newly taken from the sheepe, and sprinkled over with a little myrrhe, cresses and salt, and so to put him presently in his bed, and then cover him so that he may sweat plentifully. The next day take away the sheeps-skinne, and annoint the body with the following anodyne and resolving unguent. R. *unguent. de althæa* ℥vj. *olei Lumbric. chamæm. anethi. an* ℥ij. *terebinth. venetæ* ℥iiij. *farinæ fœnugr. rosar. rub. pulverisat. pul. myrtillorum, an* ℥j. *fiat linus ut dictum est.* Then give this potion which is sudorificke and dissolves the congealed blood. R. *Ligni guaiaci* ℥viij. *radicis enulæ camp. consolid. majoris, iridis Florent. polypod. querni, seminis coriandri, anisi, an* ℥ß. *glycyrhiz.* ℥ij. *nepetæ, centaureæ, caryophyl. cardui ben. verbenæ, an. m. s. aquæ fortis lib.* xij. Let them bee all beaten and infused for the space of twelve houres, then let them boyle over a gentle fire untill the one halfe bee consumed; let the patient drinke some halfe pinte of this drinke in the morning, and then sweate some houre upon it in his bed, and doe this for seaven or eight dayes. If any poore man light upon such a mischance, who for want of meanes cannot bee at such cost, it will be good, having wrapped him in a sheete, to bury him up to the chin in Dung mixed with some hay or straw, and there to keepe him, untill he have sweat sufficiently. I have done thus to many with very good successe. You shall also give the patient potions made with syrups which have power to hinder the coagulation and putrefaction of the blood; such as syrupe of Vinegar, or Lemons, of the juice of Citrons and such others to the quantitie of an ounce dissolved in scabious, or *Carduus* water. You may also presently after the fall give this drinke, which hath power to hinder the coagulation of the blood, and strengthen the bowells.

R. *Rhei electi. in pul. redacti* ℥j, *aquæ rubiæ majoris, & plantagin. an.* ℥j. *theriacæ* ℥ß. *syrupi de rosis siccis,* ℥ß, *fiat potus.* Let him take it in the morning for foure or five dayes. In steed hereof you may make a potion of one dramme of *Sperma ceti* dissolved in bugloss or some other of the waters formerly mentioned, and halfe an ounce of syrupe of Maiden-haire; if the disease yeeld not at all to these formerly prescribed medicines, it will be good to give the patient for nine dayes, three or foure houres before meate some of the following powder. R. *rhei torrefacti, rad. rub. majoris, centaurei, gentianæ, aristolo. rotundæ, an.* ℥ß. give ℥j. hereof with syrupe of Vinegar and *Carduus* water. They say that the water of greene Walnuts, distilled by an Alembicke, is good to dissolve congealed and knotted blood. Also you may use bathes made of the decoction of the rootes of Orris, Elecampane, Sorrell, Fennell, Marshmallowes, Water-ferne, or Osmund the waterman, the greater Comfery; the seeds of Fænugreeke; the leaves of Sage, Marjerome; the floures of Camæmile, Melilote and the like. For a warme bath hath power to rarifie the skin, to dissolved the clotted blood, by cutting the tough & mitigating the acride humors, by calling them forth into the surface of the body, and relaxing the passages thereof; so that the rebellious qualities being orecome, there ensues an easie evacuation of the matter by vomit, or expectoration, if it flote in the stomacke, or be conteined in the chest; but by stoole & Vrine, if it lye in the lower parts; by sweates and transpiration if it lye next under the skin. Wherefore bathes are good for those who have a *Peripneumonia* or inflammation of their Lunges, or a Pleurisie, according to the minde of *Hippocrates,* if so be that they be used, when the feaver begins to be asswaged; for so they mitigate paine, helpe forwards suppuration, and hasten the spitting up of the purulent matter. But we would

Ad sentent. 62. sect. 3. lib. de Articulis.

A potion to dissolve and evaluate clotted blood.

A hot sheeps skinne.

A dissolving oyntment.

A sudorificke potion to dissolve congealed blood.

Syrups hindering putrifaction and congealing of blood.

A drinke for the same purpose.

A powder for the same.

The distilled water of greene Walnuts.

Baths.

Lib. 3. de vlc. aeut. & lib. 3. de morb.

would not have the patient enter into the bath, unlesse he have first used generall remedies, as blood-letting and purging; for otherwise there will be no small danger, least the humors diffused by the heate of the bath, cause a new defluxion into the parts affected. Wherefore doe not thou by any meanes attempt, to use this or the like remedy, having not first had the advice of a Physition.

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 Heele, gives a vomitory potion, the same day, or else the next day after the heele is broken. And then if the Contusion have a wound associating it, the defluxion must be stayed at the beginning, with an oyntment made of Bole Armenicke, the whites of egges, and oyle of roses, and myrtles, with the pouders of red roses, Allome and mastich. At the second dressing apply a digestive made of the yoalke of an egge, oyle of violets and Turpentine. This following Cataplasme shal be applyed to the neare parts to help forwards suppuration. *Sect. 2. lib. fract.*

A suppurative Cataplasme.

℞. *rad. althæ, & lilio. an.* ℥iiij *fol. malv. violar. senecionis, an. M. ij. coquantur complete, & passentur per setaceum, addendo butyri recentis & olei viol. an.* ℥iij. *farinæ volatilis quant. sufficit; fiat cataplasma ad formam pultis liquidæ.* Yet have a care in using of Cataplasmes, that you do not too much exceede; for too frequent and immoderate use of them makes wounds plegmonous, sordide and putride. Wherefore the wound after it is come to suppuration must be cleansed, filled with flesh and cicatrized; unlesse haply the contused flesh shall be very much torne, so that the native heate 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 stitches 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 skinne.

A caution to be observed.

How contused wounds must be sowed

Chap. IV.

Of these Contusions which are without a wound.

IF the skinne being whole and not hurt, as farre as can be discerned, the flesh which lyes 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 maligne symptomes, which commonly happen, be no more to be feared. Wherfore in the beginning draw blood on the oppositе side, both for evacuation and revulsion. The contused part shall be scarified with equall scarifications; then shall you apply cupping-glasses or hornes, both for evacuation of the blood which causes the tumor and Tension in the part; as also to ventilate and refrigerate the heate of the part, least it turne into an Abscesse. Neither must we in the meane while omit gentle purging of the belly. The first topicke medicines ought to bee astrictives which must lye some short while upon the part, that so the Veines, and Arteries may be as it were straitned and closed up, and so the defluxion hindred; as also that the part it selfe may be strengthened. This may be the forme of such a remedy, ℞. *Albumina ovorum nu.* iij. *olei myrtini & rosacei, an.* ℥j. *boli armeni, & sanguin. dracon. an.* ℥ß. *nucum cupress. gallarum, pul. aluminis usti, an.* ℥ij. *incorporentur omnia addendo aceti parum, fiat medicamentum.* Then you shall resolve it with a fomentation, Cataplasme, and discussing emplaisters.

Phlebotomie.

Scarifying. Cupping glasses.

Astrictives how good in Contusions.

After astrictives must follow discussives.

Chap. V.

By what meanes the contused part may be freed from the feare and imminent danger of a Gangreene.

Sect. 2 lib. de fract.

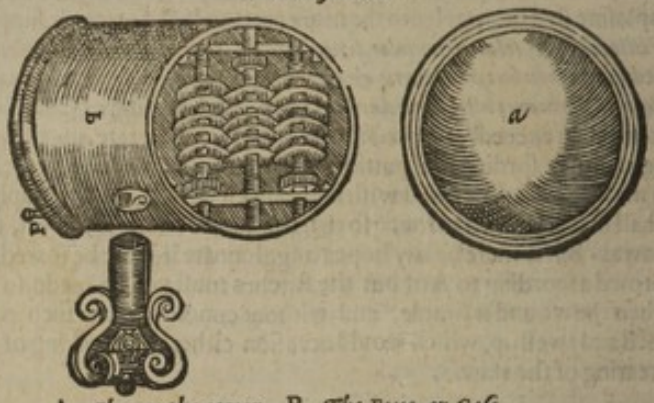
GReat Contusions are dangerous even for this cause, for that a Gangreene and mortification sometimes followes them; which *Hippocrates* teacheth to happen, when as the affected part is growne very hard and liquide.

The cause of a Gangreene.

Wherefore when the part growes livide and blacke, and the native colour thereof, by reason of the affluxe of the concreate blood, is almost extinct; chiefely to ease the part of that burden, cupping glasses and hornes shall be applyed to the part it selfe being first scarified with a Lancet, or else the following Instrument termed a *Scarificator*, which hath 18 little wheeles sharpe and cutting like a razour, which may be straitened and slacked by the pins noted by *D.* and *P.* This instrument is to be commended for that it performes the operation quickly and gently, for it makes 18 incisiones in the space that you make one with a Lancet or knife.

The use of a *Scarificator.*

A Scarificator.



A. *Shewes the cover.* B. *The Boxe, or Case.*

A fomentation to discusse and draw to the skinne.

Then shall you foment the part with strong Venegar wherein the roootes of radish or of Dragons, Cuckow-pint, *Salomons* Seale, *Auripigmentum* and the like have beene boyled; for such acride things doe powerfully heat, resolve and draw the concreate blood from the inner part of the body unto the skinne, which by its setling in the part affected, prohibits the entrance of the vitall spirits, the preservers of its integrity; yea also extinguisheth the native heate of the same part. Now wee must not use these things but with great discretion, least so we draw not onely that blood which is poured forth of the vessells, but also the other which is contained in the vessels. Moreover also we must not use them, unlesse when the defluxion is stayed. For small contusions (which *Galen* judgeth by the softnesse of the contused part) it will bee sufficient to apply to discusse them, Virgins waxe dissolved and mixed with Cummin seedes, Cloves, the roote of blacke Briony, (which hath a wonderfull faculty to discusse all blackenesses and sugillations) for the same purpose, you may also apply wormewood bruised and so warmed in a dish and sprinkled over with a little white wine. Also fry wormewood with oyle of cammomill, branne, the powder of Cloves, and Nutmegs, adding thereto a little *aqua vitæ*, then put it all in a linnen cloth and apply it hot to the part. The following emplaster doth powerfully discusse congealed blood. ℞. *Picis nigræ* ℥ij. *Gum. Elemi.* ℥iß. *styracis liquidæ & terebinth. com. an.* ℥ß. *pul. sulphuris vivi.* ℥j. *Liquefiant simul, fiat Emplastrum*; and let be spred upon leather and so applyed.

Sect. 2. lib. de fract.

A discussing plaister.

Chap.

CHAP. VI.

Of that strange kinde of symptome which happens upon contusions of the ribbes.

THe flesh contused sometimes by great violence becomes mucous and swolne, or puffed up like Veale, which the butchers blow up, the skinne remaining whole. This is seene and happens chiefely in that flesh which is about the ribs; for this being bruised either by a blow, or fall, or reluitencie, or any other such like cause; if you presse it with your hand, a certaine windinesse goeth out thereof with a small whayzzing, which may be heard, and the print of your finges will remaine as in *œdema's*. Vnlesse you quickely make fit provision against this symptome, there is gathered in that space which the flesh departing from the bones, leaves empty, a certaine purulent *sanies*, which divers times foules and corrupts the ribs. It will be cured, if the mucous tumor be presently prest, and straightly 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 fomentaions shall be used.

Hipocrat. 3. lib. de morb. sect. 58. & 65.

Remedies for a mucous and flatulent tumor of the ribbes.

The cause of such a tumor is a certaine mucous flegme; seeing that nature is so weake that it cannot well digest the nourishment, and assimulate it to the part: but leaves something as it were halfe concocted. No otherwise than the conjunctive coate of the eye is sometime so lifted up and swolne by a stroake, that it starres as it were out of the orbe of the eye, leaving such filth or matter as wee see those which are bleard eye to be troubled withall; because the force and naturall strength of the eyes is become more weake, either by the fault of the proper distemperature, or the aboundance of moysture which flowes thither, as it happens in those tumors which are against nature. For flatulencies are easily raysed from a watrish and flegmatique humors wrought upon by weake heate, which mixed with the rest of the humor, the tumor becomes higher.

The cause.

CHAP. VII.

A discourse of Mumia, *or Mummie.*

PEradventure it may seeme strange what may be the cause, why in this Treatise of curing contusions, or bruises, I have made no mention of giving Mummie either in bole, or potion to such as have falne from high places, or have beene otherwise bruised, especially seeing it is so common and usuall, yea the very first and last medicine of almost all our practitioners at this day in such a case. But seeing I understood, and had learnt from learned Physitions, that in using remedies, the indication must alwaies be taken from that which is contrary to the disease, how could I? how can any other give Mummie in this kinde of disease, seeing we cannot as yet know what Mummie is, or what is the nature and essence thereof? So that it cannot certainely be judged, whether it have a certaine property contrary to the nature and effects of contusions. This how it may have, I have thought good to relate somewhat at large; neither doe the Physitions who prescribe Mummie, nor the Authours that have written of it, nor the Apothecaries that sell it, know any certainty thereof. For if you reade the more ancient, *Serapio*, and *Avicen*, or the moderne *Matthiolus* and *Thevet*, you shall finde quite different opinions. Aske the Merchants who bring it to us, aske the Apothecaries who buy it of them, to sell it to us, and you shall heare them speake diversly heereof, that in such variety of opinions, there is nothing certaine and manifest. *Serapio* and *Avicen* have judged Mummie to bee nothing else but *Pissasphaltbum*; now *Pissasphaltum* is a certaine froth or foame rising from the Sea, or Sea waters; this same foame as long as it swimmes upon the water is soft and in some sort

Mummie a frequent and usuall medicine in contusions.

The reason that the Author makes no mention thereof amongst his medicines.

The opinion of the *Arabians* concerning it.

liquid: but being driven upon the ſhore by force of tempeſt, and working of the ſea, and ſticking in the cavityes of the rockes, it concreates into ſomewhat a harder ſubſtance than dryed pitch, as *Dioſcorides* ſaith. *Belonius* ſaith, that Mummie is onely knowne to *Ægypt* and *Greece*. Others write that it is mans fleſh, taken from the carcaſes of ſuch as are dead, and covered over in the ſandes in the deſartes of *Arabia*; in which Countrey they ſay the ſands are ſometimes carried and rayſed up with ſuch force and violence of the windes, that they overthrow and ſuffocate ſuch paſſingers as they meete withall; the fleſh of theſe dryed by the ſand and winde they affirme to be Mummy.

Lib. 4. cap. 84.

Another opinion of Mummie.

Mathiolus following the more uſuall and common opinion, writes that Mummie is nothing elſe than a liquor flowing from the Aromaticke embalments of dead bodyes, which becomes dry and hard. For underſtanding whereof you muſt know from all manner of antiquity, that the Egyptians have beene moſt ſtudious in burying and embalming their dead; not for that end that they ſhould become medicines for ſuch as live, for they did not ſo much as reſpect or imagine ſo horride a wickedneſſe. But either for that they held an opinion of the generall reſurrection, or that in theſe monuments they might have ſomething, whereby they might keepe their dead friends in perpetuall remembrance.

Another.

Thevet not much diſſenting from his owne opinion, writes that the true Mummie is taken from the monuments and ſtony tombes of the anciently dead in Egypt, the chinkes of which tombes were cloſed, and cimented with ſuch diligence; but the encloſed bodyes embalmed with precious ſpices with ſuch art for eternity, that the linnen veſtures which were wrapt about the preſently after their death may be ſeene whole even to this day; but the bodies themſelves, are ſo freſh that you would judge them ſcarce to have been three dayes buryed. And yet in thoſe Sepulchers and Vaultes from whence theſe bodyes are taken, there have beene ſome corpes of two thouſand yeeres old. The ſame, or their broken members are brought to Venice from Syria and Egypt, and thence diſperſt over all Chriſtendom. But according to the different condition of men, the matter of their embalments were divers; for the bodyes of the Nobility or Gentry are embalmed with Myrrhe, Aloes, Saffron, and other precious ſpices, and Drugs; but the bodyes of the common ſort whoſe poverty and want of meanes could not undergoe ſuch coſt, were embalmed with *aſphaltum* or *piſſaſphaltum*.

What over Mummie uſually is.

Now *Mathiolus* ſaith that all the Mummie which is brought into theſe parts is of this laſt kinde and condition. For the Noble men and cheefe of the province ſo religiouſly addicted to the monuments of their anceſtors, would never ſuffer the bodyes of their friends, and kindred to be tranſported hither for filthy gaine, and ſuch deteſted uſe, as we ſhall ſhew more at large at the end of this worke.

Which thing ſometimes mooved certaine of our French Apothecaries, men wonderous audacious, and covetous, to ſteale by night the bodyes of ſuch as were hanged, and embalming them with ſalt and Drugges they dryed them in an Oven, ſo to ſell them thus adulterated in ſteed of true Mummie. Wherefore wee are thus compelled both fooliſhly and cruelly to devoure the mangled and putride particles of the carcaſſes of the baſeſt people of Egypt, or of ſuch as are hanged, as though there were no other way to helpe 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 Drugge were any way powerfull for that they require, they might perhaps have ſome pretence, for this their more than barbarous inhumanity.

Mummie is no way good for contuſions.

But the caſe ſtands thus, that this wicked kinde of Drugge, doth nothing helpe the diſeaſed, in that caſe, wherefore and wherein it is adminiſtred, as I have tryed an hundred times, and as *Thevet* witneſſes, he tryed in himſelfe, when as hee tooke ſome thereof by the advice of a certaine Iewiſh Phyſition in Egypt, from whence it is brought; but it alſo inferres many troubleſome ſymptomes, as the paine of the heart or ſtomacke, vomiting and ſtinke of the mouth.

But hurtfull, and how?

I perſwaded by theſe reaſons, doe not onely my ſelfe preſcribe any hereof to my patients, but alſo in conſultations, endeavour what I may, that it bee not preſcribed by others. It is farre better according to *Galens* opinion

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in Method. med. to drinke some oxycrate, which by its frigidity restraines the flowing blood, and by its tenuity of substance dissolves and discusses the congealed clotts thereof. Many reasons of learned Physitions (from whom I have learned this history of Mummie) drawne from Philosophy, whereby they make it apparant, 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 thinke it not much beneficiall to Chirurgions to insert them heere. Wherefore I judge it better to beginne to treate of Combustions, or Burnes.

The effects of oxycrate in Contusions.

Chap. VIII.

Of Combustions and their differences.

ALL Combustions whether occasioned by Gun-powder, or by scalding oyle, water, some mettall or what things soever else, differ onely in magnitude. These first cause paine in the part, and imprint in it an unnaturall heate. Which savouring of the fire, leaves that impression, which the Greekes call *Empyreuma*. There are more or lesse signes of this impression, according to the efficacie of the thing burning, the condition of the part burned, and stay upon the same. If the Combustion be superficiary, the skin rises into pustles and blisters, unlesse it be speedily prevented. If it be low or deepe 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 skinne, whence paine proceedes; from paine there comes an attraction of humors, from the adjacent and remote parts. These humors presently turned into watrish or serous moysture, whilest they seeke to passe forth, and are hindred thereof by the skinne condensated by the action of the fire, they lift it up higher, and rayse the blisters which we see. Hence diverse Indications are drawne, whence proceedes the variety of medicines for burnes. For some take away the *Empyreuma*, that is, the heate of the fire (as we terme it) and asswage the paine; 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 clense, generate flesh and cicatrize it. Remedyes fit to asswage paine, and take away the fiery heate, are of two kindes; for some doe it by a cooling faculty, by which they extinguish the preternaturall heate, and represse or keepe backe the blood and humors, which flow into the parts by reason of heat & paine. 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 pustles, and so by accident asswage the paine and heat. Refrigerating things, are cold water, the water of Plantaine, Night-shade, Henbane, Hemlocke; the juyces of cooling hearbes, as Purselaine, Lettuce, Plantaine, Housleeke, Poppye, Mandrake and the like. Of these some may be compounded, as some of the fore-named juyces beaten with the white of an egge; Clay beaten and dissolved in strong Venegar; roch Alome dissolved in water, with the whites of egges beaten therein; writing inke mixed with Venegar and a little Camphire; *Vnguentum nutritum*, and also *Populeon* newly made. These and the like shall be now and then renewed chiefely at the first, untill the heate and paine be gone. But these same remedyes must be applyed warme, for if they should be layd, or put to cold, they would cause paine, 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 paine, hinder inflammation and the rising of blisters.

The reason and symptomes of Combustions.

The cause of the blisters rising upon burnes.

Variety of medicines to take away the heate and asswage the paine.

Chap. IX.

Of hot and attractive medicines to be applyed to burnes.

How fire may asswage the paine of burning.

Amongst the hot and attractive things which by rarifying, drawing out, and dissolving, asswage the paine and heate of combustions, the fire challenges the first place, especially when the burning is but small. For the very common people know and finde by dayly experience, that the heate of the lightly burnt part vanishes away, and the paine is asswaged, if they hold the part which is burnt some prety while to the heate of a lighted candle, or burning coales; for the similitude causeth attraction. Thus the externall fire whilest it drawes forth the fire which is internall and inust into the part, is a remedy against the disease it caused and bred. It is also an easily made and approved remedie, if they presently after the burne apply to the grieved part raw Onions beaten with some salt.

Beaten Onions good for burns and how.

Now you must note, that this medicine takes no place, if it be once gone into an ulcer, for it would increase the paine and inflammation; but if it bee applyed when the skinne 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 endevour to gainesay the use of this remedy by that principle in Physicke, which sayes, that contraries are cured by contraries, and therefore affirme that Onions according to the authority of *Galen*, being hot in the fourth degree, are not good for combustions; let him know that Onions

Lib. 5. simpl.

are indeed potentially hot, and actually moyst, therefore they rarifie by their hot quality, and soften the skinne by their actuall moysture, whereby it comes to passe that they attract, draw forth, and dissipate the imprinted heate, 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 contraryes (saith *Galen*) but sometimes by their like; although all healing proceede from the contrary, this word *contrary*, being more largely and stricktly taken; for so also a Phlegmon is often cured by resolving medicines, 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 medicines good to hinder the rising of blisters; such is new horse-dung fryed in oyle of wall-nuts or Roses, and applied to the parts. In like manner the leaves of Elder or Dane-wort boyled in oyle of nuts, and beaten with a little salt. Also quinched lime poudered 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 anoynted upon the part with a feather, is good for the same purpose. Also thicke Vernish which pollishers or sword cutlers use, But if the paine be more vehement, these medicines must be renewed 3 or 4 times in a day and a night, so to mittigate the bitternes of this paine. But if so be we cannot by these remedyes hinder the rising of blisters, then we must presently cut them as soone as they rise, for that the humor contayned in them, not having passage forth, acquires such acrimonie that it eates the flesh which lyeth under it, & so causeth hollow ulcers: So by the multitude of causes & increase of matter the inflamation groweth greater, not only for nine daies (as the common people prattle) but for farre longer time; also some whiles for lesse time, if the body be neither repleat with ill humors, nor plethoricke, and you have speedily resisted the paine and heate by fit remedyes. 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, oyles, butter, with a little *basilicon*, or the following oyntment.

How often in a day these must be dressed.

Medicines for an *Eschar*.

R. *Mucagin. psillij. & cydon. an.* ℥iiij. *gummi, trag.* ℈ij. *extrahantur cum aqua parietariæ, olei liliorum* ℥ß. *ceræ novæ 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. R. *lithargyri auri* ℥iiij.

Adescription of *Nutritum*.

ol.

ol. rosat. ℥iij. *ol. de papaver.* ℥iiß. *ung. populeon.* ℥iiij. *camphoræ* ℥j. *fiat unguentum in mortario plumbeo secundum artem.* Or oyle of Egges tempered in a Leaden mortar. Also unquenched lime many times washed and mixed with *unguentum rosatum*, or fresh butter without salt, and some yolkes of egges hard roasted. Or. R. *Butyri recent. sine sale, ustulati, & colati* ℥vj. *vitell. ovor.* iiij. *cerus. lotæ in aqua plantag. vel rosar.* ℥ß. *tuthiæ similiter lotæ*, ℥iij. *plumbi usti, & loti*, ℥ij. *Misceantur omnia simul, fiat linimentum ut decet.* Or else, R. *cort. sambuc. viridis, & olei rosat. an. lib.* j. *bulliant simul lento igne, postea colentur, & adde olei ovorum* ℥iiij. *pul. cerus. & tuthiæ præpar. an.* ℥j. *ceræ albæ quantum sufficit, fiat unguent. molle secundum artem.* But the quantity of drying medicines may alwayes be encreased or diminished according as the condition of the ulcer shall seeme to require. The following remedies, are fit to asswage paine, as the mucilages of Line seedes, of the seedes of *Psilium*, or Flea-wort, and quinces extracted in rosewater, or faire water, with the addition of a little camphire; and least that it dry too speedily, adde thereto some oyle of Roses. Also five or sixe yoalkes of egges mixed with the mucilages of Line seede, the seede of *Psilium*, and quinces often renewed, are very powerfull to asswage paine. The women which attend upon the people in the Hospitall in *Paris*, doe happily use this medicine against burnes. R. *Lard. conficis 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 kinde, then let it be incorporated with eight yolkes of new layd egges, and so make an oyntment. If the smart be great, as usually it is in these kindes of wounds, the ulcer or sores shall be covered over with a peice of Tiffany, least you hurt them, by wiping them with somewhat a course cloath, and so also the matter may easily come forth, and the medicines easily enter in. Also you must have a care when the eyelids, lippes, sides of the fingers, necke, the armepits, hammes, 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 sticke together. Therefore you shall provide for this, by fit placing the parts, and putting soft linnen ragges betweene them. But you must note, that deepe combustions, and such as cause a thicker *Eschar*, are lesse painefull, than such as are but onely superficiary. The truth hereof you may perceive by the example of such as have their limbes cut of, and seared or cauterised with an hot Iron; for presently after the cauterising is performed they feele little paine. For this great combustion takes away the sense, the vehemencie of the sensory or thing affecting the sense, depriving the sensitive parts of their sense; As wee have formerly noted when we treated of wounds and paines of the Nerves. The falling away of such *Eschars* shall be procured by somewhat a deepe scarification which may pierce even to the quicke, that so the humors which lye under it may enjoy freer perspiration, and emollient medicines may the freelier enter in, so to soake, moysten and soften the *Eschar* that it may at length fall away. The rest of the cure shall be performed by detergent and sarcoticke medicines, adding to the former oyntments mettalline pouders, when the present necessitie shall seeme so to require. But wee 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 bodyes, and the stubbornesse and gentlenesse of diseases. After a burne the scarre which remaineth is commonly rough, unequall, and ill favoured: therefore wee will tell you in our treatise of the plague how it must be smoothed, and made even.

A remedy for burnes comonly used in the Hospitall of *Paris*.

Why deepe combustions are lesse painefull than superficiarie.

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 skinne, and so insinuate and throughly fasten it selfe into the flesh by its tenuity, that it cannot be taken or drawne out thence by any remedyes, no not by *Phœnigmes* nor vesicatoryes, nor scarification, nor ventoses, nor hornes, so that the prints thereof alwayes remaine, no otherwise than the markes which the Barbarians burne in their slaves which cannot afterwards be taken away or destroyed by any Art.

Markes or spots made in the face by cornes of Gunpowder cannot be taken away.

CHAP.

Chap. X.

Of a Gangreene and Mortification.

CErtainely the maligne 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 than a Gangreene, 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 treate of a Gangreene, first giving you the definition, then shewing you the causes, signes, prognostickes, & lastly the manner of cure. Now a Gangreene is a certaine disposition, and way to the mortification of the part, which it seaseth upon, dying by little and little. For when there is a perfect mortification, it is called by the Greekes *Sphacelos*, by the Latines *Syderatio*, our countrymen terme it the fire of Saint *Anthony* or Saint *Marcellus*.

Gal. 2. ad Glauconem.

Chap. XI.

Of the generall and particular causes of a Gangreene.

The generall cause of a Gangreene.

THe most generall cause of a Gangreene is, when by the dissolution of the harmony and joynt 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, feeles, and mooves. 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 oyle or water, gunpowder fired and the like. But potentially by acride medicines; as Sublimate, vitriol, potentiall cauteries and other things of the same nature: for all these cause a great inflmmation in the part: But the ambient ayre may cause great refrigerations, and also a Gangreene, which caused *Hippocrates lib. de Aer.* to call great refrigerations of the braine *Sphacelisme*. Therefore the unadvised and unfit application of cold and narcoticke things, a fracture, luxation and great contusion, too strait bandages, the biting of beasts, especially of such as are venemous; a puncture of the Nerves and Tendons, the wounds of the nervous parts and joynts, especially in bodyes which are plethorike and repleate with ill humors, great wounds whereby the vessels which carry life are much cut, whence an *aneurisma*, and lastly many other causes, which perturbe that harmony of the foure prime qualities which we formerly mentioned, and so inferre a Gangreene.

The perticular causes.

Cold causeth a Gangreene.

Chap. XII.

Of the Antecedent causes of a Gangreene.

How defluxions cause a Gangreene.

NOw the antecedent or internall and corporeall causes of a Gangreene, 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 sustaine and governe such plenty of humors, it comes to passe that the native heate 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 performe their motions of contraction and dilatation, by which their native heate is preserved and tempered. But then the Gangreene is chiefely uncureable when the influxe of humors

An untureable Gangreene.

mours 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 all so incident to the bones. Neyther onely a Phlegmon or inflammation, but also a rottennesse and corruption doth oft times first invade and beginne at the bones; for thus you may see many who are troubled with the Leprosie and French disease, to have their skinne and flesh whole and faire to looke, on whose bones notwithstanding are corrupt and rotten, and oft times are much decayed in their proper substance. This mischiefe is caused by a venemous matter, whose occult quality wee can scarse expresse by any other name than poyson inwardly generated. Oft times also there is a certaine acrid and stinking filth generated in flesh with a maligne and old ulcer, with which if the bones chance to bee moystned they become foule and at length mortified: of which this saying of *Hippocrates* is extant, Vlcers of a yeares continuance or longer, must necessarily foule the bone, and make the scarres hollow. *Lib. de tumor. frater n. natur.* *Aph. 5. sect. 6.*

Whither also belongs this saying of the same party; An *Erysipelas* 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 foure and twenty houres by causing an *escharre*, bring the part to mortification: otherwhiles cold, as wee see it divers times happens in parts which are possest with a Gangreene, no paine, tumor, blackenesse, nor any other precedent signe of a Gangreene going before. For *Iohn de Vigo* saith, that happened to a certaine gentlewoman of *Genoa* under his cure. A Gangreene by effluxe of a cold matter.

I remember the same happened to a certaine man in *Paris*, who supping merrily and without any sense of paine, went to bed, and suddainly on the night time a Gangreene seazed on both his legges, caused a mortification without tumor, without inflammation; onely his legges were in some places spred over with livid, blacke and greene spots, the rest of the substance retaining his native colour: yet the sence of these parts was quite dead, they felt cold to the touch, and if you thrust your lancet into the skinne no blood came forth. A notable History.

A Councell of Physitions being called, they thought good to cut the skinne, and flesh lying under it, with many deepe scarifications; which when I had done, there came forth a little blacke, thicke and as it were congealed blood; wherefore this remedy as also diverse other, prooved to no purpose, for in conclusion a blackish colour comming 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 mischiefe could proceede from any other than a venenate matter; yet the hurt of this venenate matter is not peculiar, or by its selfe.

For oft times the force of cold, whether of the encompassing ayre, or the too immoderate use of Narcoticke medicines, is so great, that in a few houres it takes away life from some of the members, and diverse times from the whole body, as we may learne by their example, who travell in great snowes, and over mountaines congealed, and horrd with frost & yce. Hence also is the extinction of the native heate and the spirits residing in the part, and the shutting forth of that which is sent by nature to ayde or defend it. For when as the part is bound with rigide 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 spoyled, and the harmony of the foure prime qualities destroyed, by the offensive dominion of predominant cold their enimy, whereby it commeth 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. Simple cold may cause a Gangreene.

A certaine Briton an Hostler in *Paris*, having drunke soundly after supper, cast himselfe upon a bed; the cold ayre comming in at a window left open, so tooke hold upon one of his legges, that when he waked forth of his sleepe, he could neither stand nor goe. Wherefore thinking onely that his leg was numbe, they made him stand to the fire; but putting it very nigh, he burnt the sole of his foote without any sense of paine, some fingers thickenesse, for a mortification had already possessed more than halfe his legge. Wherefore after he was carried to the Hospitall, the Chirurgion A History.

who

who belonged thereto, endeavoured by cutting away of the mortified legge to deliver the rest of the body from imminent death; but it proved in vaine; for the mortification taking hold upon the upper parts, he dyed within three dayes, with thoublesome belching and hicketting, raving, cold sweate, and often swounding. Verily all that same winter, the cold was so vehement that many in the Hospitall of *Paris* lost the wings or sides of their nose-thrills, seazed upon by a mortification without any putrefaction.

What parts are usually taken by a Gangreene occasioned by cold.

But you must note, that the Gangreene which is caused by cold, doth first and principally seaze upon the parts most distant from the heart, the fountaine of heate, to wit, the feete and legges; as also such as are cold by nature, as gristly parts, such as the nose and eares.

CHAP. XIII.

Of the signes of a Gangreene.

Gell. 2. lib. de fract.

THE signes of a Gangreene which inflammation or a phlegmon hath caused, are paine and pulsation without manifest cause, the sudden changing of the fyery and red colour into a livid or blacke, as *Hippocrates* shewes where hee speakes of the Gangreene of a broken heele.

What a pulsificke paine is.

I would have you here to understand the pulsificke paine not onely to be that which is caused by the quicker motion of the Arteries, but that heavy and pricking which the contention of the unaturall heate doth produce by raising a thicke cloud of vapours from these humours which the Gangreene sets upon. The signes of a Gangreene caused by cold, are, if suddenly a sharpe pricking and burning paine assaileth the part; for *penetrabile frigus adurit* (*i*) peircing cold doth burne: if a shining rednesse as if you had handled snow, presently turne into a livid colour; if in stead of the accidentall heate which was in the part, presently cold and numbenesse shall possesse it, as if it were shooke with a quartain feaver. Such cold if it shall proceede so farre as to extinguish the native heate, bringeth a mortification upon the Gangreene; also oft times convullions and violent shaking of the whole body, wondrous troublesome to the braine and the fountaines of life. But you shall know Gangreenes caused by too streight bandages, by fracture, luxation, and contusion, by the hardnesse which the attraction and flowing downe of the humors hath caused; little pimples or blisters spreading or rising upon the skinne by reason of the great heate, as in a combustion; by the weight of the part occasioned through the defect of the spirits not now sustaining the burden of the member; and lastly from this, the pressing of your finger upon the part, it will leave the print thereof as in an *œdema*; and also from this, that the skinne commeth from the flesh without any manifest cause.

Signes of a Gangreene proceeding of cold.

Signes of Gangreenes proceeding from strait bandages, or ligatures, &c.

Now you shall know Gangreenes arising from a bite, puncture, *aneurisma*, or wound in plethoricke and ill bodies, and in a part induced with most exquisite sence, almost by the same signes as that which was caused by inflammation.

Signes of a Gangreene occasioned by a bite, puncture, &c.

For by these and the like causes, there is a farre greater defluxion and attraction of the humors than is fit, when the perspiration being intercepted and the passages stopt, the native heate is oppressed and suffocated. But this I would admonish the young Chirurgion, that when by the forementioned signes hee shall finde the Gangreene present, that hee doe not deferre the amputation for that hee findes some sense, or small motion yet residing in the part.

For oft times the affected parts are in this case mooved not by the motion

motion of the whole muscle, but onely by meanes, that the head of the muscle is not yet taken with the Gangreene: with mooving it selfe by its owne strength, also mooves its proper and continued tendon and taile though dead already; wherefore it is ill to make any delay in such causes.

Chap. XIIII.

Of the Prognosticks in Gangreenes.

HAving given you the signes and causes to know a Gangreene; it is fit wee also give you the prognosticke. The fearcenesse and malignity thereof is so great, that unlesse it be most speedily withstood the part it selfe will dye, and also take hold of the neighbouring parts by the contagion of its mortification: which hath beene the cause that a Gangreene by many hath beene termed an *Esthiomenos*. For such corruption creepes out like poyson, and like fire eates gnawes and destroyes all the neighbouring parts, untill it hath spred over the whole body. For as *Hippocrates* writes, *Lib. de vulner. capitu*; *Mortui & viventis nulla est proportio (i)* There is no proportion betweene the dead and living. Wherefore it is fit presently to separate the dead from the living; for unlesse that be done, the living will dye, by the contagion of the dead. In such as are at the point of death a cold sweat flowes over all their bodyes: 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 raysed from the corruption of the humors and flesh, and so carryed to the bowells and principall parts, by the Veines, Nerves, and Arteries. Wherefore when you have foretold these things to the friends of the patient; then make haste to fall to your worke.

Why a Gangreene is called *Esthiomenos*.

The quicke impatient of the dead.

Chap. XV.

Of the generall cure of a Gangreene.

THe Indications of curing Gangreenes are to be drawne from their differences, for the cure must bee diversely instituted according to the essence and magnitude. For some Gangreenes possesse the whole member; others onely some portion thereof; some are deepe; othersome superficiall onely. Also you must have regard to the temper of the body. For soft and delicate bodyes, as of children, women, Eunuches, and idle persons, require much milder medicines, than those who by nature and custome, or vocation of life, are more strong and hardy, such as husbandmen, labourers, marriners, 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 solide, as the Nerves and joynts, or more solide, as the *Vertebra*. Now the hot and moyst parts, as the Privities, mouth, wombe, and fundament, are easilyer and sooner taken hold of by putrifaction; wherefore we must use more speedy meanes to helpe them. Wherefore if the Gangreene be cheefely occasioned from an internall cause, he must have a dyet prescribed for the decent and fitting use of the sixe things not naturall. If the body be plethoricke, or full of ill humors; you must purge, or let blood by the advice of a Physition. Against the ascending up of vapours to the noble parts, the heart must cheefely be strengthened with Treacle dissolved in Sorrell, or *Carduus* water; with a bole of {Mithridate, the conserves of Roses & Bugloss; 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. *aquæ rosar. & nenuphar. an.* ℥ iiij. *aceti scillitici* ℥ j. *corallorum, santalorum albor. & rubrorum, rosar. rub. in pulver. radicatarum, & spodij, an.* ℥ j. *mithrid. & theriacæ, an.* ℥ iiß;

Various Indications of curing of a Gangreene.

What parts soonest taken hold of by a Gangreene.

A cordiall Epithema.

℥ijß. *trochiscorum de Caphura*, ℥ij. *flor. cordial. in pollin. redactarum, p.ij. croci* ℥j. *ex omnibus in pollinem redactis, fiat epithema.* Which may be applyed upon the region of the heart with a scarlet clot or spunge. These are usually such as happen in the cure of every Gangreene.

Chap. XVI.

Of the particular cure of a Gangreene:

The cure of a Gangreene made by inflammation.

THe cure of a Gangreene, caused by the too plentifull and violent defluxion of humors suffocating the native heate, by reason of great Plegmons, is performed by evacuating and drying up the humors, which putrifie by delay and collection in the part. For this purpose scarifications and incisions, great, indifferent, small, deepe and superficiary according to the condition of the Gangreene, are much commended; that so the burdened part may enjoy the benefit of perspiration; and the contained humors, of diffiation, or evacuation of their sooty excrements. Let incisions be made when the affect is great, deepe in, and neere to mortification. But scarifications may be used when the part first begins to putrefie; for the greatnesse of the remedy must answere in proportion to that of the disease. Wherefore if it penetrate to the bones, it will bee fit, to cut the skin and flesh with many and deepe incisions, with an incision knife made for that purpose; yet take heede of cutting the larger nerves and vessels, unlesse they be wholy putrified, for if they be not yet putrified, you shall make your incisions in the spaces betweene them; if the Gangreene be lesse, we must rest satisfied with onely scarifying it. When the scarifications and incisions are made, we must suffer much blood to flow forth, that so the conjunct matter may bee evacuated. Then must we apply and put upon it such medicines as may by heating, drying, resolving, clensing and opening, amend and correct the putrefaction, and by peircing to the bottome 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 Oake wherein Lupines have bin throughly boyled are good. Or you may with lesse trouble make a medicine with salt water, wherein you may dissolve Aloes and *Ægyptiacum*, adding in the conclusion a little *Aqua vitæ*; for *aqua vitæ* and calcined vitrioll are singular medicines for a Gangreene. Or, R. *acet. optimi* lb j *mel-ros.* ℥iiij. *syrup. acetosi* ℥iij. *salis com.* ℥v. *bulliant simul, adde aq. vitæ* lb *ß.* Let the part be frequently washed with this medicine, for it hath much force to represse Gangreenes. After your Lotion, lay *Ægyptiacum* for a Liniment and put it into the incisions; for there is no medicine, more powerfull against putrefaction, for by causing an *Eschar*, it separates the putride flesh from the sound. But we must not in this kinde of affect expect that the putride flesh may of it selfe fall from the sound; but rather cut off with your incision knife or sissers, whatsoever thereof you can, & then put to it *Egyptiacum* as oft as neede shall require. The knowledge hereof may be acquired from the colour, smell, and sensibleneesse of the flesh its selfe. The description of the *Egyptiacum*, whose wondrous effects I have often tryed in these causes, is this. R. *floris æris, aluminis roch. mellis com. an.* ℥iij. *aceti acerrimi* ℥v. *salis com.* ℥j. *vitrioli rom.* ℥ß. *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 *Ægyptiacum* may serve. When you have put in the *Ægyptiacum*, then presently lay the following Cataplasme thereupon. For it hinders putrefaction, resolves, cleanses & dryes up the virulent *sanies*, and by the dry subtlety of the parts penetrates into the member, strengthens it, and assw ages the paine. R. *farin. fabar. hordei, orobi, lent. lupin. an.* lb. *ß. sal. com. mellis rosat. an.* ℥iiij. *succi absinth. marrub. an.* ℥iiß. *aloes, mastiches, myrrhæ, & 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 putride part into the whole body. R. *olei rosati, & myrtill. an* ℥4. *succi plantag. solani, sempervivi, an.* ℥ij. *albumen ovorum* 5. *boli armeni, terræ sigillatæ subtiliter pulverisatorum, an.* ℥j. *oxycrati quantum sufficit, misce ad usum dictum.*

The description of an *Egyptiacum.*

Astrigents that may be used in cure of a Gangreene.

But

But these medicines must be often renewed. If the greese be so stubborne, that it will not yeeld to the described remedies, wee must come to stronger, to wit, Cauteries, after whose application, *Galen* bids to put upon it the juice of a Leeke with salt beaten and dissolved therewith, for that this medicine hath a peircing and drying faculty, and consequently to hinder putrifaction. But if you prevaile 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 extreame diseases exquisitly extreame remedies are best to be applyed. Yet first be certaine of the mortification of the part; for it is no little or small matter to cut off a member without a cause.

Gal. 2. ad Glauconem.

Aphor. 6. sect. 11.

Therefore I have thought it fit to set downe the signes, whereby you may know a perfect and absolute mortification.

Chap. XVII.

The signes of a perfect Necrosis *or Mortification.*

YOu shall certainly know that a Gangreene is turned into a Sphacell, or mortification, and that the part is wholly and throughly dead, if it looke of a blacke colour, and bee colder than stone to your touch, the cause of which coldnesse is not occasioned by the frigiditie of the aire; if there bee a great softnesse of the part, so that if you presse it with your finger it rises not againe, but retaines the print of the impression. If the skinne 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, viscide, greene or blackish flow from thence; if it bee quite destitute of sense and motion, whether it be pulled, beaten, crushed, pricked, burnt, or cut off. Here I must admonish the young Chirurgion, that hee 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 paine there. But that feeling is oft deceiptfull, as that which proceeds rather from the strong apprehension of great paine which formerly reigned in the part, than from any facultie of feeling as yet remaining. A most cleare and manifest argument of this false and deceitful sense appeares after the amputation of the member; for a long while after they will complaine of the part which is cut away.

A note concerning the unsensiblenes of the part.

Verily it is a thing wondrous strange and prodigious, and which will scarse be credited, unlesse by such as have seene with their eyes, and heard with their eares the patients who have many moneths after the cutting away of the Legge, grievously complained that they yet felt exceeding great paine of that Leg so cut of. Wherefore have a speciall care least this hinder your intended amputation; a thing pittifull, 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 signes 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, Vstions, and Terebrations must bee performed as soone as neede requires.

A wondrous symptome.

Sect. 7. Lib. 6. Epidem.

Chap. XVIII.

Where Amputation must be made.

IT is not sufficient to know that Amputation is necessary; but also you must learne in what place of the dead part, it must bee done, and herein the wisedome and judgement of the Chirurgion is most apparent. Art bids

The contraversy decided.

to take hold of the quicke, 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 selfe in these difficulties. Let us suppose, that the foote is mortified even to the anckle; here you must attentively marke in what place you must cut it off. For unlesse you take hold of the quicke flesh in the amputation, or if you leave any putrefaction, you profit nothing by amputation, for it will creepe and spread over the rest of the body. It befits Physicke ordained for the preservation of mankind, to defend from the iron or instrument and all manner of injurie, that which enjoyes life and health. Wherefore you shall cut off as little of that which is sound as you possibly can; yet so that you rather cut away that which is quicke, than leave behind any thing that is perished, according to the advice of *Celsus*. Yet oft times the commodity of the action of the rest of the part, and as it were a certaine 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 Legge some five fingers breadth under the knee. For so the patient may more fitly use the rest of his Legge and with lesse trouble, that is, he may the better goe on a woodden Legge; 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 Legges instead of two.

Lib. 7. Cap. 33.

An observable History.

For I so knew Captaine *Francis Clerke*, when as his foote was strucken off with an iron bullet shot forth of a man of warre, and afterwards recovered and healed up, hee was much troubled and wearied with the heavy and unprofitable burden of the rest of his Legge, wherefore though whole and sound he caused the rest thereof to bee cut off, some five fingers breadth below his knee; and verily hee useth it with much more ease and facility than before in performance of any motion. Wee must doe otherwise if any such thing happen in the Arme; that is, you must cut off as little of the sound part as you can. For the actions of the Legges much differ from these of the armes, and chiefly in this that the body rests not, neither is carried upon the armes, as it is upon the feete and Legges.

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 yolkes of Egges, and bread tosted and dipped in Sacke or Muskedine. Then let him bee placed, as is fit, and drawing the muscles upwards toward the sound parts, let them be tyed with a straite 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 haire withall; This ligature hath a threefold use; the first is, that it hold the muscles drawne up together with the skin, so that retiring backe presently after the performance of the worke, they may cover the ends of the cut bones, and serve them in stead of boulsters or pillowes when they are healed up, and so suffer with lesse paine the compression in sustaining the rest of the body; besides also by this meanes the wounds are the sooner healed and cicatrized; for by how much more flesh or skinne is left upon the ends of the bones, by so much they are the sooner healed and cicatrized. The second is, for that it prohibites the fluxe of blood by pressing and shutting up the veines and arteries. The third is, for that it much dulls the sense of the part by stupefying it; the animall spirits by the straite compression 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.

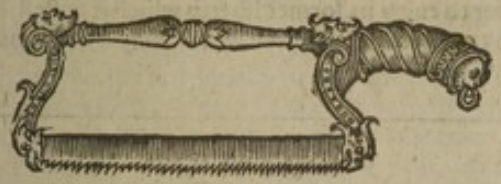
A

A crooked knife fit for dismembring; or a dismembring knife.



Now you must note, that there usually lyes betweene the bones, a portion of certaine 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 neately like a crooked incision knife. I thought good to advertise thee hereof; for if thou shouldest leave any thing besides the bone to bee divided by the saw, you would put the patient to excessive paine in the performance thereof; for soft 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 foote and three inches long, and that as neare 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.

The Figure of such a Saw.

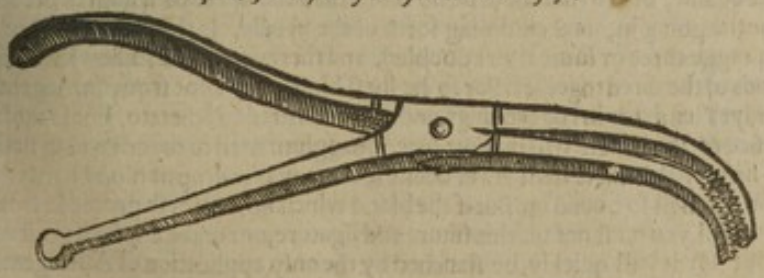


Chap. XX.

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 Veines and Arteries be bound up as speedily and streightly as you can; that so the course of the flowing blood may bee stopped and wholly stayed. Which may be done by taking hold of the vessells with your Crowes beake, whereof this is the figure.

The Crowes beake fit for to draw the vessells forth of the flesh wherein they lye hid, that so they may be tyed or bound fast.



The ends of the vessells lying hid in the flesh, must be taken hold of & 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 towards their originalls. In performance of this worke, you neede take no great care, if you together How to draw forth the vessells and binde them.

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 bee consolidated with the more ease, than if they being bloodlesse parts should grow together by themselves. To conclude, when you have so drawne them forth, binde them with a strong double thred.

Chap. XXI.

How after the blood is stanched, you must dresse the wounded member.

How the lips of the dismembred part are to be joyned together.

When you have tyed the Vessells, loose you Ligature which you made above the place of amputation; then draw together the lippes of the wound with foure stitches made acrosse, having taken good hold of the flesh; for thus you shall draw over the bones that part of the skinne and cut muscles drawne upwards before the amputation, and cover them as close as you can, that so the ayre may the lesse come at them, and that so the wound may bee the more speedily agglutinated. But when wee say, draw together the lippes of the wound with foure stitches, 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 stitches would sooner breake 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 skinne and flesh thereunder to enjoy its former liberty which it possest before the drawing up, and so in fine by natures assistance, the wound may be the more easily agglutinated.

Chap. XXII.

How you must stoppe the bleeding, if any of the bound up vessels chance to get loose.

The businesse hitherto being performed as we said, if peradventure it happen that any bandage of any of the vessels be unlooſed, then must you againe binde the member with that kinde of Ligature which you did before the amputation thereof. Or else, which is better, more easily and lesse painefull, let your servant taking hold of the member with both his hands, pressing his fingers strait, stoppe the passage of the looſed vessell, for so hee may stanch the bleeding. Then let the worke-master take a needle some foure fingers long, square, and having sharpe edges, drawing after it a three or foure doubled strong thred. With this let him binde the vessell after the following manner. Let him thrust his needle on the outside into the flesh, some halfe fingers breadth from the looſed vessell untill he come to the end thereof, then let him put it about it, and bring it backe againe, but so that there be no more than the space of a fingers bredth betweene the going in, and comming forth of the needle. In this space let him put a linnen ragge three or foure times doubled, and thereupon bind somewhat straite the two ends of the thred together. For so he shall hinder the knot from hurting the flesh which lyes under it in the bindings, and also adde strength thereto. For so the bound up orifice of the vessell will in short space be agglutinated to the adjoyning flesh, and that so firmely, that there hath never beene seene, any one drop of blood to have flowed from a vessell so bound up. But if the blood which flowes forth proceede from any small vessell, you must not use this future and ligature, nor make any such great matter thereof; for it will quickly be stanched by the only application of Astringents presently to be mentioned.

The Heamorrhagie of small vessels is not to be regarded

CHAP.

CHAP. XXIII.

How to performe the residue of the cure of the amputated member.

NOw must we shew what medicines are fitting to be applyed after the amputation of a member; which are Emplasticks, as these which exceedingly conduce to greene wounds. As R. *boli arm.* ℥iiij. *farin. vol.* ℥iij. *picis, resinæ, an.* ℥ij. *pulverisentur omnia subtilissimè & simul mixtis fiat pulvis*; herewith let the wound bee strewed, and lay thereupon dry Lint; but let the following repercussive or defensitive be applyed to the member. An emplasticke medicine.

R. *Albumoverum* vj. *boli arm. sang. drac. gypsi, terræ sigill. aloes, masticches, gallar. combust. an.* ℥ij. *in pollinem redigantur omnia, & bene agitentur, addendo olei rosarum & myrtil. an.* ℥j. *fiat defensitivum ad formam mellis.* This ointment must bee applyed upon stoopes dipped in Oxycrate, and that so that it may not onely cover the cut member, but also be spread further and cover the neighbouring parts; as when the Legge is cut off, it must bee laid upon the joynt, and spread higher than the knee, some foure fingers upon the thigh; for it hath not onely a repercussive facultie, but it also strengthens the part, hinders defluxion by tempering the blood, aswaging paine, and hindring inflammation. It will also be good to moisten your double clothes and bandages in Oxycrate; then must you place the member in an indifferent posture upon a pillow stuffed with oaten huskes or chaffe, Stagges haire, or wheate branne. It must not be stirred after the first dressing (unlesse great necessity urge) for foure dayes in winter, but 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 haste you cause a new flux of blood. This agglutination will be performed by applying refrigerating, astringent, and emplasticke medicines, such as this following powder. A repercussive. How to place the member and how often to dresse it.

R. *boli arm. farin. hord. picis, resi. gypsi, an* ℥iiij. *Aloes, nucum cup. cort. granat. an.* ℥j. *incorporentur omnia simul, fiat pulvis subtilis*: herewith let the whole ulcer be strewed over for three or foure dayes space; which being ended, let onely the seates of the vessells be poudred therewith, and that for eight or ten dayes, so that wee neede no further doubt of the agglutination of the vessells. In the meane space let the digestive be applyed to the rest of the Vlcer untill it bee come to suppuration; for then you shall give over your digestive, and betake you to detersive and mundificative medicines: As An emplasticke pouder.

R. *terebinth. ven. lotæ in aquavitæ* ℥vj. *mellis ros. colati* ℥iiij. *succi plantag. Apij, centaur. minoris, an.* ℥ij. *bulliant omnia simul usque ad consumptionem succorum: auferantur abigne, addendo farinæ fab. & hord. an.* ℥j. *theriac. Gal.* ℥ß. *aloes, myrrhæ, aristoloch. an.* ℥iij. *croci* ℈j. *fiat mundificativum.* Detersive.

But seeing the case stands so that the Patients imagine they have their members yet entire, and yet doe complaine thereof (which I imagine to come to passe, for that, the cut nerves retire themselves towards their originall, and thereby cause a paine like to convulsions; for as *Galen* writes in his booke, *De motu musculorum*, That contraction is the true and proper action of a nerve and muscle: and againe, extension is not so much an action as a motion:) now wee must indeavour to give remedy to this symptome. Which may be done by annointing the spine of the backe and all the affected part with the following Liniment, which is very powerfull against Convulsions, the Palsie, numnesse, and all cold affects of the nervous bodies. Why after dismembring the patients complaine of paine as if the part were yet remaining on.

R *salviæ, chamæpytheos, majoranæ, roris mar, menth. rutæ, lavendulæ, an. m. j. flor. chamamel. melilot. summit. aneth. & hyperici, an. p. ij. baccarum lauri & juniperi an.* ℥ij. *radicis pyrethri* ℥ij. *mastic. assæ odorat. an.* ℥ß. *terebinth. venet* ℔. j. *olei lumbr. anethæ cateil. an.* ℥vj. *olei terebinth.* An ointment for the spine of the backe against all affects of the nerves.

binth. ℥iij. *axung. hum.* ℥ij. *croci* ℥j. *vini albi odoriferi lib.*j. *cera quantum sufficit, contundenda contundantur pulverisanda pulverisentur, deinde macerentur omnia in vino per noctem, postea coquantur cum oleis & axungia prædictis in vase duplici, fiat linimentum secundum artem, in fine adde aquæ vitæ* ℥iiij. Besides, in dressing these wounds, the Chirurgion must use diligence to procure the falling away of the ends or scalls of the bones, which the saw and the appulse of the aire never before comming 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 bee forcibly pluckt off, but gently mooved by little and little, so that you shall thinke you and the patient have exceedingly well performed your parts if they fall away at the thirtyeth day after the Amputation. All these things being performed, you shall hinder the growth of proud flesh with the cathæreticks, such as are burnt vitrioll, the pouder of Mercurie, and other things, amongst which is Alome burnt and poudered, which is excellent in these kind of wounds whether by its selfe 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 selfe devise other things, such as these, as occasion shall offer its selfe.

How to procure the falling away of the ends of the bones.

Cathæreticks.

Chap. XXIIII.

What just occasion moved the Author to devise this new forme of remedy, to stanch the blood after the amputation of a member; and to forsake the common way used almost by all Chirurgions; which is, by application of actuall cauteries.

VErily I confesse, 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 agreived; But what should I doe? I had observed my maisters whose method I entended to follow, alwaies to doe 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 medicines, which they would use to the dismembred part, now one, then another, as they themselves thought meete. Which thing cannot be spoken, or but thought upon without great horror, much lesse acted. For this kinde of remedy could not but bring great and tormenting paine to the patient, seeing such fresh wounds made in the quicke and sound flesh are endewed 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 inward parts, whence horrid symptomes ensue, and oft times death it selfe. And verily of such as were burnt, the third part scarse ever recovered, and that with much adoe, for that combust wounds difficultly come to cicatrization; for by this burning are caused cruell paines, whence a Feaver, Convulsion, and oft times other accidents worse than these. Adde hereunto, that when the eschar fell away, oft times a new hæmorrhagye ensued, for stanching whereof they were forced to use other caustick and burning Instruments. Neither did these good men know any other course; so by this repetition there was great losse and waste 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 tooke away the oportunitie of fitting or putting too of an artificiall legge or arme in stead of that which was taken off.

Hot Irons not to be used.

Wherefore I must earnestly entreate all Chirurgions, that leaving this old, and too too cruell way of healing, they would embrace this new, which I thinke was taught

taught mee by the speciall favour of the sacred Deitie; for I learnt it not of my maisters, nor of any other, neither have I at any time found it used by any. Onely I have read in *Galen*, that there was no speedier remedy for stanching of blood, than to bind the vessels through which it flowed towards their rootes, to wit, the Liver and Heart. *Lib.5.Meth.*

This precept of *Galen*, of binding and sowing the Veines and Arteries in the new wounds, when as I thought it might be drawne 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 alwayes had my cauteries and hot Irons in a readinesse, that if any thing happened otherwise then I expected in this my new worke, 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 worke. And I thinke it fit that Chirurgions doe 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 alway done thus.

Chap. XXV.

The practice of the former precepts is declared, together with a memorable history of a certaine soldier, whose arme was taken off at the Elbow.

A History.

I Thinke it fit to confirme by an example the prescribed method of curing a Gangreene and Mortification. Whilest I was Chirurgion to the Marshall of *Montejan* at *Turin*, a certaine common souldier received a wound on his wrest with a musket bullet, by which the bones and tendons being much broken, and the nervous bodyes cruelly torne, there followed a Gangreen, & at length a mortification even to the Elbow; besides also an inflammation seazed upon the middle part of his Chest, and there was as it were a certaine disposition to a Gangreene, whereby it followed that he was painefully and dangerously troubled with belchings, hickettings, watchings, unquietnesse and frequent swoundings, which occasioned many Chirurgions to leave him as desperate. But it so it fell out, that I orecome by his friends intreaty, undertooke the cure of this wretched person, destitute of all humane helpe. Wherefore knowing the mortification by its signes, I cut off the arme by the elbow as speedily as I could, making first the ligature, where of I made mention; I say I tooke it off not with a saw, but onely with an incision knife, cutting in sunder the ligaments which held the bones together, becausse the sphacell was not passed the joynt of the Elbow. Neither ought this section to be accounted strange, which is made in a joynt; for *Hippocrates* much commends it, and saith that it is easily healed, and that there is nothing to be feated therein besides swounding, by reason of the paine caused by cutting the common tendons and 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 feare of inflammation and a Gangreene; then presently I stanched 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 Arme which was Gangreenated, with many and deepe incisions, shunning and not touching the inner part, by reason of the multitude of the large vessels and Nerves which runne 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

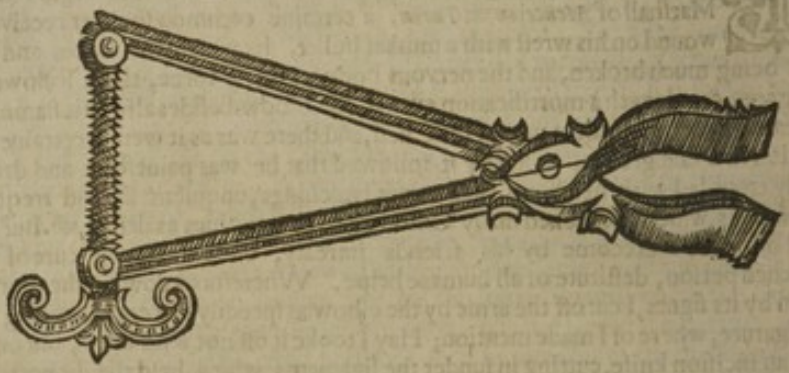
Dismembring at a joynt.

Sect.4.lib. de Art.

which remained in the part. And then I aſſailed and overcame the ſpreading putrefaction by putting and applying the formerly preſcribed medicines; I uſed all ſorts of reſtrictive medicines, to ſtay the inflammation of the Cheſt; I alſo applyed Epithema's to the region of the heart, and gave him cordiall potions and boles, neither did I deſiſt from uſing them untill ſuch time as his belching, hicketting and ſwoundings had left him. Whileſt I more attentively intended theſe things, another miſcheife aſſailes my patient, to wit, Convulſions, and that not through any fault of him or me, but by the naughtineſſe of the place wherein hee lay, which was in a Barne every where full of chinkes 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; neyther had he any fire or other thing neceſſary for preſervation of life, to leſſen theſe injuries of the Aire and place; Now his joints were contracted, his teeth ſet, and his mouth and face were drawne awry, when as I pittying his caſe made him to bee carried into the neighbouring Stable which ſmoaked with much horſe dung, and bringing in fire in two chafendiſhes, I preſently annointed his necke and all the ſpine of his backe, ſhunning the parts of the Cheſt, with liniments formerly deſcribed for convulſions; then ſtraight way I wrapped him in a warme linnen cloth, and buried him even to the necke in hot dung, putting a little freſh ſtraw about him; when hee had ſtayed there ſome three dayes, having at length a gentle ſcowring or flux of his belly, and plentifull ſweate, hee begun by little and little to open his mouth and teeth which before were ſet and cloſe ſhut. Having got by this meanes ſome opportunitie better to doe my buſineſſe, I opened his mouth as much as I pleaſed, by putting this following Inſtrument betweene his Teeth.

Burying in hot horſe dung helpes Convulſions.

A Dilater made for to open the mouth and Teeth by the meanes of a ſcrew in the end thereof.



Now drawing out the Inſtrument I kept his mouth open by putting in a willow ſticke on each ſide thereof, that ſo I might the more eaſily feede him with meats ſoone made, as with Cowes milke and reare egges, untill hee had recovered power to eate, the convulſion having left him. Hee by this meanes freed from the Convulſion, I then againe begun the cure of his arme, and with an actuall cautery ſeare the end of the bone, ſo to dry up the perpetuall affluxe of corrupt matter.

It is not altogether unworthy of your knowledge, that hee ſaid, how that hee was wondrouſly delighted by the application of ſuch actuall cauteries, a certaine tickling running the whole length of the arme by reaſon of the gentle diffuſion of the heate by applying the cauſticke; 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 ſcalles of the bone, the freer appulſe of the aire than was fit making much thereto; beſides when

when there was place for fomentation, with the decoction of red Rose leaves, Wormewood, Sage, Bay leaves, flowers of Chamomile, Melilote, Dill; I so comforted the part that I also at the same time by the same meanes drew and tooke away the virulent *Sanies*, which firmely adhered to the flesh and bones. A fomentation for a Gonvulsion.

Lastly, it came to passe, that by Gods assistance, these meanes I used, and my carefull diligence, he at length recovered. Wherefore I would admonish the young Chirurgion, that hee never account any so desperate, as to give him for lost, content to have let him goe with prognosticks; for as an ancient Doctor writes; That as in Nature, so in diseases there are also Monsters. Monsters or miracles in diseases.

The end of the Twelfth Booke.

OF VLCERS, FISTVLAS, AND Hæmorrhoides.

THE THIRTEENTH BOOKE.

CHAP. I.

Of the nature, causes, and differences of Vlcers.

The diverse acceptions of an Vlcer.

Sent. 34. sect. 3 lib. de fract.

HAving already handled and treated of the nature, differences, causes, signes and cure of fresh and blood wounds, reason & order seeme to require that we now speake of Vlcers; taking our beginning from the ambiguity of the name. For according to *Hippocrates*, the name of Vlcer most generally taken may signifie all or any solution of Continuity; In which sense it is read, that all paine is an Vlcer. Generally, for a wound and Vlcer properly so called; as appeares by his Booke, *de Vlceribus*. Properly, as when hee saith, it is a signe of death when an Vlcer is dryed up through an *Atrophia*, or defect of nourishment. Wee have here determined to speake of an Vlcer in this last and proper signification. And according thereto wee define an Vlcer to bee the solution of Continuity in a soft part, and that not bloody, but sordide 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 Vlcers 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 skinne and softer parts by their acrimonie and malignitie; Now these things happen eyther by naughty and irregular diet, or by the ill disposition of the entrailes, sending forth and emptying into the habite of the body this their ill disposure. The externall causes are, the excesse of cold seazing upon any part, especially more remote from the fountaine of heate, whence followes paine, whereunto succeeds an attraction of humors and spirits into the part, and the corruption of these so drawne thither by reason of the debility or extinction of the native heate in that part, whence lastly ulceration proceeds. In this number of externall causes may be ranged, a stroake, contusion, the application of sharpe and acrid medicines, as causticks, burnes; as also impure contagion, as appeares by the virulent vlcers acquired by the filthy copulation or too familiar conversation of such as have the French disease. How many and what the differences of Vlcers are, you may see here described in this following Scheme.

Sect. 1. greg.

What an Vlcer properly is.

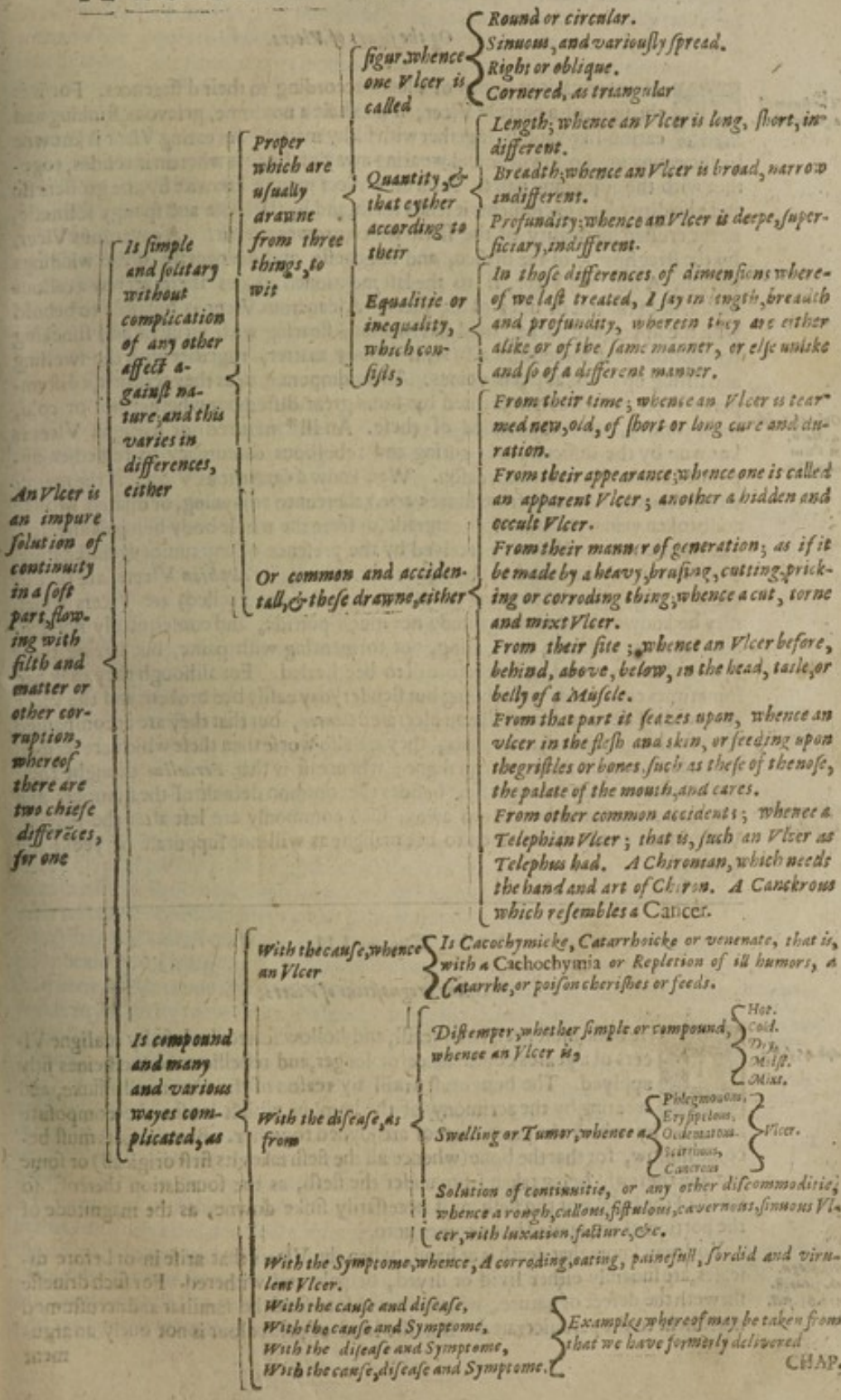
Lib. de constit. Artis cap. 6.

The internall causes.

The externall causes.

A

A Table of the differences of Vlcers.



CHAP.

Chap. II.

Of the ſignes of Vlcers.

The ſignes of a putrid Vlcer.

THere are various ſignes of Vlcers according to their differences. For it is the ſigne of a putride Vlcer, if it exhale a noyſome, grievous, ſtinking and carion-like vapour, together with filthy matter. An eating Vlcer is knowne by the eating in, hollowneſſe and wearing away of the part wherein it reſides, together with the adjoyning parts. A ſordide Vlcer may be knowne by the groſſeneſſe and viſcidity of the excrements it ſends forth, and by the looſe and ſpongy ſoftneſſe, or the cruſted inequality of the fleſh which growes over it. A cavernous Vlcer, by the ſtreightneſſe of the orifice, and largeneſſe and deepeneſſe of the windings within. A fiſtulous Vlcer, if to the laſt mentioned ſignes there accrew a callous hardneſſe of the lips or ſides of the Vlcer. A cancrous Vlcer is horrible to behold with the lips turned backe, hard and ſwolne, flowing with virulent and ſtincking corruption, and ſometimes alſo with bloody matter, together with the ſwelling and lifting up of the adjacent veines. An untemperate, or as they terme it, a diſtempered Vlcer, is ſuch as is nouriſhed by ſome great diſtemper whether hot or cold, moiſt or dry, or compounded of theſe. An ill* natured or maligne Vlcer is knowne by the difficulty of curing and rebellious contumacy to remedies appointed according to art and reaſon. Wee know a catarrhous Vlcer, if the matter which feeds it flow to it from ſome *varices* thereunto adjoyning, or dilated, ſwollne and broken veines, or from ſome entraile, or from the whole body being ill affected. An Apoſtumatous Vlcer is perceived by the preſence of any tumor againſt nature, whoſe kind may be found out by ſight and handling. *Telephian* Vlcers, are ſuch as affected *Telephus*, and *Chironian* (in whoſe cure *Chiron* excelled) are Vlcers which may be knowne by their magnitude not much putride, and conſequently not ſending forth any ill ſmell, not eating, not tormenting with paine, but having their lips ſwollne and hard, and therefore ill to bee healed. For although they may bee ſometimes cicatrized, yet it being but ſlender may eaſily bee broken, and the Vlcer renewed. They are almoſt like an ulcerated *Cancer*, but that they are accompanied with ſwelling in the adjacent parts; they are alſo worſe than theſe which are termed *Cacoethe*, that is, ill natured or maligne; whence it is that *Fernelius* thought they had a hidden cauſe of malignitie, beſides the common default of the humour, and that ſuch as can ſcarce bee driven away; ſuch commonly are left after the plague. Wherefore *Galen* thinkes ſuch to bee maligne as will not ſuppurate or yeeld any quitture.

Gal. cap. 5. lib. 4. Meth.
* *Vlcus cacoethes.*

Com. 44 aphor. 22 ſect. 5.

Chap. III.

Of the prognoſticks of Vlcers.

Aph. 45 ſect. 6.

THe bone muſt neceſſarily ſcaill, and hollow ſcarres be left by maligne Vlcers of a yeares continuance or longer, and rebellious to medicines fitly applyed. The bone muſt ſcaill by reaſon of the continuall affluxe, and wearing by the acrimony of the humour, which looſes the compoſure and glue by which the parts thereof are joyned 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 bulcke of the fleſh muſt neceſſarily ſinke downe, as the magnitude of the portion of the waſted bone comes unto.

Hip. progn. lib. 1. cap. 8. Aph. 65. ſect. 5.

You may know that death is at hand, when the Vlcers that ariſe in or before diſeaſes, are ſudainly either livid or dryed, or pale and withered. For ſuch drineſſe 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 onely an argument

ment of the overabundance of choler and melancholy, but alſo of the extinction of the native heate. In Vlcers where tumors appeare, the patients ſuffer no convulſions, neither are franticke; for the tumor being in the habite of the body poſſeſſed with an Vlcer, 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 diſcuſſing medicine, or bleeding, thoſe who have them on their backs have convulſions and diſtenſions, for that the ſpine of the backe is almoſt wholly nervous; but ſuch as have them on their fore parts, become eyther franticke, or have a ſharpe paine of their ſide, or pleuriſie, or elſe a dyſentery if the tumors be reddiſh; for the forepart of the body is repleniſhed and overſpread with many and large veſſells, into whoſe paſſages the morbificke matter being tranſlated, is preſently carryed to theſe parts which are the ſeats of ſuch diſeaſes.

Soft and looſe tumors in Vlcers are good, for they ſhew a mildneſſe and gentleneſſe of the humors, but crude and hard ſwellings are naught; for all digeſtion in ſome meaſure reſembles elixation. Vlcers which are ſmooth and ſhining are ill, for they ſhew that there reſides an humour maligne by its acrimony, which frets aſunder the roots of the haires, and depraves the naturall conſtruction of the pores of the skin; whence it is that ſuch as are troubled with Quartaine agues, the Leproſie or *Lues venerea*, have their haire fall off. *Aph. 67. ſect. 5.* *Aph. 4. ſect. 6.*

A livid fleſh is ill in Vlcers which cauſe a rottenneſſe or corruption of the bones lying under the fleſh; for it is an argument of the dying heate and corruption of the bone, whence the fleſh hath its originall and integrity.

Theſe Vlcers which happen by occaſion of any diſeaſe, as a Dropſy, are hard to be cured; as alſo thoſe whereinto a *varix* or ſwollne veſſell continually caſts in matter; which a preſent diſtemper foments; which have ſwollne, hard and callous lips; and ſuch as are circular or round. An *Hyperſarcoſis*, or fleſhy excreſcence uſually happens to Vlcers not diligently mundified; and if they poſſeſſe the armes or Legs they cauſe a Phlegmon or ſome other tumor in the groines, chiefly if the body bee full of ill humors, as *Avicen* hath noted. For theſe parts by reaſon of their rarity and weakeneſſe are fit and ſubject to defluxions. *Albucraſis* writes that for nine cauſes Vlcers 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 medicines; the fourth by reaſon of the ſordidneſſe of the Vlcer; the fifth by the putrifaction of the ſoft and cationlike fleſh encompaſſing the Vlcer; 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 ſeaventh by reaſon of the callous hardneſſe of the lips of the Vlcer. The eighth when the heavens and aire are of ſuch condition as miniſters fuell to the continuance of the Vlcer, as at Sarogoza in Aragon; the ninth when the bones which lye under it are waiſted by rottenneſſe. *Hip. lib. de ulc. Gal. cap. 2. & 5. lib. Meth. 4.* For what cauſes Vlcers are hard to heale.

An Vlcer that caſts forth white, ſmooth, equall quitture, and little or no ſtinking, is eaſily healed; for it argues the victory of the native heate, and the integrity of the ſolid parts. We terme that ſmooth quitture which is abſolutely concocted, neither yeelds any aſperity to the touch, whereby we might ſuſpect that as yet any portion of the humor remaines crude; we call that equall wherein you can note no diverſity of parts; and 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 fluxe of blood ſuddainly breake forth in thoſe Vlcers which beate ſtrongly by reaſon of the great inflammation adjoyned therewith. For as *Hippocrates* obſerves, an effuſion of blood happening upon a ſtrong pulſation in Vlcers 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 heate and inflammation the nouriſhers of this Vlcer, that it breakes its receptacles, and hence enſues the extinction of the native heate, whence the defect of ſuppuration and a Gangreene enſues. Now for that there flowes two ſorts of excrements from maligne Vlcers, the more thinne is tearmed *Ichor* or *ſanies*, but the more groſſe is named *ſordes*; that is virulent and flowes from pricked nerves, and the *Perioſtia* when they are evill affected; but the other uſually flowes from the What matter is ſmooth, equall and white. *Ad ſtatut. 32. ſect. 2. de fract.* *Aph. 21. ſect. 7.* Two ſorts of excrements flow from a maligne Vlcer

Vlcers of the joynts, and it is the worser if it be blacke, reddish, ash-coloured, if muddy or unæquall like wine Lees, if it stinke. *Sanies* is like the water wherein flesh hath beene washed; it argues the preternaturall heate of the part, but when it is pale coloured, it is said to shew the extinction of the heate.

Chap. IIII.

Of the generall cure of Vlcers.

The curing of a simple Vlcer consists in exsiccation.

Gal. 7. Meth. cap. 12.

AN Vlcer is eyther simple or compound. A simple Vlcer, as an Vlcer hath one and that a simple indication, that is, exsiccation: and that more than in a wound, by how much an Vlcer is moister than a wound. There are many indications proposed for the cure of a compound Vlcer, in respect of wch *Galen* would have us to keepe this order, that wee have the first regard of the most urgent, then of the cause, then of that, which unlesse it be taken away, the Vlcer cannot be healed. By giving you an example you may easily understand the meaning hereof. Imagine on the inside of the Leg a little above the ancle, an Vlcer very painefull, hollow, putride, associated with the rottennesse of the bone, circular, having hard and swolne Lips, and engirt with the inflammation and *varices* of the neighbouring parts. If you take this to cure before you doe any thing about the Vlcer, unlesse you bee called upon by that which urges, as by vehemency of paine, you must first use generall meanes by calling and advising with a Physition; For in *Galens* opinion, if the whole body require a preparation, then must that be done in the first place; for in some Vlcers purgation onely will bee sufficient; in some bloodletting; others are better by using both meanes, which is as the cause of the Vlcer proceedes from a repletion or illnesse of humors. Now by these meanes having taken away the cause of the Vlcer, you must come to the particular cure thereof, beginning with that which is most urgent. Wherefore you must first asswage the paine by application of things contrary to the cause thereof, as if it proceede from a Phlegmonous distemper, which hath long possest, distended and hardned the part, it must bee eased by evacuation. First, bathing it with warme water, to mollifie and relaxe the skinne, that so you may the more easily evacuate the contained humors; then shall you draw away portion of the matter causing the swelling and paine by scarrification, if the patient shall be of sufficient courage, or else by application of hose-leaches if hee be more faint hearted; and then you shall temper the heate there of by applying *Vnguentum refrigerans Galeni*.

Gal Lib. 4. de comp. med. secund. gen.

To conclude, you shall attempt all things which wee 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 conjoyned with the Vlcer, to wit, the rottennesse of the bone, which you shall helpe by actuall cauteries; and in the meane while you shall draw the Vlcer into another forme, to wit, cornered, and you shall cut away the callous hardnesse, and helpe the rottennesse. Then must you procure the falling away of the Eschar, and then provide for the scailing of the bone by the meanes formerly prescribed, lastly the mundified Vlcer must be filled with flesh.

The things conducing to the generating of flesh.

For generating of flesh two causes must concurre, the efficient and materiall; The efficient is, the good temper both of the whole body, as also of the Vlcerated part. For this prevailing, there will be an attraction, digestion, apposition and assimulation of the laudible juice to the part affected; verily the laudible temper is preserved by like things, but the vicious is amended by contraries. The matter to bee spent upon flesh, is laudible blood, which offends neither in quality, nor quantity. In this regeneration of the flesh there appeare two kinds of excrements, the one more thinne and humide called *Sanies*, the other more grosse termed *Sordes*. Both of these for that they are contrary to nature, doe therefore hinder the regeneration of flesh, and therefore must be taken away by applying their contraryes, as by things

drying

drying in the firſt degree, and more ſtrongly or weakely detergent according to the complexion of the part and the whole body, and the plenty and quality of the excrementitious humor, and the uncleanneſſe of the Vlcer. For the part muſt bee preſerved by the uſe of the like, but the ulcer orecome by application of things contrary thereto. After that by natures endeavour and the Chirurgions helpe the Vlcer 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 pouders having very little or no acrimony. Thus Alume and vitrioll being burnt and made into pouder, and thinly ſtrewed upon the part doe quickly cicatrize the former fleſhy worke. To this purpoſe alſo ſerve, the roote of *Ariſtolochia*, Aloes, burnt Lead, Pomegranat pills burnt, Litharge, *Tutia*, and alſo plates of Lead beſmeared with quickſilver, whoſe efficacy for this purpoſe Chirurgions ſometimes finde more certaine and powerfull than any other remedies.

What a ſcarre is.

Things cauſing cicatrization.

CHAP. V.
Of a diſtempered Vlcer.

BEfore we ſpeake of a diſtempered Vlcer, it is meete, leaſt that the Chirurgion take one diſtemper for another, briefly to relate the ſignes of each. You may know that an Vlcer is aſſociated with a dry diſtemper by your ſight, as if the Vlcer be as it were wrinckled, if it ſend forth little or no moiſture; alſo it is knowne by touch, if it feele rough and hard. You ſhall correct this diſtemper by humecting medicines, as fomenting it with warme water according to *Galens* opinion, or elſe with *Hydrelæum* (*i.*) Oile and water mixt, but alwayes you muſt firſt purge, if the body ſhall abound with ill humors, or uſe Phlebotomie if the body be plethoricke; otherwiſe you ſhall draw more humors into the part than it can beare. Now you ſhall ſo long foment it, untill the fleſh which is about it begin to looke red, waxe ſoft and moiſt, and the part it ſelfe be a little ſwollne. If you proceede further, you will reſolve all the humor which you have drawne thither, and ſo your labour is in vaine. After the fomentation apply ſuch a remedy to the ulcerated part.

Signes of a diſtempered Vlcer.

Remedies for a dry diſtempered Vlcer.

℞ *cremoris hordei* ℥ij. *ſol. malvæ in aq. cocti* ℥j. *pingued. porci* ℥ß. *mellis com.* ℥ß. *miſte in mortario & fiat unguentum.*

You ſhall know a moiſt diſtemper aſſociates the Vlcer by the plenty of the excrementitious humor, which the Vlcer ſends forth; by the ſpongie and fungous ſoftneſſe and growth of the fleſh about it. You ſhall amend this by drying remedies, ſuch as theſe are, which we terme ſarcoticks, having alwayes regard to the plenty of the humour, the proper temper of the part, and other indications formerly mentioned. Amongſt other remedies *Galen* much commends Alume water, for it dries, cleanſes and corroborates the affected part. Alſo this enſuing fomentation may be applyed ro good purpoſe. ℞ *roſar. rub. abſinth. beton. tapſi barbati, an. m.* j. *gallarum, nucum cupreſſi, an.* ℥ij. *aluminis rochæ* ℥j. *fiat decoctio in vino auſtero, inſtituatur fotus*; Then let *Empl. de ceruſſa* or *De minio* be applyed to the Vlcer. Alſo I have found by experience that the pouder of burnt alome lightly ſtrewed upon the Vlcer is very effectuall in this caſe. You ſhall know that an hot diſtemper aſſociates the Vlcer by redneſſe, or yellowneſſe thereof, by the heate manifeſt to your touch, and the propriety of the paine. Then muſt you have recourſe to refrigerating things, ſuch as *ung. Roſatum Meſ. Refrigerans Gal. Populeon*; ſtoopes and cloathed dipped in plantaine water, Night-ſhade water, or Oxycrate. I have oft found by experience that ſcarrification, or Leaches being applyed, did more conduce than any other remedy. For ſo the chafed blood, which by that meanes is apt to corrupt, is drawne away, and the part its ſelfe is alſo freed of that burden.

Signes of too moiſt an Vlcer.

Gal. lib. 1. *ſimp. cap* 7.

Signes of a hot diſtempered Vlcer.

We know a cold diſtemper by the whitiſh or pale colour, by the touch of the Chirurgion, and ſpeach 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 halfe filled with the following decoction.

Signes of a cold diſtempered Vlcer.

℞ *origani, pulegij, chamæm. melilori, an. m.* j. *abſinth. majoranæ, ſalviæ, roriſmar. an. m.* ß.

fiat decoctio in vino generoſo, addendo aqua vitæ quod ſufficit. Alſo the Vlcer may conveniently bee fomented with ſpunges 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 joyned to the Vlcer, the medicines muſt in like manner be mixt & compoſed. The reſidue of the Chirurgions care and paines muſt be ſpent upon the proper and peculiar cure of the Vlcer, as it is an Vlcer; which we ſaid in the former Chapter was conteined in deterſion, regenerating fleſh and cicatrization thereof.

Chap. VI.
Of an Vlcer with paine.

THere oft times ſo great paine accompanieth Vlcers, that it calls thereto the counſell of the Phyſition. Wherefore if it proceede 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 doe not ſo ceaſe, wee muſt goe on to Narcoticks. Such are cataplaſmes of the leaves of Mandrakes, water lillies, Henbane, Nightſhade, Hemlocke, the ſeeds of Poppy and Oyles of the ſame; to which alſo may be added *Opium*, *Populeon*, and other things of like faculties. But if a maligne acrimonie and virulency of an humour corroding and eating the fleſh lying under it and the lips about it, cauſe and make the paine, you ſhall neither aſſwage it by anodynes, nor Narcoticks; for by application of gentle medicins it wil become worſe and worſe. Wherefore you muſt betake you to Cathæreticks; For ſtrong medicines are fitteſt for ſtrong diſeaſes. Wherefore let a pledget dipped in ſtrong and more than ordinarily powerfull *Ægyptiacum*, or in a little oyle of Vitrioll, be applyed to the Vlcer; for theſe have power to tame this raging paine, and virulent humors. In the meane ſeaſon let refrigerating things be put about the Vlcer, leaſt the vehemency of acrid medicines cauſe a deſluxion.

The matter of Narcoticke cataplaſmes.

Catheræticks have power to aſſwage paine.

Chap. VII.
Of Vlcers with overgrowing or proudneſſe of fleſh.

VLcers have oft times proud or overgrowing fleſh in them, either by the negligence of the Chirurgion, or fault of the patient. Againſt this, drying and gently eating or conſuming medicines muſt be applyed; ſuch as are Galls, *cortex thuris*, Aloes, *Tutia*, Antimony, *Pompholix*, Vitrioll, Lead, all of them burnt and waſht if neede require. Of theſe pouders you may alſo make ointments with a little oyle and waxe; 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 worke of nature, (as the generating, reſtoring and agglutinating of the fleſh is) but it is performed by medicines which dry vehemently, or elſe by the hand of the Chirurgion; wherefore amongſt the remedies fit for this operation, the pouder of mercury with ſome ſmall quantity of burnt Alume, or burnt Vitrioll alone, ſeeme very effectuall to me. Now for the hard and callous lips of the Vlcer, they muſt bee mollyfied with medicines which have ſuch a faculty, as with Calves, Gooſe, Capons or Ducks greaſe, the oiles of Lillies, ſweet Almonds, Wormes, Whelpes, *Oeſipus*, the mucilages of Marſh-mallowes, Lineſeede, fænugreeke ſeede, Gum *Ammoniacum*, *Galbanum*, *Bdellium*, of which being mixed may be made Emplaiſters, unguents, and liniments, or you ſhall uſe *Empl. Diachylon*, or *de Mucaginibus*, *De Vigo cum mercurio*. To conclude, after we have for ſome few dayes uſed ſuch like remedies, you may apply to the Vlcer a plate of Lead rubbed over with Quickſilver; for this is very effectual to ſmooth an Vlcer and depreſſe the lips; if you ſhall prevaile nothing by this meanes, you muſt come to the cauſticks, by which if you ſtill prevaile nothing, for that the lips of the Vlcer are ſo callous that the cauſtickes cannot peirce into them, you muſt cleave them with a gentle ſcarification, or elſe cut them to the quicke, ſo to make way,

Things waſting ſuperfluous fleſh.

Lib. 3. Meth. cap. 6.

For the callous lips of Vlcers.

or

or as it were open a window for the medicine 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. *Lib.4.Meth. cap.2.*

Chap. VIII.

Of an Vlcer putride and breeding Wormes.

WOrmes are divers times bred in ulcers, whence they are called wormie ulcers; the cauſe hereof is the too great excrementitious humidity prepared to putrefie by unnaturall and immoderate heate. 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 eares, noſe, fundament, necke of the wombe, and laſtly to all ſinuous and cuniculous ulcers. Yet it doth not neceſſarily follow that all putrid ulcers muſt have wormes in them; as you may perceive by the definition of a putride ulcer which we gave you before. For the cure of ſuch ulcers after generall meanes, the wormes muſt firſt be taken forth, then the excrementitious humor muſt be drawne 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 quicke he will be much deceived; for they oft times doe ſo tenaciouſly adhere to the ulcerated part, that you cannot plucke them away without much force and paine. *The cauſe of wormes breeding in Vlcers.*

℞. *abſinth. centaur. majoris, marrubij, an. M.* j. *fiat decoctio ad* lb. *ſſ. in qua diſſolve aloes* ʒß. *unguenti ægyptiaci* ʒj. Let the ulcer be fomented and waſhed with this medicine, 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 goe into all parts thereof. *A fomentation to kill the wormes.*

Archigenes much commends this following medicine. ℞. *Ceruſæ, polij montani, an.* ʒß. *picis navalis liquidæ quantum ſufficit, miſce in mortario pro linimento.* If the putrefaction be ſuch that theſe medicines 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 beginne with the more gentle, ſuch as this of *Galens* deſcription. *Gal.4.comp. med.*

℞. *ceræ.* ʒij. *ceruſæ* ʒj. *olei roſ.* ʒij. *ſalis amnon.* ʒß *ſquam. æris* ʒij. *thur. alum. arug. malicor, calcis vivæ, an.* ʒj. *fiat emplaſtrum.* Or ℞. *terebinth. lotæ* ʒij. *ceræ albæ* ʒß *liqueſiant ſimul addendo ſublimati,* ʒß. *ſalis torrefacti, & vitrioli calcinati, an.* ʒj. *fiat mundificativum.* Or you muſt uſe our *Ægyptiacum* alone, which hath Sublimate entring into the compoſition thereof; but in the interim the circuit of the Vlcer muſt be defended with refrigerating, and defenſative things for feare of paine.

Chap. IX.

Of a ſordide Vlcer.

A Sordide Vlcer after the cure of the body in generall, ſhall be healed with detergent medicines; the indication being drawne from the groſſe and tough excrement, which with the excrementious *Sanies*, as it were beſieging, and blocking up the ulcerated parts, weakens and as it were dulls the force of medicines though powerfull, which cauſeth us to beginne the cure with fomentations and lotions as thus.

℞. *Lixivij com.* lb. j. *abſinth. marrub. appij. centaur. utriuſque, hyperici, an. M. ſſ. coquantur, colatura, quæ ſufficiat, adde mellis roſati* ʒj. *unguenti ægyptiaci* ʒß. *fiat fotus.* Then uſe the following deterſive medicine: ℞. *ſucci appij, & plantag. an.* ʒij. *mellis com.* ʒj. *terebinth.* ʒiß. *pul. Ireos Florent. & aloes. an.* ʒß. *fiat medicamentum.* *A detergent lotion.*

The Chirurgion muſt wel conſider, at how many dreſſings he ſhall be able to waſh away

away the groſſe *ſordes* or filth ſticking cloſe to the Vlcer, and dry up the excrementitious *ſanies*. For oft times theſe things may be done at one dreſſing; but in others who have more quicke ſenſe or feeling, not ſo ſoone. But when the Vlcer is freed of ſuch groſſe *Sordes* or filth, you muſt forbeare to uſe more acride things for feare of paine, defluxion, inflammation, and eroſion, whereby the Vlcer would become more hollow. Wherefore then we ſhall bee content to apply remedies which dry and cleanſe without acrimony, that wee may ſo helpe natures endeavours in generating fleſh. Such remedies are the pouders of Aloes, Maſtich, Myrrhe, Orris, Litharge, Antimony, roots of Gentian, Barly flower, and the like, which being ſtrewed upon the Vlcer, you ſhall cover it with Lint, and put over that a plate of Lead, rubbed over with quickſilver; and you ſhall put on theſe deterſives and deſiccatives more or leſſe ſtrong, as you ſhall finde it requiſite and neceſſary. For the too plentifull uſe of drying and deterſive things, doth in time hollow the Vlcers, whereby it comes to paſſe that in ſhort time in like ſort, a greater quantity of *Sanies* flowes from the Vlcer, the proper ſubſtance of the fleſh being diſſolved by the force or acrimony of the deterſive medicine; as alſo the proper alimentary humor, which flowed to the part, being in like ſort, a greater quantity of *Sanies* flowed from the Vlcer, the proper ſubſtance of the fleſh being diſſolved by the force or acrimony of the deterſive medicine, as alſo the proper alimentary humor, which flowed to the part, being in like ſort defiled: which thing beguiles the unskilfull Chirurgion. For by how much he ſees the Vlcer flow more plentifully with *ſanies*, he endeavours by ſo much the more to exhauſt and dry up with more acrid medicines theſe humidities as if they were excrementitious; But *Galen* hath long agoe admoniſhed us to take heede hereof, ſetting forth a Hiſtory of a certaine Empericke who dreſſing a ſordide Vlcer with a greene, acrid and eating medicine, diſſolved the fleſh, and ſo conſequently made the Vlcer more hollow, and cauſed more paine and defluxion; whereby it happened that continually adding more acrid medicines, hee continually by his ignorance and unskilfulneſſe increaſed the colliquation of the fleſh, the largeneſſe of the ulcer and excrementitious humidity. Wherefore wee muſt take ſpeciall care, whether the ſordide Vlcer 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 benigne and alimentary humor ſent thither for the nutrition of the part, by the too frequent and unskilfull uſe of too acrid a medicine. You may conjecture this by the increaſe of the paine without reaſon, and by the heate and redneſſe of the lips of the Vlcer. Therefore you muſt principally have regard to this, that you give each of your patients his fit meaſure, that is, a convenient and agreeable medicine 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 deale of difference whether you apply a medicine to a plowman or labourer, or to an Eunuch and woman, or whether to the Legge, or eyes. For theſe medicines which to a denſe and hard body and part are onely detergent and drying, the ſame are to delicate and tender bodies and parts cathæreticke 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 doe laudibly and ſufficiently cleanſe the fleſh in a ſoft body and dryup the *ſanies*, theſe ſame things applyed 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 skilfull Chirurgion will ſee when he muſt betake himſelfe from too ſtrongly cleanſing and eating medicines, to theſe which are more milde.

Detergent medicines without acrimony.

A caution very obſervable in uſe of detergent things.

A diſtinction to be obſerved concerning the impurity of ulcers.

Diligent regard muſt be had of the patients bodies and the affected parts.

CHAP. X.

Of a virulent, eating & maligne Vlcer which is termed Cacoëthes, *& of a Chironian Vlcer.*

How virulent and eating ulcers differ.

VIrulent and eating Vlcers differ not unleſſe in *magis* and *minus*, for we tearme it a virulent Vlcer which ſends forth a virulent *ſanies*, which is properly called *Virus*. This *Virus*, or virulency, when it becomes more maligne, gnawes

gnawes and feeds upon the parts which lye under, and are adjoyning to the Vlcer, and makes an eating Vlcer. Such Vlcers are by *Galen* called *Dyſepulotica*, that is, difficultly to be cicatrized; for, ſaith he, it happens that the Vlcer is Dyſepuloticke, either for that the part affected may be vitiated either in the habit or temper thereof, ſo that it may corrupt the humor which flowes thither; ſuch an Vlcer 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 heale up. He further addes that a Chironian Vlcer is farre more maligne than theſe Vlcers which are tearmed *Cacoethe*. *Gal. Lib. 4. de comp. med. ſec. genera.*

How a chironian ulcer differs from an eating, ſee before, *Cap. 2.*

For the cure; by reaſon that all theſe Vlcers have a large extent, for ſome are more maligne and ill to be cicatrized than otherſome; it is alſo neceſſary to have divers medicines ready and at hand diſtinct both in their faculties and the degrees thereof; ſo that it is no marvaile if they oft faile of their purpoſe, who with the ſame medicine dreſſe and thinke they ſhall heale all maligne Vlcers. This following medicine deſcribed by *Aſclepiades* is much commended by *Galen*.

R. *ſquamæ æris, aruginis raſæ, an.* ℥j. *ceræ* lb. ß. *reſinæ laricis.* ℥jß. *quæ liquari poſſunt aridis affundantur*, and make an emplaiſter to bee laid onely upon the Vlcer; for you muſt lay a defenſative about the Vlcer for feare of inflamation. But *Galen* ſaith, that the following Epuloticke of *Primion* excells the reſt, as that which to deſperate Vlcers, (which many have taken in hand and left as uncurable,) was of certaine and approoved uſe. *Gal. lib. 4. ſec. gen. Cap. 5.*

R. *ſorcos* ℥ij *aluminis ſciſſilis, calcis viuæ, an* ℥ij. *thuris, gallarum, an.* ℥iij. *ceræ*, lb. j & ℥iij. *ſevi vitulini* lb. j. & ℥vj. *olei veteris quantum ſuffecit, fiat emplaſtrum.* *Gal. lib. 4. de comp. med. ſec. gen. Cap. 6.*

CHAP. XI.

An adverti ſement to the young Chirurgion touching the diſtance of times wherein maligne Vlcers are to be dreſſed.

TO ſhew the uſe of *Aſclepiades* his medicine deſcribed in the former Chapter, and convince the errour of theſe Chirurgions, who thinke they doe well for their patients, if they twiſe or thrice on a day dreſſe maligne Vlcers, I have heere thought good to digreſſe a little from my purpoſe and to interpoſe *Galens* authority. Rightly (ſaith *Galen*) hath *Aſclepiades* added theſe words to the formerly deſcribed medicine: And looſe this after three dayes, and foment the Vlcer, and faſten the ſame emplaiſter being waſhed, and apply it againe; for unleſſe the medicine adhere long to the skin, it will doe no good. Which thing notwithſtanding many Phyſitions have beene ignorant of, thinking if they wiped away the *Sanies* from the Vlcer thrice on a day, they ſhould doe better than thoſe who did the ſame but twice a day. But thoſe who dreſſe it but once a day, are reprooved 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 qualities of all neighbouring bodies do mutuall actuate and affect each other in ſome degree, although the one thereof bee 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 medicine ſhall bee like in *ſpecies* to the body to bee cured, there followes the better ſucceſſe. Wherefore he which moved by theſe reaſons firſt appointed to uſe the emplaſter formerly applyed, is worthy of commendations; and we ought to follow him much the rather, ſeeing that which he found out by reaſon, is approoved by experience. Neither did he unadviſedly command to foment the wound every third day, that is, at every dreſſing; for ſeeing it is a powerfull medicine, therefore it ſtands in neede of mitigation. Thus much *Galen*, whoſe opinion grounded on reaſon, he can againe confirme with another reaſon. It is already ſufficiently knowne, that medicines can doe nothing in us unleſſe by the force of the native heate, which ſtirres up the faculty of the medicine to operation. But in Vlcers which are abſolutely maligne, the native heate of the affected part is very languid, being broken *Gal. lib. 4. de comp. med. ſec. gen. Cap. 5.* *Galens reaſon further explained.*

broken and debilitated by the preſence of the preternaturall heate; ſo that it ſtands in need of a great ſpace of time to actuate the vertue and faculty of the medicine. Wherefore, if in that time, when as the native heate hath much moved and ſtirred up the faculty of the medicine, the ulcer be looſed or opened, and that emplaiſter caſt away which was layd upon the part, and a freſh one layd in ſteede thereof; the heate implanted in the part is either diſſipated by the contact of the ayre, or is weakned 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 layd on, the heate of the part muſt undergoe a new labour, ſo to ſtirre up the faculty to bring it to act.

Medicines are onely ſuch in faculty.

For all medicines are, what they are, in faculty. Equall to this is their errour, who by too oft renewing their emplaiſters on the ſame day, doe too powerfully cleanſe; for ſo they doe not onely 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 Vlcers ſo often in one day, and to looſe them to apply new emplaiſters, unleſſe ſome grievous ſymptome (as paine) force us to doe it, which requires to be aſſwaged and mittigated by the often changing and renewing of Anodyne medicines.

Chap. XII.

How to binde up Vlcers.

The beginnig of your binding muſt be at the Vlcer.

FOr the binding up of Vlcers, you muſt alwayes beginne your bandage at the Vlcer. Now the Rowler muſt be ſo large that it may not onely cover and comprehend the Vlcer, but alſo ſome portion of the adjacent parts above and below; and let it preſſe the Vlcer with that moderation, that it may only preſſe out the excrementitious humors. For ſo the ulcer wil become dry, and conſequently more neere to healing, as it is obſerved by *Hippocrates*. Let this be the meaſure of your binding, that it be neither too ſtraite for hence would enſue paine and defluxion; nor too laxe, for ſuch is of no uſe. You may moyſten your boulſters 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 legge, ought neither to ſtand, nor ſit, but to lye on a bed. Wherefore when the legges are ulcerated the armes muſt be exerciſed, by handling, lifting up and caſting downe of divers things. But on the contrary if the armes be ulcerated, the legges muſt be exerciſed with walking, or frictions from above downewards, if the patient cannot endure to walke. So the humors and ſpirits which with more violence and greater plenty runne downe to the part affected, may be drawne backe and diverted.

Hip. lib. de ule.

Revulſion into contrary parts.

Chap. XIII.

Of the cure of particular ulcers, and firſt of thoſe of the eyes.

4. Methodi.

FOr that (in *Galens* opinion) the diverſe indication in curing diſeaſes is drawne from the condition of the part, to wit, the temper, complexion, ſite, figure, uſe, dull or quicke ſenſe; Therefore having breefely handled the generall cure both of ſimple and compound and implicite ulcers, I thinke it fit to treate 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 ſharpe defluxion which frets or eates in ſunder the coates thereof, or elſe by a ſtroake.

Lib. 6. cap. 6. lib. 3. Botryon. Celoma.

Paulus ſets downe theſe differences of the ulcers of the eyes; If (ſaith he) a ſmall, little and hollow ulcer be upon the horny coate, it is by the Greekes termed *Botryon*; but if it be broader and leſſe deepe, it is termed *Celoma*; about the circle of the *Iris* or Raine-

Rainebow, 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 bee mundified, incarnated, dryed and cicatrized; but the part affected indicates more gentle medicines. Wherefore having purged the patient and taken some blood both from his arme, as also from his veines and temporall Arteries, and bathed him if it be needfull; to divert the defluxion you shall to his shoulders apply cupping glasses with scarrification; or else bread newly drawne out of the oven, and sprinkled with *aqua vitæ* 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 emplaister made of *emplastrum contra rupturam, ung. Comitissæ, and Resiccativum rubrum* mixed together. But this ensuing *Collyrium* described by *Celsus* and approved by *Hollerius*, shall be dropped into the eye. R. *æris usti, cadmiæ ustæ & lotæ, an.* ℈j. *ex aqua fingatur collyrium quod liquore ovi dissolvatur.* But in the meane time you must diligently observe whether you put the eye to any great paine. Wherefore now and then by putting anodyne medicines thereto, it will be good to comfort it. Also you may make *collyria* of the decoction of Plantaine, fænugreeke, wormewood, with a little quantity of Sugar Candy, *tutia*, gumme *tragacanth*, myrrhe and vitrioll dissolved therein. When the ulcer is mundifyed, the following sarcoticke will be of good use.

Argemon. Epicauma. The cure.

A *Collyrium* to cleanse the Vlcers of the eyes.

R. *sarcocollæ in lacte muliebri nutritæ*, ℥iij. *pul. diaireos simplicis, gum. arabici, tragacanth. an.* ℥ß. *mucilaginis sanugraci quantum sufficit ut inde fiat collyrium.* But you must note that for moyst Vlcers, powders are more convenient than *Collyria*.

A sarcoticke *Collyrium.*

When the ulcer is playned or filled with its proper flesh, it may bee cicatrized with the following *collyrium*. R. *tutiæ, cadmiæ ut decet præparatæ, ceruſæ, antimonij, olibani, an.* ℥ß. *myrrhæ, sarcocollæ, sanguinis Draconis, aloes, opij, an.* ℈ß. *cum aqua plantaginis fiat collyrium*; or the powder onely may be conveniently strewed thereon.

An epulotick *Collyrium.*

Celsus hath noted that the cicatrizing of the eyes is incident to two dangers, that is, least they be too hollow, or else too thick. If too hollow, they must be filled by the following remedy, R. *Papaveris lachrimæ*, ℥ß. *sagapeni, opopanacis, an.* ℥ß. *æruginis* ℥j. *cumini* ℥iij. *piperis* ℥ij. *cadmiæ lotæ & ceruſæ, an.* ℥iß. *cum aqua pluviali fiat collirium.* But if the scars be thicke or grosse, the following remedy will extenuate them. R. *cinamom. acaciæ, an.* ℥ß. *cadmiæ elotæ, croci, myrrhæ, papaveris lachrymæ, gum. arabici, an.* ℥j. *piperis albi, thuris, an.* ℈ß. *æris combusti*, ℥iij. *cum aqua pluviali fiat collyrium.* But if the scarre be upon the *cornea* or horny coate, so that it cover the *pupilla* or sight, the sight will be intercepted by the densenesse of the membrane. Here you must also observe, that the scarres that are on the *Cornea* are white, but these on the *Adnata* are red, because this is spred over with more little veines than that.

Lib. 6. cap. 6.

A *Collyrium* for hallow scarres.

The scarres of the Horny coat are white and these of the *Adnata* red.

Chap. XIIII.

Of the Ozæna *and Vlcers of the Nose.*

THe *Ozæna* is a deepe and stinking Vlcer in the inside of the nose, sending forth many crusty and stinking excrements. *Celsus* saith that such ulcers can scarsely be healed. It is caused (as *Galen* saith) by the distillation of acride and putride humors from the head into the nosethrills about the mammillary processes. For the cure, the patient must eate sparingly, and his meate must neither be sharpe nor strong; the humor being prepared must be purged; the head dryed and strengthened, that so it may neither admit the excrementitious humors, nor send them downe; then must we come to the part affected with the Vlcer. The Vlcer must be dryed with a repelling medicine, such as is the juice of Pomegranats boyled to the halfe in a brasse vessell; the powder of Calamint, Cresses, white Hellebore, the juyce of Cresses with Alume and other things which you may reade in *Celsus*.

Lib. 6. cap. 8. Ga. Lib. 3. de comp. med. secund. loces cap. 3. The cure.

Galen out of *Archigenes* wishes, to draw up into the nosethrills the juyce of Calamint, or that the Calamint it selfe being dryed, and made into powder, may bee blowne with a quill into the nose. Others use this following powder. R. *ros. rub. mint.*

mint. calam. arom. rad. angelicæ, gentian. macis, caryop. an. ℥ß. *camph. ambræ, an gr.* iiij. *moschi.* gr. vj. *fiat pulvis subtilissimus. Manardus* writes that the Vrine of an Asse, though a nasty medicine, is an excellent remedy in this affect. But if the inveterate and contumacious evill doe not yeeld to these remedies, then you must have recourse to Coprose, Verdigreece, *sal ammoniacum*, and Alume with Vinegar. It divers times happens that the Vlcer spreading on, comes to take hold of the *Ossa ethmoidea* or sive-like bones; in which case you must not forcibly plucke them out; but referre the whole businesse to nature, and expect when they shall come away of themselves, making in the meane while injections into the nosethrils of *aqua vitæ*, wherein Cephalicke pouders have beene steeped for the greater drying.

Lib. 20. cap. 5.

An injection when the Ozæna shall come to the *Ossa Ethmoidea.*

Chap. XV.

Of the Vlcers of the mouth.

Of this tribe are the *Aphthæ*, Vlcers familliar to little children, according to *Hippocrates*. They oft times beginne at the gums, and by the palate of the mouth creepe into the *uvula*, thtotle, and over all the mouth, as *Celsus* saith. *Galen* makes two kinds of *Aphtha's*; the one of easie cure, such as that which usually troubles children by reason of the acrimony of the nurses milke; the other is maligne by reason of an affluxe of an evill humor (that is, venenate and maligne) into the mouth.

Aph. 24. sect. 3. Celsus lib. 6. cap. 11. Gal. com. ad 3. lib. Epidem.

The cure. For the cure, it shall be good to abstaine from all acride things, and if it be a sucking child, it will not be amisse to temper the nurses milke with refrigerating meates, bathing the whole body, and fomenting the dugges with warme water; for all the members in children are most tender, and as it were mucous, and their mouths are unaccustomed to meates and drinkes. For topicke medicines, you must make choise of such which may quickely and readily worke the effect; for heere the condition of the affected part is such, that they cannot long remaine and adheere thereto. Therefore if the Vlcer be maligne, it must be lightly touched with *aqua fortis* which hath beene used in separating mettalls and which besides is tempered with sixe parts of common water. You may for the same purpose use the oyles of Vitrioll, Sulphur, Antimony, Mercury water and the like.

Aetius wishes you to touch and correct such Vlcers with a locke of wooll dipped in scalding oyle, and so fastened to the end of a probe, untill they waxe white and become smooth or plaine. For so their eating and spreading force will at length be bridled, and laudible flesh grow up in place of that which is eaten. After such burning it will be good to wash the mouth with the following gargarisme, which also of its selfe alone will serve to cure Aphtha's, which are not maligne.

A gargarisme for the *Aphthæ.*

℞. *hordei integri p.* j. *plantag. ceterach, piloselle, agrimoniæ, an. M.* j. *fiat decoctio ad* ℔ j. *in qua dissolve mellis rosati* ℥j. *diamoron,* ℥ß. *fiat gargarisma.* You may also make other gargles, of Pomegranate pills, Balaustles, Sumach, Berberies, red roses being boyled, and dissolving in the strayned liquor *Diamoron* and *Diamucum* with a little Alume. For *Galen* writes, that simple Vlcers of the mouth are healed with things which dry with moderation; now *Diamoron* and *Diamucum* are such. But others stand in neede of strong medicines, with such like. If the palate be seazed upon, we must use the more diligence and care; for there is danger, least being the part is hot and moyst, the bone which lyes under which is rare and humide, may bee corrupted by the contagion and fall away, and the voyce or speech be spoyled. If the Vlcer be pockie, omitting the common remedyes of Vlcers, you must speedily betake your selfe to the proper antidote of that disease, to wit, quick-silver.

Lib. 6. meth. Cap. 10.

Vlcers of the palate must be quickely and carefully dressed.

Fistulous Vlcers often take hold on the Gummes, whence the roote of the next tooth becomes rotten, and so farre that the acrimonie of the *Sanies* oft times makes its selfe a passage forth on the outside under the chinne; which thing puts many into a false conceite of the *scrophulæ* or Kings evill, and consequently of an uncurable disease. In such a case *Aetius*, and *Celsus* counsell is, to take out the rotten tooth, for so the

Aetius lib. 6. cap. 3. Celsus lib. 6. cap. 13.

the *Fistula* will be taken away, the Gum pressing and thrusting its selfe 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 Vlcers of the tongue may be cured by the same remedies by which the rest of the mouth; yet those which breede on the side thereof endure very long, and you must looke whether or no there be not some sharpe tooth over against it, which will not suffer the Vlcer in that place to heale; which if there be, then must you take it away with a file.

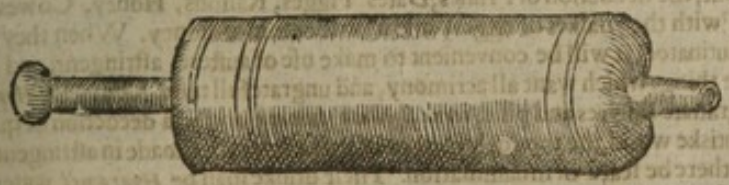
Chap. XVI.

Of the Vlcers of the Eares.

VLcers are bred in the auditory passage both by an externall cause, as a stroake, or fall, as also by an internall, as an abscesse there generated. They oft times flow with much matter, not there generated, for such Vlcers are usually but small and besides in a spermaticke part, but for that the braine doth that way disburden its selfe. Their cause.

For the cure, the cheefe regard must be had of the antecedent cause, which feedes the Vlcer, and it must be diverted by purging medicines, Masticatories and Errhines. The cure. This is the forme of a Masticatory. ℞. *Mastic.* ℥j *staphisagr. & pyreth. an.* ℈j. *cinam. & caryoph. an.* ℈ß. *fiant Masticatoria, utatur manè & vesperi.* A masticatory. But this is the forme of an Errhine. ℞ *succi betonic. mercurial: & melissæ, an* ℥ß. *vini albi* ℥j, *misce & frequenter naribus attrahatur.* An Errhine. For topicke medicines we must shunne all fatty and oyly things, as *Galen* sets downe *in Method. medendi*, where he findes fault with a certaine follower of *Thessalus* who by using *Tetrapharmacum*, made the Vlcer in the eare grow each day more filthy than other, which *Galen* healed with the Trochisces of *Andronius* dissolved in Vinegar, whose composure is as followeth. ℞ *balaust.* ℥ij, *alumin.* ℥j. *atrament. sutor.* ℥ij, *myrrhæ.* ℥j, *thur. aristoloch. gallarum, an* ℥ij, *salis Ammon.* ℥j, *excipiantur omnia melicrato, & fiant trochisci.* The composition of *Andromachus* his trochisces. *Galen* in the same place witnesseth, that he hath healed inveterate Vlcers and of two yeares old of this kind, with the scailes of Iron made into powder, and then boyled in sharpe Vinegar untill it acquired the consistence of Honey: Moreover an Oxes gall dissolved in strong Vinegar, and dropped in warme, amends and dryes up the putrefaction wherewith these Vlcers flow. Also the scailes of Iron made into powder boyled in sharpe Vinegar, dryed and strewed upon them. Scailes of Iron. But if the straitnesse of the passages should not give leave to the matter contained in the windings of the eares to passe forth, then must it bee drawne out with an Instrument thereupon called a *Pyoulcos*, or matter-drawer, whereof this is the figure. Of the *Pyulcos Galen* maketh mention 2. *ad Glauconem*.

The figure of a Pyoulcos, *or matter-drawer.*



CHAP.

Chap. XVII.

Of the Vlcers of the Windpipe, weaſon, ſtomacke and Guts.

The Cauſes. THeſe parts are ulcerated either by an externall cauſe as an acride medicine, or poyſon ſwallowed downe; or by an internall cauſe, as a maligne fretting humor which may equall the force of poyſon generated in the body, and reſtrained in theſe parts. If the paine be encreaſed by ſwallowing or breathing, it is the ſigne of an Vlcer in the weazon, or windepipe joyning thereto; But the paine is moſt ſenſibly felt when as that which is ſwallowed is either ſoure or acride, or the ayre breathed in, is more hot or cold than ordinary. But if the cauſe of paine lye faſtened in the ſtomacke, more greevous ſymptomes urge; for ſometimes they ſwound, have a nauſeous diſpoſition and vomiting, convulſions, gnawings, and paine almoſt intollerable, and the coldneſſe of the extreame parts; all which when preſent at once, few ſcape unleſſe ſuch as are young, and have very ſtrong bodyes. The ſame affect may befall the whole ſtomacke, but becauſe both for the bitterneſſe of paine, and greatneſſe of danger, that Vlcer is farre more greevous which takes hold of the mouth of the Ventricle, honoured by the Ancients with the name of the heart; therefore Phyſitions doe not make ſo great a reckoning of that which happens in the lower part of the ſtomacke. Now we know that the Guts are ulcerated if *Pus*, or much purulent matter come forth by ſtoole; 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 certaine continuall *Teneſmus*, or deſire to goe to ſtoole. Now all ſuch Vlcers are cured by meates and drinkes, rather than by medicines, according to *Galen*. Therefore you muſt make choyſe of all ſuch meates and drinkes as are gentle, and have a lenitive faculty, ſhunning acride things; for *Tutia*, Lytharge, Ceruſe, Verdigreece and the like, have no place heere, as they have in other Vlcers. But when as the Vlcer ſhall be in the Gullet or Weazon, you muſt have a care that ſuch things may have ſome viſcidity or toughneſſe, and be ſwallowed by little, and little, and at diverſe times; otherwiſe they will not much availe, becauſe they cannot make any ſtay, in theſe commune wayes of breath and meat; therefore they preſently ſlip downe and flow away; wherefore all ſuch things ſhall be uſed in forme of an *Eglegma*, to be taken lying on the backe, and ſwallowed downe by little and little, opening the muſcles of the throate, leaſt the medicine paſſing downe ſodainely and in great quantity, cauſe a cough, a thing exceeding hurtfull to theſe kinds of Vlcers. When they muſt be cleanſed, you ſhall have crude honey, which hath a ſingular faculty, above all other detergent things, in theſe kind of Vlcers. But when they can conveniently ſwallow, you ſhall mixe Gumme Tragacanth diſſolved in ſome aſtringent decoction. In Vlcers of the ſtomacke all acride things (as I have formerly adviſed) muſt be ſhunned, as thoſe which may cauſe paine, inflammation and vomite, and beſides hinder the digeſtion of the meate. Therefore let them frequently uſe a ptiſan, and ſugered gellyes wherein Gumme Tragacanth, and bole Armenicke have beene put, the decoction of Prunes, Dates, Figges, Raiſons, Honey, Cowes milke boyled with the yoalkes of egges, 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 taſte, ſuch as are *Hypociſtis*, Pomegranate flowres and pills, *terra ſigillata*, *ſumach*, *acacia*, a decoction of quinces, the Lentiske wood, the tops of Vines, of brambles, myrtles, made in aſtringent wine, unleſſe there be feare of inflammation. Their drinke ſhall be *Hydromel* water with Sugar, ſyrupe of Violets and Iujubes. Honey mixed with other medicines is a very fitting remedy for Vlcers of the guts and other parts more remote from the ſtomacke; for if you ſhall uſe aſtringent medicines alone of themſelves, they will ſticke to the ſtomacke; 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 helpes them forwards to the affected parts; alſo cleanſes the Vlcers themſelves. Here alſo Aſſes milke may with good ſucceſſe be uſed in ſtead of Goates or Cowes milke. The uſe

Signes.

Gal. lib. 5. de loc. affect. cap. 5.

Lib. 4. & 5. Method.

The cure.

How to take medicines for Vlcers of the throate.

Why acride things muſt be ſhunned in theſe Vlcers.

How powerfull Honey is to cure ſuch kind of Vlcers.

of

of a vulnerary potion is also commendable, if so bee that it bee made of such hearbes and simples, as by a certaine tacite familiarity have respect to the parts affected. But the Vlcers of the Guts have this difference amongst themselves, that if the greater guts be affected, you may heale them with a Glyster and injections, made also sharpe to correct the putrefaction; such as are those which are made of Barly water, or wine with *Ægyptiacum*. But if the small guts be ulcerated, they must bee 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, doe 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 farre as the great guts.

Ægyptiacum good for the Vlcers of the greater guts. *Lib. 5. meth.*

Chap. XVIII.

Of the Vlcers of the Kidneyes and Bladder.

Vlcers are caused in the Kidnyes and Bladder, either by the use of acride meates, drinkes, or medicines, as *Cantharides*; or else by the collection of an acride humor bred in that place, sent or salne thither; or else by the rupture of some vessell, or an abscesse broken and degenerated into an Vlcer, as it sometimes comes to passe. They are discerned by their site, for the paine and heavinesse of Vlcers of the Reines comes to the Loynes, and the *Pus* or matter is evacuated well and throughly mixed with the Vrine.

Causes.

Signes.

Neither doth the *Pus* which flowes from the reines stinke so ill, as that which is cast forth of the bladder; the reason is, for that the bladder being a bloodlesse, fleshlesse & membranous part, hath not such power to resist putrefaction. That *pus* which flowes from the Kidneyes never flowes without water; and although by long keeping in an Vrinall, it at length subsides or falls to the bottome, and may be seene separated; yet when it is first made, you may see it perfectly mixed with the Vrine; but that *Pus* wch flowes from the bladder is oft times made alone without Vrine; & usually it comes to passe that the *Pus*, or matter which flowes from the ulcerated Kidnyes, hath in it certaine caruncles, or as it were haires, according to the rule of *Hippocrates*. Those who in a thicke Vrine have little caruncles, and as it were haires come forth together therewith, they come from their Kidneyes; but on the contrarie those who have certaine bran-like scailes come from them in a thicke Vrine, their bladder is scabby or troubled with a scabby Vlcer.

Hip. Aphor. 81 sect. 4.

Aphor. 76. sect. 4.

Aphor. 77. sect. 4.

For the cure; it is expedient that the belly be soluble either by nature or Art, and the use of mollifying Glysters. And it is good to vomit sometimes, so to draw backe the humors by whose confluxe into the affected part the Vlcer might bee fed and made more sordide and filthy. You must beware of strong purgations, least the humors being moved and too much agitated, the matter fit to nourish the Vlcer may fall downe upon the Kidneyes or bladder. The ensuing potion is very effectuall to mundifie those kind of Vlcers.

The cure.

Why we must shunne strong purges.

R. *Hordei integri, M.* ij. *glycyrrhizæ ras. & contus.* ℥ß. *rad. acetosæ & petrosel. an.* ℥vj. *fiat decoctio ad* ℔. j. *in colatura dissolve mellis dispum.* ℥ij. Let him take every morning the quantity of foure Ounces. *Gordonius* exceedingly commends the following Trochisces. R. *quator sem. frig. maj. mundatorum, sem. papaveris albi, sem. malvæ, portul. cydon. baccarum myrti, tragacanth. gum. arab. nucum pinearum mund. pistach. glycyrrhizæ mund. mucaginis sem. psilij, amygd. dulc. hordei mundi, an.* ℥ij. *bol. armeni, sang. drac. spodij, rosarum, myrrhæ an.* ℥ß. *excipientur hydromelite, & fingantur trochisci singuli ponderis* ℥ij. Let him take one thereof in the morning dissolved in Barly water or Goates milke. *Galen* bids to mixe honey and diuretick things with medicines made for the Vlcers of the Reines and bladder, for that they gently move Vrine, and are as vehicles to carry the medicines to the part affected. Vlcers of the bladder are either in the bottome thereof, or at the necke and urinary passage.

Things to cleanse these Vlcers.

Trochisces for the Vlcers of the Kidneyes and bladder.

4. Meth.

If they be in the bottome, the paine is almost continuall; if in the necke, the paine then prickes and is most terrible when they make water and presently after. The Vlcer which is is the bottome sends forth certaine scaly or skinny excrements together with the Vrine; but that which is in the necke, causes almost a continuall *Tentigo*. Those which are in the bottome are for the most part incurable, both by

Signes to know what part of the bladder is ulcerated.

Why ulcers in the bottome of the bladder are uncureable.

reaſon of the bloodleſſe and nervous nature of the part, as alſo for that the Vlcer is continually chaſed and troubled by the acrimony of the Vrine, ſo that it can hardly be cicatrized. For even after making of water ſome reliques of the Vrine alwayes remaine in the bottome of the bladder, which could not therefore paſſe forth together with the reſt of the Vrine, for that for the paſſing forth of the Vrine, the bladder being diſtended before, falls and is complicated in its ſelfe. Vlcers of the bladder are healed with the ſame medicines as thoſe of the reines are; but theſe not onely 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 Vlcers of the bladder cauſe greater and more ſharpe paine than thoſe of the Kidnyes, therefore the Chirurgion muſt bee more diligent in uſing Anodynes. For this purpoſe, I have often by experience found, that the oyle of hen-bane made by expreſſion gives certaine helpe. Hee ſhall doe the ſame with Cataplaſmes and liniments applyed to the parts about the *Pecten* and all the lower belly and *perinæum*, as alſo by caſting in of Gliſters. If that they ſtinke, it will not be amiſſe to make injection of a little *Ægyptiacum* diſſolved in wine, plaintaine or roſe water. For I have often uſed this remedy in ſuch a caſe with very proſperous ſucceſſe.

Ægyptiacum for the ulcers of the bladder.

Chap. XIX.

Of the Vlcers of the wombe.

The cauſes.

Vlcers are bred in the wombe either by the confluxe of an acride, or biting humor, fretting the coates thereof, or by a tumor againſt nature degenerating into an Abſceſſe, or by a difficult and hard labour; they are knowne by paine at the *perinæum*, and the effluxe of *Pus* and Sanies by the privity All of them in the opinion of *Avicen* are either putride, when as the *Sanies* breaking forth is of a ſtinking ſmell, and in colour reſembles the water wherein fleſh hath beene waſhed; or elſe lordide, when as they flow with many virulent and crude humors; or elſe are eating or ſpreading Vlcers, when as they caſt forth blacke *Sanies*, and have pulſation joyned with much paine. Beſides they differ amongſt themſelves in ſite, for either they poſſeſſe the necke 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 paine.

Lib. 3. ſect. 12. tract. 2, cap. 5. Signes.

The cure.

They are cured with the ſame remedies wherewith the ulcers of the mouth to wit, with *aqua fortis*, the oyle of Vitrioll and antimony, and other things made ſomewhat more milde, and corrected with that moderation, that the ulcerated parts of the wombe may bee ſafely touched with them; it is requiſite that the remedies which are applyed to the Vlcers of the wombe, doe in a moment that which is expected of them, for they cannot long adhere or ſticke in the wombe, as neither to the mouth. *Galen* ſaith that very drying medicines are exceeding fit for the Vlcers of the wombe, that ſo the putrefaction may be hindred or reſtrained, whereto this part as being hot and moyſt is very ſubject; beſides that the whole body unto this part as unto a ſinke ſends downe its excrements. If an ulcer take hold of the bottome of the wombe, it ſhall be cleanſed and the part alſo ſtrengthened by making this following injection. ℞ *hordei integri p. ij. guajaci.* ℥j *rad. Ireos.* ℥ß. *abſinth. plant. centaur. utriuſque, an. M.* j *fiat decoct. in aquæ fabrorum ad* ℔. ij. *in quibus diſſolve mellis roſati, & ſyrupi de abſinthio, an.* ℥ij. *fiat injectio.* For amending the ſtinking ſmell I have often had certaine experience of this enſuing remedy. ℞. *vini rub.* ℔. j. *unguent. ægyptiaci* ℥ij, *bulliant parum.* Thus the putrifaction may be corrected and the painefull malicious neſſe of the humor abated. Vlcers when they are cleanſed muſt preſently be cicatrized; that may be done with Alume water, the water of plantaine wherein a little vitrioll or Alume have beene diſſolved. Laſtly, if remedies nothing availing, the Vlcer turne into a *Cancer*, it muſt be dreſſed with anodynes and remedies proper for a *Cancer*, which you may finde ſet downe in the proper treatiſe of *Cancers*. The cure of Vlcers of the fundament was to bee joyned to the cure of theſe of the wombe; but I have thought good to referre it to the treatiſe of *Fiſtula's*, as I doe the cure of theſe of the vrinary paſſage to the Treatiſe of the *Lues venerea*.

Why ſtrongly drying things are good for Vlcers of the wombe.

An injection for an Vlcer in the bottome of the wombe.

An injection hindring putrefaction.

Chap.

CHAP. XX.

Of the Varices *and their cure by cutting.*

A *Varix* is the dilatation of a Veine, some whiles of one and that a simple branch, otherwhiles of many. Every *Varix* is either straight or crooked, and as it were infolded into certaine windings within its selfe. Many parts of the body are subject to *Varices*, as the temples, the region of the belly under the Navill, the testicles, wombe, fundament, but principally the thighes and legges. The matter of them is usually melancholy blood, for *Varices* often grow in men of a malancholy temper, and which usually feed on grosse meates, or such as breed grosse and melancholy humors. Also women with child, are commonly troubled with them, by reason of the heaping together of their suppressed menstruall evacuation. The precedent causes are a vehement concussion of the body, leaping, running, a painefull journey on foote, a fall, the carrying of a heavy burden, torture or Racking. This kind of disease gives manifest signes thereof by the largenesse, thicknesse, swelling and colour of the Veines.

What a *Varix* is and what be the differences thereof.

The matter.

The causes.

Signes.

It is best not to meddle with such as are inveterate; for of such being cured there is to be feared a refluxe of the melancholy blood to the noble parts, whence there may be imminent danger of maligne Vleers, a Cancer, Madnesse or suffocation.

The cure.

When as many *Varices* and diversly implicite are in the legges, they often swell with congealed and dryed blood, and cause paine 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 downewards; which I have oft times done, and that with happy successe to the patients, whom I have made to rest for some few dayes, and have applyed convenient medicines. A *Varix* is often cut in the inside of the legge a little below the knee, in which place commonly the originall thereof is seene. He which goes about to intercept a *Varix* downewards from the first originall and as it were fountaine thereof, makes the cure far more difficult. For hence it is divided as it were into many rivelets, all which the Chirurgion is forced to follow.

The cutting of *Varices*

A *Varix* is therfore cut or taken away so to intercept the passage of the blood and humors mixed together therewith, flowing to an Vleer seated beneath; or else least that by the too great quantitie of blood, the vessell should be broken, and death bee occasioned by a hæmorrhagie proceeding from thence. Now this is the manner of cutting it. Let the patient lye upon his backe on a bench or table, then make a ligature upon the legge in two places the distance of some foure fingers each from other, wherein the excision may be made, for so the Veine will swell up and come more in sight, and besides you may also marke it with inke; then taking the skin up betweene your fingers cut it longwayes according as you have marked it, then free the bared veine from the adjacent bodies; and put thereunder a blunt pointed needle (least you pricke the veine) thred with a strong double thred, and so binde it fast; and then let it be opened with a Lancet, in the middle under the Ligature just as you open a veine, and draw as much therehence as shall be fit. Then straight make a Ligature in the lower part of the forementioned Veine, and then cut away as much of the sayd Veine as is convenient betweene 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 stirre the wound any more for the space of three dayes. Then doe all other things as are fit to be done to other such affects.

For what intention a *Varix* must be cut.

Paulus cap. 82. lib. 6.

The manner how to cut it.

Chap. XXI.

Of Fiſtula's.

What a Fiſtula is.

A Fiſtula is a ſinuous, white, narrow, callous and not ſeldome unperceivable Vlcer. It tooke 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 Vlcers not well cured.

What a Callous us.

A *Callous* is a certaine fleſhy ſubſtance, white, ſolid, or denſe and hard, dry and without paine, generated by heaping up of dryed excrementitious phlegme, or elſe aduſt melancholy, encompaſſing the circuite of the Vlcer, and ſubſtituting its ſelfe into the place of laudible fleſh. The *Sinus* or cavity of a Fiſtula is ſometimes dry, and otherwhile drops with continuall moiſture: ſometimes the dropping of the matter ſodainly ceaſes, and the orifice thereof is ſhut up, that ſo it may deceive both the Chirurgion and the Patient with a falſe ſhew of an abſolute cure; for within a while after it will open againe 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 loynts, 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 uncurable. There are divers ſignes of Fiſtula's according to the variety of the parts they poſſeſſe; for if that which you touch with the end of your probe make reſiſtance, and reſound, then you may know that it is come to the bone; and then if the end of the probe ſlip up and downe as on a ſmooth and polite ſuperficies, it is a ſigne 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 neede not uſe the probe. Beſides alſo it is a ſigne that the bone is affected, if there be a purulent effiux 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 it with a probe, eſpecially if the matter which flowes downe be more acrid. Oft times if it be cold, the member is ſtupified the motion being weakned; 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 humor of the Nerves. The ſame uſually appeares and happens in Fiſtula's which penetrate to the Tendons and thoſe membranes which involve the muſcles. If the Fiſtula bee within the fleſh, the matter flowing thence is more thicke and plentifull, ſmooth, white and equall. If it deſcend into the Veines or Arteries, the ſame happen as in thoſe of the Nerves; but that there is no ſuch great paine in ſearching with your probe, nor no offence or impediment in the uſe of any member: yet if the matter of the Fiſtulous Vlcer be ſo acrid, as that it corrode the veſſells, blood will flow forth; and that more thicke if it be from a veine, but more ſubtle and with ſome murmuring if from an Artery. Old Fiſtula's and ſuch as have run for many yeares, if ſuddainly ſhut up, cauſe death, eſpecially in an ancient and weake body.

The differences of Fiſtula's.

The ſignes.

The ſigne that the bone is bare from the condition of the matter which is caſt forth.

Aëtius tetra. 4. ſerm. 2 cap. 55.

Old Fiſtula's if cloſed prove mortall.

Chap. XXII.

Of the cure of Fiſtula's.

How to finde out the windings and cavities of Fiſtula's.

FOr the cure; in the firſt place it wil be expedient to ſearch the Fiſtula; & that either with a waxe 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

or more orifices, and those cuniculous, so that you cannot possibly and certainly search or finde 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 learne how many, and how deepe or superficiary 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 razour, or else apply actuall or potentiall cauteries; for nature cannot unlesse the Callous substance bee first taken away, restore or generate flesh or agglutinate the distant bodies. For hard things cannot grow together, unlesse by the interposition of glue, such as is laudible 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 veines for the restoring of the lost substance and uniting of the disjoyned parts. If you at any time make causticke 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 Vlcer must be dressed like other Vlcers. But oft times the *Callous* which possesses the sinuous cavity of a Fistula, overcome by the power of acrid and escharoticke medicines comes whole forth, and falls out like a pipe, and so leaves a pure Vlcer underneath it. Which I observed in a certaine Gentleman, when I had washed with strong *Ægyptiacum* divers times a Fistulous Vlcer in his thigh shot through with a bullet; then presently by putting in my Balsame formerly described, he grew well in a short time. Fistula's which are neare great vessells, Nerves or principall intrailes, must not bee medled with, unlesse 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 superficiary, or deeper in, or whether it is wholly rotten and perished. For if the default be superficiary it may easily be taken away with a desquammatory Trepan; but if it penetrate even to the marrow, it must be taken forth with cutting mullets, first having made way with a *Terebellum*. But if the bone be quite rotten and perished, it must bee wholly taken away, which may be fitly done, in the joynts of the fingers, the *radius* of the Cubite and Legge; 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 owne nature uncurable; but you shall thinke you have discharged your duty and done sufficiently for the Patient, if you leave it with a prognosticke. Of this nature are Fistula's which penetrate even to the bowells, which come into the parts ore-spread with large vessells or Nerves, which happen to effeminate and tender persons, who had rather dye by much, than to suffer the paine and torment of the operation. Like caution must bee used, when by the cutting of a Fistula there is feare 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 thinke it better to prevent by all meanes possible that the disease by fresh supplies become no worse, which may bee done if he prevent the falling downe of any new defluxion into the part; if by an artificiall diet hee 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 certaine times, or else diverted from the more noble to the base parts. But in the meane space it shall be requisite to waist the faulty flesh, which growes up more than is fitting in the Vlcer, and to cleanse the *sordes* or filth, with medicines, which may doe it without biting or acrimony and putrefaction.

Causticke 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 abscesse not well cured, or of a hæmorrhoide which is suppurated. Such as are occult, may be knowne by dropping downe of the *sanious* and purulent humor by the Fundament and the

The causes.

Signes.

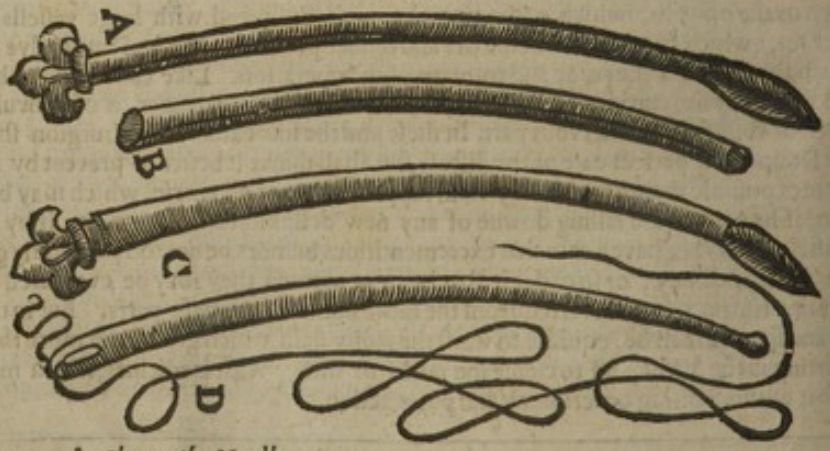
the paine of the adjacent parts. But ſuch as are manifeſt by the helpe of your probe you may finde whither they goe and how farre they reach. For this purpoſe the Chirurgion ſhall put his finger into the Fundament of the patient, and then put a Leaden probe into the orifice of the Fiſtula, which if it come to the finger without interpoſition of any *medium*, it is a ſigne it penetrats into the capacity of the Gut. Beſides alſo then there flowes not onely by the fundament but alſo by the orifice which the maligne humor hath opened by its acrimony, much matter, ſomewhiles ſanious, and oft times alſo breeding Wormes. Fiſtula's may be judged cuniculous, and running into many turnings and windings, if the probe doe not enter farre in, and yet notwithſtanding more matter flowes therehence than reaſon requires ſhould proceede from ſo ſmall an Vlcer.

Symptomes. You may in the orifices of all Fiſtula's, perceive a certaine callous wart, which the common Chirurgions tearme a Hens arſe. Many ſymptomes accompany Fiſtula's which are in the Fundament, as a *Teneſmus*, ſtrangury & falling downe of the Fundament. If the Fuſtula muſt be cured by manuall operation, let the patient lye ſo upon his backe, that lifting up his legges, his thighs may preſſe his belly, then let the Chirurgion, having his naile pared, put his finger beſmeared with ſome oyntment 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 haires 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 hee may ſtraiten them at his pleaſure. But before you bind them you ſhall draw the thread ſomewhat roughly towards you as though you meant to ſaw the fleſh therein conteined, that you may by this meanes cut the Fiſtula without any feare of an Hæmorrhagye, or flux of blood.

The art of binding and cutting a Fiſtula of the Fundament.

It ſometimes happens that ſuch Fiſtula's penetrate not into the Gut; ſo that the finger by interpoſition of ſome callous body cannot meete 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, and that by pricking and cutting may deſtroy the *callous*; which thing you cannot performe with the formerly deſcribed leaden probe, which hath a blunt point, unleſſe with great paine.

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 waiſted, the Fiſtula ſhall be bound as wee formerly mentioned That which is ſuperficiary needs no binding, onely it muſt be cut with a croked *ſcalprum*, and the *Callus* being conſumed, the reſt of the cure muſt bee performed after the

the manner of other Vlcers. But you must note, that if any parcell of the Callous body remaine untoucht by the medicine or instrument, the Fistula reviving againe will cause a relapse.

Chap. XXIIII.

Of Hæmorrhoides.

Hæmorrhoides, as the word is usually taken, are tumors at the extremities of the veines encompassing the Fundament, caused by the defluxion of an humor commonly melancholicke, and representing a certaine kind of *Varices*. Some of these run at an hole being opened, which sometimes in space of time contracts a *Callus*; others onely swell, and cast forth no moisture; some are manifest; others lye onely hidde within. Those which runne, commonly cast forth blood mixed with yellowish serous moisture, which stimulates the blood to breake forth, and by its acrimony opens the mouthes of the veines. But such as do not run, are eyther like blisters, such as happen in burnes, and by practitioners are usually called *vesicales*, and are caused by the defluxion of a phlegmaticke and serous humor; or else represent a Grape, whence they are called *Vvales*, generated by the afflux of blood laudible in qualitie, but overaboundant in quantity; or else they expresse the manner of a disease, whence they are termed *morales*, proceeding from the suppression of melancholicke blood; or else they represent warts, whence they are stiled *Verrucales*, enjoying the same materiall cause of the generation as the *morales* doe. What they are. Their differences.

This affect is cause of many accidents in men; for the perpetuall effluxe of blood extinguisheth the vivide and lively colour of the face, calls on a dropsie, overthrowes the strength of the whole body. The fluxe of Hæmorrhoides is commonly every moneth, sometimes onely foure times in a yeare. Great paine, inflammation, an Abscesse which may at length end in a Fistula, unlesse it be resisted by convenient remedies, doe oft times forerunne the evacuation of the Hæmorrhoides. But if the Hæmorrhoides flow in a moderate quantity, if the patients brooke it well, they ought not to be stayed, for that they free the patients from the feare of imminent evills, as melancholy, leprosie, strangury and the like. Besides, if they bee stopped without a cause, they by their refluxe into the Lungs cause their inflammation, or else breake the vessells thereof, and by flowing to the Liver cause a dropsie by the suffocation of the native heate; they cause a dropsie and universall leaneness 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 hares downe dipped in the ensuing medicine. R. *put. aloes, thuris, balaust. sang. draconis, an* ʒß. *incorporentur simul cum ovi albumine, fiat medicamentum ad usum.* When they are stretched out and swolne without bleeding, it is convenient to beate an Onion roasted in the embers with an Oxes gall, and apply this medicine to the swolne 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 horse-leaches, or a Lancet. The juyce or masse of the hearbe called commonly Dead-nettle or Arkeangell, applyed to the swolne Hæmorrhoides opens them, and makes the congealed blood flow there hence. The *Furgus* and *Thymus* being diseases about the fundament are cured by the same remedy. If acrimony heate and paine doe 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. R. *Olei ros.* ʒiiij. *ceruse* ʒj. *Litharg.* ʒß *ceræ novæ*, ʒvj. *opij* ℈j. *fiat unguent. secundum artem.* Or else. R *thuris, myrrhæ, croci, an* ʒj. *opij* ℈j. *fiat unguentum cum oleo rosarum & mucagine sem. psilij, addendo vitellum unius ovi.* You may easily prosequute the residue of the cure according to the generall rules of Art. Symptomes. *Sent. 37. sect. 6. sept.* A remedy for the immoderate flowing of the Hæmorrhoides. For suppresst Hæmorrhoides.

The end of the Thirteenth Booke.

No Pages Missing

OF BANDAGES, OR, LIGATURES.

The Fourteenth Book.

Chap. I.

Of the differences of Bandages.

BAndages, wherewith we use to binde, doe much differ amongst themselves. But their differences (in Galens opinion) are chiefly drawne from sixe things; to wit, their matter, figure, length, breadth, making, and parts whereof they consist. Now the matter of Bandages is threefold; Membranous or of skinnes, which is accommodated peculiarly to the fractured grisles of the Nose; of Woollen, proper to inflamed parts, as those which have neede of no astriction; of Linnen, as when anie thing is to be fast bound: and of Linnen cloathes, some are made of flaxe, othersome of hempe, as Hippocrates observes. But Bandages doe thus differ amongst themselves in structure, for that some thereof consist of that matter which is sufficiently close and strong of it selfe, such are the membranous; others are woven, as the linnen ones. But that Linnen is to bee made choice of for this use, and judged the best, not which is new and never formerly used, but that which hath alreadie beene worne and served for other uses, that so the Bandages made thereof may be the more soft and pliable: yet must they bee of such strength, that they may not breake with stretching, and that they may straitly containe and repell the humour readie to flow downe, and so hinder it from entring the part. These, besides, must not bee hemmed nor stitched, must have no lace nor seame; for hems and seames by their hardnesse presse into, and hurt the flesh that lyes under them. Lace, whether in the midst or edges of the rowler, makes the Ligature unequall. 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 laxe. Furthermore, these Ligatures must bee of cleane cloth, that if occasion bee, they may bee moystened or steeped in liquour appropriate to the disease, and that they may not corrupt, or make worse that liquour by their moistening therein. Now the Bandages which are made of Linnen cloathes must be cut long-waies, and not athwart, for so they shall keepe more firme and strong that which they binde, and besides, they will be alwaies alike, and not broader in one place than 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 binde 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

Lib. de fascia.

Sect. 3. de Offic.

What cloth best for rowlers.

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 wee cannot certainly define nor set downe 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 necke, shoulders, armes, breasts, groines, testicles, fundament, hips, thighes, legs, feet and toes. For the parts of Bandages, wee terme one part their bodie, another their heads. By the bodie we mean their due length & breadth; but their ends, whether they run long-waies or a-crosse, wee according to Galen, terme them their heads.

Com ad sect. 22. sect. 2. de offic. chir.

Chap. II.

Sheweth the indications and generall precepts of fitting of Bandages and Ligatures.

1. & 2. sect. lib. de fract.

THere 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 selfe. From the part affected: so the legge, if you at any time binde it up, must bee bound long-waies; for if you binde it overthwart, the binding will loosen as soone as the patient beginnes to goe, and put forth his legge, for then the muscles take upon them another figure. On the contrarie the Arme or Elbow must be bound up, bending in and turned to the breast, for otherwise at the first bending, if it bee 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 himselfe thus much, That the part must be bound up in that figure, wherein wee would have it remaine.

We must alwaies begin our ligatures at the bottome of a sinus.

Now for that indication which is drawne 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 bottome of the *sinus*, and end at the orifice of the ulcer; and this precept must you alwayes observe, whether the *sinus* be sealed in the top, bottome, middle, or sides of the ulcer. For thus the filth therein contained shall bee emptied and cast forth, and the lippes of the ulcer too farre separated, shall bee joyned together; otherwise the contained filth will eate into all that lyes neare it, increase the ulcer, and make it uncurable by rotting the bones which lye under it with this acride *sanies* or filth. But some Ligatures are remedies of themselves, as those which performe their duties of themselves, and whereto the cure is committed, as are these which restore to their native unitie, those parts which are dis-joyned: others are not used for their owne sakes, but only to serve to hold fast such medicines as have a curative facultie. This kinde of Ligature is eyther yet a doing, and is termed by Hippoc. *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 carelesly, for so he shall binde 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 bee 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 speciall care that there be no knot tyed upon the same place, or upon the region of the backe, buttocks, sides, joynts, or backe part of the head, or to conclude in any other part upon which the Patient uses to leane, rest or lye. Also on that part where wee intend to sow or fasten the Rowlers, you must double in their ends, that so the fastning or suture may be the stronger, otherwise how close soever they shall be wrapped or rowled about the member, yet will they not remaine firme, especially if they be of a great breadth. For the second kinde of Ligature, to wit, that which is already done and finished; the Surgeon, the performer thereof, must consider to what end

Hipp. sent. 4. sect. 2. offic.

Initio 2. sect. offi.

it

it was done, and whether he hath performed it well and fitly, as also neatly and elegantly, to the satisfaction both of himselfe and the beholders. For it is the part of a skilfull Workeman everie where handsomely and rightly to performe that which may so be done. Ligatures must not bee only lightly, but also neatly performed.

In fractures and luxations & all dislocations of bones, as also in wounds and contusions, you must beginne 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 anie be alreadie fallen thither, may by this strait compression be pressed forth, as also to hinder and prevent the entrance in of any other which may bee readie 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 torne, which causes sugillation in the neighbouring flesh, which first lookes red, but afterwards black and blue by reason of the corruption of the blood poured forth under the skinne. 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 Impostumes, and other maligne accidents. Now the blood which flowes, goes but one way downwards, but that which is pressed is carried as it were in two pathes, to wit, from above downwards, and from belowe upwards. Yet you must have a care that you rather drive it backe into the body and bowels, than towards the extremities thereof, as being parts which are uncapable 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 backe into the bodie, it is then ruled and kept from doing harme by the strength and benefit of the faculties remaining in the bowels and the native heat. *Gal. com. ad sent. 25. sect. 1. lib. de fract.*

CHAP. III.

Of the three kindes of Bandages necessarie in fractures.

TWo sorts of Ligatures are principally necessarie for the Surgeon, according to Hippocrates, by which the bones aswell broken as dislocated may be held firme when they are restored to their naturall place. *Sent. 24. sect 2. offic.*

Of these some are called *Hypodesmides*, that is, Under-binders: others, *Epidesmi*, that is, Over-binders. There are sometimes but two under-binders used, but more commonly three. The first must first of all bee cast over the fracture, and wrapped there some three or foure times about, then the Surgeon must marke 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 drawne 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 firmely there contained. Therefore if the right side be the more prominent or standing forth, thence must you beginne your ligation, and so draw your ligature to the left side. On the contrarie, 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.) having both his hands at command, that so he may the more exquisitly performe such variety of ligations. But let him in rowling, bend or move this first ligature upwards, that is, towards the bodie, for the former reasons. But neyther 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 drawne from the side whereunto the bone went; so that on this side it bee more loose and soft, and not straitly pressed with boulsters or rowlers, that so it *Hypodesmides.*

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 naturall ſeat: wherefore there will be no ſmall danger, leſt the bone bee forced out againe, and removed from its place, whereinto it was reſtored by art and the hand. Which thing Hippocrates ſo much feared, that on the contrarie he willed that the ſet bone ſhould be drawne 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 returne to our former diſcourſe of the three Ligatures: The firſt under-binder being put on, wee then take the ſecond, with which wee in like ſort begin at the fracture, but having wrapped it once or twice about there, for that, as we formerly ſaid, wee muſt not force backe, and preſſe ſo much blood towards the extremities, as wee muſt doe towards the body and bowels. Wherefore this Ligature ſhall be drawne from above downe-wards, gently ſtraining it to preſſe forth the blood contained in the wounded part: When by rowling you ſhall come to the end of that part, then you ſhall carry back againe that which remaines thereof, to wit, upwards; But otherwiſe you may take the third under-binder, wherewith you may beginne to rowle, whereas you left with the ſecond, and you may carry it thus, rowling it from below upwards. Theſe under-bindings thus finiſhed, apply your boulſters, 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 boulſters, and reſtoring the muſcles to their native figure. The two other which remaine, conſiſt of one head, & the one of them muſt be rowled from below upwards, the other from above downwards, after ſuch a manner, that they may bee 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 growne out of uſe, we muſt here ſet downe that which is in common uſe. They doe 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 begunne 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 alwaies 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 proceede: for healing whereof the Ligature muſt bee looſed, and then the tumified parts preſſed by a new rowling, which muſt bee 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 backe againe. He which doth this, forſakes the proper cure of the diſeaſe, ſo to reſiſt the ſymptome, which the Surgeon ſhall never refuſe to doe, as often as any neceſſarie cauſe ſhall require it. For this cauſe Hippocrates bids, that the Bandages bee looſed everie three dayes, and then to foment the part with hote water, that ſo the humors, which (drawne thither by the vehemency of paine) have ſettled in the part, may be diſſolved and diſperſed; and itching and other ſuch like ſymptomes prevented. The feare of all accidents being paſt, let the Ligation bee ſooner or later looſed, and more ſlacked than it formerly was accuſtomed; that ſo the blood and laudible matter, wherof a *Callus* may enſue, may flow more freely to the affected part.

When the third under-binder is neceſſarie. *Epideſmi.*

The manner of binding now in uſe.

What meane to be obſerved in wrapping the Ligatures.

Why Hippoc. bids to looſe the Ligatures every third day.

CHAP.

CHAP. IIII.

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 binde the part with a Ligature, otherwise there will be no small danger of swelling, inflammation, and other ill accidents, by reason of the too plentifull affluxe of humors from the neighbouring parts. But it is not fit to endeavour to use that kinde of binding which is performed with manie circumvolutions or wrappings about. For, seeing the wound must bee dressed everie day, the part must each day necessarily be stirred, and the Ligature, consisting of so many windings, loosed; which thing will cause paine, and consequently hinder the knitting and uniting which is performed by rest. Therefore this kinde of binding may be performed by one onely rowling about the wound, and that with a rowler which consists of a twice or thrice doubled cloth, made in manner of a boulster, and sewed with as much conveniencie as you can, that it may be so large as to encompasse and cover all the wound, for these reasons; which shall bee delivered at large in our Treatise of Fractures. But if the wound runne long-wayes, let the boulsters and splints be applyed to the sides of the wound, that so the lipps of the wound may bee pressed together, and the contained filth pressed forth. But if it be made over-thwart, we must abstaine from boulsters 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 binde up a Fracture with a wound.

Ad sent. 12. sect. de fract.

CHAP. V.

Certaine common precepts of the binding up of Fractures and Luxations.

IN everie Fracture and Luxation, the depressed, hollow and extenuated parts, such as are neere unto the joynts, ought to be filled up with boulsters, or cloaths 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 firmely contained in their seates. 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 armepits, above the heele, in the arme neer the wrest; and, to conclude, in all other parts which have a conspicuous inequalitie by reason of some manifest cavitie. When you have finished your binding, then enquire of the patient, whether the member seeme 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 paine, heate, 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 signe of a just ligation that is neyther too strait nor too loose, if the ensuing day the part be swolne with an œdematous tumor, caused by the blood pressed forth of the broken place; but of too strait ligation, if the part be hard swolne; and of too loose, if it bee no whit swolne, 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 bee loosed, for feare of more grievous symptomes, and the part must be fomented with warme *Hydraleum*, and another indifferent, yea verily, more loose ligature must be made in stead thereof, as long as the paine 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 beginnes to recover, for three or foure dayes space, especially if you find him of a more compact habit and a strong man, the ligature must be kept firme and not loosed. If on the third day, and so untill the seventh, the spires or windings

Hipp. sent. 37. & 38. sect. 2. de fract.

The signes of too strait and loose binding up.

be found more looſe, and the part affected more ſlender; then wee 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 firmely agglutinated, which is the cauſe, why in the place of the fracture the ligation muſt bee 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 boulſters and ſplints. To conclude, the ſeventh day being paſt, we muſt binde the part more ſtraitly than before: for that then inflammation, paine, and the like accidents, are not to bee feared. But theſe things which we have hitherto ſpoken of the three kindes 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 armes, thighes, and legges, but only bee put on their outſides.

Why we muſt make more ſtrait ligation on the broken part.

CHAP. VI.

The uſes for which Ligatures ſerve.

The firſt benefit of Ligatures.

BY that which wee 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 joyne together thoſe which gape; as in fractures, wounds, contuſions, ſinewous ulcers, and other like affects againſt nature, in which the ſolution of continuitie ſtands in neede of

The ſecond.

the helpe of Bandages, for the reparation thereof. Beſides alſo, by the helpe 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 arme-pits to the cheſts, the chin to the breaſt, unleſſe they be hindered by due Ligation. Bandages doe alſo conduce to refreſh emaciated parts: wherefore if the right legge waſte for want of nouriſhment, the left legge, beginning at the foote, may bee conveniently rowled up even to the groine.

The third.

If the right arme conſume, binde the left with a ſtrait Ligature, beginning at the hand, and ending at the arme-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 emptie veſſels of the emaciated part. But I would have the ſound part to bee ſo bound, that thereby it become not painefull; for a dolorifick ligation cauſes a greater attractation of blood and ſpirits, as alſo exerciſe: wherefore I would have it during that time to bee at reſt, and keep holy-day. Ligatures alſo conduce to the

The fourth.

ſtopping of bleedings: which you may perceive by this, that when you open a veine with your launcet, the blood is preſently ſtayed, laying on a boulſter and making a ligature. Alſo Ligatures are uſefull for women preſently after their delivery;

The fifth.

for their womb being bound about with Ligatures, the blood wherewith their womb was too much moiſtened, is expelled, the ſtrength of the expulſive facultie being by this means ſtirred up to the expulſion thereof: and it alſo hinders the empty wombe from being ſwolne up with winde, which otherwiſe would preſently enter thereinto. This ſame Ligature is a helpe to ſuch as are with childe, for the

The ſixth.

more eaſie carrying of their burden; eſpecially thoſe whoſe Childe lyes ſo farre down-wards, that lying as it were in the den of the hippes, it hangs betweene the thighes, and ſo hinders the free going of the mother. Therefore the woman with childe is not only eaſed by this binding of her wombe with this Ligature, which is commonly termed, the navill Ligature; but alſo, her childe being held up higher

The ſeventh.

in her wombe, ſhe hath freeer and more liberty to walke. Ligatures are in like ſort good for revulſion and derivation: as alſo for holding of medicines which are layd to a part, as the necke, breaſt or belly. Laſtly, there is a triple uſe of Ligatures in

The eighth, the particular uſe of Ligatures in the amputation of members.

amputation of members, as armes and legges. The firſt to draw and hold upwards the skinne and muſcles lying under it, that the operation being performed,

they

they may, by their falling downe againe, cover the ends of the cut-off bones; and so by that meanes helpe forwards the agglutination and cicatrization; and when it is healed up, cause the lame member to move more freely, and with lesse paine; and also to performe the former actions, this, as it were, cushion or boulster of muscu-lous flesh lying thereunder. The second is, they hinder the bleeding by pressing to-gether the veines 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.

Chap. VII.

Of Boulsters or Compresses.

Boulsters have a double use; the first is to fill up the cavities and those parts which are not of an equall thickenesse to their ends. Wee have examples of cavities in the Arme-pits, Clavicles, Hams & Groines; and of parts which grow small towards their ends, in the armes towards the wrests, in the legges towards the feet, in the thighes towards the knees. Therefore you must fill these parts with boulsters and linnen cloathes, that so they may be all of one big-nesse to their ends. The first use of Boulsters.

The second use of boulsters, is to defend and preserve the first two or three Row-lers or Under-binders, the which we sayd before must be applyed immediately to the fractured part. Boulsters, according to this twofold use, differ amongst them-selves, for that when they are used in the first mentioned kind, they must be applied athwart; but when in the latter, long-wayes or down-right. The second use of them.

You may also use Boulsters, lest the too strait binding of the Ligatures cause paine and trouble to the new set bones. A three or foure times doubled cloth will serve for the thickenesse of your Boulsters, but the length and breadth must bee more or lesse, according to the condition of the parts and disease for which they must be applyed. The third use of them.

Chap. VIII.

Of the use of Splints, Junks, and Cases.

Having delivered the uses of Ligatures and Boulsters, it remaines that wee 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-bord, of thin splinters of wood, of leather, such as shoo-soales are made with; of the rindes of trees, or plates of Latin, or lead, and such other like, which have a gentle and yeelding stiffe-nesse; yet would I have them made as light as may bee, 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 bee used. Let also their figure be straight or crooked according to the condition of the member whereto they must be applyed. You must have a speciall care, that they runne not so farre as the swellings out, or eminencies of the bones; as the ancles, knees, el-bowes, 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 up-on the broken bone. The use of splints is, to hold fast and firme, that they may stir no way the broken and luxated bones, after they bee set and restored to their places. That they performe this use, it is fit there be no thicke boulsters under them, nor over many rowlers; for so through so thick a space, they would not so straitly presse the part. Junkes are made of stickes the bignesse of ones finger, wrapped about with rushes, and then with linnen cloth: they are principally used in fractures The matter of Splints. Their use. What Junks are.

of

of the thighes and legges. Cases are made of plates of Latin, or else of some light wood; their use is, to containe the bones in their due figure, when the patient is to be carried out of one bed or chamber into another, or else hath neede to goe to stoole: lastly, if wee 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 left being not as yet well knit, or more loosely bound up for feare of paine, inflammation, or a gangrene, they hang downe, fall, or fly in sunder by reason of the inequalities of the bed. Such Cases, Junkes, and the like, which serve for restoring and fast holding of broken and luxated bones, we may, according to Hippocrates his minde, call them in generall *Glossocomia*. All which things, the yong Surgeon, which is not as yet exercised in the workes of Art, can scarce tell what they are. But in the meane time, whileſt that hee may come to bee exercised therein, or see others performe these operations, I, as plainely as possibly I could, have in words given him their portraiture or shape.

The matter and use of Cases.

Glossocomium, a generall name for such things.

The end of the fourteenth Booke.

OF

OF FRACTURES.

THE FIFTEENTH BOOKE.

CHAP. I.

What a Fracture is, and what the differences thereof are.

A Fracture, in Galens opinion, is the solution of continuitie in a bone, which by the Greeks is called *Catagma*. There are many sorts of hurting or offending the bones: as the drawing them a-sunder, luxation, or putting them out of joynt; their unnaturall growing together, their cutting or dividing a-sunder; contusion, abscesse, putrefaction, rottennesse, laying bare the *periostium* being violated or lost; and lastly, that whereof we now treate, a Fracture. Again, the varieties of Fractures are almost infinite. For one is complete and perfect, another imperfect; one runnes long-wise, another transverse, another oblique; one while it is broken into great peeces, another while into little and small scales, which have eyther a blunt, or else a sharpe end, and pricke the adjacent bodies of the muscles, nerves, veines or arteries. It somtimes happens, that the bone is not broken into splinters, that is, long-wayes, but together, and at once into two peeces overthwart, which Fracture is called *Raphanedon*, that is, after the maner of a Raddish. *Lib.6.method.*

What it is for a bone to be broken *Raphanedon.*

A Fracture is made *Caryedon*, or like a nut, when as the bone flyes 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 meale or floure; and such is often seene 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-downe, and alongst the bone: and these fractures are eyther 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 inke upon them, and then shave them with your Scrapers. Sometimes the bone is only pressed downe by the stroke, sometimes on the contrarie it flyes 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 somtimes smooth and polished, otherwhiles unequall, and as it were sharpe and rough with little teeth, or prickes. Some fractures touch onely the surface of the bone, fetching off only a scale; othersome change not the site of fractured bones, but only cleaves them length-waies, without the plucking away of any fragment; othersome penetrate even to their marrow.

What *Caryedon*, or *Alphitidon.*

What *Schidacidon.*

Furthermore some Fractures are simple and alone by themselves; othersome are accompanied with a troop of other affects and symptomes; as a wound, hæmorrhagye, inflammation, gangrene, and the like. Hereunto you may also adde the differences

rences drawne from the parts which the Fractures poſſeſſe; as from the head, ribs, limbs, joynts, and other members of the bodie. 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 ſtroaks of all externall things, which may cut, bruiſe, breake, 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 ſignes of a Fracture.



The firſt ſigne of a broken bone.

WE may know by evident ſignes that a bone is broken: the firſt whereof, and moſt certaine, is, when by handling the part which we ſuſpect to be broken, wee feele peeces of the bone ſevered aſunder, and heare a certaine crackling of theſe peeces under our hands, cauſed by the attrition of the ſhattered bones. Another ſigne is taken from the impotencie of the part, which chiefly bewrayes its ſelfe, when both the bones, the legge, and brace-bones, the ell and wand are broken. For if onely the brace-bone or wand be broken, the Parient may goe on his legge, and ſtirre his arme: for the brace-bone ſerves for the ſuſtaining of the muſcles, and not of the bodie, as the legge bone doth. The third ſigne is drawne from the figure of the part changed beſides nature: for it is there hollow, from whence the bone is flowne or gone, but gibbous or bunching out whither it is runne. Great paine in the interim torments the patient by reaſon of the wronged *perioſtium*, and that membrane which involves the marrow and the ſympathie of the adjacent parts which are compreſſed or pricked.

Another.

A third.

Chap. III.

Of Prognoſticks to be made in Fractures.



WEe 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 and ſymptomes may happen thereupon. Hee ſhall eaſily attaine to the knowledge of all theſe things, who is not onely well ſeene in the anatomicall deſcription of the bones, but alſo in the temper, compoſition and complexion of the whole bodie. Wherefore in the firſt place, I thinke 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 dryed by the drineſſe of the ayre encompaſſing us, become more brittle; which everie 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 bodie. Wherefore alſo you may gather this to the framing of your Prognoſticks, That bones by reaſon of their naturall drineſſe are not ſo eaſily agglutinated and conſolidated as fleſh; though in Children, according to Galen, by reaſon of the abundance of their humiditie, the loſt ſubſtance may bee repaired, according (as they terme it) to the firſt intention, that is, by reſtoring of the ſame kinde of ſubſtance or matter. But in others, about the Fractures a certaine 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

Why bones are more brittle in froſtie weather.

Why the ſolution of continuity in bones is not ſo eaſily repaired. *Gal. in arte par.*

broken part is ſeene to be more firme and hard than it is in any other: therefore that uſuall ſaying in Phyſicke is not without reaſon; That reſt is neceſſarie for the uniting of broken bones. For the *Callus* is eaſily diſſolved, if they bee moved before their perfect and ſolid agglutination. The matter of a *Callus* ought to be indifferent and laudible in quantitie and qualitie, even as blood which flowes 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 laudible temper, otherwiſe there either wil be no *Callus*, or certainly it wil grow more ſlowly. Fractures are far more eaſily repaired in yong bodies than in old: for in theſe there is plentie 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 certainely ſet downe a time neceſſarie for the generating a *Callus*: for in ſome it happens later, in ſome ſooner: the cauſe of which varietie is alſo to be referred to the conſtitution of the yeare and region, the temper and diet of the Patient, and maner of Ligation. For, thoſe Patients whoſe powers are weake, and blood watriſh and thin, in theſe the generation of a *Callus* uſes to be more ſlow: On the contrarie, ſtrong powers haſten to agglutinate the bones, if there be plentie of groſſe and viſcous matter; whereby it comes to paſſe, that meats of groſſer nutriment are to bee uſed, and medicines applyed which may helpe forwards the endeavour of nature, as we ſhall declare hereafter. When the bones are broken neare unto the joynts, the motion afterwards uſes to be more difficult, eſpecially if the *Callus*, which is ſubſtituted, be ſomewhat thicke and bunching forth. But if, together with the violence and force of the Fracture, the joynts ſhall bee broken and bruiſed, the motion will not only bee loſt, but the life brought in danger, by reaſon of the greatneſſe of the inflammation, which uſually happens in ſuch affects, and the exceſſe of paine in a tendinous body. Theſe fractures wherein both the bones of the arme or legge are broken, are more difficult to cure, than thoſe which happen but to one of them. For they are handled & kept in their places with more difficulty, becauſe that which remaines whole, ſerves the other for a reſt or ſtay to which it may leane. Moreover, there is longer time required to ſubſtitute a *Callus* to a great bone, than to a little one. Againe 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 growes in ſanguine, than in cholerick bodies. But broken bones cannot be ſo happily agglutinated, nor reſtored in any body, but that alwaies ſome aſperity or unequall protuberancie may bee ſeene on that part where the *Callus* is generated. Wherfore the Surgeon ought to make artificiall Ligations, that the *Callus* may not ſtand out too far, nor ſinke downe too low. That Fracture is leaſt troubleſome which is ſimple; on the contrarie, 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 *periœſtium*. 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 paine 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 ſwolne by the contraction of the muſcles towards their originall. Wherefore when a bone is broken, if you perceive anie 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 owne accord ſuffer the bones to be reſtored to their proper ſeat and themſelves. This extenſion muſt bee 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, whoſe 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

Why bones ſooner knitin yong bodies.

Meats of groſſe and tough nouriſhment conduce to the generation of a *Callus*.

Fractures at joynts dangerous.

Hipp. ſect. 18. & 19 ſect. 1. de fracturis.

Ligations conduce to the handſomnes of a *Callus*.

Extenſion muſt preſently bee made after the bone is broken.

Sent. 36 ſect. 3. de fract.

restored to themselves and their naturall place, the part wasts for want of nourishment; both for that the naturall site of the veines, arteries and nerves is perverted, as also because the part it selfe lyes immoveable, or scarce moveable: whereby it commeth to passe, that the spirits doe not freely flow thereto, as neyther the nutritive juice commeth thither in sufficient plentie. When the dislocated or broken member is troubled with any great inflammation, it is doubtfull whether or no a convulsion will happen, if wee attempt to restore it, or the parts thereof to their seat: therefore it is better, if it may bee done, to deferre the reducing thereof so long, untill the humor which possesses the part be dissolved, the tumor abated, and the bitternesse of paine mitigated.

In inflammations the restoring of the bone must not bee 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 himselfe: The first is, to restore the bone to its place: The second is, that he containe or stay it being so restored: The third is, that he hinder the increase of maligne symptomes and accidents; or else if they doe happen, that then he temper and correct their present malignitie. Such accidents are paine, inflammation, a feaver, abscesse, 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 bitternesse of paine or inflammation, which may trouble the patient, is not as yet verie great, neyther is the contraction of the muscles upwards as yet very much or stubborne. Therefore first of all, the Patient with his whole bodie, but especially with the broken or dislocated part, as also the Surgeon, must bee 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 engines. His friends which are present, let them see and hold their peace, neyther say, nor do any thing which may hinder the Worke of the Surgeon. Then putting one hand above, that is, towards the center of the body, and the other below, as neare as hee can to the part affected, let him stretch forth the member: for if you lay your hand any distance from the part affected, you wil hurt the sound part by too much compression, neyther will you much avayle your selfe 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 bee nothing above which may withstand or hold, lest that you draw the whole bodie to you. This being done, according as I have delivered, it is fit the Surgeon make a right or straight extension of the part affected: for when the bone is eyther broken or out of joynt, 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 seate. Which being restored, you shall presently with your hand presse it downe, if there be any thing that bunches or stands out. And lastly, you shall binde it up, by applying boulsters and splints as shall bee fit. But if the bone bee dislocated or forth of joynt, then presently after the extension thereof, it will be requisite to bend it somwhat about, and so to draw it in. The Surgeon is sometimes forced to use engines for this worke, 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 joynts: 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 bee 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 symptomes, paine, convulsion,

Three things to be performed in curing broken and dislocated bones.

How to put the bones in their places.

Hipp. sent. 60. sect. 2. de fract.

Ad sent. 1. sect. 1. de fract.

When instruments or engins are necessary.

vulsion, a palsie and gangrene: all which sooner happen to strong and aged bodies, than to children, eunuches, women, youthes, and generally all moyst bodies, for that they are lesse hurt by violent extension and pulling, by reason of their native and much humiditie and softnesse. For thus skins of leather, moystened with any liquor, are easily retched and drawn out as one pleaseth: but such as are dry & hard, being lesse tractable, will sooner rend and teare, than stretch further out. Therefore the Surgeon shall use a meane 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 paine 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 bee nothing bunching out, nor rugged, but the surface of the member remaine smooth and equall; and lastly, if the broken or dislocated member compares with its opposite in the composure of the joynts, as the knees and ancles answer justly and equally in length and thicknesse. 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 himselfe in his bed, or as it were a convulsive twitching of the members or joynts whilest he sleepes, the muscles of their owne accord contracting themselves towards their originals, that the member may againe fall out; and it will give manifest signes thereof by renewing the paine, by pressing or pricking the adjacent bodies: which paine will not cease, before it bee restored to its place: and hereof the Surgeon ought to have diligent care. For if, whilest the *Callus* is in growing, one bone ride over another, the bone it selfe will afterwards be so much the shorter, and consequently the whole member; so that if this errour shall happen in a broken legge, the Patient will halt ever after, to his great griefe, and the Surgeons shame. Wherefore the Patient shall take heed, as much as in him lyes, that he stirre not the broken member, before that the *Callus* be hardened. Such diligent care needes not bee had in dislocations. For these once set, and artificially bound up, doe not afterwards so easily fall forth as broken bones.

What bodies are sooner hurt by violent extension.

Signes of a bone well set.

Causes and signes of the relapse of a set bone.

The second scope is, that the bones which shall be restored may bee firmely kept in their state and place. That shall be done by Bandages; as ligatures, boulsters, and other things, whereof hereafter we shall make particular mention. Hither tend proper and fit medicines, to wit, applying of oyle of Roses with the whites of Egges, and the like repelling things; and then resolving medicines, as the present necessity shall require. It will be convenient, to moysten your rowlers and boulsters in oxycrate for this purpose, or else in Rose vinegar, if the Fracture be simple, or with red wine, or the like liquor warme (in Galens opinion) if a wound bee joyned to the fracture; and it will be fit to moysten fractures oftner in Summer: For so the part is strengthened, the defluxion being repelled, whereby the inflammation and paine 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 meanes which wee 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 remaine in the same place unstirred. Besides also, it is expedient then only to dresse the part, when it is needfull, & with those things that are requisite, shunning, as much as may be, inflammation and paine. That figure is thought the best, which is the middle, that is, which containes the muscles in their site, which is without paine; so that the Patient may long endure it without labour or trouble. All these thing being performed, the Patient must be asked, Whether the member be bound up too strait? If hee answer, No, (unlesse peradventure a little upon the fracture or luxation, for there it is fit it should bee more straitly bound) then may you know that the binding is moderate. And this same first ligation is to bee kept in fractures without loosing for three or foure dayes space, unlesse peradventure paine urge you to the contrary. In dislocations the same binding may bee kept for seven or eight daies, unlesse by chance some symptome may happen, which may force us to open it before that time: for

Ad sent. 21 sect. 1. de fract.

What the middle figure is, and why best.

Fit time for loosing of Ligatures in fractures and dislocations.

the Surgeon must with all his art have a care to prohibite the happening of evill accidents and symptomes, which, how he may bring to passe, shall bee declared in the following Chapter.

CHAP. V.

By what meanes you may performe the third intention in curing fractures and dislocations, which is, the hindring and correction of accidents and symptomes.

Foure choice meanes to hinder accidents.

THat we may attaine unto this third scope, it is requisite we handle as gently and without paine, as we may, the broken or dislocated member; we drive away the defluxion ready to fall downe upon the part by medicines, repelling the humour, and strengthning the part; wee, by appointing a good diet, hinder the begetting of excrements in the bodie, and divert them by purging and phlebotomie. But if these accidents be already present, we must cure them according to the kinde 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 subacride 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 acride one, from whence (in Galens opinion) proceeds a painefull 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 emplaisters, boulsters, and ligatures, which are put about the part. Hereunto may be added, that the part its selfe doth not so perfectly performe and enjoy its wonted faculties and actions: by which it commeth to passe, that the heat thereof is more languide than may suffice to discusse the fuliginous matter there collected. Wherefore it will be convenient to loose the ligatures everie third day, that, as by loosing their tyes, their sanious and fuliginous excrements, shut up under the skinne, 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 bee long fomented with hote water alone, or else with a decoction of sage, chamomile, roses, and melilote made in wine and water: for long fomenting attenuates and evacuates, but shorter fils and mollifies, as it is delivered by Hippocrates. Also gentle frictions, performed with your hand, or a warme linnen cloath upwards, to the right side and left, and circularly to everie side, are good. But if the skinne be already risen into blisters, they must be cut, lest the matter contained thereunder may corrode and ulcerate the skinne: then must the skinne be annointed with some cooling and drying medicine; as, *Ung. album Camphoratum Rhasis, Desiccativum rubrum, unguentum rosatum sine aceto*; adding thereto the pouder of a rotten poste, or prepared *Tutia*, or the like. Other accidents more grievous than these, doe often happen, but we will treat of them hereafter. But if the scales of the bone underneath bee 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 beake, as occasion shall offer its selfe. 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, neyther 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 a fracture of the Nose.

The causes and differences of itching.

Adsent. 4. sect. 1. de fract.

Remedies against the itching.

Hipp. sent. 46. sect. 3. de fract.

CHAP.

CHAP. VI.

Of the Fracture of the Noſe.

THe Noſe is griſtly in its lower part, but bony in the upper. Wherfore 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, & ſo great a depreſſion to the innerſide, that unleſſe 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 kinde of fracture may be reſtored, that bone which ſtands too farre out muſt be preſſed downe; but that which is depreſt, muſt be lifted up with a ſpatherne, or little ſticke handſomely faſhioned and wrapped about with cotten or a linnen ragge, ſo to avoyd paine. Therefore you ſhall hold the ſpatherne in one hand, and reduce and order it with the other. The bone being reſtored, directories or tents of a convenient bigneſſe ſhall be put into the noſe; which tents ſhall bee made of ſponge, or flaxe, or a peece of a beaſts or ſheeps lungs. For theſe things are ſoft, and doe not onely 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 boulſters on each ſide, even untill the perfect agglutination of the bones, leſt the figure and ſtraitneſſe ſhould be vitiated and ſpoyled. 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 mean time we muſt ſee, that we do not preſſe the Noſe with too ſtrait binding, unleſſe peradventure ſome other thing perſwade; leſt they become eyther too wide, too flat, or crooked. If any wound accompany the fracture, that ſhall bee cured after the ſame manner, as the wounds of the head. The fracture reſtored, the following medicine, which hath a facultie to repell and repreſſe the defluxion, to ſtrengthen and keep the part in its due poſture, and to dry up and waſte the matter which hath alreadie fallen downe, ſhall bee applyed to the Noſe, and all the other dry parts.

Hipp. ſent. 46. ſect. 3. de art.

How to reduce the noſe into its naturall figure.

℞. *thuris, maſtiches, boli armeniæ, ſanguinis draconis. an.* ℥ß. *aluminis rochæ, reſinæ pini. an.* ℥ ij. *pulveriſentur ſubtiliſsimè:* Or elſe, ℞. *farinæ volatilis* ℥ß. *albuminum ovorum quantum ſufficit, incorporentur ſimul, & fiat medicamentum.*

A fit aſtringent and drying medicine.

Neither ſhall you uſe any other art to cure the cartilagineous part of the noſe being fractured. Wherefore Hippocrates termes that ſolution of continuitie that there happens, A fracture, as if it were in a bone; becauſe hee could finde no other name more fitly to expreſſe it: for a griſtle, next to a bone, is the hardeſt of all the parts of our bodie. A *Callus* uſes to grow in fractured noſes, unleſſe ſomething hinder within the ſpace of twelve or fifteene dayes.

Sent. 47. ſect. 2. de art. & Gal. in 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 ſharpe, and receives a tendon from the temporall muſcle; the other ends blunt and round under the mammillarie proceſſe, and it is there implanted in a ſmall cavitie; it is joyned 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 joyned

A deſcription of the lower Jaw.

The manner of reſtoring a broken Jaw.

ned more easily to one another. The teeth in the meane while, if they be eyther shaken or removed out of their sockets, must be restored to their former places, and tyed with a gold or silver wyar, or else an ordinary threed, to the next firme teeth, untill such time as they shall be fastened, and the bones perfectly knit by a *Callus*. To which purpose the ordered fragments of the fractured bone shall bee stayed, by putting a splint on the outside, made of such leather as shoe soales 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 long-waies in the midst thereof; that so it may engirt the chin on both sides. Then there will be foure heads of such a ligature so divided at the ends; the two lower whereof being brought to the crown of the head, shall bee there fastened and sowed to the Patients night-cap. The two upper drawne athwart shall likewise be sowed as artificially as may bee, to the cap in the nappe of the necke. It is a most certaine signe, that the Jaw is restored and well set, if the teeth fastened therein stand in their due ranke and order. The patient shall not lye downe upon his broken jaw, lest the fragments of the bones should againe fall out, and cause a greater defluxion. Unlesse inflammation, or some other grievous symptome, shall happen, it is strengthned with a *Callus* within twentie dayes; for that it is spongious, hollow, and full of marrow, especially in the midst thereof: yet sometimes, it heales more slowly, according as the temper of the patient is, which takes also place in other fractured bones. The agglutinating and repelling medicine, described in the former chapter, shall be used; as also others, as occasion shall offer it selfe. 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-joyned fragments should fly insunder with the labour of chewing. Therefore shall hee bee nourished with water-grewell, ponadoes, cullasses, barley creames, gellies, brothes, reare egges, restaurative liquors, and other things of the like nature.

The description of a fit ligature for the under Jaw.

In what time it may be healed.

CHAP. VIII.

Of the Fracture of the Clavicle or Collar-bone.

Hipp. sect. 63. sect. 1. de art.

AS the nature and kinde of the fractured Clavicle shall bee, so must the cure and restoring thereof bee performed. But howsoever this bone shall be broken, alwaies the end fastened to the shoulder and shoulder-blade, is lower than that which is joyned to the chest; for that the arme drawes it downe-wards. The collar-bone, if broken athwart, is more easily restored and healed, than if it be cloven long-wayes. For, everie bone broken athwart doth more easily returne 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-waies, is more difficultly joyned and united to the ends and fragments: for those peeces, which were set, will be plucked asunder, even by the least motion of the armes; and that which was knit with the shoulder, will fall downe to the lower part of the breast. The reason of which is, the Collar-bone is not moved of its selfe, but consents in motion with the arme. In restoring this or any other fracture, you must have a care that the bones ride not one over another, neyther be drawn nor depart too far in sunder: therfore it will be here convenient, that one servant draw the arme backwards, and another pull the shoulder towards him the contrarie way; for so there will be made, as I may so terme it, a counter-extension. While which is in doing, the Surgeon with his fingers shall restore the fracture, pressing downe that which stood up too high, and lifting up that which is pressed downe too low. Some, that they may more easily restore this kinde of fracture, put a clew of yarne under the Patients arme-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 bee so depress,

How to restore the fractured Clavicle. The first way.

The second way.

The third way.

depreſt, that they cannot be drawn upwards by the forementioned means: then muſt the Patient be layd with his backe, juſt betweene the ſhoulders, upon a pillow hard ſtuffed, or a tray turned with the bottome upwards, and covered with a rugge or ſome ſuch thing. Then the ſervant ſhall ſo long preſſe downe the Patients ſhoulders with his hands, untill the ends of the bones, lying hid and preſſed downe, 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 bee reſtored, and any of the ſplinters pricke and wound the fleſh, and ſo cauſe difficultie of breathing, you then muſt cut the skinne 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 bee feared. If there be many fragments, they, after they are ſet, ſhall be covered with a knitting medicine made of wheat floure, frankincenſe, bole armenicke, *ſanguis draconis*, *reſina pini*, made into powder, and mixed with the whites of egges, putting upon it ſplints, covered with ſoft worne linnen raggs; covered over likewiſe with the ſame medicine, and then three boulſters dipped in the ſame; two whereof ſhall be layd upon the ſides, but the third and thickeſt upon the prominent fracture, ſo to repreſſe it and hold it in. For thus the fragments ſhall not be able to ſtirre or lift themſelves up further than they ſhould, eyther to the right ſide or left. Now theſe Boulſters muſt be of a convenient thickneſſe 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 halfe long, more or leſs, according to the Patients bodie. Now hee ſhall be ſo rowled up, as it may draw his arme ſomewhat backwards, and in the interim his arme-pits ſhall be filled with boulſters, 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 himſelfe bend his arme backewards, and ſet his hand upon his hip, as the Countrey Clownes uſe to doe, when they play at leap-frogge. 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 remaine in the part: for that a ligature cannot be rowled about the collar-bone, as it may about a legge or an arme. A *Callus* oft times growes on this bone, within the ſpace of twenty daies, becauſe it is rare and ſpongious.

How to binde up the fractured clavicle.

It is a difficult matter perfectly to reſtore a fractured clavicle.

CHAP. IX.

Of the fracture of the ſhoulder-blade.

THe Greeks call that *Omoplata*, which the Latines terme *Scapula*, or *Scapula patella*, that is, the ſhoulder-blade. It is faſtened on the backe to the ribs, nowle, the *Vertebræ* of the cheſt and necke; but not by articulation, but only by the interpoſition of muſcles, of which wee have ſpoken in our Anatomie. But on the forepart it is articulated after the manner of other bones with the collar-bone, the ſhoulder, or arme-bone: for with its proceſſe, which repreſents a pricke or thorne, 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 of the ſhoulder-blade, *Acromion*. There is another proceſſe of the ſaid Blade-bone, called *Cervix omoplatæ*, or the necke of the Shoulder-blade: this truely is very ſhort, but ending in a broad and ſinuated head, provided for the receiving of the Shoulder or arme-bone. Not farre from this proceſſe is another, called *Coracoides*, for that the end thereof is crooked like a Crowes beake. 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, eyther on the ridge, which runnes like a hill, alongſt the midſt thereof, for its ſafety, as wee ſee in the *Vertebræ* of the backe. So alſo in the broader part thereof it may bee thruſt in and depreſt;

An anatomicall deſcription of the ſhoulder-blade.

How many waies the ſhoulder-blade may be broken.

depreſt; 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.

Wee know the ſpine or ridge of the Shoulder-blade to be broken, when a dolorificke inequalitie is perceived by touching or feeling it. But you may know, that the broader or thinner part thereof is depreſſed, if you feele a cavity, and a pricking paine moleſt the part, and if a numneſſe trouble the arme, being ſtretched forth. The fragments, if they yet ſticke to their bone, and doe not pricke 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 boulſters and rowlers fitted to the place. But if they doe 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 Crowes beake. But although they ſtirre up and downe, yet if they ſtill adhere to the *perioſtium* and ligaments, (if ſo be that they trouble not the muſcles by pricking them) then muſt they not bee taken forth: for I have oftner than once obſerved, that they have within ſome ſhort time after growne to the adjacent bones. But if they, being wholly ſeparated, doe not ſo much as adhere to the *perioſtium*, 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 quicke, ſaith Hippocrates, uſes to expell that which is dead farre from it. The truth whereof was manifeſted in the Marques of Villars, who at the battell of Dreux was wounded in his ſhoulder with a piſtoll bullet, certaine ſplinters of the broken bone were plucked forth with the peeces of his harneſſe, and of the leaden bullet; and within ſome ſhort ſpace after, the wound was cicatrized, and fully and perfectly healed. But more than ſeven yeares after, a defluxion and inflammation ariſing in that place by reaſon of his labour in armes, and the heavineſſe of his armour at the battell of Mont-contour, the wound broke open againe; 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 necke of the ſhoulder blade or dearticulation of the ſhoulder, there is ſcarce any hope of recovery; as I have obſerved in Anthony of Burbon, King of Navarre; Francis of Lorraine, Duke of Guiſe; the Count Rhingrave Philibert, and many other in theſe late civill warrs. For there are many large veſſels about this dearticulation, to wit, the axillary veine and arterie, the nerves ariſing from the *Vertebræ* of the necke, which are thence diſſeminated into all the muſcles of the arme. Beſides, alſo inflammation and putrefaction ariſing there are eaſily communicated by reaſon of their neighbour-hood to the heart and other principall parts, whence grievous ſymptomes, and oft times death it ſelfe, enſues.

The cure.

Lib. de vuln. Capitis.

A hiſtorie.

Nature of its owne accord makes it ſelfe way to caſt forth ſtrange bodies and matters.

Why a fracture in the joynt of the ſhoulder is deadly.

Chap. X.

Of the fracture and depreſsion of the Sternon, *or Breaſt-bone.*

Signes that the *ſternum* is broken.

Signes that it is depreſt.

The cure.

THe *Sternum* is ſometimes broken, otherwiles onely thruſt in without a fracture. The inequality perceivable by your feeling, ſhews 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 difficultie 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 depreſt, the patient muſt be layd on his backe, with a cuſhion ſtuffed with tow or hay under the *vertebræ* of the backe, as we ſet downe in the ſetting of the Collar-bone. Then a ſervant ſhall lye ſtrongly with both his hands on his ſhoulders, as if he would preſſe them downe, whilſt the Surgeon, in the meane time preſſing the ribs on each ſide, ſhall reſtore and ſet the bone with his hand; and then the formerly deſcribed medicines ſhall bee applyed for to hinder inflammation, and aſſwage paine; boulſters ſhall bee fitted thereto, and

and a ligature ſhall bee made croſſe-wayes above the ſhoulders, but that not too ſtrait, leſt it hinder the Patients breathing. I by theſe meanes, at the appointment of Anthony of Burbon 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. A hiſtorie.

CHAP. XI.

Of the fracture of the ribs.

THe true ribs, for that they are bonie, may be broken in any part of them. But the baſtard ribs cannot be truly broken unleſſe at the backe bone, becauſe they are onely bonie in that part, but griſtly on the foreſide towards 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 paſſe, that they are not abſolutely broken, but cleft into ſplinters, and that ſometimes inwards, but not outwards. Thus the fiſſure doth oft-times not exceede the middle ſubſtance of the rib; but ſometimes it ſo breakes 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 ſymptome; then the danger is leſſe. Therefore Hippocrates wiſheth, that theſe, who are thus affected, fill themſelves more freely with meat; for that moderate repletion of the belly, is (as it were) a certaine 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 feele themſelves better after, than before meat. For emptineſſe of meat, or of the ſtomack, makes a ſuſpenſion of the ribs, as not underpropped by the meat. Now that fracture which is outwardly, is farre more eaſie to heale, than that which is inwardly; for that this pricketh the membrane or *Pleura*, 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 paſſe, that it cannot be ſo eaſily reſtored; for that theſe things cannot bee 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 joyne it together. It is therefore healed within twenty dayes, if nothing elſe hinder. The ſignes of fractured ribs are not obſcure; for by feeling the grieved part with your fingers, you may eaſily perceive the fracture by the inequalitie of the bones, and their noyſe or crackling, eſpecially, if they bee quite broke aſunder. But if a rib be broken on the inſide, a pricking paine, far more grievous than in a Pleuriſie, troubles the Patient; becauſe the ſharp ſplinters pricke 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 carried 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 humors, and exceſſe of paine 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 layd upon the fractured ſide an emplaiſter made of Turpentine, roſin, black pitch, wheat floure, maſtick and aloes, and ſpread upon a ſtrong and new cloath. When it hath ſtucke there ſome time, then plucke it ſuddenly with great violence from below upwards: for ſo the rib will follow together therewith, and bee plucked and drawne upwards. It is not ſufficient to have done this once, but you

In what place the ſhort ribs may be broken.

Sent. 56, ſect. 3. de art.

Why an internall fracture of the ribs is deadly.

The ſignes.

The cauſe of ſpitting blood when the ribs are broken.

Sent. 51 ſect. 3. de art. Paulus lib. 6. cap. 96. Aviten. 4.

The cure.

must doe it often, untill such time as the Patient shall finde himselfe better, and to breathe more easily. There will be much more hope of restitution, if, whilest the Surgeon doe this diligently, the Patient forbeare coughing, and hold his breath. Otherwise, if necessitie urge, as if sharpe splinters with most bitter tormenting paine pricke the Costall membrane overspred with many nerves, veines, and arteries, which run under the ribs, whence difficultie 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 discerne 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, Phlebotomie 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, feaver, *Empyema*, and the like, must here be prescribed, by the advice of the Physician which over-sees 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 medicines. There is no other rule of site and lying, than such as is taken from the will and content of the Patient.

A simple fracture may be cured onely by Surgerie.

CHAP. XII.

Of certaine preternaturall affects which ensue upon broken ribs.

MAny symptomes ensue upon fractured and contused ribs: but amongst the rest, there are two which are not common, whereof we will treate 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 bin neglected at the beginning. But the flesh is not meerly puffed up of its selfe, but also with a certaine phlegmatick, glutinous and viscous humour gathering thereinto. The cause hereof is, the weakenesse of the digestive facultie of the part, occasioned by the stroake and distemper; which therefore cannot assimulate the nourishment flowing more plentifully than it was wont, eyther drawne thither by means of the pain, or sent thither by a blinde violence of nature, stirred thereto by a desire of its own preservation. Wherfore 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 commeth to passe, that the flesh is swolne up in that place, and the skinne on the contrary growes soft, as if it were blowne up with a quill. Therefore laying your hand thereon, you may heare the noyse of the winde going forth thereof, and see a cavity left in the part, as it is usually seene in œdematous tumors. Unlesse you remedie this inflation, there will ensue an inflammation, fever, abscesse, difficulty of breathing; and lastly, that second kinde of affect, whereof we have determined to treat in this Chapter, to wit, the putrefaction, corruption, or blasting of the ribs. An abscesse, and the separation of the flesh from the bone, is the cause hereof: for hence it commeth to passe, that the bone, despoyled of its naturall and fleshly cloathing wherewith it was cherished, is easily offended by the touch of the entring ayre, which it never formerly felt, and so at length it becommeth (as it were) blasted: which when it happens, they spit up filth, and so fall into a consumption, and at length dye. To withstand all these inconveniencies, you must, as speedily as you can, restore the fractured bones by the formerly delivered meanes. And then this mucous tumor must be resolved by proper heating and discussing medicines, and kept downe by boulsters 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 Abscesse, it shalbe speedily opened,

The cause.

The signes.

The cure.

lest

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 bee evacuated by putting a pipe into the ulcer; the end whereof ſhalbe bound about with a thred, leſt it fall into the capacity of the cheſt, and that it may bee drawne forth at your pleaſure.

CHAP. XIII.

Of the fracture of the Vertebræ, *or Rack bones of the backe, and of their proceſſes.*

THe *Vertebræ* are ſome-whiles broken, otherwhiles bruiſed, or ſtrained on the inſide, wherby it commeth to paſſe, that the membranes which inveſt the ſpinall marrow, as alſo the ſpinall marrow its ſelfe, are compreſſed and ſtraitened, which cauſe many maligne accidents; which, whether they be curable or not, may be certainly foretold by their magnitude. Amongſt theſe ſymptomes, are the ſtupidity, or numneſſe and palſie of the armes, legges, fundament and bladder, which diminiſh, or elſe take away from them the facultie of ſenſe and motion; ſo that their urine and excrements come from them againſt their wils and knowledge, or elſe are wholly ſuppreſt. Which when they happen (ſaith Hippocrates) you may fore-tell that death is at hand, by reaſon that the ſpinall marrow is hurt. Having made ſuch a prognoſticke, you may make an inciſion, ſo to take forth the ſplinters of the broken *vertebræ*, which, driven in, preſſe the ſpinall marrow, and the nerves thereof. If you cannot doe this, at leaſt you ſhall apply ſuch medicines as may aſſwage paine, and hinder inflammation; and then the broken bones ſhall be reſtored to their places, and contained therein by thoſe meanes which we ſhall mention when we come to treat of the luxation of the ſpine. But if that the proceſſes onely of the *vertebræ* be broken, the fragments ſhall be put in their places, unleſſe they bee quite ſevered from their *perioſtium*. But if they bee ſevered, you ſhall open the skinne and take them forth, and then dreſſe the wound as is fit. Wee underſtand, that onely the proceſſes of the *vertebræ* are broken, if, in the abſence of the fore-mentioned ſymptomes of numnes and the palſey, you, laying your finger upon the grieved part, feele ſomething, as a bony fragment, ſhaking and moving thereunder, with a certaine crackling noyſe, and cavitie, and depreſſion; and then, if when the Patient holds downe his head, and bends his backe, hee feele farre more paine, than when hee ſtands up ſtraight on his feete. For in ſtooping, the skinne of the backe is ſomewhat ſtretched forth, and extended, and alſo forced upon the ſharpe Splinters of the fragments, whence proceedes a dolorificke ſolution of continuitie, and a pricking: in ſtanding ſtraight up, on the contrary, the ſtretched skinne is relaxed, and conſequently leſſe moleſted by the ſharpe fragments. The fractured proceſſes of the *vertebræ* eaſily heale, unleſſe they bee aſſociated with ſome other more grievous ſymptome which may hinder; ſuch as is a certaine great contuſion, and the like. For, as wee formerly ſayd out of Hippocrates, All rare and ſpongie bones are knit by a *Callus* within a few dayes.

The affects of the vertebræ.

Sect. 2. Prob.

The cure of fractured *Vertebræ*.

The cure of the proceſſes.

Signes that onely the proceſſes are fractured.

CHAP.

Chap. XIV.

Of the fracture of the holy-bone.

What fracture of the Holy-bone curable and what not.

ALso the Holy-bone in a certaine 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 *vertebræ* thereof, the spinall marrow contained therein, then the Patient can scarce scape death, for the reasons shewed in the former Chapter.

Chap. XV.

Of the fracture of the Rumpe.

The description of the rump.

THe Rumpe is composed of foure bones: the first whereof hath a cavitie, wherein it receives the lowest *vertebra* of the Holy-bone: the other three are joyned together by *Symphysis* or Coalition; at the end of these hangs a certaine 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 backe. 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 necessitie to rise, hee shall so sit in a perforated seat, that there may bee nothing which may presse the broken part; and fitting remedies for healing fractures shall be applyed, as occasion shall offer its selfe.

The cure.

Chap. XVI.

Of the fracture of the Hip, or Os Ilium.

The description of the Hip.

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 joyned together, that they can by no meanes be separated; but in children they may be separated without much adoe. This bone may be broken in any part thereof, either by a stroake, or by a fall from high upon any hard bodie.

The signes.

You shall know the fracture by the same kinde of signes, as you know others, to wit, paine, pricking, a depressed cavitie, and inequalitie, and also a numnesse of the legge of the same side.

The cure.

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 legge. On the contrary, such fragments as are not broken or severed from their *periostium*, shall bee smoothed and set in order with your fingers, as is fitting. Other things shall be done according as art and necessity shall perswade and require.

CHAP. XVII.

Of a fracture of the Shoulder, or Arme-bone.

THe Arme-bone is round, hollow, full of marrow, rising up with an indifferent necke, and ending on the upper part into somewhat a thick head. On the lower part it hath two processes, the one before, the other behinde: between which there is (as it were) an halfe circle, or the cavity of a pulley, each end whereof leads into its cavitie, of which one is interior, another exterior; that by these (as it were) hollow stops, the bending and extension of the arme might bee limited: lest that the bone of the cubite, if the circle should have beene perfect, sliding equally this way and that way, might, by its turning, have gone quite round, as a rope runnes in a pulley; which thing would much have confused the motion of the Cubite. For so the extension, or bending it backe, would have beene equall to the necessarie bending it inwards. It is very expedient that a Surgeon know these things, that so hee 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 bodie, then the arme shall be much extended, the Patient being so set upon a lowe seat, that he may not rise, when the fracture shall bee a-setting, and so hinder the begunne worke; and also, that so the Surgeon may the more easily performe 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 shoulder-bone it selfe be drawne directly down-wards, and the cubit so bended as when you put it into a scarfe. For if any one set this bone, lifting the arme upwards, or otherwise extending it, then must it be kept in that posture: for otherwise, if the figure be changed, the setting will quickly bee spoyled, when as you come to put the arme in a scarfe. Wherefore the Surgeon must diligently and carefully observe, that in setting a broken arme, hee put it in such a posture, that resting on the breast, it looke downe towards the girdle. You must have a care in laying the splints, and rowling your ligatures, that they hurt not, nor presse too hard upon the joynts. For, in the opinion of Hippocrates, by the pressure of parts which are nervous, fleshlesse, and consequently endued with exquisite sense, by the splints there is danger of most grievous paine, inflammation, denudation both of the bone and nerve; but chiefly, if such compression hurt the inner part, towards which the arme is bended: wherefore the splints made for this place must bee the shorter. Therefore, after the Arme-bone is set, the arme shall bee layd upon the breast in a right angle, and there bound up in a scarfe, lest that the Patient, when he hath neede to stirre, spoyle and undoe the setting, and figure of the broken bone. But the arme must be kept in quiet, untill such time as the fragments shall bee confirmed with a *Callus*, which usually is in fortie dayes, sooner or later, according to the different constitutions of bodies.

The description of the arme or shoulder-bone.

The cure.

How the arme must be placed when the bone is set.

Sect. 3. offic. sect. 1. de fract.

In what time it will knit.

CHAP. XVIII.

Of the fracture of the Cubit, or the Ell and Wand.

IT sometimes happeneth, that the Cubite and Wand are broken together and at once, and otherwhiles that but the one of them is fractured. Now they are broken eyther in their midst or ends; their ends (I say) which are eyther towards the elbow, or else towards the wrest. That fracture is worst of all, wherein both the bones are broken, for then the member is made wholly impotent to performe 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 remaines whole, serves for

The difference.

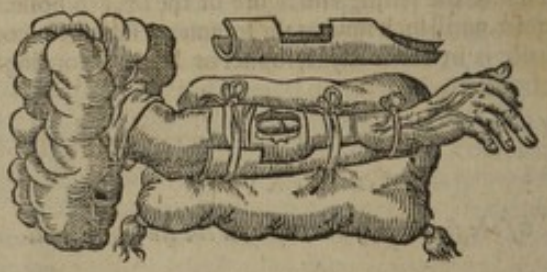
for a ſtay to the arme, and hinders the muſcles from being drawn backe, which uſually draw backe and ſhrinke up themſelves, whenſoever both bones are broken. Hence it is, that that fracture is judged the worſt, wherein the Cubit or Ell bone is broken. But that is eaſieſt of all, wherein onely the Wand is broken, for ſo the fractured part is ſuſtained by the Ell-bone: When both the bones are broken, there muſt bee made a ſtronger extenſion, for that the muſcles are the more contracted. Therefore, whenſoever eyther of them remaines whole, it doth more ſervice in ſuſtaining the other, than any eyther ligatures or ſplints, for that it keeps the muſcles right in their places. Wherefore, after the bones ſhal be ſet and rowled up with ligatures and ſplints, the arme muſt bee ſo carried up in a ſcarfe put about the necke, that the hand may not be much higher than the elbow, leſt the blood and other humors may fall downe thereinto. But the hand ſhall be ſet in that poſture which is betweene 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 *Olecranum* of the Cubit, ought to be in an equall plaine, and to be ſeated each againſt other; which is not ſo in a ſupine figure, as wherein the *Proceſſus ſtyloides* of the Cubit is ſet againſt the inner proceſſe of the arme bone. But in muſcles, for that, like as the inſertion and ſite of the head of a muſcle is, ſuch alſo is the ſite of the belly thereof, and laſtly, ſuch the inſertion of the tayle thereof; but by a ſupine figure, the muſcles ariſing from the inner proceſſe of the arme-bone and bending the cubit, ſhall have their tayle placed in an higher and more exteriour ſite. In the *interim*, you muſt not omit, but that the Patients arme may, with as little paine as poſſibly you can, be bended 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 joynt may be ſowdred together by the interpoſition, and as it were glue of the defluxion which fals abundantly into the joynt of the Ell-bow, and neighbouring parts, whence the ſtiffeneſſe and unmoveableneſſe thereof, as if there were a *Callus* growne there: from whence it may happen, that the arme thereafter may neither be bended, nor extended, which I have obſerved to have happened to many. Whereof alſo Galen makes mention, and cals this kinde of vitiated conformation *Ancyle* and *Ancyloſis*. If a wound alſo aſſociate a fracture of the arme, then ſee, that you put about it plates of Latin, or Paſt-bord, and make a convenient Ligature, and that the fragments of the bones be kept in the ſame ſtate wherein they were ſet and reſtored. Moreover, let him lay his arme upon a ſoft pillow or cuſhion, as the following Figure ſhewes you.

The cure.

Sent. 3 ſect. 1. de fract.

Com. in lib. de art.

The figure of a fractured Arme, with a wound bound up, and ſeated, as is fit.



CHAP.

Chap. XIX.

Of the fracture of a Hand.

THe bones of the Wreſt, and After-wreſt, may bee broken: but, in Hippocrates opinion, chiefly by that kind of fracture which is called a *Sedes*; now if they ſhal happen to be broken, this ſhal be the maner 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, & 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 clothes, 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 beeh put by the hand of the Workeman. 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 hollowneſſe or palme 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, wherby we take hold of any thing. The caſe ſtands otherwiſe with the fractured Toes; for they ſhall bee kept ſtraight and even out, leſt they ſhould hinder our going or ſtanding.

Stell. 2. de fract. ſent. 9.

The cure.

To what purpoſe the carrying of a ball in a fractured hand ſerves.

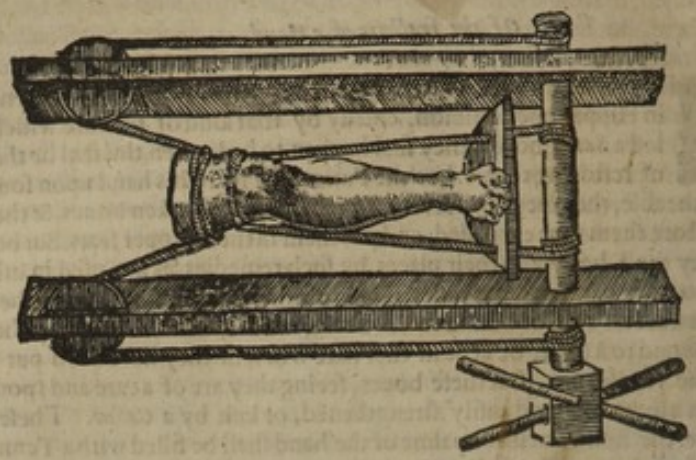
Chap. XX.

Of the fracture of a 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 whileſt they are drawne backe towards their originall, 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 legge 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 imploy two other ſtrong attendants, by whoſe joynt-helpe 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.*



Sect. 67. & 68. ſect. 2. de fract.

In ſtead of this *Gloſſocomium*, 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 greatneſſe of the extenſion the ends of the fragments be ſomewhat diſtant aſunder, an emptie ſpace being left betweene; yet notwithſtanding would hee have ligature 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 thighes, the deligation is not of ſuch force, as that it may ſtay and keepe 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 anie, unmindefull of this conſideration, would have it ſtraight, he ſhall make his Patient halt all his life after: wherefore this inner and native hollowneſſe muſt be filled up and preſerved by putting in a compreſſe 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 applied to the more ſlender and leſſe 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 firme. Now ligatures, as we formerly noted, are ordained for three things. The firſt is, that the bones may bee kept in that ſtate wherein they were ſet, untill they be ſtrengthened by a *Callus*. The ſecond is, to hinder defluxion, which eaſily fals into the broken and luxated parts, both by reaſon of paine, as alſo by weakneſſe. The third is, to ſtay and hold faſt the ſplints and medicines which are applied. Inflammation is hindred by repreſſing and hindring the blood and other humours, ready to flow downe, from entring into the part, and by preſſing thoſe humors, which are preternaturally contained in the part, into the neighbouring parts above and below. Wherefore there muſt no ſmall care be had of preparing ligatures, to wit, that they bee made of choyce and well woven cloth, yet not courſe or rough; and let them be of ſuch length and breadth, as the Surgeon, perſwaded by an artificiall conjecture, ſhal judge to be fit for the thickneſſe and length of the member, and greatneſſe of the fracture: for ligatures ought to be of breadth to involve and cover all the fractured part, and a great part of that which is ſound. But ſeeing that in my Booke of Bandages, I have ſeemed chiefly to ſet downe and approve the manner of binding uſed by Hippocrates, now I thinke good here in this place to deſcribe that which is in common uſe amongſt our Surgeons.

The naturall and internall crookednesse muſt be preſerved in ſetting the bone.

The part to bee bound up, muſt be made plaine either by nature or art.

*The manner of binding uſed by Surgeons at this day.

Our

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 onely strained, making the first wrappings upon it; so that they most and straitliest binde it there, but lesse and more loosely on both sides thereof. Such circumvolutions, or wrappings, are drawne upwards, and there ended. They must bee rowled thicke, and not wide; for so if they presently follow, and lye one upon another, they will hold the bones more firmely, and more farre and wide presse forth and represse the superfluous blood from the sound part. They presently in like sort cast the second ligature upon the verie 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 presse the humors the lesse to the extremities of the part, as those which cannot receive and beare, without inflammation and danger of a gangrene, such abundance of humors, for that they are not sufficiently spatious, as also more remote from the fountaine 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 backe againe. They cast on the third ligature in that lower end of the hurt part, and rowle it smoothly and gently upwards, the windings being made contrarie to the windings of the first and second ligatures; that they may so draw backe into their naturall state the muscles, which peradventure have beene drawne aside by the force of the former wrappings. These ligations finished, they apply three splints of past-bord, 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 doe not stirre to this side or that, being wrapped about with Tow or Cotton. Then they thinke 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 truely to lye soft, for that hard lying presses it, and causes paine and inflammation; which whiles the Patient cannot patiently endure, he is forced to change his place, whilst he everie way seeks ease for his paine: 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 unequall or uneven site distorts or draws awry the part, whilst one portion of the hurt part is borne up, and sustained by that which lyes under it; but the other hanging downe hath nothing thereunder, whereupon it may rest. Therefore Hippocrates bids us diligently to take heed, that the heele doe not hang downe, nor the foot remaine without a pillow, for hence paine and a troublesome defluxion of humors is to be feared. But the part ought to lye somewhat high, that the defluxion may bee hindred, which is easily stirred up by a prone and declining site: for if the foote shall be placed in a lower figure, the blood which flowes thither from the legge, will cause inflammation. But on the contrarie, if it bee higher, nothing can flow downe thereinto. Therefore absolutely not only the foote, but also the thigh and legge, are to be placed higher than the rest of the bodie: yet, keeping such a meane, that the part may not be too much distended, as Hippocrates admonisheth us. In the meane time, this hurt legge or side, ought to bee of equall length with the sound, and for that purpose it must bee stayed on both sides with Junks, as we shall shew you hereafter, when we come to speak of a broken legge. 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 contrarie, 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 wee may avoyde itching, which usually happens to parts too long bound up,

Why the windings of the upper ligatures must be thicker and straiter than the lower.

Why the third ligature must bee rowled contrary to the two first.

The Surgeon must be mindefull of three things in placing the member.

Sect. 2. de fract.

Sent. 33. & 56. sect. 2. de fract.

When the first ligation must be loosed.

by reason of the suppression of acride and fuliginous excrements, which use to be gathered in great quantitie in a part at rest and bound up, both from the excrementitious humors, wherewith the part is moistened, and the alimentarie humors in a part which is idle and at quiet; by reason the difflation and transpiration are hindred by want of exercise, and the pores of the skinne shut up by the abundance of the ligatures: so that by the suppression thereof, many have not only an itching, but also, the skinne being broke by the acrimonie of these, as well vapours as humors, which are kept shut and pent up, have ulcers breake forth. Therefore when such accidents shall be feared, the part shall so long be fomented with warme water and oyle, as you shall thinke fit: for, such fomenting asswageth paine, relaxeth that which was too much straitened 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 meanes revived. If, together with the tumor, there be a contusion and sugillation, it must bee the longer fomented, that the excrementitious humor residing in the part may be digested. But if this quantitie 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 wastes 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 everie third day, untill their seventh day; but after the seventh, on everie 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, renuing the ligatures, and the rest of the dressing. Therefore, if no symptome urge, 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: for, as you see wood is joyned together by glue, and pewter with sowder; so the fragments of bones are, by the providence of nature, glued and sowdred together by a *Callus*. Wherefore broken bones have very much need of rest, to the generating of a *Callus*; otherwise, the matter thereof flowing downe, quickly flowes away, and nothing is done. You may much helpe forwards the generation of a *Callus*, which is begunne about the thirteenth or fifteenth day, by applying an emplaister made with the white of an egge, having the powder of red rose leaves, and wheat floure mixed therewith, and other Catagmatick plaisters, which shall hereafter be described in speaking of the fracture of a legge.

Sow. 15. sect. 3. de offic.

Rest necessary for the knitting of set bones.

CHAP. XXI.

Of the fracture of the Thigh nigh to the joynt, or the upper or lower head of the bone.

A historie.

A Fracture sometimes happens at the joynt 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 prominencie of the *Ischium*, which at the first sight I supposed to proceede from the head of the thigh bone, I presently perswaded my selfe it was a dislocation and no fracture; I then therefore extended the bone, and forced (as I thought) the head thereof into its cavitie. The equalitie of both the legges in bignesse which followed upon this extension, encreased my perswasion that it was a dislocation. The next day I visited her the second time, and found her in great paine, her hurt legge the shorter, and her foot wrested inwards.

Then

Then I looſed all her ligatures, and perceived ſuch a prominencie as I did formerly. Wherefore I endeavoured againe 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 cavitie nor depreſſion in the joynt, by which ſignes I certainly perſwaded my ſelfe, that the bone was broken, and not diſlocated. Neyther only ſuch kinde of Fractures, but alſo the ſeparation of the *appendix* or head of this bone from its place, may induce one to thinke it a diſlocation; which thing hath ſometimes deceived ſome heedleſſe 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 returne to my former narration) I ſet the bone, and joyned the fragments together, layd thereupon ſplints with compreſſes, made ligations with a rowler, having two heads wrapped about the joynt, and the bodie croſſe-wiſe, and I defended her foote with a Caſe, that none of the clothes might preſſe it. I faſtened a rope to a poſte, and ſo let it come downe into the midſt of the bed, and tyed many knots thereon, for the better taking hold and lifting up her ſelfe; the which thing you muſt alwaies doe in fractures and diſlocations of the thigh and legge, that ſo your Patients may have ſome ſtay, whereby they may ſuccour themſelves with their hands, as oft as they deſire to riſe, or liſt themſelves up in their beds, or goe to ſtoole; as alſo, that they may give perſpiration, and as it were ventilation to the loynes, buttocks, rumpe, and other parts, compreſſed and wearied with long lying, for want wherof they are moleſted with heat and paine; whence ulcers ariſe, which oft-times torment the Patient with ſuch tormenting heate and paine, that he is even conſumed by a fever, watchings, and want of reſt. This opportunitie of raiſing the bodie out of the bed, is by ſo much the more needfull in this place, by how much the fracture is nearer the joynt: for there it is more dangerous than in the midſt of the thigh, and conſequently more difficult to dreſſe and heale, for that the part is bloodleſſe, and by reaſon of the multitude of the nerves, tendons and ligaments, which are obnoxious to many maligne ſymptomes. But the Surgeon muſt have diligent care in this kinde of fracture, and muſt looke often that the bone, which is ſet, doe not fall forth againe, which eaſily happens here by any light ſtirring of the bodie, & the like occaſion, for that the thigh hath but one onely bone. Therefore, as oft as the Bandages ſhal be looſed, and the fracture dreſſed, hee 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 doe ſo well recover a fractured thigh, that they doe not halt thereof: therefore the Patient muſt be carefull, that hee move himſelfe, or his bodie, as little as hee can. Many of the Ancients have ſet downe the time of the conſolidation of this bone to bee fiftie dayes: but (as I formerly ſayd) there can bee no certaine or determinate time hereof. But in what time ſoever this bone ſhall bee knit, the Patient muſt not ſtand or goe thereon preſently upon it; for that there remaines a weakeneſſe in the part a long time after, ſo that the Patients are forced to uſe Crutches to goe withall, in the meane ſpace while they recover more ſtrength.

Another fracture of the thigh, reſembling a luxation.

Why the fracture of a bone neare a joynt is more dangerous.

Lib. 3. ſen. 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 differences.

THe Whirle-bone of the knee is oft times contused, but not so frequently broken: yet when that happens, it goes into two or three peeces, sometimes long-wise, sometimes athwart. Sometimes it is broken in the midst, and some-whiles shivered into many splinters, and all these eyther with, or without a wound. The signes are, impotencie in going, a hollownesse 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; Wish the Patient to stretch forth his legge, yea, hee must keepe it extended all the while, untill it be knit; and therefore lest hee should bend it unawares, the hollownesse of the Ham shall be filled with a boulster: for by bending of the knee, the set fragments of the whirle-bone would againe 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 wee said must be done in a fracture of the Thigh-bone. And lastly, you must observe and doe in this, as in the fracture of a legge. For the Prognostick, this I affirme, That I have seene 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 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 farre 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.

Signes.

Cure.

Why those halt who have had this bone fractured.

Chap. XXIII.

Of a broken Legge.

Sect. 45. sect. 2. de fract.

THis kinde of Fracture is cured after the same manner as that of the arme 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 bodie: but this other is but as it were a certaine additament or assistant, provided for the staying or bearing up of the muscles of the legge, by which the foot is moved. The legge bone being only broken, the signes thereof are perceived onely in the inner part of the legge; for that the Shin-bone being whole, suffers it not to throw or cast forth its selfe. On the contrarie, when the Shin-bone onely is broken, the signes thereof appeare only in the externall part of the legge; because the legge bone, being opposed thereto, doth not suffer it to cast in its selfe, and with its fragments to turne inwards. But when both the bones are broken, the signes of the fracture may equally appeare both here and there. But when only one of these bones are broken, the fracture is farre more easie to dresse and heale, because that which remaines whole, is a much more firme stay to that which is hurt, than any splints can bee. But that I may the better instruct and make readie the Surgeon for the restoring of this fracture, I will illustrate the matter by an example from my selfe. John Nestor, Doctor of Physick, Richard Hubert, and I, went together to visit a Patient at the Place of the Friet Minorites. Wherefore, intending to passe over the Seine within sight of the place, I endeavoured to make my horse take boat, and therefore switched him over the buttocks. The Jade, madded herewith, so strucke at me with his heels, that he brake both the bones of my left legge, some foure fingers breadth above my ankle. Then I, fearing some worse mischiefe, and lest the Jade should double his blow, flew back; and as I fled backe, the broken bones flew in sunder; and breaking through the flesh, stocking

Signes that both the bones are broken.

A historie.

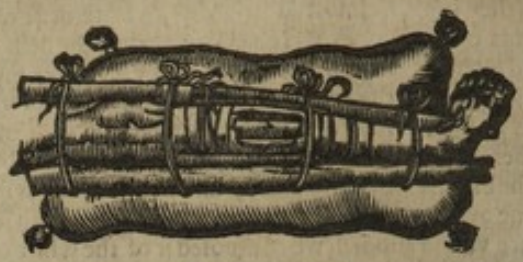
ſtocking and boote, ſhewed themſelves, whereby I felt as much paine, as it is credible a man was able to endure. Wherefore I was preſently carried into the boate, that ſo I might be carried to the other ſide of the water to be dreſſed: but the ſtirring of the boat as they rowed, almoſt killed me with bitterneſſe of paine, for that the ſharpe 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 encreaſed, whileſt lifted by the hands of divers perſons, one while up, another downe, ſometimes to the left ſide, otherwhiles to the right with my whole bodie, and all the parts thereof. When at the length, I was layd upon a bed, I was ſomewhat freed from the bitterneſſe of my paine, and had time to wipe off the ſweat, which ranne downe over all my bodie. Then was I dreſſed with ſuch a medicine, as the time and place would affoord; we compoſed it of the white of an egge, wheat floure, ſoote of a chimney, and melted butter. For the reſt, I intreated Richard Hubert, that he would handle me, as if he knew mee not, neither that, moved for love of mee, he ſhould remit any thing of the ſeveritie of art, but chiefly, that hee would ſtretch my foot ſtraight out, and if the wound were not ſufficiently wide, that hee would enlarge it with his inciſion knife, that ſo hee might the more eaſily ſet the broken bones in their due place; that hee would with his fingers (whoſe judgement is farre more certaine than the beſt made inſtruments) ſearch, whether the ſplinters which were in the wound were quite ſevered from the bone, and therfore to be taken forth; that he would with his hand preſſe forth the blood, and the clods of blood which were in a great quantitie concrete at the mouth of the wound; that he would bind up and place my legge in that ſite and manner, as he thought beſt: which is, that he ſhould have three rowlers in a readineſſe; the firſt whereof he ſhould caſt directly upon the wound, ſo that he ſhould beginne his ligation at the wound: alſo he ſhould put ſplints about it; ſome three, but others two fingers breadth, of the length of halfe a foote, ſomewhat depreſſed and hollowed, whereby they might be the more eaſily put about the legge, more ſtraitly at their ends, and a fingers diſtance each from other, which at the laſt he ſhould binde with fillets, like thoſe wherewith Women uſe to binde up their haire; yet ſo, that the binding might be more ſtrait upon the wound: and that he would fill the cavitie of the ham, and of the ancles, with boulſters made of flaxe wrapped in linnen clothes: that he would fortifie the ſides of my legge with Junkes made of bents or little ſtickes, and lined with linnen cloth, ſtretched from my heele to my groine, and bound over in foure places; ſo that the ſtrait figure of the legge might ſcarcely bee perverted by any force: that he would gently, and ſmoothly lift up my legge to an indifferent height: and laſtly, that he ſhould arme it from the violence of externall injuries, by putting it in a boxe or caſe. But you muſt note, that the fit placing or laying of the legge is a matter of ſuch moment, that if any errour be here committed, it will cauſe no leſſe than lameneſſe. For if it be lifted up higher than is fit, the *Callus* will be hollow on the foreſide; if lower, then it will be gibbous or bunching forth. Neither alſo doe they commit a ſmall errour, who doe not fill up the cavities at the ancles after the forementioned manner: for, hereupon the heele will be much afflicted, whileſt it is forced to ſuſtaine a tedious and painefull compreſſion, which at length brings a hot diſtemper, becauſe the ſpirits cannot freely flow thereto; which I, finding by experience, not knowing the cauſe, wiſhed them ever now and then to lift up my heele, wherby it might enjoy the benefit of perſpiration, and the ſpirits have free entrance thereinto, & the contained vapours paſſing forth. To conclude, my hurt legge was layd upon a cuſhion after the manner you ſee here deſcribed.

A ſweate made medicine.

What to doe when the legge is broken.

The

The figure of a Legge fractured with a wound, and bound up.



CHAP. XXIV.

Of some things to be observed in Ligation, when a fracture is associated with a wound.

That the ligation must be most strait upon the wound.

THis, taken out of the doctrine of the Ancients, ought to bee kept firme and ratified, That Ligation must bee made upon the wound; otherwise the wounded part will presently lift it selfe up into a great tumor, receiving the humors pressed thither by the force of the Ligation made on this and that side, above and below, whence ensue many maligne symptomes. You may make triall hereof upon a sound fleshie part; for if you binde it above and below, not touching that which is in the midst, it will be lifted up into a great tumor, and change the flourishing and native colour into a livide or blackish hue, by reason of the flowing and abundance of the humors pressed forth on everie 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 remaine unsuppurated and weeping, crude and liquid *sanies* flowing there-hence, like unto that which usually flowes from inflamed eyes. Such *sanies*, if it fall upon the bones, and make any stay there, it, with the touch therof, burnes and corrupts them, and so much the more, if they be rare and soft. These will bee the signes of such corruption of the bones; if a greater quantitie, and that more filthie *sanies*, flow from the ulcer, than was accustomed, or the nature of a simple ulcer requires; if the lippes of the ulcer be inverted; if the flesh be more soft and flaccid about them; if a sorrowfull sense of a beating, and also deepe paine torment the Patient by fitts; if, by searching with your Probe, you perceive the bone to be spoyled of its *periostium*; and lastly, if you finde it scaily and rough, or also if your Probe bee put downe somewhat hard, it runne into the substance of the bone. But we have treated sufficiently hereof in our particular Treatise of the rottennesse of the bones. But certainely such rottennesse 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 amisse, againe to admonish the Surgeon of this, That as farre as the thing shall suffer, hee make his rowlings upon the wound; unlesse by chance there be such excessive paine and great inflammation, that, through occasion of such symptomes 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 doe this, which may be done without offence; that is, let him supply the defect of ligation and rowlers, with a linnen cloth, not too weake, nor too much worne, being twice or thrice doubled, and which may serve to compasse the wound and neighbouring parts once about: let him sew the edges thereof at the sides of the wound, lest he be forced to stirre 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 doe not require such frequent dressing, as wounds and ulcers doe. By this it appeares, that as want of binding, and too much looseneſſe in absence

What symptomes ensue the want of binding upon the wounded part.

Signes of the corruption of the bones.

When the wounded part must be oa'ted in ligation.

ſence of paine and a Phlegmon, ſo alſo too ſtrait ligation, when paine is preſent, brings a Phlegmon and Abſceſſe to the wound. Therefore let all things here, according to the foremeantioned rules and circumſtances, be indifferent. I have for this purpoſe thought good to reiterate theſe things, becauſe you ſhall as yet finde many, who follow the practice of Paulus, and make many circumvolutions here and there, above and below the wound, which preſently they carrie croſſe-wiſe. But this croſſe or lattice-like kinde of ligation is wholly to be diſliked, and that onely to be uſed which we have deſcribed, according to the minde of Hippocrates. Now it is time, that I returne to the former hiſtorie of my miſhap, and declare what was done to me after that firſt dreſſing, which I have formerly mentioned.

Lattice like binding to be ſhunned.

CHAP. XXV.

What was uſed to the Authors Legge after the firſt dreſſing.

Being brought home to mine owne houſe in Paris in the afternoone, they tooke from me, out of the Baſilica of the left arme, ſome ſixe ounces of blood. And then at the ſecond dreſſing the lippes or edges of the wound and places thereabout were annointed with *unguentum roſatum*, which, by a joynt conſent of the Ancients, is much commended in the beginnings of fractures: for it will aſſwage paine, and hinder inflammation, by repelling the humors farre from the wounded part: for it is cold, aſtringent and repelling, as the compoſition thereof ſhewes; for it is made *ex oleo omphacino, aqua roſacea, pauco aceto & cera alba.* Therefore I uſed this oyntment for ſixe dayes; I dipped the compreſſes and rowlers ſomewhiles in oxycrate, otherwhiles in thick and aſtringent red wine, for the ſtrengthning of the part, and repreſſing the humors; which two things wee muſt have a care of in Hippocrates opinion, in fractures eſpecially with a wound. Wherfore if at any time the compreſſes or rowlers ſeemed to dry, I now and then moyſtened them with the oxycrate, or roſe vineger: for, by their too much drineſſe, paine and inflammation happen; and if they binde the part ſomewhat more ſtrait, they hurt it alſo by their hardneſſe. You ſhall ſee many ſurgeons, who in this kinde of affect, from the beginning to the end, uſe only aſtringent and emplaſtick medicines, wholly contrary to the methode ſet down by Hippocrates, and commended by Galen. For, by the continued uſe of ſuch things, the pores and breathing places of the skinne are ſhut up; whence the fuliginous excrement being ſuppreſt, the exterball heat is increaſed, and itching cauſed, and at length an ulcer by the fretting of the acride and ſerous humor long ſuppreſt. Whereby you may learne, that aſtringent and emplaſtick medicines muſt not bee uſed above ſixe daies. In ſtead hereof you ſhall uſe the emplaiſters, which I ſhall preſently deſcribe. In the beginning of my diſeaſe I uſed ſo ſpare a diet, that for nine daies, I ate nothing each day, but twelve ſtewed prunes, and ſixe morſels of bread, and dranke a Paris pinte of ſugred water, of which water this was the compoſition.

unguentum roſatum, wherefore good in fractures.

You muſt have a care, that the compreſſes and rowlers grow not hard by drineſſe.

℞. *ſacc. albiſ.* ℥ xii. *aquæ font.* ℔ xii. *cinam.* ℥ iii. *bulliant ſimul ſecundum artem:* Otherwhiles I uſed ſyrup of maydens hair with boyled water: Otherwhiles, the divine drinke (as they terme it) whereof this is the compoſition. ℞. *aquæ cocta* ℔. vi. *ſacc. albiſ.* ℥ iiii. *ſucc. lim.* ℥ i. *agitentur & tranſvaſentur ſæpius in vaſis vitreis.* I was purged when neede required with a bole of *Caſſia* with Rubarbe. I uſed alſo ſuppoſitories of Caſtle ſoape to make me goe to ſtoole; for, if at any time I wanted due evacuation, a preternaturall heat preſently ſeized upon my kidneyes. With this, though exquiſite manner of diet, I could not prevaile, but that a fever tooke mee upon the eleventh day of my diſeaſe, and a defluxion, which turned into an Abſceſſe, long flowing with much matter. I thinke the occaſion hereof was ſome portion of the humor ſuppreſt 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

The deſcription of a ſugred water.

The cauſes of a fever and abſceſſe, enſuing upon a fracture.

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 materiall and efficient cause to the defluxion and inflammation. I was moved to thinke they were scales, severed from their bone, by the thin and crude *sanies* flowing from the wound, the much swolne sides of the wound, and the more loose and spongie 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 Legge upwards; so that the bones, by the vehemency of the convulsion, were displaced, and pressed the sides of the wound; neyther could they be perfectly composed or set, unlesse by a new extension and impulsion, which was much more painefull to mee than the former. My fever, 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.

Signes 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 sleepe. I thinke the cause thereof is, for that the native heat withdraws its selfe while we sleepe, into the center of the body; whereby it commeth to passe, that the extreme parts grow colde. In the meane while, nature, by its accustomed providence, sends spirits to the suply of the hurt part. But becausethey 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 drawne; whereby it comes to passe, that they are againe displaced, and with great torment of paine, fall from their former seate. This contraction of the muscles is towards their originall.

Why the extreme parts are cold when we sleepe.

Chap. XXVII.

Certaine Documents concerning the parts, whereon the Patient must necessarily rest, whilest he lyes in his bed.

THose who have their Legge or the like bone broken, because they are hindered by the bitternesse of paine, and also wish for their cure or consolidation, are forced to keep themselves without stirring, and upon their backes in their beds for a long time together. In the meane space, the parts whereupon they must necessarily lye, as the heele, backe, holy-bone, rumpe, the muscles of the broken thigh or legge remaine stretched forth and unmoveable, set at libertie from their usuall functions. Whereby it comes to passe, that all their strength decayes, and growes dull by little and little. Moreover also, by the suppression of the fuliginous and acride excrements, and want of perspiration, they grow preternaturally hote; whence defluxion, an abscesse and ulcer, happen to them, but principally to the holy-bone, the rumpe and heele: 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 oftimes they cause a gangrene in the flesh, and a rottennesse and mortification in the bones there-under, and for the most part a continued fever, *delirium*, convulsion, and (by that sympathie which generally accompanies such affects) a hicketing. For the heele and stomacke are two very nervous parts, the latter in the whole bodie thereof,

The naturall faculties languish in the parts by idlenesse, but are strengthened by action.

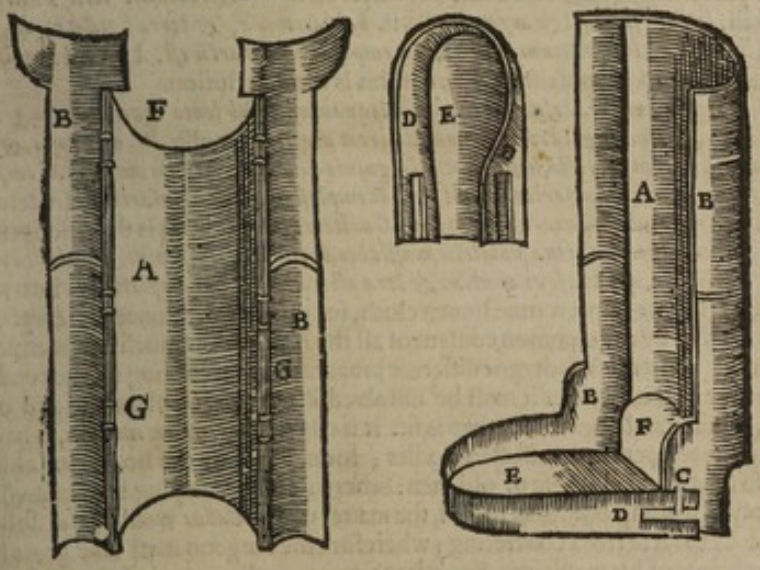
How, and what ulcers happen upon the fracture of the legge, to the rumpe & heele.

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 calfe of the legge. All which are deadly, both by diſſipation of the native heat by the feveriſh, and that which is preternaturall; as alſo by the infection of the noble parts, whoſe uſe the life cannot want, by carrion-like vapours. When as I conſidered all theſe things with my ſelfe, and(become more skilfull by the example of others) underſtood how dangerous they were, I wiſhed them now and then to lift my heele up out of the bed; and taking hold of the rope which hung over my head, I heaved up my ſelfe, 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 layd under my rumpe and heele, that they might be refreſhed by the benefit and gentle breathing of the ayre: and I did oft-times apply linnen clothes, ſpred over with *unguentum roſatum*, for the aſſwaging of the paine and heat. Beſides alſo, I deviſed a Caſſe of Lattin, wherein the broken legge being layd, is kept in its place, farre more ſurely and certainely than by anie Junks; and moreover alſo, it may all be moved to and againe at the Patients pleaſure. This Caſſe will alſo hinder the heele from lying with all its bodie and weight upon the bed, putting a ſoft and thicke boulſter under the calfe, in that place where the Caſſe is hollow: beſides alſo, it armes and defends it againſt the falling downe and weight of the bed-clothes, having a little arch made over and above, of the ſame matter. All which ſhall bee made manifeſt unto you by the following figure.

Remedies for the prevention of the foreſaid ulcers.

The uſe of a Lattin Caſſe.

The figure of a Caſſe.



A A. *Shew the bottome or belly of the Caſſe.*
B B. *The wings or ſides to be opened and ſhut at pleaſure:*
C. *The end of the wings, whereto the ſole or arch is fitted.*
D D. *The Arch.*
E E. *The Sole.*
F F. *An open ſpace, whereat the heele hangs forth of the Caſſe.*

Now it remaines, that I tell you what remedies I applyed to the Abſceſſe which happened upon my wound. When therefore I perceived an Abſceſſe to breed, I compoſed a ſuppurative medicine of the yoalks of egges, common oyle, turpentine, and

A ſuppurative medicine.

and a little wheat floure, and I used it untill it was opened: then to cleanse it I used this following remedie.

A detersive.

℞. *Syrupi rosati & terebinth. venetæ, an.* ℥ ii. *pulveris radicis ireos florentiæ, aloes, masticbes, farinæ 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 breake forth, should be filled with tents made of sponge or flaxe, that so, by this meanes, I might keep the ulcer open at my pleasure. But I put into the bottome of the ulcer catagmatick and cephalicke powders, with a little burnt Alum to procure the egresse of the formerly mentioned scales. These at length cast forth, I cicatrized the ulcer with burnt Alum. For, this having a drying and astringent facultie, confirmes and hardens the flesh, which is loose and spongie, and flowing with liquid *sanies*, and helps forwards natures endeavour in cicatrization. For, the fragments of the bones, they, by reason of their naturall drinesse and hardnes, cannot be joyned and knit together by themselves without a *medium:* but they need a certaine 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 forme from the native heat, and emplastick medicines, which moderately heat. For, on the contrarie, these medicines, which, by their too much heat, doe discusse and attenuate, doe (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 efficacie I have had experience: for, hence they are called knitting or consolidating plaisters.

Catagmatick powders have power to cast forth the scales of bones.

The causes both efficient and materiall of a *Callus*.

Medicines conducing to the generation of a Callus.

℞. *olei myrtill. & rosarum omphac. an.* ℔ ß. *rad. altheæ* ℔ ii. *rad. fraxini, & fol. ejusdem, rad. consolidæ majoris & fol. ejusdem, fol. salicis an.* m. i. *fiat decoctio in sufficienti quantitate vini nigri, & aquæ fabrorum, ad medietatis consumptionem, adde in colatura pulveris myrrhæ & thuris an.* ℥ ß. *adipis hirci* ℔ ß. *terebinth. lotæ* ℥ iiii. *masticbes* ℥ iii. *lithargyri auri & argenti an.* ℥ ii. *boli armeniæ, & terræ sigillatæ, an.* ℥ i. ß. *minii* ℥ vi. *ceræ albæ quantum sufficit, fiat emplastrum, ut artis est.* In stead hereof you may use the blacke emplaister, whereof this is the description.

The black plaister.

℞. *lithargyri auri* ℔ i. *olei & aceti* ℔ ii. *coquantur simul lento igne donec nigrum & splendens reddatur emplastrum, & non adhæreat digitis.* Or else, ℞. *olei rosat. & myrtill. an.* ℥ ii. *nucum cupressi, boli armen. sanguinis drac. pulverisatorum an.* ℥ ß. *emplastri diachalciteos* ℥ iiii. *liquefaciant simul, & fiat emplastrum secundum artem.* In defect of these, you may use a Cere-cloth, or *tela Gualteri*, whereof this is the description.

The description of a *Sparadrapum* or cere-cloth.

℞. *pulveris thuris, farinæ volatilis, masticbes, boli arm. resinæ pini, nucum cupressi, rubiæ tinctorum, an.* ℥ ii. *sevi arietini & ceræ albæ an.* ℔ ß. *fiat emplastrum:* into which (whilest it is hote) dip a warme linnen cloth, for the forementioned use. *Emplastrum Diacalcithios*, by the common consent of all the Ancients, is much commended for fractures: but it must undergoe different preparations, according to the condition of the time; for in summer it must be dissolved in the juice of plantaine and nightshade, 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 neyther are the bodies of children to be so much dried as these of old men: otherwise, if such drying medicines should be applyed to yong bodies as to old, the matter of the *Callus* would be dissolved, it would be so farre from concreting; wherefore the Surgeon must take great heede in the choyce of his medicines. For, often times remedies, good of themselves, are by use made not good, because they are used and applyed without judgment: which is the cause that oft times 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.

Medicines good of themselves, not good by event.

CHAP. XXVIII.

By what meanes we may know the Callus is a breeding.

WHen I knew that my legge begunne to knit, when as lesse matter than was usuall came from the ulcer, when the paine slackened, and lastly, when as the convulsive twitchings ceased; which caused me to judge it fit to dresse it seldomer than I was used to doe. For, by the frequent detersion in dressing an ulcer, whilst a *Callus* is breeding, the matters whereof it is to be made, are drawne away and spent, which are (as they terme them) *Ros*, *Cambium*, and *Gluten*, which are the proper and genuine nourishments both of the bony, as also of the fleshie substance. I by other signes also conjectured the breeding of the *Callus*, to wit, by the sweating of a certaine dewie blood out of the edges and pores of the wound, which gently dyed and bedewed the boulsters and ligatures, proceeding from the effluxe of the subtler and gentler portion of that matter, which plenteously flowed downe for the breeding of a *Callus*. As also, by a tickling and pleasing sense of a certaine vapour, continually creeping, with a moderate and gentle heate, from the upper parts even to the place of the wound. Wherfore thence forwards I somewhat loosened the ligation, left, by keeping it too strait, I should hinder from entring to the fragments of the bones, the matter of the *Callus*, which is a portion of the blood, temperate in qualitie, and moderate in quantie. Then therefore I thought good, to use nourishments fit to generate more grosse, thicke and tenacious blood, and sufficient for generating a *Callus*; such as are the extremities, tendinous and gristly parts of beasts, as the heads, feete, legges and eares of Hoggs, Oxen, Sheepe, Kids; all which I boyled with Rice, French Barley, and the like, using somewhiles one, somwhiles another, to please my stomack & palate. I also somtimes fed upon frumity, or wheat sodden in Capon broth with the yoalks of egges; I drank red, thicke and astringent wine, indifferently tempered with water. For my second course, I ate chesnuts and medlars: neyther doe I without some reason, thus particularize my diet: for that grosse nourishments, especially if they be friable and fragile, as beefe is, are alike hurtfull (for as much as pertaines to the generating of a *Callus*) as light meats are. For that makes the *Callus* too dry, these too tender. Wherfore Galen pronounces these meats only fit for generating a *Callus*, which are neyther fragile nor friable, neither serous and thin, nor too dry; but indifferent grosse, and also viscide, fat and tough. These meats, digested by the stomacke into *Chilus*, are sent into the guts, and from hence, by the mesaraick veines, into the Gate-veine, and the hollow part of the Liver, thence into the Hollow-veine, and so into the Veines dispersed over all the bodie and the parts thereof. There are also some of these veines which carrie blood into the bones; but in the large cavities of the bones is marrow contained, as in the small a certaine marrowie 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 veines and arteries, but into the lesse by lesser, which end in their pores and small passages. For, in large bones you may observe large and apparent passages, by which the veines and arteries enter for the forementioned use. By the same waies the nerves also insinuate themselves, from whence proceedes 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 beleeve, that the marrow hath sense of feeling, because the membranes thereof being hurt cause most bitter paine. Therefore out of the marrow and the proper substance of the bone, there sweats a certaine grosse and terrestriall juice, whereof, by the power of the assimilating facultie, which serves in stead of the formative, a *Callus* growes and knits. Simple fractures of the legge are usually knit in fiftie daies; but through the occasion of the wound and the scales quite broke off, and other accidents which befell mee, it was three whole months before the fragments of the bones were perfectly knit, and it was also another month, before I could goe upon

When the *Callus* is breeding the ulcer must be seldome dressed.

Hipp. sent. 47. sect. 1. de fract.

Meats fit for generating a Callus.

Lib. 6. meth. cap. 8.

Why the marrow may seeme to have sense of feeling.

In what space the legge is usually knit.

my legge without the helpe of a Crutch. Going was painefull to me for ſome few daies, becauſe the *Callus* had taken up ſome place of the muſcles: for, before my former freedome of motion could returne againe to the broken and knit part, it was neceſſarie, that the Tendons and Membranes ſhould ſeparate themſelves by little and little from the ſcarre. In the performance of all theſe things, I had the diligent and faithfull aſſiſtance amongſt the Surgeons, to omit Phyſitians, of Anthonie Portall, 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.*

HAving already ſpoken of the ſignes of a *Callus* beginning to concrete, of its generation and the manner thereof: it now remaines, that wee treat of thoſe things which hinder the generation thereof; and what on the contrarie helpe forwards the conformation and concretion thereof. Now theſe things which either wholly hinder, or elſe retarde the generation of a *Callus*, have a ſtrong and powerfull diſcuſſive and attenuating facultie; or elſe they are unctuous, oyly and moiſt. For, by ſuch the juice, wherof the *Callus* ought to be, is eyther melted and conſumed, or elſe growes ſoft, and is relaxed. But on the contrarie, thoſe things which helpe forwards a *Callus* muſt bee drying, incraſſating, thickening, hardening and emplaſticke, moderately hot and aſtringent. But for moiſt and relaxing medicines, they ought to have no place here, unleſſe when it happens that the *Callus* is ill formed, that is, too thicke, or crooked, or otherwiſe ill ſhapen, whereby it may be waſted and broken, ſo to bee reſtored againe after a better manner. Yet notwithſtanding, ſuch things are not to be attempted, unleſſe when the *Callus* is yet greene, and ſo depraved, that the fault therof 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 boyled the roots of Marſh-mallowes, of Brionie, the ſeeds of Line, of Fænugreeke, Pigeons dung, Bay-berries, and the like. You ſhall alſo uſe this following oyntment and plaiſter.

Diſcuſſing and unctuous medicines hinder the generation of a *Callus*.

What helps forward the generation thereof.

℞. *unguenti de Althæa* ℥ iiii. *olei liliorum, & axungiæ anſeris an.* ℥ i. *aquæ vitæ parum, liqueſiant ſimul, fiat linimentum quo liniatur pars.* Then apply this following emplaiſter.

℞. *emplaſt. de Vigo cum mercurio, cerati æſypati deſcriptione Philagrii, an.* ℥ iii. *olei anethini & liliorum an.* ℥ i. *liqueſiant omnia ſimul, fiat emplaſtrum*; let it bee ſpred upon leather for the foreſaid uſe. When by this meanes the *Callus* ſhall ſeeme to be ſufficiently mollified, it ſhal 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 breake it, the bone may breake 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 undergoe the hazzard of his life. If the *Callus* be too groſſe, it ſhalbe diminiſhed (if it be as yet freſh) with emollient, reſolving, and powerfully aſtringent medicines, which have force to diſſolve, dry and exhauſt. It will alſo bee good ſtrongly to rubb the *Callus* with oyle of Bayes, wherein Salt-peter, or ſome other kinde of Salt hath been diſſolved, then wrapped about with a Rowler, to binde it very ſtraitly, putting a leaden plate thereon, whereby the flowing downe 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 contrarie, it any waies happen, that the *Callus* be more thin and ſlender, or grows more ſlowly, for that it is too ſtraitly 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 chiefe cauſes of the leaneneſſe

What *Callus* muſt not be broken, though diſtorte, or otherwiſe ill conformed.

The cauſes of too ſlender a *Callus*.

neſs, even for this reaſon, for that exerciſe ſtirres 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 ſelfe is too haſtily and before the time put to undergoe ſolid offices and motions. According to the variety of cauſes, medicines ſhall bee applyed. For if the ligature of the part bee too ſtrait, it ſhall bee looſed, yea verily the fractured place, the ligature being taken away, ſhall be quite freed from ligation, and a new kind of ligature muſt bee made, which muſt be rowled downe from the roote of the veſſels, that is, from the armepitts, if the arme; or from the groine, if the legge 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 feare of inflammation, to hinder it from entrance into the affected part. Alſo gentle frictions and fomentations with warme water may be profitably made, from which you muſt then diſiſt when the part ſhall begin to grow hot and ſwell. If any too long continue theſe frictions and fomentations, hee ſhall reſolve that which he hath drawne thither. For this we have often times obſerved, that frictions & fomentations have contrary effects, according to the ſhortneſs and continuance of time. Pications wil alſo conduce to this purpoſe, and other things which cuſtomarily are uſed to members troubled with an *atrophia*, or want of nouriſhment.

Remedies therefore.

When we muſt deſiſt from fomenting and frictions.

CHAP. XXX.

Of fomentations which be uſed to broken bones.

DIvers fomentations are uſed to broken bones for ſeverall cauſes. When we uſe warme water for a fomentation, wee meane that, which is juſt between hot and cold, that is, which feeles luke warme 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 bodie, it drawes blood and an alimentarie humor to the part labouring of an *Atrophia*; it aſſwages paine, 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 contrarie, too hot fomenting cools by accident, digeſting and diſcuſſing the hot humor which was contained in the member. We meane 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 ſwolue: but we conjecture, that much or too much time is ſpent thereon, if the rednеſſe, which formerly appeared, goe away, and the tumor, which lifted up the part, ſubſide. Alſo in fomenting, you muſt have regard to the bodie 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 leane and ſpare, it will make the part more fleſhie and ſucculent. Now it remaines, that we ſay ſomewhat of the fracture of the bones of the feet.

Warme water.

The effects thereof.

Notes of ſhort, juſt, and too long fomenting.

Fomentations 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 bee fractured as the bones of the hands may. Wherefore theſe ſhall bee 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 bee depraved. For as we uſe our legges to walk, ſo we uſe our feet to ſtand. Beſides alſo the Patient ſhall keep his bed untill they be knit.

Why the fractured bones of the foot muſt be kept in a ſtrait poſture.

The end of the fifteenth Booke.

OF DISLOCATIONS, OR, LUXATIONS.

The Sixteenth Booke.

Chap. I.

Of the kinds and manners of Diſlocations.

A Diſlocation is the departure or falling out of the head of a bone from its proper cavitie, into an unaccuſtomed place beſides nature, hindring voluntarie motion. There is another kinde of Luxation, which is cauſed by a violent diſtention, and as it were a certaine divarication, and dilatation, or extenſion into length and breadth of the ligaments, and all the nervous bodies, which containe, ſtrengthen, and binde together the joynts. Thus thoſe who have beene tormented and racked, have that thick ligament which is in the inner cavitie of the huckle bone too violently extended: Thoſe who have ſuffered the Strappado, have the ligaments, encompaſſing the articulation of the Arme-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 joyned contiguous, and one (as it were) bound to the ſides of another, gape or flye aſunder: as in the Arme, when the ell parts from the wand; in the legge, when the one focile flyes from the other: yet this may be referred to the ſecond ſort of diſlocations, becauſe it happens not without dilatation, or elſe the breaking of the ligaments. There is alſo a fourth added to theſe, as when the *Epiphyſes* and heads of bones are plucked from the bone whereon they were placed or faſtened: which unproperly called kinde of Luxation, hath place chiefly in the bones of yong people, and it is knowne by the impotencie of the part, and by the noiſe and grating together of the crackling bones when they are handled. Now the bones of yong folks are alſo incident to another caſualtie: for as the bones of old people are broken by violence by reaſon of their drineſſe and hardneſſe, thus the bones of children are bended or crooked in by reaſon of their naturall ſoftneſſe and humiditie.

What a Luxation properly ſo called is.

What a Luxation not properly ſo called is.

The third kind of Diſlocation.

The fourth.

Chap. II.

Of the differences of Dislocations.

What Luxations are simple.

What compound.

SOme Dislocations are simple, others compound. We terme them simple which have no other preternaturall affect joyned 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 paine, inflammation, and an abscesse. For, through occasion of these we are often compelled so long to let alone the luxation, untill these bee remitted of themselves, or by our art. Some Dislocations are complete and perfect, as when the bone wholly fals out of its cavitie: othersome are unperfect, as when it is only lightly moved, and not wholly fallen out; wherfore we only call them subluxations or strains. Differences of Luxations are also drawne 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 onely according to some of them. Differences are also taken from the condition of the dislocated Joynt in greatnesse and littlenesse, from the superficiarie or deepe excavation of the *sinus* or hollownesse; and lastly from the time, as if it be lately done, or of some long continuance. I have judged it fit to set downe all these, for that there are severall indications of curing, according to the varietie of each of these, as we shall teach hereafter.

What a complete Luxation is.

What a subluxation or straine.

Chap. III.

Of the causes of Dislocations.

Internall causes of dislocations.

THere are three generall causes of Luxations, internall, externall, and hereditarie. The internall are excrementitious humors and flatulencies, which, settling into the joynts with great force and plentie, doe so make slipperie, soften & relaxe the ligaments which binde together the bones, that they easily fall out of their cavities; or else they so fill and 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 concurre, which possessing and filling up the cavities of the joynts, puts them from their seats, as it oft times happens to the joynt of the hip by Sciaticaes, and to the *Vertebræ* of the spine, by whose Luxation people become gibbous, or otherwise crooked. But externall causes of Dislocations are, fals from high, bruising and heavie 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 somtimes to infants in their birth, when as they are too carelessly and violently drawne forth by the Midwife, so that eyther their armes or legges are put out of joynt. Hereditarie causes are such as the Parents transfuse into their off-spring: hence it is, that crooked not necessarily, but often times are generated by crooked, and lame by lame. The truth whereof is evident by daily experience. Besides also Hippocrates himselfe averres, that infants in the very wombe may have their Joynts dislocated by a fall, blow and compression, & by the too much humidity and loosenes of the Joynts: whence also we see many crooke legg'd and footed from their nativitie; 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 Joynts are lesse depresst than they should bee, and that their

Externall causes.

Hereditary causes.

Sect. 3. text. 88. & 94 sect. 82. 4. text. 3. & 4. lib. de art.

Children may have Impostumes in their mothers wombs.

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 fals out, that otherſome have the ligaments, appointed by nature for faſtening together the bones of the joynt, whether inſerted or placed about, ſo weake, that from their firſt originall they are not of ſufficient ſtrength, or elſe abound with much phlegme, eyther bred together with them, or flowing from ſome other place; ſo that by their too much ſlipperineſſe they leſſe faithfully containe 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. IIII.

The ſignes of diſlocations.

SOme of the ſignes 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 ſigne, that there is alwaies a tumor in that part whereto the bone runnes, and a hollowneſſe on that ſide from whence it is flowne. Now the proper ſignes ſhall be ſhewed, when as we come to treat of the particular kindes of Luxations. We know a perfect Diſlocation by the loſt action of the part, that is to ſay, the loſt motion; paine 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 joynt with that which is hurt, in which collation, it is fit the ſound part, which is compared with the hurt, be no waies, neyther by nature nor any accident, wronged, nor deformed, nor withered or decayed, nor ſwolne above meaſure, otherwiſe it may cozen and deceive you, if you bee leſſe warie. Labour and difficultie of action in moving, is a ſigne of an uncomplete Luxation, or ſtrain. 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 ſuddenly flye thence backe againe; if thruſting your finger into the joynt, it eaſily enter, nothing reſiſting it, as though all were empty within; if the motion be difficult, or none at all.

The common ſigne of all diſlocations.

Signes of an unperfect diſlocation.

Chap. V.

Of Prognoſticks to be made upon luxations.

ALl Joynts may bee perverted or luxated, but all of them cannot in like manner be reſtored. For the head may be diſlocated, but therupon preſent death enſues, by reaſon of the compreſſion of the whole ſpinall marrow preſently at the originall 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 Joynts, as they are more or leſſe diſlocated, and moved out of their ſeats, ſo may they bee 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 ſigne of the eaſie or hard reſtoring of the diſlocation; as in the Arme, by how much the bones be the more eaſily diſlocated, by ſo much once luxated they are the more eaſily reſtored. Bones doe not eaſily fall out of joynt in fleſhie bodies; but when they chance to be put out, they are not eaſily got in againe. For in ſuch, the articulation is ſtraitly on everie ſide held in by the thickneſſe of the muſcles, and the plenty of the

What luxations be uncureable.

Why thoſe bones which are hardly diſlocated, are hard to be ſet.

the fat lying thereabouts. On the contrarie, such as are leane, especially those who formerly have beene more fat, have their joynts more laxe, whereby it comes to passe, that their bones may easily be put forth of joynt: besides also, through the default of the digestive facultie, they have their joynts replete with mucous humors; whence it is, that the heads of the bones, as standing in a slipperie 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, joyned amongst themselves, doe sometimes flye asunder, as when the shoulder blade flyes from the collar-bone at the *Acromion*, and in the Arme the Ell from the Wand, and in the Legge the one focile from the other, and the Heele-bone from the Ancle. Bones thus separated will never be joyned together againe, 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 laxe. Those whose bones are dislocated by an externall cause, they, after they be set, may easily fall out againe, for that the ligaments, moystened and bedewed with an excrementitious humor, cannot firmely hold them: oft times the ligaments are not wholly broken, but onely in some portion thereof; and hence the action of the part either perishes, or is debilitated. Also that dislocation is uncureable, when as the ligaments, steeped and swolne up with an excrementitious humiditie, are so much shortened and contracted in their length, as they have acquired in their breadth: and thus they draw away and plucke off the *appendices* of the bones from whence they arise, and by reason the bone and the *appendix* doe enter and receive each other by manie cavities and prominencies, therefore they cannot, by how skilfull hand soever they be handled, be againe fitly placed and put together. Old and inveterate dislocations, wherin a tough humor possessing the cavitie 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 cavitie in the neighbouring bone: neither if they be restored, is the restitution firme and of continuance; because the naturall cavitie is possessed by another matter, and the new made neare thereto cannot well and faithfully containe the received head of the bone. Those who have their shoulder dislocated, may use their hand for many actions, as well as the opposite sound hand; for the weight of the bodie 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 arme becoms the more corpulent. Contrarily, if the thigh-bone bee dislocated, especially if it bee wrested inwards, the whole legge quickly decayes 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 plight; but idlenesse debilitates and makes it leane. If a great wound and fracture bee joyned with a luxation, there is danger, lest while wee use extension for restoring the part, we draw the nerves too violently, and so break the nerves, veines and arteries, whence would ensue feare of inflammation, convulsion, and other maligne symptomes. Wherefore Hippocrates judges it better in such a concourse and complication of preternaturall affects, absolutely not to meddle at all with the setting of the dislocated bone: for, by attempting the restitution, certaine death; but by omitting it only lamenesse is to be feared. Everie dislocation must be restored before inflammation come; but if it be already present, you must presently be carefull to take it away. For other things, let the Patient rest, lest if the affect be irritated, the increase and excesse of paine cause a convulsion, gangrene, and lastly death, as I remember I have somtimes observed. Therfore when inflammation, and other maligne symptomes shall be mitigated and corrected, then may you endeavour to restore the luxation, especially if the habit of the bodie and member affected may admit it. For if the bodie be slender, delicate and tender, then the restitution will bee more speedy and facile. But on the contrarie, more difficult, if it be grosse and compact; And let thus much suffice for prognosticks in Luxations.

Sect.1 de artic. sent.29.

Celsus lib.8. cap.11.

Why the plucking of an *appendix* from a bone is uncureable.

Hipp.sent.88. sect.3.de art.

Sent.10 sect.5. lib.6.epid.& sect. 3. de art. sent 88.

You must not endevour to set an inflamed joynt.

CHAP.

Chap. VI.

Of the generall cure of Dislocations.

FOr all that I have heretofore delivered the generall methode of curing Fractures and dislocations, yet it shall not bee 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 performe 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 symptomes. Five intentions in curing dislocations.

The first scope, which we said was of Holding, is meant eyther of the whole body, or else of some part thereof only. The whole bodie must bee 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 foote and legge, it is sufficient onely to hold the part straitly in your hands. There is necessitie of holding eyther the bodie, or else some part thereof, lest, while the dislocated bone is extended, the whole bodie follow by continuance of parts, if there be nothing which may hinder: for if the bodie should follow him that drawes 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 betweene the luxated bones, by which distance the dislocated bone may the more freely be forced into its cavitie. 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 worke is almost alwaies performed by the hands; which when they cannot suffice, we must use the assistance of instruments and engins, whose figures you shall see hereafter delineated. But that you may not doe amisse, you may so farre use extension, untill the head of the bone be brought just against its cavitie. When the Surgeon hath brought it to this passe, then must he hasten to the third intention, which is, to put the head of the bone first moved and gently bended, into its cavitie. For hee must have a speciall care, that hee force it no other way than into its proper cavity: for it would be dangerous, lest he should turne it from one extreme into another, and the bone, for examples sake, of the thigh, which was dislocated into the forepart by too violent forcing, by exceeding the middle cavitie, may be driven and dislocated into the hinder part. To shun this, the bone shall be put backe the same way that it fell out, which may bee easily done in fresh and late happening dislocations. We understand that the bone is set by the noyse, 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 and consent in figure, magnitude and all conformation of the affected part with the sound, and lastly, by the mitigation of the paine. The fourth scope, which is of the convenient site of the part, must bee so fulfilled, that the bone after it is set may bee kept in its cavity, and not flye forth againe. Wherefore if the arme be dislocated, it shall be carried bound up in a scarfe: if the thigh, knee, legge, or foote be luxated, they shall be fitly layd in a bed; but in the *interim* the Surgeon, presently after hee hath set them, shall have a care, that the affected joynt be wrapped about with stoups and clothes, or compresses steeped in rose vinegar, and spred with convenient medicines; 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 boulsters shall be there applied whence the bone came out, otherwise there will be some danger, lest it should be againe displaced: when these things are done, he shall for foure or five dayes space meddle with nothing about the Dislocation, unlesse paine, or some such like symptome happen. For then the fifth scope will call us from that cessation and rest, which is, to correct the symptomes and complicate

The benefit of holding the member in dislocations.

The use of extension.

The manner of setting it, or putting it into its place.

Signes that the bone is set.

The benefit of fit placing the member.

The manner of binding up the set joynt.

The cure of inveterate luxations.

complicate affections, as paine, inflammation, a wound, fracture, and others, whereof wee have ſpoken abundantly in our Treatiſe of Fractures. Before wee attempt to ſet inveterate diſlocations, wee muſt endevour to humect the ligaments, tendons and muſcles by fomentations, cataplaſmes, emplaiſters, 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 againe, that by this meanes the excrementitious humor, which by continuance of time hath flowed downe, may waxe hot, be attenuated, reſolved or made ſlipperie, and alſo the fibres of the muſcles, ligaments, and nervous bodies, placed about the joynt for the defence thereof, may be looſed, that ſo they may preſently be more freely extended. But if a great ſwelling, paine and inflammation urge, we muſt firſt think of aſſwaging and curing them, then of the reſtoring the Diſlocation.

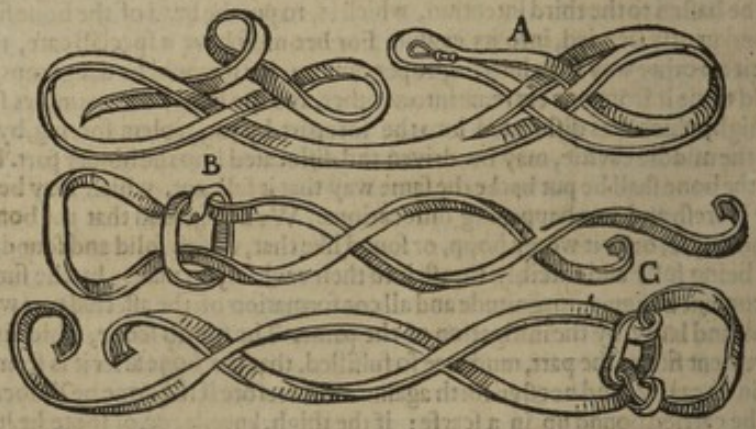
Chap. VII.

The deſcription of certaine engines, ſerving for the reſtoring of Diſlocations.

These ligatures are not for deligation, but extenſion.

BEfore I come to the particular kinds of Diſlocations, I thinke it not amiſſe 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 drawing or extenſion, and conſiſts of one knot. The third, whereto the letter *C* is put, conſiſting of two knots, is to hold or binde more ſtraitly.

The delineation of the three Ligatures.

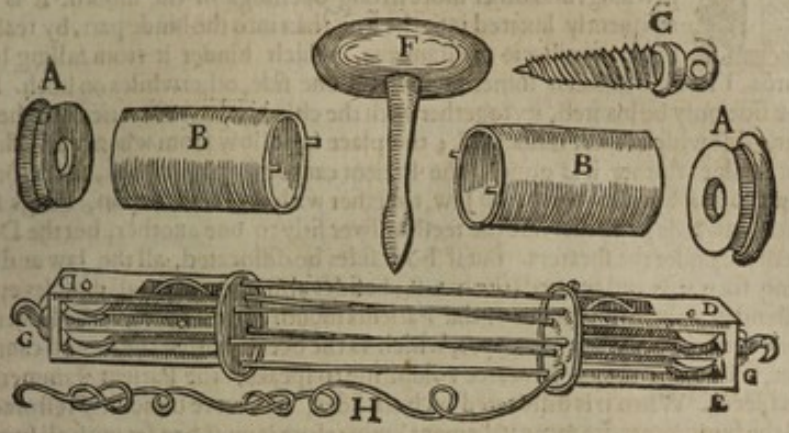


I have thought good alſo to delineate the following Engine, made for to draw and extend more powerfully, when the hand will not ſerve. It is made like a Pulley, marked with theſe letters *DD*. Within this there lye hid three wheeles, through whoſe furrowes runnes the rope which is to be drawue, marked with this letter *H*. At the ends of the Pulley are hooks faſtened, the one of which is to faſten the Pulley to a Poſte, the other is to draw the ligature faſtened to the part. The Boxes or Caſes wherein the Pulley is kept, is maked with *BB*. Their covers are marked with *AA*. A ſcrew pin which may be twined, and ſo faſtened to a Poſte, that ſo one of the ends of the Pulley may be hooked thereto, is ſigned with *C*. A Gim-

let

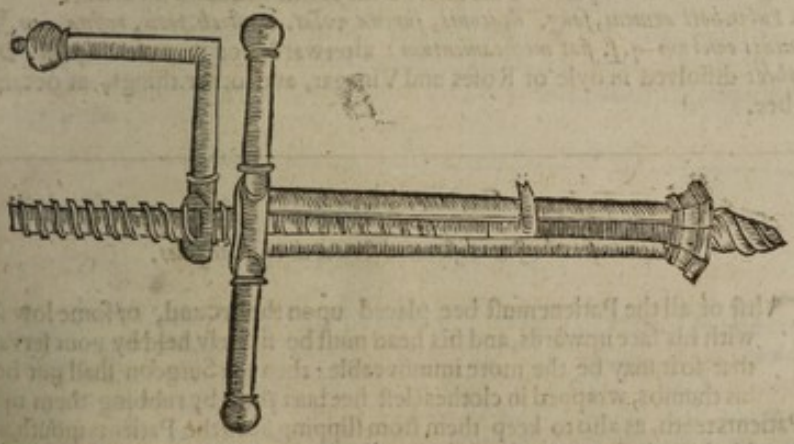
let (marked by *F.*) to make a hole in a Poſte, ſo to let in the ſcrew pin. You may ſee all theſe things expreſt in this following figure.

A Pulley.



Some Practitioners in ſtead of this Pulley make uſe of the hereafter deſcribed Inſtrument, which they terme *Manubrium verſatile*, or a Hand-vice. The end thereof is fathioned like a Gimblet, and is to be twined into a Poſte. Within that handle lyes a ſcrew with a hooked end, whereto the ſtring or ligature muſt be faſtened. Now the ſcrew-rod or male-ſcrew runnes into the female by the twining about of the handle: and thus the ligature is drawne as much as will ſuffice, for the ſetting the diſlocated bone.

Manubrium verſatile, or, *A Hand-vice.*



Having delivered theſe things thus in generall, now I come to treate of the Luxations of each part, from the Jaw-bone even to the toes of the feet.

CHAP.

Chap. VIII.

Of the Diſlocation of the Jaw-bone.

The cauſes.

Differences.

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 hinde part, by reaſon of the mammillarie additaments, which hinder it from falling backewards. The diſlocation is ſometimes but on one ſide, otherwhiles on both. If the one ſide only be luxated, it (together with the chin) is drawne awrie unto the contrarie ſide which is not diſlocated; the place is hollow from whence it is flowne, but ſwolne whither it is gone; the Patient cannot ſhut his mouth, but is forc't to gape, ſo that he cannot eate; the Jaw, together with the teeth therein, hangs ſomewhat forwards; neyther doe the teeth anſwer fitly to one another, but the Dogge-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 appeare diſtended, ſpittle runnes 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 volubilitie to ſpeake, the Patient ſtammering in his ſpeech. When it is diſlocated on both ſides, it is more difficultly reſtored, and all the ſymptomes are more vehement; wherefore it muſt bee ſet with all ſpeed, otherwiſe the Patient will preſently have grievous paine 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 braine, are diſtributed into the moving muſcles thereof, which, too violently extended, bring the forementioned ſymptomes. Practitioners affirme, that the Jaw, twelve dayes after it is ſet, is free from the danger of relapſe. If it have beene diſlocated ſome few daies, before you goe about to reſtore it, you muſt uſe ſoftening and relaxing medicines to it: but when it is put in the joynt, apply a medicine made of the whites of egges, and oyle of roſes, to aſſwage paine, and apply clothes 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 forme of ſuch a medicine.

Signes that only one part is diſlocated.

Signes that both ſides are diſlocated.

Prognoſticks.

Why death quickely enſues upon the diſlocation of both ſides of the jaw.

An aſtringent medicine.

℞. *Pulv. boli armeni, ſang. draconis, farinæ volat. maſtich. picis, reſinæ, an.* ℥ß. *albuminis ovorum q. ſ. fiat medicamentum:* afterwards you may uſe *Emplaſt. Diacalcitheos* diſſolved in oyle of Roſes and Vinegar, and other things, as occaſion ſhall bee.

Chap. IX.

How to ſet the Jaw diſlocated forwards on both ſides.

The firſt maner of ſetting a jaw-bone.

FIrſt of all the Patient muſt bee placed upon the ground, or ſome low ſeat with his face upwards, and his head muſt be firmely held by your ſervant, that ſo it may be the more immoveable: then the Surgeon ſhall put both his thumbs, wrapped in clothes (leſt hee hurt them by rubbing them upon the Patients teeth, as alſo to keep them from ſlipping) into the Patients mouth, and preſſe with them the larger teeth of the luxated Jaw, but put his other fingers without under his chin, & 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 bee put thereinto, then muſt you thruſt in woodden wedges made of ſoft wood, as hazle or firre, being cut ſquare, and of ſome fingers thickneſſe. Theſe ſhall bee 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 preſſe

Another.

presse downwards the woodden wedges. The Jaw-bones thus restored, shalbe kept so by convenient ligation, and dressed with medicines, as it is fitting; and in the meane space you must forbid the Patient to speake, or needlesly to open his mouth. Wherefore he must abstaine from hard meats, and such as require much chewing, untill his paine be quite passed, and use only spoone-meats, as Barley-creames, potadoes, jellies, cullasses, brothes, and the like. Diet.

Chap. X.

Of restoring the Jaw dislocated forwards but on one side.

THe Patient must be placed on a lowe seate, so that hee may be under the Surgeon; then your servant, standing at his back, shall hold his head firme and steddie, that it may not follow the Surgeon drawing, extending, and doing other things necessarie for restoring it. Then the Surgeon, putting his thumb between the grinders, shall presse down the Jaw, and gently drawing it aside, force it into its cavitie: in the meane while, also the Patient, as much as in him lyes, shall helpe forwards the Surgeons endevour, in opening his mouth as little as he can, lest the muscles should bee extended; and hee shall only gape so wide as to admit the Surgeons thumbe, for so the temporall muscles shall be restored to their place, and favour the restitution. If hee open his mouth as wide as hee can, they will be extended after a convulsive manner; if on the contrarie he shut his teeth too close, there will be no passage for the Surgeons Thumbe unto his grinding teeth. Somethere bee which affirme, that the Jaw-bone may sometimes be dislocated towards the hinde part, and that then the mouth is so close shut, that the Patient cannot open it nor gape, and that the lower ranke of teeth stands further in, and nearer the throat than the upper. Now for restoring it, the Patients head must be straitly holden behinde, whilst the Surgeon, the meane while putting both his thumbs into the Patients mouth, holding his other fingers without under the parties chin, hee shall, by shaking it, draw it to him, or forwards, and so restore it to its place. For my own part, I confesse I never saw this kinde of Luxation, and I easily perswade my selfe, that it can scarce ever happen, for the reason I gave in the former Chapter. But nevertheless, if it by any meanes chance to happen, yet can it not be a perfect Luxation, but an imperfect one; the Jaw being onely but a little thrust backe to the throat to those mammillarie additaments. And then it may easily be restored by lifting or drawing forth the Jaw, and suddenly forcing it from below upwards.

What the Surgeon. What the Patient ought to do. Signes 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 firme connexion which the Collar-bone hath with the foresaid parts; but chiefly where it is joyned to the *sternum*, it can scarce be depresst, 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 varietie there must be divers waies to restore it; yet generally the Collar-bone is put into its place by moving or extending the arme. But if need require, the Patient shall be layd 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 wil so come to passe, that the shoulder and

Differences of the luxated Collar-bones. The Cure.

chest will stand so forth, that presently by lifting up, by pressing downe, or drawing forth the arme forwards or backwards, as the bone shalbe flowne out to this or that part, you may restore it; for thus the prominencie may bee forced into its cavitie. But it will be requisite to binde it up, and lay boulsters thereon, and to give it rest, as if it were fractured. Galen writes, that when hee was five and thirtie yeares old, whilst he exercised himselfe in the place of Exercise, his Collar-bone was so farre separated from the *Acromion*, that there was the space of three fingers betweene them. And that this Luxation was restored in fortie dayes space, by so strait and strong a Ligation, that he perceived the motion of the beating arteries under the bone. But you shall finde verie few, who will suffer such strait ligation so long, though it be never so necessarie. Verily, this kinde of Luxation is hard to be known, but farre 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 toppe of the shoulder swels, and the place from whence the Collar-bone is flowne, is depressed with a manifest cavity, with vehement paine, inflammation, and impotencie of lifting up, or otherwise moving the arme, or performing other actions which are done by the helpe of the shoulder. Certainly, if this bone, when it is dislocated, be not set, the Patient shall be lame during his life, so that hee shall not bee able, neyther to put his hand to his head nor mouth.

Com. ad sent. 62. sect. 1. de art.

CHAP. XII.

Of the Luxation of the Spine, or Back-bone.

An anatomicall description of the Spine.

THE Backe-bone consists of many bony *vertebræ*, like rowles or wheeles inutually joynted or knit together, by their smoothnesse and circular forme conspiring to an aptnesse 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 thorough with a stake. The *vertebræ* have a hole passing through the midst of them, whereby the marrow, passing this way out from the braine 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 certaine conjugations of the nerves passe forth into the rest of the body, and veines and arteries passe in for the propagation of nourishment and life. The whole exteriour face of the Spine is rough, and as it were armed with foure sorts of *apophyses* or processes, whereof some stand up, others downe; some direct, others transverse. Wherefore from these thornie and sharpe processes, the whole hath acquired the name of the *Spina*. The *vertebræ* 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 beares, should be bigger than that which is borne. 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 firme and fasten the bones of the ribbs by a strong tye. There lyes a gristle, and a tough, and (as it were) albuminous humor betweene the *vertebræ*, which makes them, as also all the other joynts of the bodie, slipperie, and fit for motion: the Spine is flexible with notable agilitie forwards onely, but not backewards, for that so there would be continuall danger of breaking the Hollow ascendent veine, and the great descending arterie running thereunder. Therefore the dearticulations of the *vertebræ*, mutually strengthned with strong ligaments, doe looke more backewards. I have thought good to premise these things of the nature of the Spine, before I come to the Dislocations happening thereto: I willingly omit divers other things which are most copiously delivered by Galen, content only to adde thus much;

The variety of the processes of the Spine.

Gal. cap. 7. lib. 13. de usu partium.

Lib. 13. de usu partium.

much; That there is nothing to bee found in the whole structure of Mans bones, which more clearly manifests the industrie of Gods great workmanship, than this composure of the Spine and the *vertebræ* thereof.

Chap. XIII.

Of the Dislocation of the Head.

THe head stands upon the necke knit by dearticulation to the first *vertebra* thereof, by the interposition of two processes which arise from the *basis* thereof, neare the hole through which the marrow of the braine passes downe into the backe bone, and they are received by fit cavities, hollowed in this first *vertebra*. These processes sometimes fall out of their cavities, and cause a dislocation behinde, whereby the spinall marrow is too violently and hard compressed, bruised and extended, the chin is fastened to the breast, and the Patient can neyther drinke nor speake: wherefore death speedily followes upon this kinde 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 necke.

Prognosticks.

Chap. XIV.

Of the Dislocation of the vertebræ, *or Racke-bones of the necke.*

THe other *vertebræ* of the necke may bee both dislocated and strained. Dislocation verily, unlesse it be speedily helped, brings sudden death: for, by this meanes the spinall marrow is presently oppresst at the verie originall thereof, and the nerves, there-hence arising, suffer also together therewith, and principally those which serve for respiration; whereby it commeth to passe, that the *animal* spirit cannot come and disperse its selfe into the rest of the bodie lying thereunder; hence proceede sudden inflammation, the squinsie, and a difficultie, or rather a defect of breathing. But a straine or incomplete Luxation brings not the like calamitie: by this the *vertebræ*, a little moved out of their seats, are turned a little to the hinde or forepart, then the necke is wrested aside, the face lookes blacke, and there is difficultie of speaking and breathing. Such, whether dislocation or straine, is thus restored. The Patient must be set upon a lowe seat, and then one must leane and lye with his whole weight upon his shoulders; and the meane while the Surgeon must take the Patients head, about his eares, betwixt his hands, and so shake and move it to everie 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 & neck everie way. After the restoring it, the head must be inclined to the part opposite to the Luxation, and the neck must bee bound up about the dearticulation of the shoulder; but yet so, that the ligature bee not too strait, lest by pressing the weazon and gullet, it straiten the passages of breathing and swallowing.

The danger hereof.

Signes and symptomes of their subluxation.

The Cure.

Signes of their restitution.

Chap. XV.

Of the Dislocated Vertebræ *of the Back.*

THe Rack bones of the backe may bee dislocated inwards, outwards, to the right side, and to the left. We know they are dislocated inwards, when as they leave a depressed cavitie in the spine; outwardly, when they make a bunch on the backe; and wee know they are luxated to the right or left side, when as they obliquely bunch forth to this or that side. The *vertebræ* are dislocated by a

Differences and signes.

Causes.

cauſe eyther internall, or externall, as is common to all other Luxations; the internall is eyther the defluxion of humors from the whole bodie, or any part to them and their ligaments; or elſe a congeſtion proceeding from the proper and native weakeneſſe of theſe parts; or an attraction ariſing from paine and heat. The externall is a fall from high upon ſome hard bodie, a heavie and bruiſing blow, much and often ſtooping, as in Dreſſers and Lookers to Vineyards, and Paviers, decrepite old men; and alſo ſuch, as through an incureable diſlocation of the Thigh-bone, are forced in walking to ſtoope downe, and hold their hand upon their thigh. But a *vertebra* cannot be forced or thruſt inwards, unleſſe by a great deale of violence; and if it at any time happen, it is not but with the breaking of the tyes and ligaments, for they will breake 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 dulneſſe, and loſſe of ſenſe in the members lying thereunder. Neyther is reſtitution to bee hoped for, becauſe wee cannot through the belly force it into its place: the urine is then ſuppreſt, as alſo the excrements of the belly; ſometimes on the contrarie, both of them breake forth againſt the Patients minde, the knees and legges 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, runne and are carried more inwardly into the bodie. Beſides, the preſſed Spinall marrow becomes inflamed; and that being inflamed, the parts of the ſame kinde, and ſuch as are joyned thereto, are alſo inflamed by conſent, whence it happeneth, that the bladder cannot caſt forth the urine. Now where the ſinewes are preſſed, they can no more receive the irradiation of the animal facultie. Hence followes the deprivation of the ſenſe and motion in the parts whereto they are carried, therefore the contained excrements doe 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 diſlocated inwards.

Hipp. ſent. 51. ſect. 3. de art. & Gal. in com.

CHAP. XVI.

How to reſtore the Spine outwardly diſlocated.

The cure.

THe *vertebræ* 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 downe-wards, and ſtraitly to binde him about with towels under the arm-pits, & about the flanks and thighes. And then to draw and extend, as much as we can, upwards and downe-wards, yet without violence: for unleſſe ſuch extenſion be made, reſtitution is not to be hoped for, by reaſon of the proceſſes and hollowed cavities of the *vertebræ*, wherby, for the faſter knitting, they mutually receive each other. Then muſt you lye with your hands upon the extuberancie, and force in the prominent *vertebra*. But if it cannot be thus reſtored, then will it bee convenient to wrap two pieces of wood, of foure fingers long, and one thick, more or leſſe, in linnen clothes, and ſo to apply one on each ſide of the diſlocated *vertebræ*, and ſo with your hands to preſſe them againſt the bunching forth *vertebræ*, untill you force them backe into their ſeats, juſt after the manner you ſee it here delineated.

Another maner of cure.

In



In the meane 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 *vertebræ* are restored by the equall smoothnesse of the whole Spine. It is fit, after you have restored it, to binde up the part, and lay splints or plates of Lead neatly made for that purpose upon it; but so, that they may not presse the crists or middle processes of the *vertebræ*, which I formerly mentioned, but only the sides: then the Patient shall be layd upon his backe in his bed, and the splints long kept on, lest the *vertebræ* should fall out againe.

How to keep the restored *vertebræ* in their places.

CHAP. XVII.

A more particular inquirie of the Dislocation of the Vertebræ, *proceeding from an internall cause.*

THe *vertebræ* are in like sort luxated by the antecedent cause, as wee have formerly said, which is caused by the naturall imbecillitie of the parts, principally of the nervous ligament, by which all the *vertebræ* are bound each to other; this ligament comes not to the spinall marrow, but onely bindes together the *vertebræ* on their outsides. For, besides the two membranes proceeding from the two *Meninges* of the Braine, wherewith the marrow is covered, there is a third strong and nervous coate put upon it, lest, whilest the spine is diversly bended, the bended marrow should bee broken. This third coate arises from the *pericranium*, as soone as it arrives at the first *vertebra* of the necke. Now that Ligament, wherewith we said the joynts of the *vertebræ* were mutually knit and fastened, is encompassed with a tough and glutinous humor for the freeer motion of the *vertebræ*. Sometimes another cold, crude, grosse and viscide humor, confused and mixed herewith by great defluxions and catarrhes, begets a tumor, which doth not only distend the nerves proceeding forth of the holes of the *vertebræ*, but also distends the ligaments wherewith they are bound together: which so distended, and (as it were) drawne aside, do draw together with them the *vertebræ*, 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 *vertebra*, standing forth and making a bunch, is termed in Greeke *Cyphosis*, (Those thus affected we may call, *Bunch backt.*) But when it is depressed, it is named *Lordosis*, (Such we may terme, *Saddle backt.*) But when the same is luxated to the right or left side, it maketh a *Scoliosis* (or *Crookednesse*,) which wresting the spine, drawes it into the similitude of this letter S. Galen addes a fourth default of the *vertebræ*, which is, when their joynts are moved by reason of the loosenesse of their ligaments,

Cyphosis. Lordosis. Scoliosis.

Com. ad text. 2. sect. 3. lib. de art.

Seiſis. ligaments, the *vertebræ* yet remaining in their places, and he cals it a *Seiſis* (or ſhaking). They alſo note another defect peculiar to the Spinall marrow, which is, when as it (the *vertebræ* 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 ſtroake, and by all occaſions which may much ſhake, and conſequently depreſſe the ſpinall marrow, or by any other meanes 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 thinke upon: But let us returne 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 concurre with theſe internall cauſes, the *vertebræ* 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 ſelfe in forwards or backwards, or elſe the one ſhoulder to bee bigger or fuller, the other more ſpare and leane. 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 feete or legges, and never put their other hand under their backs, never ſo much as thinking that children grow moſt towards their heads.

The ſeparation of the ſpinall marrow from the encompaſſing *vertebræ*.

The error of Nurſes in binding and lacing of Children.

Chap. XVIII.

Prognoſticks of the Diſlocated Vertebræ *of the backe.*

Hipp. ſect. 6. ſect. 3. de art.

IF in Infancie it happen that the *vertebræ* of the backe ſhall bee diſlocated, the ribbs will grow little or nothing in breadth, but runne outwards before; therefore the cheſt loſeth its naturall latitude, and ſtands out with a ſharpe point. Hence they become aſthmaticke, the lungs and muſcles which ſerve for breathing, being preſſed together and ſtraitened; and that they may the eaſlier breathe, they are forced to hold up their heads, whence alſo they ſeeme to have great throats. Now becauſe the weazon being thus preſſed, the breath is carried through a ſtrait paſſage; therefore they wheaſe as they breath, and ſnort in their ſleepe, for that their lungs, which receive and ſend forth the breath or ayre, be of leſſe bigneſſe: beſides alſo, they are ſubject to great diſtillations upon their lungs, whereby it commeth to paſſe, that they are ſhorter lived. But ſuch as are bunch-backed below the midriffe, are incident to diſeaſes of the kidneyes and bladder, and have ſmaller and ſlenderer thighes and legges, and they more ſlowly and ſparingly caſt forth haire and have beards; to conclude, they are leſſe fruitfull, and more ſubject to barrenneſſe, than ſuch as have their crookedneſſe above their midriffe. The Bunches which proceede from externall cauſes are oft times cureable; but ſuch as have their originall from an inward cauſe are abſolutely uncureable, unleſſe they be withſtood at the firſt with great care & induſtrie. Wherefore ſuch as have it by kinde, never are helped. Such as, whileſt they are yet Children, before their bodies bee come to perfect growth, have their Spine crooked and bunching out, their bodies uſe not to grow at the Spine, but their legges and armes come to their perfect and full growth; yet the parts belonging to their breaſts and backe, become more ſlender. Neither is it any wonder, for ſeeing the veines, arteries, and nerves are not in their places, the ſpirits doe neither freely, nor the alimentarie juices plenteouſly flow by theſe ſtraitned paſſages, whence leanneſſe muſt needs enſue: but the limbs ſhall thence have no wrong, for that not the whole bodie, but the neighbouring parts onely are infected with the contagion of this evill. When divers *vertebræ*, following each other in order, are together and at one time diſlocated, the diſlocation is leſſe 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 ſharpe angle; wherefore being more ſtraitly preſſed, it muſt neceſſarily bee eyther broken or hurt, which is abſolutely deadly,

Why, when the ſpine is luxated, the parts belonging to the cheſt are nouriſhed and grow the leſſe.

Why the Luxation of one vertebra is more dangerous than of many.

deadly, for that it is the braines substitute. But when divers *vertebræ* 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 seeme to belong that which is pronounced by Hippocrates; A circular moving of the *vertebræ* out of their places is lesse dangerous than an angular. *Sent. 51. sect. 3. lib. de art.*

Chap. XIX.

Of the Dislocation of the Rumpe.

THe Rumpe 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 heele to his buttockes, neither, unlesse with much force, bend his knee. Going to stoole is painefull to him, neyther can he sit unlesse in a hollow chaire. That this (as it were) dislocation may bee 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 joyne 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 bee recovered about the twentieth day after it is set. During all which time the Patient must not goe to stoole, unlesse sitting upon a hollow seat, lest the bone, as yet scarce well recovered, should fall againe out of its place. The signes. The Cure.

Chap. XX.

Of the Luxation of the Ribs.

THe Ribs may by a great and bruising stroake bee dislocated, and fall from the *vertebræ* whereto they are articulated, and they may bee driven inwards, or side-waies. Of which kinde of Luxation, though there be no particular mention made by the Ancients, yet they confesse, that all the bones may fall, or be removed from their seats or cavities, wherein they are received and articulated. The signe of a Rib dislocated and slipped on one side, is, a manifest inequality, which here makes a hollownesse, and there a bunching forth; but it is a signe that it is driven in, when as there is only a depressed cavitie where it is knit and fastened to the *vertebræ*. Such dislocations cause divers symptomes, as difficulty of breathing, the hurt rib hindring the free moving of the chest; a painfulnesse in bowing downe, or lifting up the bodie, occasioned by a paine 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 bee forthwith restored, then the puffing up of the flesh must bee helped. Wherefore, if the dislocated Rib shall fall upon the upper side of the *vertebra*, the Patient shall be set upright, hanging by his armes upon the toppe of some high doore or window: then the head of the rib, where it stands forth, shalbe pressed downe, untill it be put into its cavity. Againe, if the rib shall fall out upon the lower side of the *vertebra*, it will be requisite, that the Patient bend his face downewards, 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. Causes. Signes. Cure. *Gal. Com. ad sent. 3. sect. 1. de art.*

Chap.

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 cavitie of the shoulder-blade is not very deepe; and besides, it is every where smooth and polite, no otherwise 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 legge and knee. Wherein notwithstanding, we must not thinke nature defective, but rather admire Gods providence in this thing; for that this articulation serves not onely for extension and bending, as that of the Elbow, but besides, for a round or circular motion, as that which carries the arme round about, now up, then downe, according to each difference of site. The shoulder-bone, which Hippocrates cals the Arme-bone, may be dislocated foure manner of waies; upwards, downe-wards, or into the Arme-pit, forwards and outwards, but never backwards, or to the hinde part. For, seeing that there the cavitie of the blade-bone, which receives the head of the arm-bone, which Hippocrates cals a Joynt, lyes and stands againſt it; who is it that can but imagin any such dislocation? In like sort it is never dislocated inwardly, for on this part it hath the flesh of a strong muscle, termed *Deltoides*, lying over it, besides also the backe and *acromion* of the Blade, and lastly, the anker-like or beake-like processe, all which foure hinder this joynt from slipping inwards. Now Hippocrates saith, that he hath only seene one kinde of Dislocation of this bone, to wit, that which is downe-wards or to the arme-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 down-wards into the Arme-pit, a depressed cavitie may bee perceived in the upper part of the joynt; the *acromion* of the Blade shewes more sharpe and standing forth than ordinarie, for that the head of the shoulder-bone is slipt downe, and hid under the arme-pit, causing a swelling forth in that place; the Elbow also casts it selfe (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 eare on that side, neyther to his mouth, nor shoulder. Which signe is not peculiar to the luxated shoulder, but common to it, affected with a contusion, fracture, inflammation, wound, abscesse, *scirrhus*, or any defluxion upon the nerves, arising out of the *vertebræ* of the neck, and sent into the arme: also this arme is longer than the other. Lastly (which also is common to each difference of a luxated shoulder) the Patient can move his arme by no kinde of motion without sense of paine, by reason of the extended and pressed muscles, some also of their fibres being broken. There are sixe wayes to restore the shoulder luxated down-wards into the arme-pit. The first is, when it is performed with ones fist, or a towell. The second, with a clew of yarne, which put under the arme-pit, shall be thrust up with ones heele. The third, with ones shoulder put under the Arme-hole, which maner, 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 Arme-pit, and then the Arme 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*. Wee will describe these sixe waies, and present them to your view.

Why there is no internall ligament from the arme-bone to the shoulder blade.

Differences of a luxated shoulder.

Sent. 1. sect. 1. lib. de art.

Signes of the shoulder dislocated downewards.

The waies to restore it.

Chap.

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 joynt of the Shoulder, lest he move up and downe with his whole bodie, at the necessarie extension, working and putting it in: then let another, taking hold of his arme above the elbow, so draw and extend it downe-wards, that the head thereof may be set just against its cavitie, hollowed in the blade-bone. Then at last let the Surgeon lift and force up with his fist the head of the bone into its cavitie. Here this is chiefly to be observed, that in fresh luxations, especially in a bodie soft, effeminate, moist, and not over corpulent, that it sometimes comes to passe, that by the only meanes of just extension, the head of the bone, freed from the muscles and other particles wherewith it was, as it were, intangled, will betake it selfe into its proper cavitie; the muscles being by this meanes 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, whilest we thought no such thing, it sufficed for restitution only to have extended the arme. But if the Luxation bee inveterate, and the hand cannot serve, then must the Patients shoulder be fastned to a Poste with the forementioned Ligature, or else committed to ones charge, who may stand at his backe, and hold him fast. Then the arme shall presently be tyed about, a little above the elbow, with a fillet, whereto a cord shall be fastened; which, being put or fastened to the Pulley, shall be drawne or stretched forth, as much as need shall require. Lastly the Surgeon, with a towell, or such like Ligature, fastened about his necke, and hanging down, and so put under the Patients arme-pit neare to the Luxation, shall, raising himselfe upon his feete with the whole strength of his necke, lift up the shoulder, and also at the same time bringing his arme to the Patients breast, shall set the head of the shoulder-bone, forced with both his hands into its cavitie, as you may see by this ensuing figure.

Gal. com. ad sent. 23. sect. 1. de art.

A perfect setting the luxated shoulder by extension only.

An expression of the first manner of putting a Shoulder into Joynt.



Then must you cover all the adjacent parts with a medicine made *ex farina volatili, bolo armenio, myrtillis, pice, resina & alumine*, beaten into powder, and mixed with

with the white of an egge. Then muſt the hollowneſſe under the arm be filled with a clew of Woollen or Cotton yarne, or a linnen cloth ſpred over with a little oyle of Roſes or Myrtles, a little vinegar, and *unguentum roſatum*, or *infrigidans Galeni*, leſt it ſticke to the haires, if there be any there. The part muſt afterwards be bound up with a ligature, conſiſting of two heads, of ſome five fingers breadth, and two ells long, more or leſſe, according as the bodie ſhall require. The midſt thereof ſhall be put immediately under the arme-pit, and then croſſed over the lame ſhoulder, and ſo croſſing it as much as ſhalbe fit, it ſhall be wrapped under the oppoſite arme. And laſtly, the arme ſhall be layd upon the breaſt, and put in a ſcarfe, in a middle figure almoſt to right angles, ſo that by lifting up the hand hee may almoſt touch his ſound ſhoulder, leſt the bone, newly ſet, may fall out againe; neyther ſhall the firſt dreſſing be ſtirred, untill foure or five daies be paſt, unleſſe the greatneſſe of ſome happening ſymptome divert us from this our purpoſe.

CHAP. XXIII.

Of the ſecond manner of reſtoring a Shoulder, that is, with the heele; when as the Patient by reaſon of paine can neither ſit, nor ſtand.

Hipp. ſen. 12. ſect. 1. de art.

THe Patient muſt be layd with his backe on the ground upon a Cover-lid, or Mat, and a clew of yarne or leathern-ball, ſtuffed with tow or cotton, of ſuch bigneſſe as may ſerve to fill up the cavitie, muſt be put under his arm-pit, that ſo the bone may ſtraight-wayes the more eaſily be forced by the heele into its cavitie. 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 heele to the ball, which filled up the arme-pit; but if the left, then the left heele: then let him forthwith draw towards him the Patients arme, taking hold thereof with both his hands, and at the ſame inſtant of time ſtrongly preſſe the arme-pit with his heele. Whilſt this is in doing, one ſhall ſtand at the Patients backe, who ſhall lift up his ſhoulder with a towell, or ſome ſuch thing fitted for that purpoſe, and alſo with his heele preſſe downe 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 following figure.

The expreſſion of the ſecond manner of reſtoring a Shoulder.



CHAP.

CHAP. XXIV.

Of the third manner of restoring a Shoulder.

SOme one who is of a competent height and strength shall put the sharpe part of the toppe of his shoulder under the Patients arme-pit, and also at the same time shall somewhat violently draw his arme towards his owne breast, so that the Patients whole bodie may (as it were) hang thereby. In the meane time another, for the greater impression, shall lay his weight on the luxated shoulder, shaking it with his whole bodie. Thus the shoulder, drawne downe-wards by the one which stands under the arme-hole, and moved and shaken by the other, who hangs upon it, may bee restored into its seat, by the helpe of the Surgeon concurring therewith, and with his hand governing these violent motions, as the following figure shews.

The figure of the third manner of putting a Shoulder into Joynt.



CHAP. XXV.

Of the fourth manner of restoring a dislocated Shoulder.

YOu 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 sixe foote long; in the midst hereof let there bee fastened a clew of yarne, or ball of sufficient bignesse to fill up the cavitie of the arme-hole. Let there be two pins put in, one on each side of the ball, each alike distant there-from, with which, as with stayes, 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, eyther by nature or art, put this perch upon their shoulders; then let the Patient put his arme-pit upon that place where the ball stands

ſtands up; the Surgeon muſt be ready to pull his hanging arme downe-wards. Thus the Patient ſhall (as it were) hang on the perch with his ſhoulder, and ſo the head of the bone ſhall bee forced into its cavitie, as this enſuing Figure declares; wherein you may ſee the perch or yoake, with the two woodden pins and ball faſtened in the midſt, delineated by its ſelfe.

The figure of the fourth manner of reſtoring the Shoulder.



Chap. XXVI.

Of the fifth manner of putting the Shoulder into joynt, which is performed by a Ladder.

YOu may alſo reſtore a Shoulder diſlocated into the Arme-pit, by the helpe of a Ladder, after the following manner. Let ſome round body, as a ball, or clew of yarne, which (as we formerly ſaid) may ſerve to fill the Arme-pit, be faſtened upon one of the upper ſteps of a Ladder; at the foot of the Ladder ſet a low ſtoole, whereupon let the Patient mount; then binde both his legges, and alſo his ſound arme behind his back, leſt, when you are about your operation, he hinder and ſpoyle all you doe, by laying his hand, or ſetting his foote upon the Ladder. Then let his Arme be preſently put over the ſtep of the Ladder, and his Arme-pit put upon the there faſtened ball, the Patient in the meane while being wiſhed to come with his whole body as neare 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 bee no ſmall danger of breaking the ſhoulder-bone. Alſo let him take heede, that he put not his head betweene the ſteps. Then his Arme, bound above the Elbow with filletting, or ſome other ligature fit for that purpoſe, ſhall be drawne downe by the hand of ſome that aſſiſt you, and at the ſame time let the ſtoole be plucked from under his feet, ſo that hee may hang upon the Ladder. Thus by this meanes the head of the Shoulder will bee reſtored by its ſelfe, the endeavour of the Surgeon aſſiſting, and preſſing downe the

Shoulder-

shoulder-blade, and moving it to and againe. The bone being set, the stoole, which a little before was plucked from under the Patients feet, shall be put there againe, that he may, with the more ease and lesse paine, pull backe his Arme 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 stayed, the head of the bone might fall out againe. I have thought good to have all these things here expressed, that you may learne this operation, as if you see it done before you.

The delineation of the fifth manner of restoring a Shoulder.



I have not thought fit in this place to omit the industrie of Nicholas Picart, the Duke of Guise his Surgeon; who being called to a certaine Countrey-man to set his Shoulder being out of joynt, and finding none in the place besides the Patient and his wife, who might assist him in this worke, hee put the Patient, bound after the forementioned manner, to a Ladder; then immediately hee tyed a staffe at the lower end of the Ligature, which was fastened about the Patients arme above his Elbow; then put it so tyed under one of the steps of the Ladder, as low as he could, and got astride thereupon, and sate thereon with his whole weight, and at the same instant made his wife to plucke the stoole 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, layd a-croſſe upon two Poſts. Alſo you may uſe a doore, as the other figure ſhewes, wherein you muſt obſerve a flat piece of Wood or *ſpatula* with ſtrings thereat, whoſe uſe ſhal be ſhowne in the following Chapter.

Chap. XXVII.

The ſixth manner of reſtoring a Shoulder, luxated into the Arme-pit.

Sect. 1. lib. 1. de artic. ſent. 19.

Hippocrates writes, that this is the beſt way of all to reſtore a diſlocated Shoulder. You muſt take a woodden *ſpatula* of ſome foure or five fingers breadth, and ſome two fingers thickneſſe or leſſe, but ſome yard or thereupon long; the one end thereof muſt bee narrow and thin, with a round head ſtanding up and lightly hollowed, that put under the Arme-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 bee wrapped about with a linnen or woollen ragge, or ſome ſuch ſoft thing, that it may be the ſofter, and hurt the leſſe; and then it muſt be ſo thruſt under the Arme-pit, that it may throughly penetrate into the inner part betweene 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 arme, ſtretched all the length thereof even to the fingers, in one place a little below the head of the ſhoulder-bone, in another a little above the elbow, and the third at the wreſt, that ſo they may hold it firme. Therefore let the diſtances of the holes bee fitted to this purpoſe; but principally you muſt have a care of this, that the upper part of the

The deſcription of the Gloſſocomium termed Ancli.

ſpatula,

ſpatula reaching beyond the head of the arme, enter even to the innermoſt Cavity of the arme-pit; then, a croſſe pin or piece of wood muſt be made faſt through two poſtes or a frame, & well faſtened thereto, and therupon the Arme with the *ſpatula* muſt be ſo put over, that the pin may be under the arme-pit, the body weighing one way, and the arme another: which being done, the arme muſt be drawn down one way, and the body another about the pin. Now this croſſe pin muſt bee put on ſuch a height that the patient may ſtand on tipp-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 poſtes, and ſuch like things as ſhall bee 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 arme-pit without good ſucceſſe, unleſſe by chance (which alſo is noted by *Hippocrates*) that the fleſh is growne into the cavity, and the head of the bone hath made it ſelfe another cavity in the place whereinto it is fallen; for in this caſe the bone will either not bee reſtored, or elſe not remaine in its place, but fall backe 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 deſpaire and preſently deſiſt from their entended operation, but they muſt winde about, and gently move the joint: for ſo at the length it will bee more eaſily moved, and enter into the naturall cavity. When it is in, it muſt bee bound up with compreſſes and rowlers after the forementioned manner. *Sect. 1. de artic. ſent. 21.*

To the former figures I have thought good to adde this, which expreſſeth the maner of reſtoring a ſhoulder luxated into the arme-pit with a *ſpatula*, after the manner of *Hippocrates*. This *ſpatula* faſtened with an iron pin to the ſtanding frame may be turned, lifted up, and preſſed downe at your pleaſure. A. ſhewes the wooden *ſpatula*. B. The frame or ſtanding poſtes. *Hip. ſent. 64. 4. de artic.*

Hippocrates his Gloſſocomium termed Ambi.



For the more certaine uſe of this inſtrument the patient muſt ſit upon a ſeate which muſt be ſomewhat lower than the ſtanding frame, that ſo the *ſpatula* which is thruſt into the arme-pit may be the more forcibly depreſt, ſo to force in the head of the ſhoulder-bone; the patients feete muſt alſo be tyed, that hee may not raiſe himſelfe up whileſt the Surgeon endevours to reſtore it. Now he ſhall then endevour to reſtore it, when he ſhall have bound the ſtretched forth arme of the diſlocated ſhoulder unto the *ſpatula*, & thruſt the one end therof under the ſlipped forth head of the ſhoulder bone, as wee have formerly ſhewed; for then by preſſing downe 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 ex- How to make uſe of the *Ambi*

preſſed by it ſelfe, 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 arme, that it may be kept ſteddy, as you may perceive by the enſuing figure.

The figure of an Ambi fitted to a diſlocated ſhoulder.



There are other additions to this *Ambi*, whoſe figure I now exhibited to your view, by the invention of *Nicholas Picart* the Duke of *Lorrain's* Surgion, the uſe and knowledge whereof, beſtowed upon mee by the inventor himſelfe, I would not envie the ſtudious reader.

Another figure of an Ambi with the additaments.



AA

AA. Shew the two eares, as it were, stops made to hold and keep in the top of the shoulder, lest it should slippe out when it is put into the frame or supporter.
BB. The frame or supporter whereon the *Ambi* rests.
CC. The pin or axeltree which fastens the *Ambi* to the supporter.
DD. Screw-pinnes to fasten the foote of the supporter that it stirre not in the operation.
EE. The holes in the foote of the supporter, whereby you may fasten the screw-pins to the floore.

Chap. XXVIII.

How to restore a shoulder dislocated forewards.

IT is seldome that the shoulder is luxated towards the forefide; yet there is nothing so stable and firme in our bodies which may not be violated by a violent assault; so that those bones doe also fall out of joint, whose articulations are strengthened for the firmer connexion with fleshly, nervous, gristly and bony stayes or barres. This you may perceive by this kinde 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 kinde of dislocation, which was observed five times by *Galen*. I professe I have seene it but once, and that was in a certaine Nun, which weary of the Nunnery, cast her selfe downe out of a window, and bore the fall and weight of her body upon her elbow, so that her shoulder was dislocated forewards. This kinde of dislocation is knowne 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 meanes as other luxations of other parts, to wit, by strait holding, extending, and forcing in. Therefore the patient must bee placed upon the ground with his face upwards, and then you must extend the shoulder otherwise than you doe when it is luxated into the arme-pit. For when it falleth into the arme-hole, it is first drawne forewards, then forced upwards, untill it bee brought just against the cavity whereinto it must enter. But in this kinde of luxation, becaufe the toppe 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 backe of the patient, who may draw backe a stronge and broade Bandage cast about the arme-pit (such as is the *Carchesius*, which consists of two contrary and continued strings) lest that when the arme shall be extended, the shoulder follow: also you must put a clew of yarne to fill up the armepit. Then must you extend the arme, casting another ligature a little above the elbow, and in the interim have a care that the head thereof fall not into the arme-pit, which may be done both by putting the forementioned clew under the arme, and drawing the head another way; then must you permit, by slacking your extension, the joint freed from the encompassing muscles, to be drawne 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 bee restored, and such extension onely is sufficient thereto.

Com. ad sect. 2. & 23. sect. 1. de artic.

Signes.

Cure.

Sect. 23. sect. 1. de art.

CHAP. XXIX.

Of the ſhoulder luxated outwardly.

Signes. THE diſlocation alſo of the ſhoulder to the outward parts ſeldom happens; but yet, if it may at any time happen, the extenſion of the arme will bee 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 bee laid flat on his belly, and the elbow muſt be forcibly drawne contrary to that whereto it is fled, to wit, inwardly to the breaſt; and alſo the ſtanding forth head of the arm-bone, muſt bee forced into its cavity, for thus it ſhall bee eaſily reſtored. But into what part ſoever the ſhoulder-bone is diſlocated, the arme muſt be extended and drawne directly downewards. After the reſtitution fitting medicines ſhall be put about the joint. Let there bee ſomewhat put into the arme-pit which may fill it up, and let compreſſes or boulſters bee 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 armepit, and ſo brought acroſſe upon the joint of the ſhoulder, and thence carried unto the oppoſite arme-pit by ſo many windings as ſhall be judged requiſite. Then the arme muſt be put and carried in a ſcarfe to right angles, which figure muſt be obſerved not onely in every luxation of the ſhoulder, but in each fracture of the arme alſo, for that it is leſſe painefull, and conſequently, ſuch as the arme may ſtand the longeſt therein without moving.

The cure.

What to bee done to hold in the ſhoulder after it is reſtored.

CHAP. XXX.

Of the ſhoulder diſlocated upwards.

Signes. THE head of the ſhoulder alſo may ſometimes bee luxated into the upper part. Which when it happens, it ſhewes it ſelfe by bunching forth at the end of the Collar bone, the hollowneſs of the arme-pit is found larger than uſuall, the elbow flyes further from the ribs than when it fell downewards, now the arme is wholly unable to performe the uſuall actions. It is fit for the reſtitution of ſuch a luxation, that the Surgeon ſtoope downe, and put his ſhoulder under the patients arme, and then ſtand up as high as he can upon his feete, and therewithall preſſe downe the head of the ſhoulder-bone into the cavity, or elſe make ſome other to doe it. Otherwiſe it is fit to lay the Patient upon his backe on the ground, and whileſt ſome one extends the affected arme by drawing it downewards, the Surgeon with his owne hand may force downe the head of the bone into its cavity. The operation performed, the ſame things ſhall bee 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 foure forementioned kindes of diſlocations, that the bone which was luxated is reſtored, by the ſound which ſhall bee 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 paine, and laſtly by the collation and comparing of the affected arme with the ſound, and by its ſimilitude and equality therewith.

Cure.

Chap. XXXI.

Of the dislocation of the Elbow.

THe Elbow may also be foure manner of wayes dislocated, to wit, inwardly, outwardly, upwards and downewards. By the part which is inwards, I meane that which lookes towards the center of the body, when as the arme is placed in a naturall site, to wit, in a middle figure betweene prone and supine; I make the outward part, that which is contrary thereto. By the upper part I meane 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, than 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 arme doe receive and enter each other by that manner of articulation which is termed *Ginglymus*, as wee 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 orbe, and by an absolute turning. Wherefore if at any time the cubit be bended more straitly and closely than that the inner processe can retaine its place and station in the bottom of its *sinus*, the hinde processe falleth out and is dislocated backwards. But when as the fore-processe is extended more violently, and forced against the bottom of its cavity, it flyes and departs out of its place as beaten or forced thence, and this kinde of luxation is farre more difficultly restored than the former: adde hereunto that the utter extremitie of the cubite, which is called *Olecranum*, 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. Therfore such a dislocation is caused by a more violent force, than that which is made to the inner side. The signe of this luxation is, the arme remaines 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 *Olecranum*; 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 arme is crooked, neither is it extended, and it is also shorter than the other. But if the elbow bee fallen out of its place according to the other manner of dislocations, to wit, upwards or downewards, the naturall figure thereof is perverted, for the arme is stretched forth, but little notwithstanding bended towards that part from whence the bone went, that is, figured after a middle manner betweene bending and extending thereof. What kinde soever of dislocation shall befall it, the action of the Elbow will either not bee at all, or certainely not well untill that it be restored to its former place; there is a swelling in the part wherinto it is flowne, 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 againe, especially if that you doe not prevent inflammation, for being inflamed it makes the restitution either difficult, or wholly impossible, principally that which falleth outwards.

The Author seems not to agree with *Hipp. Sent. aff. Sect. 3. fract.* and *Celsus* in the setting down the kinds of a dislocated Elbow.

The Author doth not agree with *Hippocrates* and *Celsus*, in setting downe 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 out part; and those which are here attributed to the elbow dislocated upwards & downwards; those *Celsus* hath attributed to a dislocation to the out and in sides.

Inflamation hinders reposition.

Chap. XXXII.

How to restore the Elbow, dislocated outwardly.

YOu may know that the elbow is dislocated outwardly, if at any time you shall observe the arme to be distended, and not able to be bended. Wherefore you must forthwith undertake the restitution thereof, for feare of defluxion and inflammation, which the bitternesse of pain usually causeth, upon what part soever the luxation happen. There is one manner of restoring it, which

Signe.

Cure.

which is, you muſt cauſe one to hold hard and ſteddy the patients arme a little under the joint of the ſhoulder, and in the meane while let the Surgeon draw the arme, 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 arme, wreſting it gently this way and that way, that he may bring back the bone which fell out into its cavity. I have thus expreſſely delivered this, that the young Surgeon may underſtand, that the arme muſt not be bended for the reſtoring of this kinde of diſlocation; for reſtitution cannot ſo be hoped for, becauſe by this kind of luxation the inner proceſſe of the cubit poſſeſſeth the place of the exteriour proceſſe in the cavity of the ſhoulder-bone. Wherefore, whileſt the arme is bended or crooked, the cubit is onely lifted up, and not drawne into its ſeat. But if wee cannot attaine to the reſtitution thereof with our hands alone, you muſt cauſe the diſlocated arme lightly bended to embrace a poſte, then muſt the end of the cubit called *Olecranum* be tyed or bound about with a ſtrong ligature or line, and then wreſted into its cavity by putting a battoon or ſtaffe into the ligature, as is demonſtrated by this enſuing figure.

A Caution.

A figure which ſhewes the way how to reſtore the Elbow, by putting it about a poſte, with a battoone.



A figure which ſhewes 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 breadth is caſt about the *Olecranum* of the arme, embracing a poſte or pillar, and it is drawn ſo long, untill the diſlocated bone be brought into its ſeat. Now wee know that the bone is returned into its place, and reſtored, when the paine ceaſeth, and the figure and whole naturall conformation is reſtored to the arme, and the bending and extending thereof is eaſie, and not painefull.

Chap.

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 be 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 doe suddenly force the Elbow to the shoulder, as we 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 holde thereof at the shoulder and wrest, 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, he shall lay the arme in a straight angle, and so binde it up, and apply fit medicines formerly mentioned, and so let him carry it in a scarfe put about his necke, as wee 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 downewards, and also extend and bend his arme, yea, and also to attempt to lift up some heavie thing with his hand; for so it will come to passe, that the ligaments of this joynt may become more softe, ready, and able to performe their accustomed functions, and also the bones of the cubite and shoulder shall bee freed from the affect termed *Ancylosis*, whereto they are incident by the luxations of this part. Now *Ancylosis* is a certaine preternaturall agglutination, co-agmentation, and as it were union of sundry and severall bones in the same joynt, 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 joynt, by reason that by rest and cessation from the accustomed actions, a viscide humor which is placed naturally in the joynts, as also another which is preternaturall, drawne thither by paine, floweth downe, and is hardned, 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 bee 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 cubite 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 eminencie 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 wrest by *Diathrosis*, 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 bind it, & apply thereto very astringent & drying medicines. 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

Differences and causes.

Cure.

Sent. 1. sect. 2. & sent. ult. sect. 3. de fract.

thing we have read, observed by *Hippocrates*; when (saith he) 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; for 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 bee 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 Wrest.

Here, as before chap. 31, the Author dissents from *Celsus* and *Hippocrates* in expressing the names and signes of these dislocations.

WEe understand by the wrest, a certaine bony body, consisting of a composure of eight bones knit to the whole cubit by *Diarthrosis*. For the wrest considered wholly in its selfe, is knit and articulated with the Ell & 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, & towards the sides. We say it is luxated inwardly when the hand stands upwards, but outwardly, when it is crookt in & 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 befals to this or that side. The cause hereof may seem to depend upon the different dearticulation of the Ell and wand with the hand or wrest. For the wand, which is articulated on the lower part with the wrest at the thumbe, by its upper part, whileſt it receives the outward swelling or condyle of the Ell in its cavity, performs 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 wrest, 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 arm 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 bee the lower in its site and place, and the part whether 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 Wrest.

Signe.

THe wrest consists of eight bones, which cannot unlesse by extraordinary violence bee put or fall out of their places. Yet if they shall at any time fall out, they will shew it by the tumor of the part whereto they are gone, and by the depression of that wherefrom they are fled. They may bee restored, if the diseased hand bee extended upon a table; and if the bones shall be dislocated inwards, the hand shall bee placed with the palme upwards, then

Cure.

the Surgeon shall, with the palme of his hand, presse downe the eminencies of the bones, and force each bone into its place. But if the luxation bee outwards, he 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 conteined in their places with fit remedies, binding, rowling, and carrying the hand in a scarfe.

CHAP.

Chap. XXXVII.

Of the dislocated bones of the After-wrest.

THere are foure bones in the Palme or After-wrest, the two middlemost whereof cannot be dislocated sidewayes, because 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 rests, bee dislocated towards that side which is next the middle bones, whereof wee now spake, but onely on the other side, freed from the neighbour-hood of the bones: but all of them may be dislocated inwardly and outwardly. They may be restored as those of the Wrest. *Celsus lib. 8. Cap. 18.*

Chap. XXXVIII.

Of the dislocated Fingers.

ALso the bones of the fingers may bee foure severall waies dislocated, inwardly, outwardly, and towards each side. To restore them, they must bee laid straight upon a table, and so put into joint againe. For thus they may bee easily restored, by reason their sockets are not deepe, and their joints are shorter, and ligaments lesse stronge. In twelve dayes space they will recover their strength, as also those dislocations that happen to the Wrest and After-wrest. Why the dislocated fingers may be easily restored.

Chap. XXXIX.

Of a dislocated Thigh or Hipp.

THe Thigh or Hipp may be dislocated, and fall forth towards all the foure parts. But most frequently inwards, next to that outwards, but very seldom either forwards or backwards. A subluxation cannot happen in this joint, as neither in the shoulder, especially from an externall cause, contrary to which it usually happens in the elbow, hand, knee, and foot. The cause hereof is, for that the heads of the thigh and shoulder-bone are exactly round, and the sockets which receive them have certaine borders and edges encompassing them: hereunto may be added, that strong muscles encompasse each dearticulation, so that it cannot come to passe that part of the heads of such bones may bee conteined in the cavity, 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 strength of the encompassing muscles. But a subluxation may seeme to happen in these parts from an internall cause. For then the ligaments and tyes being softened and relaxed, cannot draw and carry back the head of the bone standing forth so far as the edges of the socket. If the Hip be dislocated towards the inner part, that leg becomes longer and larger than the other, but the knee appeares somewhat lower, and looks outwardly with the whole foote, neither can the patient stand upon his leg. To conclude, the head of the Thigh-bone bewrayes it selfe lying in the groin, with a swelling manifest both to the eye and hand; now the legge is longer than that which is sound, for that the head of the thigh is out of its 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, because necessarily the lower head of the thigh-bone stands contrary to the socket. For this is common to all dislocated bones, that when as the dislocation happens towards the one side, the other end of the bone flyes out to the contrary. *Hip. sent. 68. sect. 3. de art.* *Gal. com. ad sent. 47. sect. 4. de art.* A subluxation may befall the Thigh from an internall cause.

Whence

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 looke outwards. The like happens in other dislocations. The leg cannot be bended towards the groine, for that the dislocated bone holds the extending muscles of the same part so stiffely stretched out, that they cannot yeeld, or apply themselves to the benders. For flexion or bending ought to precede extension, and extension flexion.

Chap. XL.

Prognosticks belonging to a dislocated Hipp.

Why the thigh-bone dislocated is difficultly restored, or restored easily falls out againe.

THere is this danger in the dislocations of the Hipp, that either the bone cannot bee put into the place againe, at least unlesse with very much trouble, or else being put in, that it may presently fall out againe. For if the tendons of the muscles, the ligaments, and other nervous parts of the member be hard and strong, they by reason of their contumacy and stiffenesse will hardly suffer the bone to returne to its place. If that they bee soft, loose, effeminate and weake, they will not containe the restored bone in its place. Neither will it be any better contained, if that short, but yet strong and round, ligament, which fastens the head of the Thigh-bone on the inside in the Socket or Cavity of the huckle bone, bee broken or relaxed. Now it may be broken by some violent shocke or accident, it may bee relaxed by the congestion and long stay of some excrementitious, tough, and viscous humour lying about the joint, through which meanes it waxeth soft. But if it be broken, how often soever the bone be restored, it will presently fall out againe. If it bee relaxed, there is onely this hope to containe the restored bone, that is, to consume and draw away the heaped up humidity by application of medicines and Cauteries of both kindes, for which purpose those are more effectuall which doe actually burne, for that they dry and strengthen more powerfully. Leanenesse of the body, and the want of *Aponeuroses*, that is, of broad tendont and externall ligaments, wherof many encompasse the knee, encreases the difficulty of containing it in the place. But the parts adjoyning to the dislocated & not set bone fall away by little & little, and consume with an *Atrophia* or want of nourishment; both because the part it self is forced to desist from the accustomed actions and functions, as also for that the veines, arteries, and nerves 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 comes to passe, that the part it self made more weak, the native heat being debilitated through idlenesse, it can neither attract the alimentary juice, neither can it digest & assimulate that little therof which flowes and falleth thereto. Verily the Thigh-bone, as long as it is forth of the cavity, growes no more, after the manner as the other bones of the body doe, and therefore in some space of time you may perceive it to bee shorter than the sound bone. Notwithstanding the bones of the legge and foote are not hindered of their growth, for that they are not out of their proper places. Now for that the whole leg appears more slender, you must think that happens only by the extenuation & leanenesse of the proper muscles thereof. The same thing happens to the whole hand, in the largest acception, when as the shoulder is out of joint, unlesse that the calamity and losse hereof is the lesse. For the shoulder being forth of joint you may do something with your hand, whereby it will come to passe that no small portion of nourishment may flow downe into these parts. But the Thigh-bone being dislocated, especially inwards in a child unborn, or an infant, much lesse alimentary nourishment flowes to that part, because it can much lesse use the foot and legge by reason of the dislocation of the Hipp, than it can doe 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 doe decrease or are hindred from their just growth, to bee onely in those who have not yet attained to their full and naturally appointed growth

The breaking and relaxation of the internall ligament.

Gal. com. ad text. 42 sect. 4. de art.

Hippocrates explained sect 1. & 3. lib. de art.

growth in every demension. For in men of full growth, the bones which are not restored, become more slender, but yet no shorter, as appeares by that which hee hath delivered of the shoulder.

CHAP. XLI.

Of the signes of the Hipp, dislocated outwardly or inwardly.

THe thigh-bone or Hipp when it is dislocated outwardly, and not restored, after some time the paine is asswaged, and flesh growes about it, the head of the bone weares it selfe a new cavity in the adjoyning Hipp, whereinto it betakes it selfe, so that at the length the patients may go without a staffe, neither so deformed a leanesse will waste their legge. But if the luxation happen inwards, a greater leanesse will befall them, by reason that the vessels naturally run more inwardly, as *Galen* observes in the dislocation of the *Vertebræ* to the inside; therefore it comes to passe that they are more grievously oppressed: besides the thigh-bone cannot wagge or once stirre against the share-bone: wherefore if the bone thus dislocated bee not restored to its joynt againe, then they must cast their legge about as they walke, just as wee see oxen doe. Wherefore the sound legge whilest they go, takes much lesse space than the lame, because this, whilest it stirreth or moveth, must necessarily fetch a compasse about, but that performeth its motion in a right line. Besides, whilest the patients stand upon their lame legge to put forwards the sound, they are forced to stand crooked, whereupon they are forced to stay themselves with a staffe that they fall not. *Ad sect. 51. sect. 3 3 de art.*

Furthermore those who have this bone dislocated either backwards or outwards, so that it cannot bee restored, have the part it selfe grow stiffe and hard; which is the cause why the ham may bee bended without great paine, and they may stand, and goe upon the tops of their toes; besides also, when they desire ro goe faster, they are forced to stoope, and strengthen themselves by laying their hand on their lame thigh at every step, both for that their lame legge is the shorter, as also because the whole weight of the body should not lye wholly or perpendicularly upon the joynt or head of the thigh-bone. Yet in continuance of time, when they are used to it, they may goe without any staffe in their hands. Yet in the interim, the sound leg becomes more deformed in the composure & figure, because, whilest it succours the opposite and lame leg by the firme standing on the ground, it beares the weight of the whole body, 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 joynt, if the patient be arrived at his full growth, after that the head of the bone hath made it selfe a cavity in the neighbouring bone wherein it may rest, he may bee able to walke without a staffe, because the dislocated leg cannot easily be bended towards the groine or ham, and he will sooner rest upon his heele than upon his toes. This kinde of dislocation if it bee inveterate, can never be restored. And these things happen, when as the thigh-bone is dislocated inwards, or when the internall ligament which fastens the dearticulation shall be broken or relaxed. But the contrary shall plainely appeare if the dislocation shall happen to bee outwards; for then the lame legge becomes the shorter, because the head of the thigh flyes into a place higher than its cavity, and the muscles of that part are contracted towards their originall, and convulsively draw the bone upwards together with them. The whole leg, together with the knee and foot looketh inwards, they cannot goe upon their heels, but upon the setting on of the toes. The legge may bee bended, which it cannot bee in a dislocation of the thigh inwards, as *Paulus* shewes. Therefore wee must diligently observe that sentence of *Hippocrates* which is read with a negative, in these words. *Sed neque conflectere quemadmodum sanum crus possunt*, that they ought to bee read with an affirmative after this manner. *Sed conflectere &c. quin & crus ipsum &c.* But now the lame legge will better sustaine the weight of the body in an externall, than in an internall dislocation; for then the head of the thigh is more perpendi-

Signes of the thigh-bone dislocated outwards.

Paul. Æg. lib. 6. cap 8. Hip sect. 91. sect. 3. lib. 6. aph.

pendicularly subject to the whole weight of the body. Therefore when in succesſe of time it ſhall by wearing have made it ſelfe a cavity in the neighbouring bone, which in time will be confirmed, ſo that there will remaine no hope of reſtoring the diſlocation, nevertheleſſe the patient ſhall be able to goe without a ſtaffe, for that then no ſenſe of paine will trouble him; whence it followes, that the whole leg alſo will become leſſe leane, for that going is leſſe painfull, neither are the veſſels ſo much preſſed as in that diſlocation which is made inwardly.

Chap. XLII.

Of the thigh-bone diſlocated forewards.

IT ſeldome happeneth that the thigh is diſlocated forwards; yet when as it ſhall happen, it is knowne by theſe ſignes. The head of the thigh lyeth towards the ſhare; whence the groines ſwell up, and the buttocke on the contrary is wrinkled and extenuated by reaſon of the contraction of the muſcles; the patient cannot extend his leg without paine, no verily, not ſo much as bend it towards the groine, for that the fore muſcle which ariſeth from the haunch-bone, is ſo preſſed by the head of the thigh, that it cannot be diſtended; neither can the ham be bended without very much paine. But the lame legge is equall at the heel with the other leg, yet the patient cannot ſtand upon the ſetting on of the toes; therefore when he is forced to goe, hee toucheth the ground with his heel only, yea, verily the ſole of his foot is leſſe inclined to the fore ſide, neither doth it ſelldome happen, that the urine, by this accident, is ſuppreſt; becauſe the head of the thigh oppreſſes the greater nerves from whence thoſe ariſe which are carryed to the bladder, which through the occaſion of this compreſſion is pained and inflamed by conſent: now when inflammation ſhall ſeaze upon the *Sphinct* muſcle, the urine can ſcarcely flow out, for that it is hindred by the ſwelling.

Stopping of urine by reaſon of an internall diſlocation of the thigh-bone.

Chap. XLIII.

Of the thigh-bone diſlocated backwards.

SEldome alſo is the thigh-bone 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 legge by reaſon of the much compreſſion and tenſion of the muſcles which encompaſſe the head of the thigh by this kind of luxation. But the pain is encreaſed when he would bend his ham, for that then the muſcles are the more ſtrongly extended. The lame leg is ſhorter than the ſound: when the Buttocks are preſſed, the head of the thigh is perceiued hid amongſt the muſcles of that part; but the oppoſite groine is laxe, ſoft, and depreſt with a manifeſt cavity. The heele touches not the ground, for that the head of the thigh is plucked backe againe by the muſcles of the buttocks amongſt which it lyeth 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 than the reſt: whence it is, that the patient cannot bend his knee, becauſe the extenſion of the nervous production or large tendon which covers the knee is ſo great. But if the patient will ſtand upon the foot of his luxated legge without a ſtaffe, he ſhall fall down backwards, for that the body is inclined to that part, the head of the thigh being not directly underneath for the propping or bearing up of the body; wherefore he is forced to ſuſtaine himſelfe upon a crutch on his lame ſide. Having premiſed theſe things of the differences, ſignes, ſymptomes and prognoſticks, it now remaineth, that we briefly deſcribe the

Signes.

the different wayes of restoring 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 some soft quilt or coverlid under him, that he may lye the easier. Now you must place him so, that the part unto which the bone is flown, may be the 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 backe; if forwards, then upon his side. Then must extension and impulsion be made towards the cavity, that so it may bee forced thereinto: but if the dislocation be fresh, & in a soft body, as a woman, childe, and such like, whose joynts are more laxe, it shall not bee any waies needefull to make great extension with strong ligatures for the restoring it; the Surgeons hand shall suffice, or a List or towell cast about it. In the interim the bone shall bee kept fast with compresses applyed about the joynt: then the Surgeon shall extend the thigh, taking hold thereof above the knee, in a straight line, and so set it directly against the cavity, and then presently thrust it thereinto. For thus shall he restore it, if so bee that in thrusting it, hee lift up the head thereof somewhat higher, lest the lips of the cavity force it backe, and hinder it from entring. Now because unlesse there bee just extension, there can be no restitution hoped for, it is farre better in that part, that is, to extend it somewhat more than is necessary, yet so, that you doe not endanger the breaking of any muscles, tendon or other nervous body. For, as *Hippocrates* writes, when as the muscles are strong and large, you may safely extend them, if so be that you displace nothing by the force of the extension. If your hand will not suffice to make just extension, you must use the helpe of an Engine, such as is our Pulley, fastened to two postes, so much of the rope being let forth, and drawn up again, as shall suffice for the businesse 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 businesse by no lamentation, neither of the patient nor his friends. But for that we write these things chiefely for the benefit of young practicioners, it seemeth meet, that having delivered these things in general, of restoring the thigh-bone, that we run over these generalities in each particular, beginning with that dislocation which is made inwardly.

The generall cure.

Sect. 2. lib. de fract.

CHAP. XLIV.

Of restoring the Thigh-bone dislocated inwards.

IT is fit to place the patient after the foresaid manner, upon a table or bench, in the midst whereof shall stand fastned a woodden pin of a foots length, and as thick as the handle of a spade useth to be; but it must be wrapped about with some soft cloth, lest the hardnesse hurt the buttocks, betwixt which it must stand, as we read that *Hippocrates* did in the extension of a broken leg. The woodden pin hath this use, to hold the body that it may not follow him that draweth or extendeth it; & that the extension being made as much as is requisie, it may go between the *perinæum* & 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 cavity, the help of the Surgeon concurring, who twining somewhiles to this, & otherwhiles to that side, doth direct the whole work. But when the extension hath need of counter-extension, then it is needfull you have such ligatures at hand, as we have mentioned in the restoring of a dislocated shoulder, to be drawn above the shoulder. One of these shall be fastned above the joynt of the hip, & extended by a strong man; another shalbe cast above the knee by another with the like force. But if you cannot have a wooden pin, another strong & like ligature shalbe put upon the joynt directly at the hip, & held stiffe 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 hinder the restoring thereof. This manner of extension is common to foure kinds of luxation of the thigh-bone. But the maner of forcing the bone into its cavity, must be varied in each, according to the different condition of the parts

Sect. 2. simile fract.

How to make extension and counter-extension in this kind of fracture.

whereunto the head inclineth; to wit, it must be forced outwards if it bee fallen inwards, and contrary in the rest, as the kind of the dislocation shall bee. Some too clownish and ignorant knot-knitters fasten the lower ligature below the ankle, and thus the joynts of the foot and knee are more extended than that of the hipp or huckle-bone, for that they are neerer to the ligature, & consequently to the active force: but they ought to doe otherwise; therefore in a dislocated shoulder, you shall not fasten the ligatures to the hand or wrest, but above the elbow. But if the hands shall not be sufficient for this worke, then must you make use of engines. Wherefore then the patient being placed as is fit, and the affected part firmely held, some round thing shall be put into the groine, and the patients knee, together with his whole leg shall be drawne violently inwards, towards the other leg. And in the meane while, the head of the thigh shall bee strongly forced towards the cavity of the huckle-bone, and so at length restored, as the following figure shewes.

Ligatures made for extension must be fastened neere the part to be extended.

A figure which manifesteth the way of restoring the thigh-bone dissocated inwards.



A generall precept.

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 slaked, and then you must also desist from extending, otherwise the restitution cannot bee performed, for that the stronger extension of the engine wil resist the hand of the Surgeon, thrusting and forcing it into the cavity. This precept must bee observed in the restoring of this & other dislocations. You shall know that the thigh is restored by the equality of the legs, by the free & painelesse extension & inflection of the lame leg. Lastly, by the application of agglutinative medicines (whereof we have formerly spoken) the restored bone shal be confirmed in its place; to which purpose ligation shal 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 loynes. In the meane while the cavity of the groine must bee filled with somewhat a thicke 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, wherby the dislocated member may be unmoveable, and more & more strengthned. Neither must this dressing be loosed, until foure or five dayes be passed, unlesse peradventure the sudden happening of some other more grievous symptome shall perswade otherwise. To conclude, the patient must bee kept in his bed for the space of a moneth, that the relaxed muscles, nerves and ligaments may have space to recover their former strength, otherwise, there is danger lest the bone may againe 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 consists in the extension, not in the flexion, as it is demonstrated by *Hippocrates*, for that such a figure is familiar and accustomable to the legge.

Sect. 2. lib. de fract.

CHAP.

Chap. XLV.

Of restoring the Thigh dislocated outwardly.

THE patient must bee 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 be made downewards, 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 be used, as the following figure sheweth.

A figure which expresseth the manner of restoring the Thigh luxated outwards.



This kind of dislocation is the easilyest 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 drawne backe into its cavity by the onely regresse of the extended muscles into themselves towards their originals, somewhiles with a noyse or pop, otherwhiles without, which being done, laying a compresse upon the joynt, you shall perform all other circumstances as before in an internall dislocation.

When it is that onely extension serves for the restoring the dislocated thigh.

Chap. XLVI.

Of restoring the Thigh dislocated forewards.

WHen the thigh is luxated forewards, the patient must bee laid upon his sound side, and tyed as wee have formerly delivered. Then the Surgeon shall lay a Boulster upon the prominent head of the bone, and have a care that his servant firmely hold it: then immediately just extension being made, he shall with his hand force the bone into the cavity; but if his hand will not serve, he shall attempt it with his knee. Then to conclude he shall use the rest of the things formerly mentioned to containe the restored bone.

Chap. XLVII.

Of restoring the Thigh dislocated backwards.

THe patient shall be placed groveling upon a table or bench, and the member extended, as in the rest, one ligature stretched from the groine, another from the knee; then the Surgeon shall endeavour to force back with his hand that which stands up, and also to draw away the knee from the sound legge. The bone thus placed and restored, the cure requires nothing else, than to be bound up and kept long in bed, lest that the thigh, if it should be moved, the nerves being yet more loose, might againe fall out, For the thigh is in great danger of relapse, for that the cavity of the Huckle-bone is onely deprest, as farre as it goes in, and the burden of the hanging or adjoyning Thigh is heavie.

Chap. XLVIII.

Of the dislocation of the Whirle-bone of the knee.

The differences. The cure.

THe Whirle-bone of the knee may fall forth into the inner, outter, upper and lower part; but never to the hinde part, because the bones which it covers doe not suffer it. To restore it, the patient must stand with his foote firmely upon some even place, and then the Surgeon must force and reduce it with his hands from the part into which it is preternaturally slidden. When it shall bee restored, the cavity of the ham shall bee filled up with bolsters, so that he may not bend his leg, for if it be bended, there is no smal danger of the falling back of the whirl-bone. Then a case or box shalbe put about it, on the side especially whereto it fell, being made somwhat flat & round resembling the whirl-bone its self, and it shall bee bound on with ligatures, and medicines so fast that it may not stirre a jot. After the part shall seeme to have had sufficient rest, it is fit that the patient try and accustome by little and little to bend his knee, untill at length hee shall find that he may easily and safely move that joint.

Chap. XLIX.

Of the dislocated Knee.

The differences.

THe knee also may be dislocated three manner of waies, that is, into the inner, outer, and hinde part, but very seldom towards the foreside and that not without some grievous and forcible violence; for the Whirle-bone lying upon it, hinders it from slipping out, and holds it in. The other wayes are easie, because the cavity of the leg-bone is superficiary and very smooth, but the cavity of the lower end of the thigh-bone is made in the maner of a spout or gutter, & besids the head therof is very smooth and slippery; but the whole joint is much more laxe than the joint of the Elbow: so that as it may be the more easily dislocated, so may it the better be restored; and as it may be the more easily, so may it be the more safely dislocated, for that inflammation is lesse to bee feared here, as it is observed by *Hippocrates*. Falls from high, leaping, and too violent running are the causes of this dislocation. The signe thereof is the disability of bending or lifting up the legge to the thigh, so that the patient cannot touch his buttocke with his heele. 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 be placed upon a bench of an indifferent height, so that the Surgeon may be behind him

Ad finem sect. 3. de fract.

How to restore a knee dislocated backwards.

him who may bend with both his hands & bring to his buttocks the patients leg put betwixt his owne legges. But if the restitution doe not thus succeed, you must make a clew of yearn, and fasten it upon the midst of a staffe, let one put this into the cavity of his ham, upon the place whereas the bone stands out, and so force it forwards; then let another cast a ligature of some three fingers breadth upon his knee, and draw it upwards with his hands, then presently and at once they all shall so bend and crooke the lame legge that the heele thereof may touch his buttocks.

Chap. L.

Of a knee dislocated forewards.

BUt if the knee bee dislocated forwards (which seldome happens) the patient shall be placed upon a table and a convenient ligation made above, and another close beneath the knee. Then the Surgeon shall so long presse downe with both his hands the bone which is out of joint, untill it shall returne to its place againe. To which purpose if the strength of the hand will not serve to make just extension each way, you may make use of our engine, as you may perceive by this following figure. The cure.

A figure shewing the manner of restoring a knee dislocated forwards.



You shall know that the bone is restored by the free and paineless extension of the legge; then will their bee place for medicines, boulsters and strengthening ligatures. In the meane space the patient shall forbeare going, so long as the part shall seeme to require.

Chap. LI.

Of the separation of the greater and lesser Focile.

THe *Fibula* or lesser Focile is fastened and adheres to the *Tibia*, leg-bone, or greater Focile without any cavity, above at the knee and below at the ankle. But it may bee pluckt or drawne aside three manner of waies, that is, forwards, and to each side: this chance happens when in going we take no sure footing, so that wee slip with our feete this way and that way as in a slippery place, and so wrest it inwards or outwards; for then the weight of our body lying open The joyning of the leg and shin bones.

upon it, drawes the legge, as it were, insunder, so that the one Focile is dislocated or separated from the other. The same may happen by a fall from an high place, or some 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 drawne and forced by the hand of the Surgeon into their seats: then shall they be straitly bound up, putting compresses to that part unto which the *Fibula* flew; beginning also your ligation at the very luxation, for the forementioned reasons. The patient shall rest forty 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 Pasterne bone.

ALso the Leg-bone is sometimes dislocated, and divided from the pasterne bone, as well inwardly, as outwardly; which may bee knowne by the swelling out of the bone to this or that part; if it be onely a subluxation or straine, it may bee easily restored, by gently forcing it into the place againe. After the bone shall be restored, it shall be kept so by compresses and fit deligation, by crosse and contrary binding to the side opposite to that towards which the bone fell, that so also in some measure it may bee more and more forced into its place. In the mean time you must have a care that you doe not too straitly presse the great and large tendon which is at the heele. This kinde of dislocation is restored in forty dayes, unlesse some accident happen which may hinder it.

Differences and signes.

Chap. LIII.

Of the dislocation of the Heele.

WHosoever leaping from an high place have fallen very heavie upon their heele, have their heele dislocated and divided from the pasterne bone. This dislocation happens more frequently inwardly than outwardly, because the prominency of the lesser Focile embraces the pasterne bone; whence it is, that there it is more straitly and firmely knit. It is restored by extension and forcing it in, which will be no very difficult matter, unlesse some great defluxion or inflammation hinder it. For the binding up, it must bee straitest in the part affected, that so the bloud may be pressed from thence into the neighbouring parts; yet using such a moderation, that it may not bee painefull, nor presse more straitly than is fit, the nerves and grosse tendon which runnes to the heele. This dislocation is not confirmed before the fortieth day, though nothing happen which may hinder it. Yet usually it happeneth that many symptomes ensue by the vehemency of the contusion. Wherefore it will not be amisse to handle them in a particular chapter.

Causes and differences.

The cure.

Chap. LIV.

Of the Symptomes which follow upon the contusion of the Heel.

IT happeneth by the vehemency of this contusion, that the veines and arteries do as it were vomit up bloud both through the secret passages of their coates, as also by their ends or orifices, whence an *Ecchymosis* or blackenesse over all the heel, paine, swelling, and other the like ensue, which implore remedies, & the Surgeons helpe, to wit, convenient diet, and drawing of bloud by opening a veine (of which though *Hippocrates* makes no mention, yet it is here requisite by reason of the feaver and inflammation) and if need require purgation, princi-

Why bloud-letting necessary in the fracture of a heele.

Hip. sect. 3. de fracturis.

principally ſuch as may divert the matter by cauſing vomit, and laſtly, the application of locall medicines, chiefly ſuch as may ſoften and rarifie the skin under the heel, otherwiſe uſually hard and thick (ſuch as are fomentations of warme water & oile) ſo that divers times wee are forced to ſcarifie it with a lancet, ſhunning the quicke 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 bee performed before the inflammation ſeaze upon the part, otherwiſe there will be danger of a convulſion. For the bloud, when it falls out of the veſſels, readily putrefies, by reaſon the denſity of this part hinders it from ventilation and diſperſing to the adjacent parts. Hereto may be added that the large and great Tendon which covers the heele, is endued with exquiſite ſenſe, and alſo the part it ſelfe is on every ſide ſpred over with many nerves. Beſides alſo there is further danger of inflammation by lying upon the backe and heele, as we before admoniſhed you in the Fracture of a leg. Therefore I would have the Surgeon to bee here moſt attentive and diligent to performe theſe things which we have mentioned, leſt by inflammation a Gangrene and mortification (for here the ſanious fleſh preſently falls upon the bone) happen together with a continued and ſharp feaver, with trembling, hicketting and raveing. For the corruption of this part firſt by contagion aſſailes the next, and thence a feaver aſſailes the heart by the arteryes preſſed and growing hot by the putride heat, & by the nerves and that great and notable tendon made by the concourſe of the three muſcles of the calfe of the legge, the muſcles, braine and ſtomach are evilly affected and drawne into conſent, and ſo cauſe convulſions, raving and a deadly hicketting.

Why the heele is ſubject to inflammation.

Gal. ad ſent. 2. ſect. 2. lib. de fract.

CHAP. LV.

Of the diſlocated paſterne or Ancle-bone.

THe *Aſtragalus* or Paſterne bone may bee diſlocated and fall out of its place to every ſide. Wherefore when it falls out towards the inner part, the ſole of the foot is turned outwards, when it flyes out to the contrary, the ſign is alſo contrary: if it be diſlocated to the foreſide, on the hinde ſide the broad Tendon comming under the heel is hardened and diſtended; but if it be 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. Being reſtored it is kept to by application of medicines and fit ligation. The patient muſt keepe his bed long in this caſe, leſt that bone which ſuſteines and bears up the whole body, may againe ſinke under the burden, and breake out, the ſinewes being not well knit and ſtrengthened.

Signes.

Cure.

CHAP. LVI.

Of the diſlocation of the Inſtep and backe of the foot.

THe bones alſo of the Inſtep and backe of the foot may be luxated, and that either upwards or downwards, or to one ſide, though ſeldome 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 ſome plaine 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 foote, then muſt you preſſe them thence upwards, and reſtore each bone to its place. They may bee reſtored after the ſame manner if they bee ſlowne out to either ſide. But you muſt note that although the ligatures conſiſt but of one head

Cure.

in

Sect. 14. ſect. 2. lib. de fract. in other diſlocatious, yet here *Hippocrates* would have ſuch uſed as have two heads, for that the diſlocation happens more frequently from below upwards, or from above downewards, than ſidewiſe.

CHAP. LVII.

Of the diſlocation of the Toes.

The differences. NOw the Toes may bee foure waies diſlocated, even as the fingers of the hand; and they may be reſtored juſt after the ſame manner, that is, extend them directly forth, and then foree each joint into its place, and laſtly bind them up as is fitting. The reſtitution of all of them is

Cure. eaſie, for that they cannot farre tranſgreſſe their bounds. To conclude, the bones of the feet are diſlocated and reſtored by the ſame meanes as thoſe of the hands, but that when as any thing is diſlocated in the foote, the patient muſt keepe his bed, but when any thing is amiſſe in the hand, he muſt carry it in a ſcarfe. The patient muſt reſt twenty dayes, that is, untill he can firmely ſtand upon his feet.

CHAP. LVIII.

Of the ſymptomes, and other accidents which may befall a broken or diſlocated member.

MAny things may befall broken or diſlocated members by the meanes of the fracture, or diſlocation; ſuch as are bruiſes, great paine, inflammation, a fever, impoſtume, gangrene, mortification, ulcer, *fiſtula*, and *atrophia*, all which require a skilfull and diligent Surgeon for their cure. A contuſion happens by the fall of ſome heavie thing upon the

Remedies for a contuſion. part, or by a fall from high, whence followes the effuſion of bloud poured out under the skinne: which if it be poured forth in great plenty, muſt be ſpeedily evacuated by ſcarification, and the part eaſed of that burden, leſt it ſhould thence gangrenate. And by how much the bloud ſhall appear more thick and the skin more denſe, by ſo much the ſcarification ſhall be made more deepe. You may alſo for the ſame purpoſe apply leaches.

What may happen by paine. Concerning paine wee formerly ſaid, that it uſually happens by reaſon that the bones are moved out of their places, whence it happeneth that they become troubleſome to the muſcles and nerves by pricking and preſſing them. Hence enſue inflammations, as alſo impoſtumation and a feaver, oft times a gangrene, and in concluſion a mortification corrupting and rotting the bones; otherwhiles a ſinuous ulcer or *fiſtula*. But an *Atrophia* and leaneneſſe ariſeth by the ſloth and idleneſſe of the member decaying all the ſtrength therof, and by too ſtrait ligation intercepting the paſſages of the bloud otherwiſe ready to fall and flow thither.

Remedies for the leaneneſſe or *Atrophia* of any member. Now the leanneſſe which is occaſioned by too ſtrait ligation receives cure by the ſlackening of the ligatures wherewith the member was bound. That which proceeds from idleneſſe is helped by moderate exerciſe, by extending, bending, lifting up and depreſſing the member, if ſo bee that he can away with exerciſe. Otherwiſe he ſhall uſe frictions and fomentations with warme water. The frictions muſt be moderate in hardeneſſe and gentleneſſe, in length and ſhortneſſe. The ſame moderati-

What meaſure to be uſed in fomenting. on ſhall be obſerved in the warmneſs of the water, and in the time of fomenting. For too long fomenting reſolves the blood that is drawne. But that which is too little or ſhort a ſpace drawes little or nothing at all: after the fomentation, hot and emplaſtick medicines made of pitch, turpentine, *euphorbium*, pellitory of Spaine, ſulphur, and the like, ſhall bee applyed. They ſhall bee renued every day more often or ſeldome, as the thing it ſelfe ſhall ſeeme to require.

Theſe

These medicines are termed *Dropaces*; whose forme is thus. R. *picis nigræ, ammoniaci, bdelii, gummi elemi in aquavitæ dissolutorum an.* ℥ii. *olei laurini* ℥i. *pulveris piperis, zinziberis, granorum paradisi, baccarum lauri et juniperi, an.* ℥ii *fiat emplastrum secundum artem, extenuatur super alutam.* It is also good to binde about the opposite sound part with a ligature, yet without pain; as if the right arme shall decay for want of nourishment, the left shall bee bound, beginning your ligation at the hand, and continuing it to the Arme-pit. If this mischance shall seaze upon the right leg, then the left shall be swathed up from the sole of the foote to the groine. For thus a great portion of the bloud is forced back into the *venacava*, or hollow veine, and from this being distended and over full, into the part affected and gaping with the vessels almost empty; besides also it is convenient to keepe the sound part in rest, that so it may draw the lesse nourishment, and by that meanes there will bee more store to refresh the weake part.

A dropax.

Binding of the sound part opposite to the emaciated.

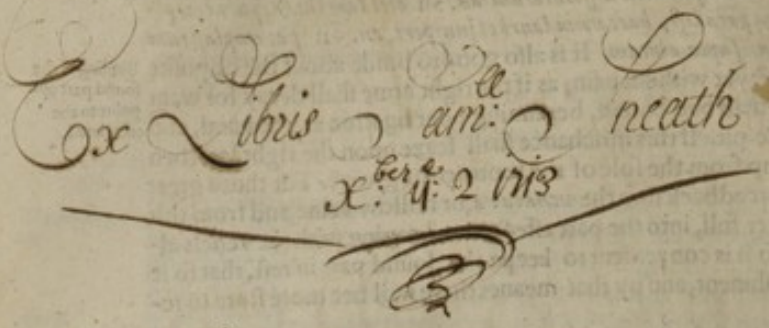
Some wish also to bind up the decaying member with moderate ligation; for thus, say they, the bloud is drawne thither; for when as wee intend to let blood by opening a veine with a lancet, we bind the arme. Also it is good to dip it into water somewhat more than warme, and hold it there untill it grow red and swell; for thus bloud is drawne into the veines, as they find, which use to draw blood of the *saphena* and *salvatella*. Now if, when as these things and the like bee done, the lame part grow hot, red and swollen, then know that health is to be hoped for; but if the contrary happen, the case is desperate, wherefore you need attempt nothing further.

How to bind up the emaciated part.

Furthermore, there is sometimes hardnesse left in the joints, after fractures and dislocations are restored. It is fit to soften this, by resolving the conteined humor by fomentations, liniments, cataplasmes, emplasters made of the roots of Marsh-mallowes, briony, lillies, line seed, fenugreek seed, and the like, and also of gums dissolved in strong vineger, as *Ammoniacum, bdelium, opopanax, labdanum. sagapenum, styrax liquida*, and *Adeps anserinus, gallinaceus, humanus, oleum liliorum*, and the like. Also you must wish the patient to move the part ever now and then, every day, yet so, that it be not painefull to him, that so the pent up humour may grow hot, bee attenuated, and at length discussed, and lastly, the part it selfe restored as farre as art can perform it; for oft times it cannot be helped any thing at all. For if the member be weake and lame by reason that the fracture happened neere the joint, for the residue of his life the motion thereof useth to bee painefull and difficult, and oft times none at all, especially if the *Callus* which grows there be somewhat thick and great; and lastly, if the joint it selfe shall bee contused and broken by the stroake, as it oft-times happens in wounds made by Gun-shot.

Signes that an *Atrophia* is curable.

The End of the sixteenth Booke.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OF DIVERS OTHER PRETERNATURALL AFFECTS, WHOSE CURE IS COMMONLY PERFORMED BY SURGERY.

The Seventeenth Booke.

Chap. I.

Of an Alopecia, *or the falling away of the haires of the head.*

AN *Alopecia* is the falling away of the haire of the head, and sometimes also of the eye-browes, chin and other parts; the French commonly call it the *Pelade*. Phisicians terme it the *Alopecia*, for that 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 haires, as in old age through want of the radicall humidity, or by the corruption of the alimentary matter of the same, as after long fevers, in the *Lues venerea* leprosie, the corruption of the whole body and all the humours, whence followeth a corruption of the vapours and fuliginous excrements; or else by the vitious constitution of the pores in the skin in rarity, and constriction or density, as by the too much use of hot oyntments made for colouring the hair, or such as are used to take off haire, therefore called *Depilatoria*, or by the burning of the skin, or losse thereof, having a scarre in stead thereof, by reason of whose density the haire cannot spring out, as by too much laxity the fuliginous matter of the haire stayes not, but presenly vanisheth away. The *Alopecia* which comes by old age, a consumption, burne, baldnesse, leprosie and a scald head, is uncurable: that which admits of cure, the cause being taken away, is helped. Wherefore, if it proceed from the corruption of humours, let a Phisician bee called, who as hee shall thinke it fit, shall appoint diet, purging and phlebotomie. Then the Surgeon shall shave off that haire which is remaining, and shall first use resolving fomentations, apply Leaches and Horns to digest the vicious humour which is under the skin, then shall he wash the head to take away the filth with a lye wherein the roots of Orris and Aloes have been boyled. Lastly, hee shall use both attractive fomentations and medicines for to draw forth the humour which is become laudable in the whole body by the benefit of diet fitly appointed. But if the *Alopecia* shall happen through defect of nourishment, the part shall bee rubbed so long

Gal. 2. lib. 1. de comp. med. secun. loca.

The cause.

What *Alopecia* uncurable.

What curable, and how.

with a courſe linnen cloth, or a figge leafe, or onions, untill it waxe red; beſides alſo the skin ſhall bee pricked in many places with a needle, and then ointments applied made of *Labdanum*, pigeons dung, ſtaviſager, oile of bayes, turpentine and waxe, to draw the bloud and matter of the haires. If the haire be loſt by the *Lues venerea*, the patient ſhall be annointed with quickſilver to ſufficient ſalivation. To conclude, as the cauſes of this diſeaſe ſhall be, ſo muſt the remdies be fitted which are uſed.

Chap. II.

Of the Tinea, *or ſcalde Head.*

Lib.1. de comp. med. ſecl. loco.

THE *Tinea* (let me ſo terme it in Latine, whilſt a fitter word may be found) or a ſcald head, is a diſeaſe poſſeſſing the muſculous skin of the head or the hairy ſcalpe, and caring thereinto like a moth. There are three differences thereof, the firſt is called by *Galen* ſcaly or branlike, for that whilſt it is ſcratched it caſts many branlike ſcales: ſome Practitioners terme it a dry ſcall, becauſe of the great aduſtion of the humour cauſing it. Another is called *ficoſa*, a fig-like ſcall, becauſe when it is diſpoyled of the cruſt or ſcab which is yellow, there appeare graines of quick and red fleſh, like to the inner ſeeds or graines of figges, and caſting out a bloudy matter. *Galen* names the third *Achor*, and it is alſo vulgarly termed the corroſive or ulcerous ſcall, for that the many ulcers wherewith it abounds are open with many ſmall holes flowing with liquid *ſanies* like the waſhing of fleſh, ſtinking, corrupt and carrion-like, ſomewhiles livid, ſomewhiles yellowiſh. Theſe holes, if they be ſomewhat larger, make another difference which is called *Cerion* or *Favoſa* (that is, like a hony combe) becauſe as *Galen* thinks, the matter which floweth from theſe, reſembleth hony in colour and conſiſtence. They all proceed of an humour which is more or leſſe vicious, for a leſſe corrupt humour cauſeth a ſcaly, 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 nurſe, or elſe preſently after it is borne, it ſcarce admits of cure; neither muſt we attempt that before the child come to that age, that he may be able to endure the cure & medicines. But you may in the meane while apply the leaves of Colworts or beets beſmeared with freſh butter, or other gentle medicine having a faculty to mollifie and open the paſſage for the ſhut up matter. Thoſe who are of ſufficient age to away with medicines, may bleed, purge, barbe, according to art by the advice of a Phiſician. For locall medicines in a ſcaly ſcall, ſoftning and diſcuſſing fomentations ſhall bee appointed, made of the roots of marſh-Mallowes, Lillies, Docks, Sorrell boyled in lye with a little vineger added thereto. The head ſhall bee twice in a day fomented with ſuch a decoction, and on the ſixth day the haire being ſhaven off, it ſhall bee ſcarified, and then leaches and hornes put to it ſo ſcarified. Then it ſhall be forthwith annoynted with oyle of ſtaviſager mixed with blacke ſope, both to draw & repreſſe the malignity of the humour impact in the part. You may alſo uſe the following medicine even to the perfect cure of the diſeaſe, as that which is much commended in this kind of diſeaſe by *Vigo*, *Gordonius*, and *Guido*; it is thus made. R. *elleb albi & nigri, attrament. auripigmenti, lithargyri auri, calcis vivæ, vitriol. alum. galla. fulig. cinner. faecis vini uſti, an* ʒ ß. *argenti vivi extincti,* ʒiii. *æruginis æris* ʒii. *fiat pulvis qui incorporetur cum ſucco boraginis, ſcabioſæ, fumariæ, oxylapathi, aceti, an quart.* i. *olei antiqui lib.* i. *bulliant uſque ad conſumpt. ſuccorum, in fine decoctionis cineres ponantur, addendo picis liquidæ* ʒ ß. *cera quantum ſufficit, fiat unguentum*: Theſe authors teſtifie that this will heale any kind of ſcall. Certainely none can diſallow of it who well conſidereth the engredients and compoſture thereof.

Cap. 8. lib. citati.

The cure.

For a ſcaly ſcall.

An oyntment for a ſcalled head.

A cruſty alſo or fig-like ſcall ſhall bee ſo long fomented with the preſcribed fomentation, untill the cruſts or ſcabs fall off, yet there is nothing ſo good and effectuall as Creſſes beaten or fryed with hogs ſuet. For it will make it fall off in the ſpace of foure and twenty hours, beſides, if it be continued it will heale them throughly, as I have knowne by experience, and reaſon alſo ſtands therewith; for according to *Galen*,

The cure of a cruſty ſcall.

A poultis of Creſſes.

Galen, Cresses are hot and dry. When the crusts shall bee fallen away, the parts affected shall bee annoynted with the formerly prescribed ointment. I have cured many with a little oyle of vitrioll, and sometimes also with *Ægyptiacum* made somewhat more strong than ordinary. But if the root of the haires appeare rotten, they shall bee plucked out one by one; yet if such putrefaction shall possesse the whole hairy scalpe, and trouble all the roots of the haire, that you may plucke them out the more readily, & with lesse paine, you may besmeare a cotten cloth on the rougher side with this following medicine. ℞. *picis nigræ* ℥vi. *picis res.* ℥ii. *pul. viridis æris, & vitriol. rom. an.* ℥i. *vel* ℥ß. *sulphur. viv.* ℥ß. *coquantur omnia simul in aceti acerrimi quantitate sufficiente, fiat medicamentum ad usum:* let it be applyed to the head, and remaine on for two dayes; then let it bee quickly and forcibly plucked away against the haire, that so the haires sticking to the plaister may by that meanes be plucked away therewith: you shall use this medicine so long as need shall seem to require. *Lib. 7 simpl.* A plaister to pluck away the haire at once.

For the third kind of scall which is termed a Corrosive or ulcerous, the first indication is to cleanse the ulcers with this following ointment. ℞. *unguenti enulati cum mercurio duplicato, ægyptiaci, an.* ℥iii. *vitriol. albi in pulverem redacti* ℥i. *incorporentur simul, fiat unguentum ad usum*; also you may use the formerly described ointment. But if any paine or other accident fall out, you must withstand it by the assistance and direction of some good Phisitian; verily these following medicines against all kinds of Scalls have been found out by reason, and approved by use. ℞. *Camphur.* ℥ß. *alum. roch. vitriol. vir. æris, sulph. vivi, fulig. forn. an.* ℥vi. *olei amygd. dulcium & axungiæ porci, an.* ℥ii. *incorporentur simul in mortario, fiat unguentum.* Some take the dung which lyeth rotting in a sheep-fold; they use that which is liquid, & rub it upon the ulcerated places, & lay a double cloth dipped in that liquor upon it. But if the patient cannot be cured with all these medicines, & that you find his body in some parts therof troubled in like sort with crusty ulcers, I would wish that his head might be anointed with an ointment made of *Axungia, argentum vivum*, & a little *Sulphur*, & then fit some *emplastrum Vigonis cum mercurio* into the fashion of a cap; also some plaisters of the same may be applyed to the shoulders, thighs and legs, and so let him be kept in a very warme chamber, and all things done as if he had the *Lues venerea*. This kinde of cure was first (that I know of) attempted by *Simon Blanch* the Kings Surgeon, upon a certaine young man, when as he in vaine had diligently tryed all other usuall medicines. A scalled head oft-times appeareth very loathsome to the eye, 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 thinke it kild, by reason of the impression of the maligne putrefaction remaining in the part, which wholly corrupts the temper thereof. Moreover, oft-times being healed, it hath left an *Alopecia* behind it, a great shame to the Surgeons. Which is the reason, that most of them judge it best to leave the cure thereof to Empericks and women. The cure of an ulcerous scall. A contumacious scall must be cured as we cure the *Lues Venerea*.

Chap. III.

of the Vertigo, *or Giddinesse.*

THE *Vertigo* is a sudden darkening of the eyes and sight by a vaporous & hot spirit which ascendeth to the head by the sleepy arteryes, and fils the braine, disturbing the humours and spirits which are conteyned there, & 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 internall sleepy arteryes to the *Rete mirabile*, or wonderfull net; otherwhiles it is generated in the brain, its selfe being more hot than is fitting; also it oft-times ariseth from the stomack, spleen, liver and other entrals being too hot. The signe of this disease is the sudden darkening of the sight, and the closing up as it were of the eyes, the body being lightly turned about, or by looking upon wheeles running round, or whirle pits in waters, What the *Vertigo* is, and the causes therof. The signes.

ters, or by looking downe any deepe or steep places. If the originall of the disease proceed from the braine, the patients are troubled with the head-ach, heavinesse of the head, and noyse in the eares, and oft-times they lose their smell. *Paulus Ægineta* for the cure bids us to open the arteries of the temples. But if the matter of the disease arise from some other place, as from some of the lower entrals, such opening of an artery little availeth. Wherefore then some skilfull Phisitian must be 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 foulenesse of the stomack. But if such a *Vertigo* be a criticall symptome of some acute disease affecting the *Crisis* by vomit or bleeding, then the whole businesse of freeing the patient thereof must be committed to nature.

Lib. 6.

A criticall *Vertigo.*

CHAP. IV.

Of the Hemicrania, *or Megrim.*

THE Megrim is properly a disease affecting the one side of the head, right, or left. It sometimes passeth no higher than the temporall musles, otherwhiles it reacheth to the toppe of the crowne. The cause of such paine proceedeth eyther from the veynes and externall arteryes, or from the *meninges*, or from the very substance of the braine, or from the *pericranium*, or the hairy scalpe covering the *pericranium*, or lasty, from putride vapours arising to the head from the ventricle, wombe, or other inferiour member. Yet an externall cause may bring this affect, to wit, the too hot or cold constitution of the encompassing ayre, drunkennesse, gluttony, the use of hot and vaporous meates, some noysome vapour or smoake, as of Antimony, quick-silver, or the like, drawne up by the nose, which is the reason that Goldsmythes, and such as gilde mettals are commonly troubled with this disease. But whence soever the cause of the evill proceedeth, it is either a simple distemper, or with matter: with matter, I say, which againe is either simple or compound. Now, this affect is either alone, or accompanied with other affects, as inflammation and tension. The heavinesse of head argues plenty of humour; pricking, beating and tension shewes that there is plenty of vapours mixed with the humours, and shut up in the nervous, arterious, or membranous body of the head. If the paine proceed from the inflamed *meninges*, a fever followeth thereon, especially, if the humour causing paine doe putrefie. If the paine be superficiary, it is seated in the *pericranium*. If profound, deepe and piercing to the botome of the eyes, it is an argument that the *meninges* are affected, and a feaver ensues, if there be inflammation, and the matter putrefie; and then oft-times the tormenting paine is so great and grievous, that the patient is affraid to have his head touched, if it be but with your finger, neither can hee away with any noise, or small murmuring, nor light, nor smels however sweet, no nor the fume of Vine. The paine is sometimes continuall, otherwhiles by fits. If the cause of the pain proceed from hot, thin & vaporous bloud, which will yeeld to no medicines, a very necessary, profitable & speedy remedy may be had by opening an artery in the temples, whether the disease proceed from the internall or externall vessels. For, hence alwayes ensueth an evacuation of the conjunct matter, bloud and spirits. I have experimented this in many, but especially in the Prince de la *Roche-sur-you*. His Physitians, when hee was troubled with this grievous Megrim, were *Chaplaine*, the Kings, and *Castellane*, the Queenes chiefe Phisitians, and *Lewes Duret*, who notwithstanding could helpe him nothing by bloud-letting, cupping, bathes, frictions, diet or any other kind of remedy either taken inwardly or applyed outwardly. I being called, said, that there was onely hope one way to recover his health, which was to open the artery of the temple in the same side that the paine was; for I thought it probable, that the cause of his pain was not contained in the veins, but in the arteries, in which case by the testimony of the ancients, there was nothing better than the ope-

The differences.

In what kind of Megrim the opening of an Artery is good.

A history.

opening or bleeding of an artery, whereof I had made tryall upon my selfe to my great good. When as the Physitians had approved of this my advice, I presently betake my selfe to the work, and choose out the artery in the pained temple, which was both the more swolne and beat more vehemently than the rest. I open this, as wee use to doe in the bleeding of a veine, with one incision, and take more than two sawcers of blood flying out with great violence, and leaping; the paine presently ceased, neither did it ever molest him againe. Yet this opening of an Artery is suspected by many, for that it is troublesome to stay the gushing forth bloud, and cicatrize the place, by reason of the density, hardnesse, and continuall pulsationof the artery, and lastly, for that when it is cicatrized theremay be danger of an *Aneurisma*. Wherefore they thinke it better first to divide the skin, then to separate the artery from all the adjacent particles, and then to binde it in two places, and lastly divide it, as we 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 learnt by frequent experience that the apertion of an artery, which is performed with a Lancet, as wee doe in opening a veine, is not at all dangerous; and the consolidation or healing is somewhat slower than in a veine, but yet will bee done at length, but that no flux of bloud will happen, if so bee that the ligation be fitly performed, and remaine so for foure dayes with fitting pledgets.

No danger in opening an artery.

Chap. V.

Of certaine affects of the eyes, and first of slaying up the upper eye-lidde when it is too laxe.

Of the diseases which befall the eies, some possess the whole substance thereof, as the *Ophthalmia*, a *Phlegmon* therof: others are proper and peculiar to some parts thereof, as that which is termed *Gutta serena* to the opticke nerve. Whence *Galen* made a threefold difference of the diseases of the eyes, as that some happened to the eye by hurting or offending the chiefe organ thereof, that is, the crystalline humour; others by hindering the animall faculty, the chiefe causer of sight, from entring 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 *Ægilops*, *Cataracta*, *Glaucoma*, and divers others of this kinde. Some have their upper eie-lid fall down, by reason that the upper skin thereof is relaxed more than is sufficient to cover the eye, the gristle in the meane while not relaxing it selfe together therewith. Hence proceeds a double trouble; the first, for that the eye cannot bee easily opened; the other, becaus the haires 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 palsie of that part, which is frequent in old people, or the defluxion or falling downe of a watrish humour, and that not acride or biting; which appeares by this, that those who are thus affected have a ranke of haires growing under the naturall ranke, by reason of the aboundance of heaped up humour, as it is most probable. For thus a wet and marish ground hath the greatest plenty of grasse. Now if this same humour were acride, it would cause an itching, and consequently become troublesome to the patient, and it would also fret insunder and destroy the roots of the other haires, so farre it is from yeelding matter for the preternaturall generation of new. It is fit, before you doe any thing for the cure, that you marke with inke the portion thereof which is superfluous, and therefore to be cut away, lest if you should cut off more than is requisite, the eye-lid should remaine turned up, and so cause another kinde of affect, which the ancients have called *Ectropion*. 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

Differences.

Paul. Ægin. lib. 3. cap. 6.

The cause.

The cure.

as shall be necessary to make it as it were naturall; lastly, joine the lips of the wound together with a simple suture of three or foure stiches, that so it may bee cicatrized; for the cicatrization restraines the eie-lid from falling downe so loosly, 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 bee covered, if too little, then you have done nothing, and the patient is troubled to no purpose. If there shall bee many haires growne preternaturally, you shall plucke them away with an instrument made for the same purpose; then their roots shall be burned with a gentle cautery, the eye being left untoucht, for a scar presently arising will hinder them from growing againe.

CHAP. VI.

Of Lagophthalmus, *or the Hare eye.*

Paulus Aegin. lib. 6. cap. 10.

SUch as have their eie-lids too short, sleep with their eyes open, for that they cannot be covered by the too short skin of the eye-lids: the Greekes terme this affect, *Lagophthalmos*. The cause is either internall or externall: internall, as by a Carbuncle, Impostume, or Ulcer: externall, as by a wound made by a sword, burn, fall, & the like. If this mishap proceed by reason of a cicatrization, it is cureable, if so that the short eye-lid be of an indifferent thickness. But if it have bin from the first conformation, or by some other meanes, 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 emollient fomentations, then the skinne shall be divided above the whole scarre, in figure of an halfe moon, with the hornes looking downewards. Then the edges of the incision shall bee opened, and lint put into the middle therof, that so it may hinder the lips from joyning together againe. Then shall you apply a plaster upon the lint, and so bind up the part with a fitting ligature that may somewhat presse upon the whole eye, lest it should lift it selfe somewhat upwards againe, and so returne into its ancient, but not naturall figure. But in cutting the skinne, you must take care that your incision harme not the gristle; for if it be cut, the eie-lid falls downe, neither can it be afterwards lifted up. But now for the lower eye-lid: it is subject to sundry diseases, amongst which there is one which answereth in proportion to that, which we late mentioned, which is, when as it is lifted upwards little or nothing, but hangs and gapes, 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 be helped by the means formerly delivered.

The cure.

Ectropion, or the turning up or out of the Eye-lid.

CHAP. VII.

Of the Chalazion, *or Haile-stone, and the* Hordeolum *or Barly-corne of the eye-lids.*

Paul. cap. 16. lib. 6.

THe *Chalazion* is a round and cleere pimple which growes upon the upper eie-lid, it is also moveable and may be stirred this way and that way with your fingers: the Latines call it *Grando*, for that it resembles a Hail-stone. Another pimple not much unlike this growes somtimes upon the verges of the eye-lids above the place of the haires. It is termed *Hordeolum*, by reason of the similitude it hath with a barly corne. The matter of these is contained in its proper cist or skin, and therefore is hardly brought to suppuration. At the first beginning it may be resolved and discussed. But when as it is once growne and concrete into a plaster or stone-like hardnesse, it is scarce cureable. Wherefore it is best to

The cure.

performe

performe 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 leave the thread therein of such length that you may fasten the ends thereof with a little of the emplaster called *Gratia Dei* like glew to the forehead, 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 day, as is usually done in chirurgicall setons. For thus at length the swelling will be destroyed and made plaine.

Chap. VIII.

Of the Hydatis *or Fatnesse of the Eye-lids.*

THe *Hydatis* is a certaine fatty substance like a peece of fat seated and lying under the skinne 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 loose tumour making the whole eye-lid, which it possesseth, œdematous; so that, as if depressed with a weight, it cannot be lifted up. It hath its name, for that it hath as it were a bladder distended with a whayish humour, which kinde of fault is observed by *Galen* in the liver. Those, who are thus affected, have their eyes looke red, and flow with teares, 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 some salt into the place whence it was taken out (unless the vehemency of paine hinder) that so the place may bee dryed and strengthened, and the rest of the matter (if any such be) may be consumed, and hindred from growing againe. Lastly, you shall cover the whole eye with the white of an Egge dissolved in rose-water, or some other repercussive.

What *Hydatis* is.

Com. ad aphor. 55. sect. 7.

The cure.

Chap. IX.

Of the Eye-lids fastened or glewed together.

SOmetimes it commeth to passe that the upper eye-lid is glewed or fastened to the under, so that the eye cannot be opened, or so that the one of them may sticke or bee fastened to the white coat of the eye, or to the horny. This fault is sometimes drawne from the first originall, that is, by the default of the forming faculty in the wombe (for thus many infants are born with their fingers fastened together, with their fundaments, privities and eares unperforated) the eye in all other respects being well composed. The cause of this affect somtimes proceeds 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, & so opening them; but with such moderation, that you touch not the horny coat, for otherwise it would fall out. Therefore you must put the end or point of your probe under the eye-lids, and so lifting them up (that you hurt not the substance of the eie) divide them with a crooked incision knife.

Paulus cap. 15. lib. 6.

The cause.

The cure.

The incision made, let the white of an egge beaten with some rose-water be put into the eye; let the eye-lids be kept open, yea let the patient himself be carefull that he often turne it upwards, and lift it up with his fingers, not onely that the medicine may bee applyed to the ulcer, but also that they may not grow together againe. In the night time let a little pledget dipped in water, and that either simple, or wherein some vitriol hath bin dissolved, bee laid thereon. For thus you shall hinder the eye-lids from joyning together againe. Then on the third day the parts or edges of the eie-lids shall be touched with waters drying without biting or acrimony, that so they may be cicatrized. But if the eye-lid adhere to the horny coate at the *pupilla* or apple of the eye, the patient will either bee quite blind, or very ill of sight. For the scarre which ensues will hinder the shapes of things from entring to the crystalline humour

A disease subject to relapse.

humour, and the visive spirits from passing forth to the objects. For prognostickes, you may learne out of *Celsus*, that this cure is subject to a relapse, so that it may bee shunned neither by diligence nor industry, but that the eye-lid will alwayes adhere and cleave to the eye.

Chap. X.

Of the itching of the Eye-lids.

MAny have their Eye-lids itch vehemently by reason of salt phlegme, which often times excoriating and exulcerating the parts themselves, yeelds a *sanies*, which joynes together the eye-lids in the night time as if they were glewed together, and maks them watry and bleared. This affect doth so torment the patients, that it oft times makes them require the Physitians helpe. Wherefore generall medicines being premised, the Ulcers shall be washed with the following *Collyrium*. Rc. *aquæ mellis in balneo mariæ destillatæ* ℥iii. *sacchari candi*. ℥i. *aloës lotæ & in pollinem redactæ* ℥ß. *fiat collyrium*. Which if it doe no good, you may use this which followes. Rc. *Ung. Ægyptiac.* ℥i. *dissolve in aquæ plantaginis quantitate sufficienti*. Let the ulcerated eie-lids be touchd with a soft linnen rag dipped therin, but with care that none therof fall upon the eye. But when the patient goes to bed, let him cause them to be anointed with the following ointment, very effectuall in this case. Rc. *axungiæ porci et butyri recentis, an.* ℥ß. *tuth. præpar.* ℥ß. *antimon. in aquæ euphrasiæ præparati*, ℈ii. *camphoræ gra.* iiii. *misce, et in mortario plumbeo ducantur per tres horas, conflatum inde unguentum, servetur in pyxide plumbea*. Some commend and use certaine waters fit to cleanse, dry, binde, strengthen, and absolutely free the eye-lids from itching and redneſſe; of which this is one.

A detergent *collyrium*.

Rc. *aquæ euphrag. fœniculi, chelidon. an* ℥ß. *sarcocal. nutritæ* ℈ii. *vitriol. rom.* ℥i. *misceantur simul & bulliant unica ebullitione; postea colatur liquor, & servetur ad usum dictum*. Or else. Rc. *aquæ ros. & vini alb. boni an.* ℥iiii. *tuth. præpar. aloës an.* ℥i. *flor. æni* ℈ii. *camphor. gra.* ii. Let them bee boyled according to art, and kept in a glasse to wash the eye-lids. Or else, Rc. *vini albi* ℔ß. *salis com.* ℥i. let them be put into a cleane barbars bason and covered, and kept there five or six dayes, and bee stirred once a day, and let the eye-lids bee touched with this liquor. Some wish that the patients urine be kept all night in a barbers bason, and so the patients eie-lids be washed therwith. Verily in this affect we must not feare the use of acride medicines, for I once saw a woman of fifty yeares of age, who washed her eye-lids when they itched with the sharpest vinegar she could get, and affirmed that she found better successe of this than of any other medicine. *Vigo* prescribes a water whose efficacy above other medicines in this affect, hee saith, hath bin proved; and that it is to bee esteemed more worth than gold, the description thereof is thus. Rc. *aq. ros. vini albi odoriferi mediocrù vinositatis an.* ℥iiii. *myrobalan. citrini trit.* ℥iß. *thuris* ℥ii. *bulliant omnia simul usque ad consumptionem tertiæ partis; deinde immediatè addantur floris æris* ℈ii. *camph. gr.* ii. Let the liquor be kept in a glasse well stopped for the foresaid use.

You need not feare to use acride medicines in the itching of the eye-lids. *Lib. 2. cap. 4. tract. 3.*

Chap. XI.

Of Lippitudo, *or Bleare-eyes.*

What *Lippitudo* is.

THere are many whose eyes are never dry, but alwaies flow with a thinne, acrid and hot humour, which causeth roughnesse, and upon small occasions inflammations, blear or blood-shot eies, and at length also *Strabismus* or squinting. *Lippitudo* is nothing else but a certaine white filth flowing from the eyes, which oft times agglutinates or joynes together the eye-lids. This disease often troubles all the life time, and is to be cured by no remedy: in some it

is

is cureable. Such as have this diſeaſe from their infancy, are not to be cured, for it remaines with them till their dying day. For large heads, and ſuch as are repleate with acride or much excrementitious phlegme, ſcarce yeeld to medicines. There is much difference whether the phlegme flow downe by the internall veſſels under the ſcull, or by the externall which are betweene the skull and the skin, or by both. For if the internall veines caſt forth this matter, it will be difficultly cured, if it bee cured at all. But if the externall veſſels caſt it forth, that cure is not unprofitable, which having uſed medicines reſpecting the whole body, applyes aſtringent medicines to the ſhaved crown, as *Empl. contra rupturam*, which may ſtreighten the veines, and as it were ſuſpend the phlegme, uſeth cupping, and commands fractions to bee made towards the hinde part of the head, and laſtly, maketh a Seton in the necke. There are ſome who cauterize the toppe of the crowne with a hot iron, even to the bone, ſo that it may caſt a ſcaile, thus to divert and ſtay the defluxion. For locall medicines, a *Collyrium* made with a good quantity of roſewater, with a little vitrioll diſſolved therein, may ſerve for all.

A *Collyrium* of vitrioll to ſtay the defluxions of the eyes.

CHAP. XII.

Of the Ophthalmia, *or inflammation of the Eyes.*

AN *Ophthalmia* is an inflammation of the coate *Aduata* and conſequently of the whole eye, being troubleſome by the heate, redneſſe, beating, renitency, and laſtly paine. It hath its originall either by ſome primitive cauſe or occaſion, as a fall, ſtroake, duſt, or ſmall ſand flying into the eyes. For the eye is a ſmooth part, ſo that it is eaſily offended by rough things, as ſaith *Hippocrates, lib. de carnibus*. Or by an antecedent cauſe, as a defluxion falling upon the eyes. The ſignes follow the nature of the materiall cauſe, for from blood eſpecially cholerike and thin, it is full of heat, redneſſe and paine; from the ſame allayed with phlegme all of them are more remiſſe. But if a heavineſſe poſſeſs the whole head, the originall of the diſeaſe proceeds therfrom. But if a hot pain trouble the forehead, the diſeaſe may be thought to proceed from ſome hot diſtemper of the *Dura mater*, or the *pericranium*; but if in the very time of the raging of the diſeaſe the patient vomit, the matter of the diſeaſe proceeds from the ſtomacke. But from whence ſoever it commeth there is ſcarce that paine of any part of the body, which may be compared to the paine of the inflamed eyes. Verily the greatneſſe of the inflammation hath forced the eyes out of their orbe, and broken them aſunder in divers. Therefore there is no part of Phyſicke more blazed abroad than for ſore eyes. For the cure, the Surgeon ſhall conſider and intend three things, diet, the evacuation of the antecedent and conjunct cauſe, and the overcomming it by topicke remedies. The diet ſhall bee moderate, eſchewing all things that may fill the head with vapours; and thoſe things uſed that by aſtriction may ſtrengthen the orifice of the ventricle, and prohibite the vapours from flying up to the head; the patient ſhall bee forbidden the uſe of wine, unleſſe peradventure the diſeaſe may proceed from a groſſe and viſcide humour, as *Galen* delivers it. The evacuation of the matter flowing into the eye, ſhall bee performed by purging medicines, phlebotomy in the arm, cupping the ſhoulders and neck with ſcarification, and without: and laſtly, by frictions, as the Phyſitian that hath undertaken the cure ſhall thinke it fit. *Galen* after univerſall remedies for old inflammations of the eyes, commends the opening of the veines and arteryes in the forehead and temples, becauſe for the moſt part the veſſels therabouts diſtended with acride, hot and vaporous blood, cauſe great & vehement paines in the eye.

What *Ophthalmia* is, and the cauſes thereof.

Signes.

The cure.

Com. ad aphor. 31. ſect. 6.

Lib. 13. meth. cap. ult.

For the impugning of the conjunct cauſe, divers topick medicines ſhall be applyed, according to the four ſundry times or ſeaſons that every phlegmon uſually hath. For in the beginning, when as the acride matter flowes downe with much violence, repercuſſives doe much conduce: and tempred with reſolving medicines, are good alſo in the encreaſe. R. *aq. roſ. et plantag. an.* ℥ß. *mucagin. gum. Tragacanth.* ℥ii. *al-*

bum

A repercussive medicine.

bum.ovi quod sufficit, fiat collyrium, let it bee dropped warme into the eye, and let a double cloth dipped in the same *collyrium* bee put upon it. Or, ℞. *mucag.sem.psil. & cydon.extracta in aq. plant. an.* ℥ß. *aq. solan. & lactis muliebris, an.* ℥i. *trochisc.alb. rha.* ℈i. *fiat collyrium,* use this like the former. The veins of the temples may be streightened by the following medicine. ℞. *bol.arm.sang.drac.& mast.an.* ℥i.ß. *alb.ovi, aquæ ros. & acet.an.* ℥i *tereb.lot.& ol.cidon.an.* ℥i.ß. *fiat defensivum.* You may also use *Ung. de Bolo, empl.diacul.* or *contra rupturam* dissolved in oyle of myrtles, and a little vinegar. But if the bitternesse of the paine be intolerable, the following cataplasme shall be applyed. ℞. *medul. pomor. sub.ciner.coctorum.* ℥iii. *lactis muliebris* ℥ß. let it be applyed to the eye, the formerly prescribed *collyrium* being first dropped in. Or, ℞. *mucag.sem.psil.& cidon.an* ℥ß. *micæ panis albi in lacte infusi,* ℥ii. *aquæ ros.* ℥ß. *fiat cataplasma.* The bloud of a turtle Dove, Pigeon or Hen drawne by opening a veine under the wings, dropped into the eye, asswageth paine. Baths are not onely anodine, but also stay the defluxion by diverting the matter thereof by sweats; therefore *Galen* much commends them in such defluxions of the eyes as come by fits. In the state when as the paine is either quite taken away or asswaged, you may use the following medicines. ℞. *sarcocol. in lacte muliebri nutritæ,* ℥i. *aloës lotæ in aq. rosar.* ℈ii. *trochisc. alb. rha.* ℥ß. *sacchar.cand.* ℥ii. *aquæ ros.* ℥iii. *fiat collyrium.* Or, ℞. *sem. fæniculi. & fænug. an.* ℥ii. *flo. chamæ. & melil.an.* m. ß. *coquantur in aq. com. ad* ℥iii. *colatura adde tuthiæ præp.& sarcoc.nutritæ in lacte muliebri. an.* ℥i. ß. *sacchari cand.* ℥ß. *fiat collyrium ut artis est.* In the declination the eye shall be fomented with a carminative decoction, and then this *collyrium* dropped thereinto. ℞. *sarcoc.nutritæ* ℥ii. *aloës & myrrh.an.* ℥i. *aq. ros. & euphrag.an.* ℥ii. *fiat collyrium, ut artis est.*

An anodine cataplasme.

The efficacy of Baths in pains of the eyes. *Adap. or sect.7.*

Detergent Collyrs.

Chap. XIII.

Of the Proptosis, *that is, the falling or starting forth of the eye, and of the* Phthisis, *and* Chemosis *of the same.*

The causes.

THe Greekes call that affect *Proptosis,* the Latines *procidentia* or *Exitus oculi,* when as the eye stands, and is cast out of the orbe by the occasion of a matter filling and lifting up the eye into a greater bignesse, and largenesse of substance. The cause of this disease is sometimes externall, as by too violent straying to vomit, by hard labour in child-birth, by excessive and wondrous violent shouting, or crying out. It sometimes happeneth that a great and cruell paine 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 eye, give beginning to this disease. Certainely sometimes the eye is so much distended by the defluxion of humors, that it breakes in sunder, and the humours thereof are shed, and blindenesse ensues thereof, as I remember befell the sister of *Lewis de Billy* merchant, dwelling at Paris near S. *Michael's* bridg. The cure shall be diversified according to the causes. Therefore universall medicines being premised, cupping glasses shalbe applyed to the originall of the spinall marrow, and the shoulders; as also cauteries, or Setons: the eye shall be pressed or held downe with clothes doubled and steeped in an astringent decoction made of the juice of *Acacia,* red roses, the leaves of poppy, henbane, roses and pomegranate pills: of which things poultisses may bee made by addition of barly meale and the like.

The cure.

The *Atrophia* of the eye.

The Phthisis thereof. *Lib.3.cap.22.*

There is sometimes to bee seene in the eye an affect contrary to this, and it is termed *Atrophia.* By this the whole substance of the eye growes lanke and decayes, and the apple it selfe becomes much lesse. But if the consumption and emaciation take hold of the pupill onely, the Greekes, by a peculiar name and different from the generall, terme it a *Phthisis,* as *Paulus* teacheth. Contrary causes shall bee opposed to each affect; hot and attractive fomentations shall be applyed; frictions shall be used in the neighbouring parts, and lastly all things shall be applyed which may without danger be used to attract the bloud and spirits into the parts.

There is another affect of the eye, of affinity to the *Proptosis,* which by the Greeks

is

is termed *Chemosis*. Now this is nothing else than when both the eye-lids are turned up by a great inflammation, so that they can scarce cover the eyes, and the white of the eye is lifted much higher up than the blacke. Sometimes the *Adnata* changing his wont, looketh red; besides also, this affect may take its originall from externall causes, as a wound, contusion and the like. But according to the variety of the causes, and the condition of the present affect fixed and remaining in the part, divers remedies shall be appointed. The *Chemosis*. *Paulus li. 3. cap. 2.*

CHAP. XIV.

Of the Ungula, or Web.

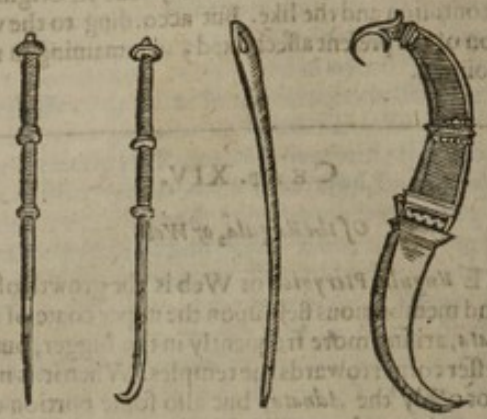
THE *Ungula*, *Pterygion* or Web is the growth of a certaine fibrous and membranous flesh upon the upper coate of the eye called *Adnata*, arising more frequently in the bigger, but sometimes in the lesser corner towards the temples. When it is neglected, it covers not onely the *Adnata*, but also some portion of the *Cornea*, and comming to the pupill it selfe hurts the sight thereof. Such a Web sometimes adheres not at all to the *Adnata*, but is onely stretched over it from the corners of the eye, so that you may thrust a probe betweene it and the *Adnata*: it is of severall colours, somewhiles red, somewhiles yellow, somewhiles duskish, & otherwhiles white. It hath its originall either from externall causes, as a blow, fall, and the like; or from internall, as the defluxion of humours into the eyes. The *Ungula* which is inveterate, and that hath acquired much thicknesse and breadth, and besides doth difficultly adhere to the *Adnata*, is difficultly taken away, neither may it bee helped by medicines whereby scars in the eyes are extenuated. But that which covereth the whole pupill must not bee touched by the Surgeon, for being cut away, the scar which is left by its density hindereth the entrance of objects to the cristalline humour, and the egresse of the animall spirit to them. But oftentimes it is accompanied with an inflammation of the eyes, a burning itching, weeping defluxion, and swelling of the eye-lids. That the cure may rightly and happily proceed, hee must first use a spare diet, purging medicines shall be given, and bloud taken away by opening a veine, especially, if there be great inflammation. For particular remedies, this excrescence shall be eaten away, or at least kept from growth by dropping into the eye *collyrium* of vitrioll described in wounds of the eyes. But if that wee profit nothing by this meanes, it remaineth, that wee take it away with the hand after the following manner. What Web curable, and what uncurable. The cure.

You shall set the patient upon a forme or stoole, and make him leane much backe, and be so held firmely, that he may not fall nor stirre; then must you open his sore eye, putting therein the *speculum oculi* formerly described in treating of the wounds of this part, and then must you lift up the Web it selfe with a sharpe little hook, with the point turned a little in, and put under the midst of the Web; when you have lifted it a little up, thrust a needle threaded with a smoth threed between it & the *Adnata*, then taking hold of the hooke, and the two ends of the threed drawne through with the needle, and lifting up the Web by them, you shall gently begin to separate it from the substance of the eye lying there-under, beginning at the originall 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 cutting of the Web.

The

The figures of little hookes, a needle, and crooked incision knife.

Little Hookes. *A needle.* *A crooked incision knife.*



Then must it bee cut off with a paire fissers, and the white of an egge beaten with some Rose-water laid thereon, and often renewed. Afterwards the eye must every day be opened, lest comming to cicatrization, the eye-lids shall be glewed together in that part whereas the Web is taken away, which also shall bee hindred by putting of common salte, sage and cummin seeds into the eye, being first champed and chawed in the mouth. There are some who in stead of the crooked knife separate the Web from the *Aduata* with a horses haire, others do it with a goose quill made ready for the same purpose, taking 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 be cut, there wil remain a hole, through which during the rest of the life a weeping humour will continually flow, a disease by the Greekes termed *Rhyas*. If after the cutting, there be fear of inflammation, linnen rags moystned in repelling medicines, formerly prescribed in wounds of the eye, shall bee layd thereupon.

Chap. XV.

Of the Ægilops, fistula lachrimosa, *or weeping Fistula of the eye.*

The use of the glandule at the greater corner of the eye.

AT the greater corner of the eye there is a glandule, made for the receiving and containing the moysture which serveth for the lubricating and humecting the eye, least it should dry by continuall motion. This Glandule sometimes by a sanguine or pituitous defluxion falling violently from the brain, swels, impostumates & ulcerates with an ulcer, not seldome degenerating into a fistula, so that in succesſe of time it rotteth the bone that lyeth under it: of such fistulaes, some are open outwardly, and these usually have their originall from a phlegmon; other some are inwardly, and those are such as at first swelled by the defluxion or congestion of a phlegmaticke matter, so that there appeareth no hole outwardly, but onely a tumor of the bignesse of a peale; this tumor being pressed, floweth with a sanious, serous and red, or otherwise with a white and viscide matter, and that either by the corner of the eye, or by the inside of the nose. Some have this matter flowing continually, others have it onely monethly, which is proper also to some fistulaes. Such weeping fistulaes if they become old, cause an *Atrophia* of the eye, & sometimes blindnesse, & a stinking breath. Therefore wee must diligently and speedily by phisicall and chirurgicall meanes resist the breeding disease. Wherefore, having used generall medicines, we must come to particulars. Therefore if the ulcer be not sufficiently wide, it shall bee inlarged by putting tents of spunge therein.

The differences.

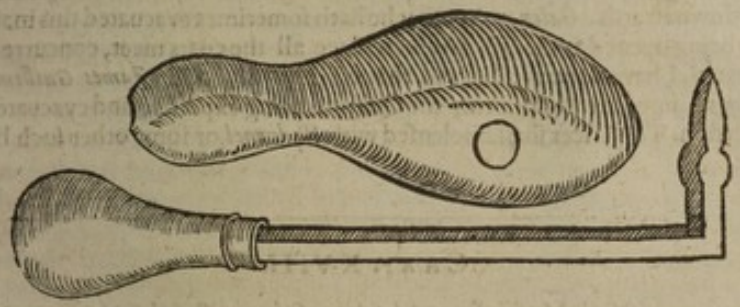
Periodicall and Typicall Fistulaes.

therein. The fleſh of the Glandule encreaſing more than is fit, ſhall be corrected by putting therein the cathæreticke pouders of Mercury, calcined vitrioll, or ſome *aqua fortis*, or oyle of vitrioll, and laſtly, by a potentiall cautery. If you cannot prevaile by theſe meanes, and that the bone begins to rot, and the patient bee ſtout hearted, then uſe an actuall cautery whoſe uſe is far more effectuall, ready, certaine and excellent than a potentiall cautery, as I have tryed in many with happy ſucceſſe. In my opinion it makes no matter, whether the cautery be of gold, ſilver or iron; for the efficacy it hath, proceedeth not from the matter, but from the fire. Yet if wee muſt religiouſly obſerve and make choiſe of mettals, I had rather have it of Iron, as that which hath a far more drying and aſtringent faculty than gold, for that the element of earth beareth the chiefe ſway thererein, as appeareth by the waters which flow through iron mines. Wherefore you ſhall cauſe to be made a triangular Iron, ſharpe at the end, that it may the more ſpeedily penetrate. And then the ſound eye and adjacent parts being well covered and defended, and the patients head firmely holden in ones hands, leſt the patient being frighted, ſtirre himſelfe in the very inſtant of the operation. But a plate of iron ſomewhat depreſſed in the midſt, for the cavity of the greater corner, ſhall be applyed and fitted to the pained eye. This plate ſhall be perforated that the hot Iron may paſſe thereby to the fiſtula lying thereunder; and ſo may onely touch that which is to be cauterized.

The cure.

The efficacy of an actuall cautery.

The figure of a cautery, and a plate with a hole therein.



After the bone is burnt with the cautery, a *collyrium* made of the whites of egges beaten in plantaine and nightſhade waters muſt be poured into the hole it ſelfe, the eye and all the neighbouring parts; but the patient ſhall bee layd in bed, with his head ſomewhat high, and the *collyrium* ſhall be renued as often and as ſoone as you ſhall perceive it to grow dry. Then the fall of the Eſchar ſhall be procured by annointing it with freſh butter; when it is fallen away, the ulcer ſhall be cleanſed, filled with fleſh, and laſtly cicatrized.

Things to be done after the cauterizing.

Chap. XVI.

Of the Staphiloma, *or grape-like ſwelling.*

Staphiloma is the ſwelling of the horney and grape-like coat, bred through the occaſion of an humor flowing downe upon the eye, or by an ulcer, the horney coat being relaxed, or thruſt forth by the violence of the puſtule generated beneath. It in ſhape reſembleth a grape, whence the Greekes ſtile it *Staphyloma*. This tumor is ſometimes blackiſh, otherwhiles whitiſh. For if the horney coat bee ulcerated and fretted in ſunder, ſo that the grapie coat ſhew it ſelfe, and fall through the ulcer, then the *Staphyloma* will looke blacke like a ripe grape, for the uter part of the *Uvea* is blackiſh. But if the *Cornea* bee onely relaxed and not broken, then the ſwelling appeares of a whitiſh colour like an unripe grape. The Ancients have made many kindes or differences thereof. For if it bee but a ſmall hole or the

What a *Staphiloma* is, and the cauſes thereof.

Paulus and *Aetius*.

broken *Cornea* by which the *Uvea* sheweth or thrusteth forth its selfe, they then termed it *Myocephalon*, that is, like the head of a fly. But if the hole were large, and also callous, they called it *Clavus*, or a naile; 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 discommodities, the one of blindnesse, the other of deformity. Wherefore here is no place for surgery to restore the sight, which is already lost, but onely to amend the deformity of the eie; which is by cutting off that which is prominent. But you must take heed that you cut away no more than is fit, for so there would be danger of pouring out the humors of the eye.

Every Staphiloma infers incurable blindnesse.

CHAP. XVII.

Of the Hypopyon, *that is, the suppurate or putrefied eye.*

The cause.

PUS, or Quitture is sometimes gathered between the horny and grapy coate from an internall, or externall cause; From an internall, as by a great defluxion, and oft times after an inflammation, but externally, by a stroake, through which occasion a veine being opened hath poured forth blood thither, which may presently be turned into Quitture. For the cure, universall remedies being premised, cupping-glasses shall bee applied, with scarification, and frictions used. Anodine and digestive *collyria* shall be poured from above downewards. *Galen* writes that he hath sometimes evacuated this matter, the *Cornea* being opened at the *Iris*, in which place all the coats meet, concurre and are terminated. I have done the like, and that with good successe, *James Guillemeau* the the Kings Surgeon being present, the Quitture being expressed and evacuated after the apertion. The Ulcer shall be clensed with *Hydromel*, or some other such like medicine.

Lib.14 method. cap. ult.

CHAP. XVIII.

Of the Mydriasis, *or dilatation of the pupill of the eye.*

The cause.

MYdriasis is the dilatation of the pupill of the eye; and this happeneth either by nature or chance: the former proceedeth from the default of the first conformation, neither is it curable; but the other is of two sorts; for it is either from an internall cause, the off-spring of an humour flowing downe from the braine, wherefore Phisicall meanes must bee used for the cure thereof. Now that which commeth by any externall occasion, as a blow, fall or contusion upon the eye, must bee cured by presently applying repercussive and anodyne medicines; the defluxion must be hindred by diet skilfully appointed, phlebotomie, cupping, scarification, frictions, and other remedies which may seeme convenient. Then must you come to resolving medicines; as the bloud of a Turtle Dove, Pigeon, or Chicken reeking hot out of the veine, being poured upon the eye and the neighbouring parts. Then this following cataplasme shall be applyed thereto. R. *farinæ fabar. & hordei an.* ℥iiii. *ol. rosar. & myrtillor. an.* ℥i. ß. *pul. irecos flor.* ℥ii. *cum sapa fiat cataplasma.* You may also use the following fomentation. R. *rosar. rub. & myrtill. an.* m.i. *florum melil. & chamæm. an.* p.i. *nucum cupress.* ℥i. *vini austeri* lb. ß. *aq. rosar. & plantag. an.* ℥iii. make a decoction of them all for a fomentation to be used with a sponge.

The cure.

A digesting Cataplasme.

CHAP.

CHAP. XIX.

Of a Cataract.

A Cataract is called also by the Greeks *Hypochyma*, by the Latines, *suffusio*. Howsoever you terme it, it is nothing else but the concretion of an humour into a certaine thin skin under the horny coat, just against the apple or pupill, and as it were swimming upon the watery humour; and whereas the place ought to bee empty, opposing it selfe to the internall faculty of seeing, whereby it differeth from spots and scars growing upon the horny coate and *Adnata*. It sometimes covereth the whole pupill, otherwhiles but the one halfe thereof, and somwhiles but a small portion thereof. According to this variety the sight is either quite lost, weake, or somewhat depraved, because the animall visive spirit cannot in its entire substance passe through the density thereof. The defluxion of the humour whence it proceeds, is either caused by an external occasion, as a stroake, fall, or by the heat or coldnesse of the encompassing ayre, troublesome to the head and eyes; or else it is by an internall meanes, as the multitude; or else the acride hot and thin quality of the humours. This disease also sometimes taketh its originall from grosse and fumid vapours sent from a crude stomacke, or from vaporous meats or drinks, up to the braine, and so it falleth into the eyes, where by the coldnesse, straitnesse and tarrying in the place, they turn into moysture, and at length into that concretion or filme which wee see: The signs may be easily drawne, from that we have already delivered. For when the cataract is formed and ripe, it resembleth a certain thin membrane spred over the pupill, and appeareth of a different colour, according to the variety of the humour whereof it consisteth, one while white, another while blacke, blew, ash-coloured, livid, citrine, greene. It sometimes resembleth quicksilver, which is very trembling and fugitive, more than the rest. At the first when it beginneth to breed they seeme to see many things, as flyes flying up and downe, haires, nets, and the like, as if they were carelesly tossed up and down before their eyes: sometimes every thing appeareth two, and somewhiles lesse than they are; because the visive spirit is hindered from passing to the objects by the density of the skin, like as a cloud shadowing the light of the Sun. Whence it is that the Patients are duller sighted about noone, and surer and quicker sighted in the morning and evening, for that the little visive spirit diffused through the aire, is dispersed by the greater light, but contracted by the lesse. Now if this filme cover halfe the pupill, then all things shew but by halfes; but if the midst thereof bee covered and as it were the center of the Christalline humour, then they seeme as if they had holes or windowes: but if it cover it all, then can hee see nothing at all, but onely the shadowes of visible bodies, and of the Sun, Moone, Stars, lighted candles, and the like luminous things, and that but confusedly and as by conjecture.

A Cataract.

The differences.

Causes.

Signes.

CHAP. XX.

The physicall cure of a beginning Cataract.

A Beginning Cataract is hindred 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 meates, which yeeld a flegmaticke juice and vaporous, as pease, beanes, turneps, chesnuts, and lastly all such things as have the faculty of stirring up the humours, and causing defluxion in the body, such as are all salt & spiced meats, as also garlike, onions, mustard. The immoderate use of venery hurts more than all the rest, for that it more violently exagitates the whole body, weakens the braine and head, and begets crude humours:

Diet for such as are troubled with a Cataract.

Bread seasoned with fennell seeds.

Let his bread be seasoned with some fennell seeds, for it is thought to have a faculty of helping the sight, and clearing the eyes, and dissipating the misty vapours in the stomacke before they can ascend to the braine. Wherefore by the same reason it is good to use marmelade of quinces, conserve of roses, and common drige powder, or any such like composed of things good to break wind, or corroborate the ventricle. Phlebotomie and purging, if they be requisite, shall be fitly appointed: Ventoses shall be applyed to the shoulders and necke; the phlegmaticke matter shall be diverted and evacuated by the mouth with using masticatories in the morning. There be some which believe that a beginning cataract may be dissipated and discussed by often rubbing the eye-lids with the fingers, and in like sort by the often and earnest beholding of the Starres, and the Moone when it is at the full, looking-glasses, diamonds, and all other such like bright shining things. I beleeve that by beames plentifully and suddenly brought and diffused over the eye, directly opposite against some bright shining thing, it may seeme to have a penetrating, dividing, dissolving, as also a consuming and drying faculty. Besides, also the hot breath of him who holdeth in his mouth, and chaweth fennell seeds, aniseeds, coriander-seeds, nutmeg, cinamon, cloves, and the like, hath a great faculty, the eyes being first gently rubbed with the finger, it being breathed in, neare at hand and often received, to heat, attenuate, resolve, digest, and diffuse the humour which is ready to concrete. Moreover, this *collyrium* of *John Vigo* is thought very powerfull to cleare the eyes, strengthen the sight, hinder suffusions, and discusse them if at any time they concrete and beginne to gather. ℞. *hepatis hircini sani & recentis lib.* ii. *calami aromatici & mellis an.* ℥ß. *succi ruta,* ℥iii. *aquæ chelidoniæ, faniculi, verbenæ euphrasiæ, an.* ℥iii. *piperis longi, nucis moschatæ, caryophyllorum an.* ℥ii. *croci* ℈i. *floris rorismarini aliquantum contriti,* m. ß. *sarcocollæ, aloës hepaticæ, an.* ℥iii. *fellis raiæ, leporis & perdicis, an.* ℥i. *terantur omnia, tritisque adde sacchari albi* ℥ii. *mellis rosati* ℥vi. *conjiciantur in alembicum vitreum & distillentur in balneo Mariæ;* Let this distilled liquor bee often dropped into the eyes. But if you prevaile nothing by all these medicines, and that the cloudy and heaped up humour doth daily encrease and thicken, then must you abstaine from remedies, and expect untill it bee no more heaped up, but thickned, yea untill it seeme to be growne somewhat hard. For so at length it may bee couched with a needle; otherwise if this same skin shall not be ripe, but more tender than is fitting, when you shall come to the operation, it will be broken and thrust through with the needle, and not couched. On the contrary, if it bee too hard, it will resist the needle, neither will it suffer it selfe to bee easily couched. Wherefore it is requisite that the Surgeon know when it is ripe, and he must diligently observe the signes whereby he may discerne a ripe Cataract from an unripe; and that which is cureable, from that which is uncurable. For that only which is ripe and curable is to be 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 dense, and lastly, that which is uncureable must not bee attempted at all.

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.

Chap. XXI.

By what signes ripe and curable cataracts may bee discerned from unripe and uncurable ones.

IF the sound eye being shut, the pupill of the sore or suffused eye, after it shall be rubbed with your thumbe, bee presently dilated and diffused, and with the like celerity returne into the place, figure, colour and state, it is thought by some to shew a ripe and confirmed cataract. But an unripe and not to bee couched, if the pupill remaine dilated and diffused for a long while after. But it is a common signe of a ripe, as also more dense and consequently uncurable suffusion, to bee able to see nor distinguish no visible thing beside light and brightnesse; for to discerne other objects sheweth that it is not yet ripe. Therefore the sound eye being shut and pressed, the pupill of the other rubbed with

with your thumbe, is dilated, enlarged, ſwelleth and is more diffuſed; the viſive ſpirits by this compreſſion being as it were forced from the ſound into the ſore eye. But theſe following cataracts are judged uncurable, that is, ſuch as are great, ſuch as when the eye-lid is rubbed are nothing dilated or diffuſed, whoſe pupill becommeth no broader by this rubbing: for hence you may gather that the ſtopping or obſtruction is in the opticke nerve, ſo that how cunningly and well ſoever the cataract bee couched, yet will the Patient continue blind; you ſhall do no more good in couching a cataract, which is in an eye conſumed and waſted with a *Phthiſis*. Alſo that cataract is uncurable which is occaſioned by a moſt grievous diſeaſe, to wit, by moſt bitter and cruell paines of the head, or by a violent blow. Such as are of a plaiſter-like, green, blacke, livid, citrine and quickſilver-like colour, are uſually uncurable. On the contrary, ſuch as are of a Cheſnut colour, or of a skye or ſea-water colour, with ſome little whitneſſe, yeeld great hope of a happy and ſucceſſefull cure.

Uncurable Cataracts.

Curable Cataracts.

Chap. XXII.

Of the couching a Cataract.

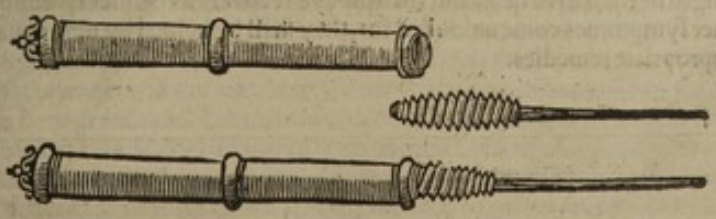
After you ſhal know by the forementioned ſignes, that the Cataract is curable, it remains that you attempt the couching thereof, but ſo, that there be nothing which may hinder. For if the paine of the head, cough, nauſeouſnes or vomiting at that time trouble the patient, you ſhal then beſtow your labour in vaine: Wherefore you muſt expect untill theſe ſymptomes be gone. Then make choice of a ſeaſon fitting for that purpoſe, that is, in the decreaſe of the moon, when the aire is not troubled with thunder nor lightening, and when as the Sunne is not in Aries, becauſe that ſigne hath dominion over the head. Then let the Surgeon conſult a Phyſitian whether purging or bloud-letting be convenient for the Patient, ſo to reſiſt plethoricke ſymptomes, otherwaies ready to yeeld matter for relapſe. Two dayes after you muſt make choice of a place furniſhed with indifferent or competent light, and the Patient being faſting ſhall be placed in a ſtrait chaire, ſo that the light may not fall with the beames directly upon him, but ſidewiſe. The eye which ſhall bee cured muſt bee made more ſteddy, by laying and binding wooll upon the other: Then the Surgeon ſhall ſeate and place himſelfe directly againſt the Patient upon a ſeat ſomewhat higher, and bidding the Patient put his hands downe to his girdle, he ſhall hold the patients legges betweene his knees. One ſhall ſtand at the Patients backe who ſhall hold his head and keepe it from ſtirring; for by a little ſtirring hee may loſe his ſight for ever. Then muſt you prepare and make ready your needle, and thruſt it often into ſome ſtrong thicke cloth, that it may bee as it were ſmoothe by this motion, and for the performance of the worke in hand with the leſſe paine ſomewhat warmed. It muſt bee made of iron or ſteele, and not of gold or ſilver, it muſt be alſo flatted on the ſides, and ſharpe pointed, that ſo it may the better pierce into the eye, and wholly couch the Cataract once taken hold of; and leſt it ſhould ſlip in the Surgeons hand, and be leſſe ſteddy, it ſhall bee put into a handle, as you may ſee by the following figure.

When to couch a Cataract.

The place.

The needle.

A needle inſerted in a handle for the couching of Cataracts.



All things being thus in a readineſſe, you muſt bid the patient to turne the ſight of his eye towards his noſe, and the needle muſt be boldly thruſt (for it is received in a place that is voyde, and onely filled with ſpirits) directly by the coat *Adnata*, in the middle ſpace between the leſſer corner & the horny coat, juſt againſt the midſt of the Cataract, yet ſo, as that you hurt no vein of the *Adnata*, & then by ſtirring it as it were diverſly untill it come to the midſt of the pupill and ſuffuſion. When it is come thither, the needle muſt bee inclined from above downewards to the ſuffuſion, and there to be ſtirred gently untill by little and little it couch or bring downe the Cataract as whole as may be beneath the compaſſe of the pupill; let him ſtill follow it though couched with his needle, and ſomewhat violently depreſſe, and keep it down for ſome ſhort ſpace, that ſo it may reſt and ſtay in that lower place whether it is depreſſed. The Surgeon ſhall try whether it firmely remaine there or no, bidding the patient preſently to move his eye; For if it remaine conſtantly ſo, and doe not returne againe, the cure is perfect. Then muſt the needle be lifted up by little and little, neither muſt it preſently be taken forth, that if the Cataract ſhould beare up, or riſe againe, that it might againe, and ſo often (whilſt the worke is yet hot, and all things in a readineſſe) be couched towards the leſſer corner, untill it be fully and ſurely hid. Then muſt you draw backe the needle gently, and after the ſame manner as you put it in; leſt if you uſe not moderation, you bring backe the Cataract, from whence you couched it, or grievouſly offend the cryſtalline humour, the prime inſtrument of ſight, or the pupill with danger of dilating thereof. Some as ſoone as the worke is done, give the patient ſomething in his hand to looke upon: but *Paulus* approves not thereof, for hee feares leſt his endeavouring or ſtriving to ſee, may draw backe the Cataract. Wherefore it is more wiſedome and better, preſently after the drawing forth of the needle, to put on a ſoft ragge the white of an egge beaten in roſe-water with a little choice alume, and ſo apply it to the eye and neighbouring parts for to binde and hinder the inflammation; then alſo you muſt together therewith bind up the ſound eye, leſt by ſtirring to ſee, it might together therewith draw and move the ſore eye, by reaſon of the ſympathy and conſent they mutually have by the optick nerves. After all things are thus performed, the patient ſhall bee laid in a ſoft bed, & ſo placed, that his head may lye ſomwhat high; let him be laid far from noiſe, let him not ſpeake, nor eate any hard thing that may trouble his jawes, wherefore let him feed upon liquid meats, as ponado, barly cream, culliſſes, gellyes, reare egs, and other meates of the like nature. At the end of eight dayes the ligature that binds up his eyes ſhall be looſed, and his eyes waſhed with roſe water, and putting on ſpectacles, or ſome taffaty, the patient ſhall by little and little accuſtome himſelfe to the light, leſt hee ſhould bee offended by the ſudden meeting with light. But if the ſuffuſion, after ſome ſhort while after, lift it ſelfe up againe, it muſt bee couched againe, but through a new hole, for the eye is pained and tender in the former place. It ſometimes happens by the touch of the needle that the Cataract is not couched whole, but is broken into many peeces; then therefore each of them muſt be followed, and couched ſeverally: if there be any very ſmall particle which ſcapes the needle, it muſt bee let alone, for there is no doubt but that in proceſſe of time it may be diſſolved by the force of the native heat. There are alſo ſome Cataracts which at the firſt touch of the needle are diffuſed & turne into a ſubſtance like to milke or troubled water, for that they are not throughly ripe, yet theſe put us in good hope of recovery, and it bee but for this, that they can never afterwards concrete into one body as before. Wherefore at the length they are alſo diſcuſſed by the ſtrength of the native heat, and then the eye recovers its former ſplendor. If that any other ſymptomes come unlooked for, they ſhall be helped by new counſels and their appropriate remedies.

Gal. lib. 10. de uſu partium cap. 5. Celſ. lib. 7.

The ſigne of a Cataract well couched.

Lib. 6. cap. 21.

What to be done after the couching of a Cataract.

Of a Cataract which is broken to pieces.

CHAP.

Chap. XXIII.

Of the stopping of the passage of the eares, and the falling of things thereinto.

IT sometimes happeneth that children are born without any holes in their eares, a certaine fleshy or membranous substance growing in their bottome or first entrance. The same may also happen afterwards by accident, they being ulcerated by some impostume or wound, and the eare shut up by some fleshy excrescence or scar. Whenas the stopping is in the bottome of the cavity, the cure is more difficult than if it were in the first entrance. But there is a double way of cure; for this substance, whatsoever it be, must either be cut out, or else eaten away and consumed by acrid and catheriticke medicines; in performance of which there is need of great moderation of the mind and hand. For it is a part endued with most exquisite sence and neare the braine, wherefore by handling it too roughly, there is feare of distension of the nerves, and consequently of death. The cause. The cure.

Sometimes also the preternaturall falling of strange bodies into this passage, maketh a stopping of the eares, such as are fragments of stones, gold, silver, iron and the like mettals, pearles, cherry-stones, or kernels, pease and other such like pulse. Now solid and bonie bodies still retaine the same magnitude; but pease, seeds and kernels, by drawing the moisture there implanted into them, swell up, and cause vehement pain by the distension of the neighbouring parts, wherefore the sooner they are drawne forth, the better it is for the patient. This shall be done with small pincers and instruments made in the shape of earepicks. But if you profit nothing thus, then must you use such gymblets as are made for the drawing forth of bullets shot deep into the body. Little stones and bodies of the like stony hardnesse shall bee forced forth by the brain, provoked to concussion by sneesing, & by dropping some oyle of almonds first into the passage of the eare, that the way may be the more slippery; for it will come to passe by this sneesing, or violence of the internall aire forcibly seeking passage out, that at length they may bee cast forth, the mouth and nostrils being stopped with the hand. But if wee cannot thus prevaile, it remaines, that we cut open the passage with an incision knife, so much as shall be sufficient for the putting in and using of an instrument for to extract them. If any creeping things of little creatures, as fleas, ticks, pismires, gnats and the like, which sometimes happeneth, shall get therein, you may kill them by dropping in a little oyle and vineger. There is a certaine little creeping thing, which for piercing and getting into the eares, the French call *Perse-oreille* (wee an Eare-wigge). This, if it chance to get into the eare, may be killed by the foresaid meanes, you may also catch it, or draw it forth by laying halfe an apple to your eare, as a bait for it. The concussive force of sneesing.

Chap. XXIV.

Of getting of little bones and such like things out of the jawes and throate.

SOmetimes little bones and such like things in eating greedily use to sticke, or as it were fasten themselves in the jawes or throate. Such bodies if you can come to the sight of them shall bee taken out with long, slender and croked mallets made like a Cranes beake. If they do not appear, nor there be no means to take them forth, they shalbe cast forth by causing vomit, or with swallowing a crust of bread, or a dry fig gently chawed, and so swallowed; or else they shall be thrust downe into the stomacke, or plucked back with a leeke, or some other such like long and stiffe crooked body annoynted with oile and thrust downe the throate. If any such like thing shall get into the Weazon you The cure differeneaccording to the places where they sticke.

you muſt cauſe coughing by taking ſharpe things, or elſe ſneeſing, ſo to caſt forth whatſoever is there troubleſome.

CHAP. XXV.

Of the Tooth-ache.

The Tooth ach a moſt cruell paine.

OF all paines, there is none which more cruelly tormenteth the patients than the Tooth-ache. For wee ſee them oft times after the manner of other bones to ſuffer inflammation, which will quickly ſuppurate, and they become rotten, and at length fall away piecemeale; for wee ſee them by daily experience to be eaten and hollowed, and to breed wormes, ſome portion of them putrefying. The cauſe of ſuch paine is either internall, or externall and primitive. The internall is a hot or cold defluxion of humours upon them, filling their ſockets, & thence conſequently driving out the teeth; which is the reaſon that they ſtand ſometimes ſo farre forth, that the patient neither dares nor can make uſe of them to chaw for feare of paine; for that they are looſe in their ſockets by the relaxation of the gums, cauſed by the falling downe of the defluxion. When as they are rotten and perforated even to the roots, if any portion of the liquor in drinking, fall into them, they are pained as if you thruſt in a pin or bodkin, the bitterneſſe of the paine is ſuch. The ſignes of a hot defluxion are ſharpe and pricking paine, as if needles were thruſt into them, a great pulſation in the roote of the pained tooth and the temples, and ſome eaſe by the uſe of cold things. Now the ſignes of a cold defluxion are a great heavineſſe of the head, much and frequent ſpitting, ſome mitigation by the uſe of hot remedies. In the bitterneſſe of paine we muſt not preſently run to Tooth-drawers, or cauſe them preſently to goe in hand to plucke them out. Firſt conſult a Phyſician, who may preſcribe remedies according to the variety of the cauſes. Now here are three intenſions of cureing. The firſt is concerning diet; the other for the evacuation of the defluxion or antecedent cauſe; the third for the application of proper remedies for the aſſwaging of paine. The two former ſcopes, to wit, of diet, and diverting the defluxion by purging, phlebotomie, application of cupping glaſſes to the necke and ſhoulders, and ſcarification, doe abſolutely belong to the Phiſitian. Now for proper and topicke medicines they ſhall be choſen contrary to the cauſe. Wherefore in a hot cauſe, it is good waſhing the mouth with the juice of Pomgranats, plantaine water, a little vineger wherein roſes, *balauſtiæ* and *ſumach* have beene boyled. But ſuch things as ſhall be applyed for the mitigating of the paine of the teeth, ought to bee things of very ſubtle parts, for that the teeth are parts of denſe conſiſtence. Therefore the ancients have alwaies mixed vineger in ſuch kind of remedies. ℞. *roſar. rub. ſumach. hordei, an.* m. ß *ſeminis hyoſcyami conquaſſati* ℥ii. *ſantalorum an.* ℥i. *lactucæ ſummitatum rubi, ſolani, plantaginis, an.* m. ß. *bulliant omnia in aquæ lib.* iiii. *& pauco aceto ad hordei crepaturam.* Waſh the mouth with ſuch a decoction being warme. You may alſo make Trochiſces for the ſame purpoſe after this manner. ℞. *ſem. hyoſcyami, ſandaracha, coriandri opii an.* ℥ß. *terantur & cum aceto incorporentur, formenturque trochiſci apponendi dentibus dolentibus.* Or elſe, ℞. *ſeminis portulacæ, hyoſcyami, coriandri, lentium, corticis ſantali citrini, roſar. rub. pyrethri, camphoræ, an.* ℥ß. Let them all bee beaten together with ſtrong vineger, 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 paine bee not aſſwaged with theſe, you ſhall come to narcoticks, which may ſtupefie the nerve; as, ℞. *ſeminis hyoſcyami albi, opii, camphoræ, papaveris albi, an. quantum ſufficit, coquantur cum ſapa, et denti applicentur.* Beſides, you muſt alſo put this following medicine into the eare of the pained ſide. ℞. *opii & caſtorei, an.* ℈i. *miſceantur cum oleo roſato*: It hath ſometimes availed in ſwolne and diſtended gums, being firſt lightly ſcarified, to have applied leaches, for the evacuation of the conjunct matter, as alſo to have opened the veines under the tongue, or theſe which are behind the eares. For I remember that I, by theſe three kindes of remedies, aſſwaged great

The cauſe thereof.

Signes of this or that defluxion.

Three ſcopes of curing.

A cold & reperciſſive lotion for the mouth.

Trochiſces for a hot defluxion.

Narcoticks.

paines

paines of the teeth. Yet there bee some who in this affect open not these veines which are behind the eares, but those which are conspicuous in the hole of the eare in the upper part thereof.

Paine of the teeth arising from a cold cause and defluxion, may be helped by these remedies; boyle rosemary, sage, and pellitory of Spaine in wine and vinegar, and adde therto a little *aqua vitæ*, in this liquor dissolve a little treacle, and wash your teeth therewith. Others mingle Gum *ammoniacum* dissolved in *aqua vitæ* with a little *sandaracha* and myrrhe, and lay it to the pained tooth, after *Vigoes* counsaile. *Mesue* thinkes that beaten garlicke carryed in the right or left hand, asswages the paine, as the teeth ake upon the right or left side. But I being once troubled with grievous paine in this kinde, followed the counsaile of a certaine old woman, and laid garlicke rosted under the embers to my pained tooth, and the paine forthwith ceased. The same remedy used to others troubled with the like affect, had like successe. Moreover, some thinke it availeable if it bee put into the auditory passage Others drop into the eares oile of *castoreum*, or of cloves, or some such other chymicall oile. It is good also to wash the teeth with the following decoction. R. *rad. pyrethri* 3ß. *mentha et ruta an. p.i. bulliant in aceto*, and with this decoction being warme, wash the teeth. Some like fumes better, & they make them of the seeds of *Coloquintida* and mustard, and other like; they take the smoake by holding their mouths over a funnell. Other some boile pellitory of Spaine, ginger, cinamon, alume, common salt, nut megs, cipresse nuts, anise and mustard seeds, and *euphorbium* in oxycrate, and in the end of the decoction adde a little *aqua vitæ*, and receive the vapour thereof through a funnell: as also they wash their teeth with the decoction, and put cotton dipped therein into the eare, first dropping in a little thereof. Somethere are which affirm that to wash the teeth with a decoction of Sourge is a very good and anodyne medicine in the tooth-ach. I have oft times asswaged intolerable paines of the teeth, by applying vesicatories under the eare, to wit, in that cavity whereas the lower jaw is articulated with the upper: for the veine, artery and sinew which are distributed to the roots of the teeth, lye thereunder. Wherfore the blisters being opened, a thinne liquor runnes out, which doth not onely cause, but also nourish or feed the disease. But if the tooth be hollowed, and that the patient will not have it puld out, there is no speedier remedy, than to put in caustick medicines, as oile of vitriol, *aqua fortis*, and also a hot iron; for thus the nerve is burnt insunder, and loseth its sense. Yet some affirm that the milky juice that flowes from Spurge made into a paste with *Olibanum* and *amylum*, and put into the hollowed tooth, will make it presently to fall away in peeces. When the Gums and Cheekes are swollen with a manifest tumour, then the patient begins to be somewhat better and more at ease. For so by the strength of nature, the tumor causing the paine is carryed from within outwards. But of what nature soever the matter which causeth the paine be, it is convenient to intercept the course thereof with *Empl. contra rupturam*, made with pitch and mastick, and applyed to the temple on that side where the tooth aketh.

Hot fumes.

Vesicatories.

Causticks.

Chap. XVI.

Of other affects of the teeth.

THe teeth are also troubled with other preternaturall affects. For sometimes they take by relaxation of the gums, or else become corrupt and rotten, or have wormes in them, or else are set on edge. For the first, the gummes are relaxed either by an externall or primitive cause, as a fall or blow: or else by an internall or antecedent, as by the defluxion of acrid or waterish humours from the braine, or through want of nourishment in old bodies. If the teeth grow loose by the meanes of the decaying gums, the disease is then incurable: but you may withstand the other causes by the use of such things as fasten the teeth, shunning on the contrary such as may loosen them. Therefore the patient must not speake too earnestly, neither chaw hard things. If they become loose by a fall or blow

Causes of looseness of the teeth.

blow, they must not bee taken forth, but restored and fastened to the next that remaine firme, for in time they will be confirmed in their sockets, as I tryed in *Anthony de la Rue* a tailour, who had his jaw broken with the pommell 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 thread; for the rest, I fed the patient with broths, gellyes, and the like, and I made astringent gargarismes of cypresse nuts, myrtle berries, and a little alum boyld in oxycrate, and I wished him to hold it a good while in his mouth: by these means I brought it so to passe, 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 he saw a Lady of the prime nobility, who instead of a rotten tooth she drew, made a sound tooth, drawne from one of her waiting maids at the same time, to be substituted and inserted, which tooth in processe of time, as it were taking roote, grew so firme, as that she could chaw upon it as well as upon any of the rest. But as I formerly said, I have this but by heare-say.

A History.

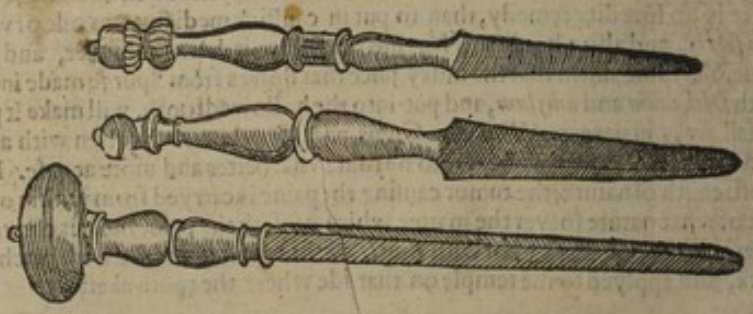
The causes of hollow teeth.

Now the teeth are corroded or eaten in by an acride and thinne humour penetrating by a plenteous and frequent defluxion even to their roots, and being there conteined, it putrefies, and becomming more acride, it doth not only draw the teeth into the contagion of its putrefaction, but also perforats and corrodes them.

The cure.

The putrefaction may bee corrected, if after generall medicines, you put oile of vitriol or *aqua fortis* into the hole of the eaten tooth: or else, if you burne the tooth it selfe to the roote with a small iron wyar being red hot: you shall thrust this hot iron through a pipe or cane made for the same purpose, lest it should harm any sound part by the touch therof, and thus the putrefaction, the cause of the arrosion, may be stayed. But if the hole bee on the one side between two teeth, then shall you file away so much of the sound tooth as that you may have sufficient liberty to thrust in your wiar without doing any harme.

The formes of Files made for filing the teeth.



Causes of wormes in the teeth.

Wormes breeding by putrefaction in the roots of the teeth, shall be killed by the use of causticks, by gargles or lotions made of vinegar wherein, either pellitory of Spain hath bin steeped, or Treacle dissolved also; Aloes and Garlike are good to be used for this purpose.

Causes of setting the teeth on edge.

Setting the teeth on edge happens to them by the immoderate eating of acride or tart things, or by the continuall ascent of vapours endued with the same quality, from the orifice of the ventricle to the mouth, or by a cold defluxion, especially of acride phlegme, falling from the braine upon the teeth, or else by the too excessive use of cold or stupifing liquors. This affect is taken away, if after generall medicines and shunning those things that cherish the disease, the teeth bee often washed with *aqua vita*, or good wine wherein sage, rosemary, cloves, nutmegs and other things of the like nature have bin boyled.

CHAP.

Chap. XXVII.

Of drawing of teeth.

Teeth are drawne, either for that they cause intolerable paines, which will not yeeld to medicines, or else for that they are rotten and hollowed, so that they cause the breath to smell; or else for that they infect the sound and whole teeth, and draw them into the like corruption, or because they stand out of order. Besides, when they are too deep and strongly rooted, so that they cannot be pluckd out, they must oft times be broken of necessity, that so you may drop some caustick thing into their roots, which may take away the sense, and consequently the paine. 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, eyes and braine 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 loosed from them, then shake them with your fingers, and doe this untill they begin to be loose; for a tooth which is fast in, and is plucked out with one pull, oft-times breaks the jaw, and brings forth the piece together therewith, whence follow a feaver and a great fluxe of bloud not easily to be stayed (for bloud or *pus* flowing out in great plenty is, in *Celsus* opinion, the sign of a broken bone) & many other maligne and deadly symptoms: some have had their mouthes drawne so awry, during the rest of their lives, so that they could scarce gape. Besides, if the tooth be much eaten, the hole thereof must be filled either with Lint, or a corke, or a piece of lead well fitted thereto, lest it be broken under your *forceps*, when it is twitched more straightly to be plucked out, and the root remain, ready in a short time to cause more grievous paine. But judgement must be used, and you must take speciall care lest you take a sound tooth for a pained one; for oft times the patient cannot tell, for that the bitternesse of paine by neighbourhood 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 be placed in a low seat, bending back his head between the Tooth-drawers legs; then the Tooth-drawer shall deeply scarifie about the tooth, separating the gums therfrom with the instruments marked with this letter A. and then if spoyled as it were of the wall of the gums, it grow loose, it must be shaken and thrust out by forcing it with the three-pointed levatory noted with this letter B. but if it sticke in too fast, and will not stirre at all, then must the tooth be taken hold of with some of these toothed *forcipes* marked with these letters C. D. E. now one, then another, as the greatnesse, figure, and site shall seeme to require. I would have a tooth-drawer expert and diligent in the use of such toothed mullets; for unlesse one know readily and cunningly how to use them, he can scarce so carry himself, but that he will force out three teeth at once, oft-times leaving that untoucht which caused the paine.

A caveat in drawing of teeth.

Lib.7. cap.18.

The maner of drawing teeth.

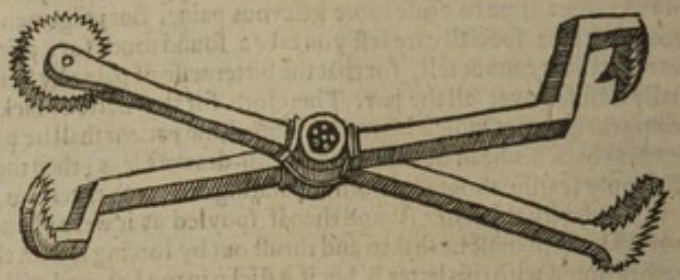
Instruments

The effigies of Forcipes *or mullets for the drawing of teeth.*

Instruments for scraping the teeth, and a three-pointed levatory.



The forme of another Instrument for drawing of teeth.



What to be done when the tooth is pluckt out.

After the tooth is drawn, let the blood flow freely, that so the part may be freed from pain, and the matter of the tumor discharged. Then let the tooth-drawer presse the flesh of the gums on both sides with his fingers whereas hee tooke out the tooth, that so the socket that was too much dilated and oft times torne by the violence of the plucke, may be closed again. Lastly, the mouth shall be washed with oxycrate; and if the weather bee cold, the patient shall take heed of going much in the open aire, lest it cause a new defluxion upon his teeth.

Chap. XXVIII.

Of cleansing the Teeth.

Causes of foule or rusty teeth.

PIeces of meat in eating sometimes sticke between the teeth, and becomming corrupt by long staying there, doe also hurt the teeth themselves, and spoile the sweetnesse of the breath. Hee that would eschew this, ought presently after meate to wash his mouth with wine mixed with water, or oxycrate, and well to clense his teeth that no slimy matter adhere to them. Many folkes teeth by their owne default gather an earthy filth of a yellowish collour, which eates into them by little and little, as rust eates into iron. This rusty filthinesse, or as it were mouldinesse of the teeth, doth also oft times grow by

by the omitting of their proper duty, that is, of chawing. Whence soever this slimy filth proceeds, wee must get *Dentifrices* to fetch it off withall, and then the teeth must be presently rubbed with *aqua fortis* and *aqua vitæ* mixed together, that if there be any thing that hath scaped the *Dentifrices*, it may bee all fetched off; yet such acride washings are hurtfull to the sound teeth, for that they by little and little consume and waste the fleth of the gums. The cure. A caution in the use of acride things.

Dentifrices shall be made of the roote of marsh-mallowes boiled in white wine & Alume; and as when the teeth are loose wee must abstaine from such things as are hard to be eaten and chawed, but much more from breaking of such things as are of a bony consistence, also here we must shunne all things that by their toughnesse stick to the teeth. Many for the cleansing of the teeth, commend a powder made of scuttle bones, purple shells, pumice stone, burnt alume, and harts horne, and a little cinamon, which is a singular remedy for the teeth howsoever affected. Many other are content with bread only tosted & beaten, but this following water is very effectuall to whiten the teeth. R. *sal. ammon. & gemmei, an.* ℥i. *alum. roch.* ℥ß. *aquæ ros. quod sufficit, destillentur.* And let the teeth be cleansed with this distilled liquor. A water to whiten the teeth.

CHAP. XXIX.

Of the impediment and contraction of the Tongue.

THe tongue is sometimes tyed and short from the nativity; as when the liberty of the tongue is restrained by the subject and neighbouring as well membraines as muscles, being either too short or too hard. Sometimes this disease happens after they are borne by some accident or preternaturall affect, as by too hard a scarre left by the healing of an ulcer under the tongue. The patient at his beginning to speake, is too slow in speaking, but presently leaving his slowneſse hee becomes too quicke, so that he stammers. If the disease proceed from the astriction and shortnesse of the ligamentall membrane lying under the tongue, then the in incision shall bee made broadwise, having great care that the veines and arteries which are there, be not violated, for feare left they should cause a *hæmorrhagy* not easily to be stayed: Then the mouth shall be presently washed with oxycrate, and some lint dipped in syrupe of dryed roses, or honey of roses put into the midst of the incision, left 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 be often thrust this way, and the tongue more violently rowld up and down, & thrust out of the mouth. Yet somtimes this ligament is so thick & short, and therfore holds down the tongue so close, that you cannot come 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 thread shall bee thrust through it, and so the thread shall bee tyed straiter and straiter every day, untill by little and little this ligamentall tye of the tongue, which by its immoderate shortnesse intercepts the liberty of the motion shall be consumed and broken. The cause of being tongue-tied. The cure. Another way to cut it.

CHAP. XXX.

Of superfluous Fingers, and such as sticke together.

EAch hand hath naturally five fingers onely; whatsoever is more or lesse is against nature: and if there be fewer, it is a fault not to be helped by art. But if there be more, that for the most part may be helped by art: superfluous fingers usually grow by the thumbe, or the little finger, but seldome otherwise. These are either wholly fleshy, or have bones of their kind and nailes upon them. Those which are of a bony nature doe either arise from the joints of the naturall fingers, and are joynted like them, and so are oft times The differences.

moveable, or elſe from ſome middle ſpace of a joint, and theſe have not power to ſtirre or move. Now they are ſometimes equall in magnitude to the naturall fingers to which they grow, yet more frequently they are ſhorter. Thoſe which are onely fleſhy, are eaſily amputated and made even with a razour; but ſuch as are alſo bony cannot be cut off, unleſſe with the cutting mullets herafter deſcribed, and this is a diſeaſe of the fingers in number. There is alſo another diſeaſe in figure, for they ſomtimes ſticke together, and otherwhiles they are very little ſeparated. This fault happens either from the firſt originall by the error of the formative faculty; or elſe it happens afterwards by accident, as by a wound or burne ill cured. For neighbouring fingers being ulcerated do eaſily grow together, unleſſe they be kept aſunder by a linnen ragge. And if they by chance ſhall grow together by a little and thin skinne and fleſh, they ſhall forthwith be divided with a ſharp razour; but if they be joyned by the interpoſition of a more groſſe and denſe ſubſtance, to wit, the nerves, tendons, and veſſels, being knit together on each ſide, it will be beſt not to meddle at all with the dividing them.

Cutting Mullets neatly made for the cutting off ſuperfluous Fingers.



The cure of nailes running into the fleſh of the fingers.

Neither muſt wee omit, that many have their nailes run with ſuch bony ſharpeneſſe into the fleſh of their fingers lying under them, that they cauſe moſt cruell pain; neither commonly do you availe any thing by paring them; for growing up within a while after, they preſſe downewards againe with the more violence. Therefore the Surgeon is often forced to cut away all the fleſh whereinto the ſharpeneſſe of the naile runs. Which I have done in many with happy ſucceſs. Many have corns growing upon their fingers in divers faſhions: They are taken off by paring away by little and little the callous hardneſſe, and then laying a head of garlicke beaten thereon. Yet the cure is more quick and certaine which is performed by cauſtickes, as *aqua fortis*, or oile of vitrioll.

How to take off the cornes of the fingers.

CHAP. XXXI.

Of the too ſhort a Præpuce, and of ſuch as have bin circumciſed.

The cauſe.

The cure.

WHen as the Præpuce or foreskin is too ſhort, it cannot cover the *glans*. This happens either by nature, to wit, by the firſt conformation, or afterwards by ſome accident, as to thoſe whom religion and the cuſtome of their nation bids to be circumciſed. The cure is thus. The Præpuce is turned up, and then the inner membrane thereof is cut round, and great care is had, that the veine and artery which are there betweene the two membranes of

of the Præpuce, be not cut insunder. Hence it is drawn downward by extension, untill it cover the *glans*, a desiccative emplaster being first put between it and the *glans*, lest they should grow together. Then a pipe being first put into the urinary passage, the præpuce shall be there bound untill the incision be cicatrized. This cure is used to the Jewes, when having abjured their religion full of superstitions, for handsomnesse sake, they would cover the nut of their yard with a præpuce, and so recover their cut off skinne.

Chap. XXXII.

Of Phymosis *and* Paraphymosis, *that is, so great a constriction of the præpuce about the* Glans *or Nut, that it cannot be bared or uncovered at Pleasure.*

THe prepuce is straitened about the *Glans* two waies; for it either covers the whole nut, & so straitly encompasses the end therof, that it cannot be drawne upwards, and consequently the nut cannot be uncovered; or else it leaves the *Glans* bare under it, being fastened so stiffely to the roots thereof, that it cannot bee turned up, nor drawn down, or over the *Glans*. The first manner of constriction is termed *Phymosis*, the latter *Paraphymosis*. The *Phymosis* happens either by the fault of the first conformation, or else by a scarre, through which occasion the præpuce hath growne lesser, as by the growing of warts. Now *Paraphymosis* is often occasioned by the inflammation of the yard, by impure copulation; for hence ulcers breed betweene the præpuce and *Glans*, with swelling, and so great inflammation, that the præpuce cannot bee turned backe. Whence it is that they cannot bee 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 hindred & prevented by amputation: but if a scar be the cause of the constriction of the præpuce, the patient being plac'd in a convenient site, let the præpuce be drawne forth and extended, and as much as may be stretched and enlarged, then let the scarre be gently cut in three or foure places on the inner side with a crooked knife, but so, that the gashes come not to the outside, and let them be an equall distance each from other. But if a fleshy excrescence or a wart shall be the occasion of this straitnesse and constriction, it shall be consumed by the same remedies, by which the warts of the wombe and yard are consumed or taken off. But when as the præpuce doth closely adhere to the *Glans* on every side, the cure is not to be hoped for, much lesse 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 evill conformation, have not their *Glans* perforated in the middle, but have only a small hole underneath, toward the bridle & ligament of the yard, called the cord. Which is the cause, that they do not make water in a strait line, unlesse they turn up their yard toward their belly, neither by the same reason can they beget children, because through this fault of conformation, the seed is hindred from being cast directly into the wombe. The cure is wholly chirurgicall, and is thus performed. The præpuce is taken hold of and extended with the left hand, but with the right hand, the extremity 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 downewards; in these also the generation of children is hindred, because the seed cannot be cast directly and

The cause.

The cure.

plentifully into the wombe. Therefore this ligament must be cut with much dexterity, and the wound cured after the manner of other wounds, having regard to the part.

Such as are borne without a hole in their fundament are not long lived.

Children also are sometimes borne into the world with their fundaments unperforated, for a skinne preternaturally covering the part, hinders the passage forth of the excrements; 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 dayes after such section.

Chap. XXXIV.

Of the causes of the stone.

Why children are subject to the stone in the bladder.

THE stones which are in the bladder have for the most part had their first originall in the reines or kidneys, to wit, falling down from thence by the ureters into the bladder. The cause of these is twofold, that is, materiall and efficient. Grosse, tough, and viscide humours, which crudities produce by the distempers of the bowels and immoderate exercises, chiefly 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

The cause.

is either the immoderate heate of the kidneys, by meanes whereof the subtler part of the humors is resolved, but the grosser and more earthy subsides, and is hardened as we see bricks hardened by the sun and fire; or the more remisse heat of the bladder, sufficient to bake into a stone the *faeces* or dregges of the urine gathered in great plenty in the capacity of the bladder. The straightnesse of the ureters and urenary passage may be accounted as an assistant cause. For by this meanes the thinner portion of the urine floweth forth, but that which is more feculent and muddy being stayed behind, groweth as by scaile upon scaile, by addition and collection of new matter into a stony masse. And as a weeke often-times dipped by the Chandler into melted tallow, by the copious adhesion of the tallowy substance presently becomes a large candle; thus the more grosse and viscide fæces of the urine stay as it were at the barres of the gathered gravell, and by their continuall appulse are at length wrought and fashioned into a true stone.

Chap. XXXV.

Of the signes of the stone of the Kidneys and bladder.

Why the thigh is numme in the stone of the reines.

THE signes of the stone in the reines, are the subsiding of red or yellow sand in the urine, a certaine obscure itching at the kidneys, and the sense of a weight or heavinesse at the loynes, a sharp and pricking paine in moving or bending the body, a numnesse of the thigh of the same side, by reason of the compression caused by the stone, of the nerves discending out of the *vertebræ* of the loynes of the thigh. But when the stone is in the bladder, the fundament and

Signes of the stone in the bladder.

whole *perinæum* is pressed as it were with a heavie weight, especially if the stone be of any bignesse, a troublesome & pricking pain runs to the very end of the yard, and there is a continuall itching of that part, with a desire to scratch it: hence also by the paine and heat there is a tension of the yarde, and a frequent and needlesse desire to make water, and sometimes their urine commeth from them drop by drop. A most grievous paine torments the patient in making water, which he is forced to shew by stamping with his feet, bending of his whole body, and the grating of his teeth. He

Why such as have a stone in the bladder are troubled with the falling of the fundament.

is oft times so tormented with excesse of paine, that the *Sphincter* being relaxed, the right gut falleth downe, accompanied with the swelling heate and paine of the *Hæmorrhoid* veines of that place. The cause of such torment is, the frequent striving

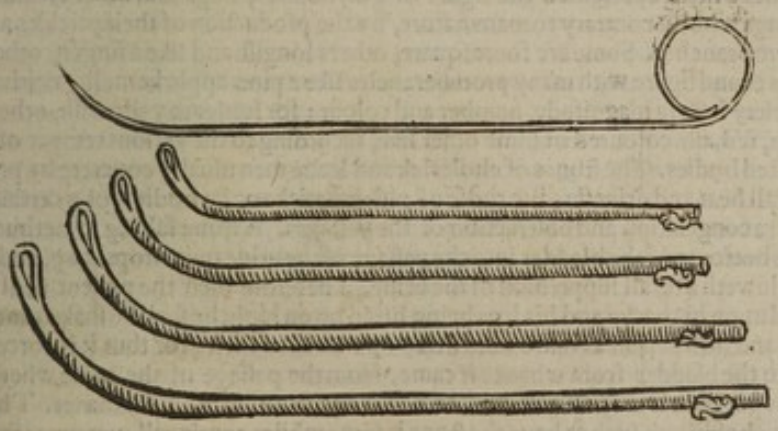
of

of the bladder to expell the ſtone wholly contrary to the nature thereof, whereto by ſympathy the expulſive faculty of the guts and all their parts of the belly come as it were for ſupply. The ſediment of the urine is groſſe & viſcid, and oft-times like the whites of egs, which argueth the weakneſſe of the native heate not attenuating the juices. The patient looketh of a pale and yellowiſh complexion and hollow eyed, by reaſon of the almoſt continuall watching which is cauſed by the bitterneſſe of paine; yet may it more certainely be knowne by putting in, or ſearching with a *Cathater*. Which to doe, the patient ſhall bee wiſhed to ſtand with his body ſomewhat ſtooping, leaning againſt ſomewhat with his backe, and holding his knees ſome foot aſunder. Then the *Cathater* being bigger or leſſer as the body ſhall require, and anointed with oyle or butter, ſhall bee thruſt with a skilfull hand into the paſſage of the urine, and ſo into the capacity of the bladder. But if the *Cathater* cannot come to that capacity, the patient ſhall be placed in ſuch a poſture; then ſhall he be layd upon his backe on a bench, or the feet of a bed, with his knees bended, and his heeles drawn to his buttocks, after which manner he muſt almoſt lie when he is to be cut for the ſtone, as ſhall be ſhewen hereafter. For thus the *Cathater* is more eaſily thruſt into the bladder, and ſhewes there is a ſtone by the meeting and obſcure ſound of the obvious, hard and reſiſting body. You muſt have ſundry *Cathaters*, that they may ſerve for every body bigger and leſſer, and theſe muſt be crooked, ſmooth and hollow. When being thruſt into the urenary paſſage (which before unawares I omitted) they come to the necke of the bladder, they muſt not be thruſt ſtreight 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 crookedneſſe of the way, which trends in the forme of this letter S. It is not ſo in women by reaſon of the ſhortneſſe and ſtraitneſſe of the necke of the bladder. It is fit your *Cathaters* bee hollow or fiſtulous in manner of a pipe, that they may receive a ſilver wiar or ſtring, that may hinder the groſſe and viſcide humour, clotted blood, or the like, from ſtopping the further end of the *Cathater*, through which the ſuppreſſed urine ought to paſſe & be made. But now aſſoon as we perceive that the *Cathater* is come into the capacity of the bladder, the wiar muſt be drawn forth, that ſo the urine may the freelier flow out by the hollowneſſe of the *Cathater*. You may perceive the ſhapes of theſe inſtruments by this following figure.

How to ſearch for the ſtone in the bladder with a *Cathater*.

The figure of the necke of the bladder is different in men and women.

The figure of Cathæters, *and of a ſilver ſtring or wiar.*



CHAP. XXXVI.

Prognostickes in the stone.



HEn the stone is cast forth of the kidney (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 body 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 suppresst, and death ensue by the suffocation and extinction of the native heat, by the urine flowing back by the rivelits of the veines over all the whole body. Such as have a small stone cast forth of their reines into the cavity of the ureters, these, untill this stone be fallen into the bladder, have cruell paine with gripings, with often desire to go to stoole and make water, but oft-times do neither. For such oft-times have their bellies distended with flatulencies: an argument hereof is their continuall belching, or breaking of wind. But by sneesing & coughing, or any other concussion of the whole body, a pricking paine is forthwith felt, whereas the stone stops, especially if it be either rough, or have sharpe points like hornes. This paine is communicated to the hip and thigh by sympathie, and some have the stones drawne up as it were with great violence. To these may bee added the Colicke, cholericke vomiting, and almost a generall sweat. The stone in the kidnies is most commonly bred in such as are ancient, by reason of the weakenesse of the expulsive faculty. But the stone in the bladder happeneth to such as are more young, because the native heat is more vigorous in such, and strong and inordinate motions increase the strength of the expulsive facultie. When the stone is in the bladder, and the urine appeareth bloody, it is the signe of a small, as also a prickly and rough stone, for thus it more easily entreth into the neck of the bladder, and exulcerateth it being fleshy, whence the blood commeth away with the urine, and most cruell paine as of needles thrust into the flesh, especially after labour and much exercise: on the contrary, a larger and more smooth stone will not cause such tormenting paine, and it causeth a milkie water. The shapes of stones bred in the kidnies are various, according to the variety of the strainers through which they passe whilst they are bred. Verily I have seen stones which represented the figure of grayhounds, hogs and other creatures, and things wholly contrary to mans nature, by the production of their prickles and as it were branches. Some are foure square, others longish and like a finger, other some of a round figure with many protuberancies like a pine-apple kernell; neither is the variety lesse in magnitude, number and colour: for some are yellowish, others whitish, red, ash-coloured or some other like, according to the various temper of the affected bodies. The stones of cholerick and leane men usually concrete by preternaturall heat and drinesse; but those of phlegmaticke or fat bodies, of a certaine as it were congelation and obstruction of the passages. A stone falling sometimes from the bottome of the bladder into the passage of the urine quite stops it up, and thence followeth a totall suppression of the urine. Therefore then the patient shall be placed upon his backe and his legs being lifted up on high, he shall be shaken and tossed up and downe, just as one would shake up a sacke 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 backe by thrusting in a Cathæter. The paine which afflicteth such as have the stone is some whiles continuall, yet more frequently it commeth by fits and returnes, sometimes monethly, other whiles yearely. Such as have the stone in the kidnies make for the most part watterish 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 shortnesse of the passage is evacuated in gravell, before it can be gathered and grow into a stone of a just magnitude; yet stones breed in some women and those equally as big as in men, and therefore they are to be cured by section and the like remedies.

How death may ensue by the suppression of the urine.

Why stones of the kidneys have sundry shapes.

Why men are more subject to the stone than women.

When

When the ſtone exceedeth the bigneſſe of an egge, it can ſcarce be taken away without the tearing of the bladder, whence happeneth an unvoluntary ſhedding of the water, curable by no art, becauſe the bladder, ſeeing it is nervous and without bloud, being once torne admitteth no conſolidation, adde hereto that inflammation and a gangrene often following the rending of the bladder bring inevitable death. The patient runs the ſame hazzard, if a long ſtone be pulled out ſidewiſe with your inſtrument, or if it be incloſed in a membrain (which kind of ſtone can ſcace be found with a Cathæter) and ſo bee faſtened to the bladder, or otherwiſe if the ſtone it ſelfe bee faſtened into the ſubſtance of the bladder, or laſtly if by any chance the Surgeon being about to plucke out the ſtone ſhall hurt the body of the bladder with his inſtruments. Yet ſtones of an indifferent bigneſs are more ſafly extracted out of the bladder than thoſe which are leſſe, and the patient more frequently and happily recovereth. For they doe not ſcape from the inſtrument, and the patient being 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, paine and other ſymptomes, which happen after cutting, yea in cutting. Having thus ſpoken of the cauſes, ſigns, places, ſymptomes and prognoſticks, we muſt come to the cure, beginning with that part which is termed *Prophylactice*, that is, the preventing part.

What ſtones cannot be taken out of the bladder without killing the patient.

CHAP. XXXVII.

What cure is to be uſed when we feare the ſtone.

DIet muſt firſt bee appointed, which by the convenient uſe of the fixe things not naturall (as they terme them) may heape up ſmall ſtore of groſſe, tough and viſcide humours in our bodies. Therefore cold and cloudy aire is to be ſhunned. They muſt abſtaine from fiſh, beefe, porke, water-foule, pulſe, cheeſe, milke meates, fryed and hard egges, rice, cakes and all paſtry, unleavened bread, and laſtly all manner of obſtructing meats. Alſo garlike, onions, leeks, muſtard, ſpices, & laſtly all things which overheat the bloud and humors muſt be ſhunned, eſpecially if you feare that the ſtone is concrete by the heat of the reines. Standing and muddy waters, thicke and troubled wines, beare, and ſuch kind of liquors muſt be eſchewed. Saciety in meats and drinks is to be ſhunned, as that which breeds crudities. Alſo long watching and continuall labour becauſe they inflame the bloud, cauſe crudities, and preternaturall heat muſt carefully be eſchewed, as alſo all more vehement paſſions of the minde. If the body be plethoricke, then it muſt bee evacuated by phlebotomie, purging and vomiting, which is accounted for a ſingular remedy for the prevention of this diſeaſe. For the performance of all which things a Phyſician ſhall be conſulted. But becauſe Phyſicians are not in every place and alwaies at hand, I have thought good to ſet downe theſe following medicines; yet we muſt firſt remember this counſell of *Galen*; The uſe of diureticks, and ſtrong purging medicines is hurtfull, as often as there is inflammation in the reines and bladder, for ſo the confluxe of the humors to the affected parts is the greater, whence the inflammation and paine are increaſed.

What diet ſuch muſt uſe as feare the ſtone.

Lib. 13 method.

Wherefore firſt uſing relaxing medicines, as fixe drams of *Caſsia* newly drawne, with ℥iv. of *Rubarbe* in powder mixed therewith; then lenitive and refrigerating medicines ſhall bee inwardly and outwardly uſed, ſuch as is this following ſyrupe. ℞. *ſummitatum malv. biſmal. & violar. an.* m. ß. *rad. alth.* ℥i. *glycyr.* ℥ß. 4. *ſem. frigid. major. an.* ℥i. *fiat decoctio.* ℞. *prædict. decoctionis* ℔ ß. *in colatura diſſolve ſacch. albiſſ.* ℥ii. *mellis albi* ℥ iß. *fiat ſyrupus ſecund. artem*; let the patient uſe this often. This following apozeme is alſo very effectual for the ſame purpoſe. ℞. *rad. aſpar. gramin. polyp. querc ini, paſſul. mund. an.* ℥ß. *betonic. herniar. agrimon. omnium capill. & pimpinell. an.* m. ß. 4. *ſem. frigid. major. & ſem. fœnic. an.* ℥i. *folior. ſen.* ℥vi. *fiat decoct. ad* ℔ ß. *in colatura diſſolve ſyrupi de Althæa & de herniar. an.* ℥iß. Make a cleare apozeme and let it be aromatized with a little cinamon, for two doſes; let him take the firſt doſis in the morning two houres before meat, and the other at foure of the clock in the afternoone. Moreover

A lenitive and lubricating ſyrupe.

A diuretick Apozeme.

over this following broth hath an excellent and certain power to prevent the ſtone.

A diuretick and lenitive broth.

℞. *hordei integr.* p.i. *radic. petroſelini, acetoſ. fœnicul. cichor. bruſci an.* ℥i. 4. *ſem. frigidorum conquaſſatorum. an.* ℥ß. *fol. acetoſ. portul. lactucæ, ſummitatum malvæ, & violar. an.* m.ß. *bulliant in aqua fluviatili cum gallo gallinaceo & crure vitulino*; let the broth bee kept, and let the Patient take thereof ſixe ounces for foure daies: in the morning two houres before meat, with an ounce of the juice of Citrons gently warmed with the ſame broth at the time of the taking thereof; for thus, much urine will be made in a ſhort while after, full of a ſandy ſediment and a groſſe viſcide humour. Whereby you may certainly gather that this kind of broth is very effectuall to cleanſe the paſſages of the urine, neither in the interim, doth it any harme to the ſtomacke and other parts by which it paſſeth: ſo that it may be rightly eſteemed a medicinall nouriſhment. You may alſo profitably uſe this following powder. ℞. *nucleorum meſpilorum* ℥i. *pul. elect. diamarg. frig.* ℥ii. 4. *ſem. frigid. majorum mund. glycyrhizæ raſæ,* ℥i. *ſem. ſaxifrag.* ℥ii. *ſem. milii ſolis, geniſt. pimpinel. bruſci & aſparag. an.* ℈i. *ſem. althææ,* ℥ß, *ſacch. albiſſ.* ℥vi. *fiat pulvis*; let him take a ſpoon full in the morning three houres before meat. Alſo ſome thinke that lye made of the ſtalkes and huskes of beanes is a good preſervative againſt this diſeaſe. Beſides the uſe of this following glyſter hath done good to many. ℞. *fol. lactuc. ſcariol. portul. an.* m.i. *flor. viol. & nenuph. an.* p.i. *fiat decoctio. ad lib.* i. *in colatura diſſolve caſſiæ fiſtulæ* ℥i. *mellis viol. & ſacch. rub. an.* ℥iß. *olei viol.* ℥iiii. *fiat clyſter.* This which followeth is the fitter to aſſwage the paine. ℞. *flo. chamæmelil. ſummitat. aneth. berul. an.* p.ii. *fiat decoctio in lacte vaccino*; *in colatura diſſolve caſſiæ fiſtul. & ſacchar. alb. an.* ℥i. *vitellos ovorum num.* ii. *olei anethini, & chamæm. an* ℥ii. *fiat clyſter.* In the interim let the kidneys bee annointed on the outſide with *unguentum roſatum, refrigerans Galen.* and *populeon* uſed ſeverally, or mixed together, laying thereupon a double linnen cloth dipped in oxycrate. But if the concretion of the ſtone be of a cold cauſe, the remedies muſt bee varied, as follows; ℞. *terebinth. venet.* ℥i. *cort. citri* ℥ii. *aquæ coct.* ℥ii. *fiat potio.* Or elſe, ℞. *caßiæ recent. extract.* ℥vi. *benedict. lax.* ℥iii. *aq. fœnicul.* ℥ii. *aq. aſparag.* ℥i. *fiat potio*; let him take it three houres before dinner: this following apozeme is alſo good. ℞. *rad. cyper. bardan. & gram. an* ℥iii. *biſmal. cum toto, beton. an.* m.ß. *ſem. milii ſolis, bardan. urtic. an* ℥ii. *ſem. melon. glycyrhiz. raſ. an.* ℥iiß. *ficus num.* 4. *fiat. decoct. ad quart.* iii. *in expreſſa colatura, diſſolve ſyrup. de caphan. & oxymilitis ſcillitici an.* ℥i. ß. *ſacchar. albiſ.* ℥iii. *fiat apozema pro tribus doſibus, clarificetur & aromatiz. cum* ℥i. *cinam. &* ℥ß. *ſant. citrin.* let him take foure ounces three houres before dinner. Or elſe, ℞. *rad petroſel. fœnicul. an.* ℥i. *ſaxifrag. pimp. gram. & bardan. an.* m. ß. *quatuor ſeminum frig. major. mundat. & milii. ſolis an.* ℥ii. *fiat decoctio, cape de colatura* ℔. ß. *in qua diſſolve ſacch. rub. & ſyrup. capill. ven. an.* ℥i.ß. Let it be taken at three doſes, two houres before meat. The following powder is very effectuall to diſſolve the matter of the ſtone. ℞. *ſem. petroſel. & rad. ejuſdem mundat. an* ℥ß. *ſem. cardui, quem colcitrapam vocant,* ℥i. let them be dryed in an oven or ſtone with a gentle fire, afterwards let them be beaten ſeverally and make a powder, whereof let the patient take ℈i.ß. or two ſcruples with white wine, or chicken broth faſting in the morning by the ſpace of three daies. Or, ℞. *coriand. præp.* ℈iv. *aniſi marathri, ganor. alkakengi, milii ſolis, an* ℥ii. *zinzib. & cinam. an.* ℈ii. *turbith. electi* ℥i. *cari* ℈ii. *galang. nucis moſchat. & lapid. judiaci an.* ℈i. *ſol. ſennæ mund. ad duplum omnium, diacrydii* ℥ii.ß. *miſce, fiat pulvis:* the doſis is about ℥i. with white wine three houres before meate. Againſt the flatulencies which much diſtend the guts in this kind of diſeaſe, gliſters ſhall be thus made; ℞. *malv. biſmal. pariet. origani, calament. flo. chamæm. ſumitat. anethi, an.* m. ß. *aniſi, carvi. cumini fœnic. an.* ℥ß. *baccar. laur.* ℥iii. *ſemin. rutæ* ℥ii. *fiat decoctio, in colatura, diſſolve bened. lax. vel diaphanic.* ℥ß. *confect. bac. lauri* ℥iii. *ſacchar. rub.* ℥i. *olei aneth. chamæm. & rutar. an.* ℥i. *fiat clyſter.* Or, ℞. *olei nucum & vini mal. an.* ℔. ß. *aq. vitæ.* ℥ß. *fiat clyſter*; let it be kept long, that ſo it may have the more power to diſcuſſe the winde.

A diuretick powder.

The lye made of the aſhes of beane ſtalkes a diuretick.

Anodine gliſters in the ſtone.

Remedies againſt the ſtone of the kidnies comming from a cold cauſe.

Carminative gliſters.

Chap.

Chap. XXXVIII.

What is to be done, when the stone falleth out of the Kidney into the Ureter.

OFt-times it falleth out that the reines using their expulsive faculty force downe the stone (whose concretion and generation the Physicians by the formerly prescribed meanes could not hinder) from themselves into the ureters; but it stayeth there either by reason of the straightnesse of the place, or the debility of the expulsive faculty. Therefore then cruell paine tormenteth the patient in that place whereas the stone sticketh, which also by consent may be communicated to the hippe, bladder, testicles and yard, with a continuall desire to make water and goe to stoole. In this case it behooveth the Physician that he supply the defect of nature, and assist the weake indeavours.

Signes of the stone stopping in the *ureter*.

Therefore let the patient if he be able mount upon a trotting horse, and ride upon him the space of some two miles, or if hee can have no opportunity to doe so, then let him run up and downe a paire of staires untill he be weary, and even sweat again; for the stone by this exercise is oft-times shaken into the bladder; then presently shall be given or taken by the mouth such things as have a lenitive and relaxing faculty, as oyle of sweet almonds newly drawne and that without fire, and mixed with the water of pellitorie of the wall and white wine. Let frictions of the whole body be made from above downewards with hot clothes; let Ventoses with a great flame be applyed one while to the loynes, and another while to the bottome of the belly, a little below the grieved place; and unlesse the patient vomit of his owne accord, or by the bitternesse of his paine, let vomiting bee procured with a draught of water and oile luke warme; for vomiting hath much force to drive downe the stone, by reason of the compression of the parts, which is caused by such an endeavour: lastly, if the stone descend not by the power of these remedies, then the patient must bee put into a *Semicupium*, that is, a Halfe-bath, made of the following decoction. Remedies to force down the stone sticking in the *ureter*.

℞. *malvæ, bismal. cum toto an.* m.ii. *beton. nasturt. saxifrag. berul. parietar. violar. an.* m.iii. *semin. melonum, mali solis, alkekengi an.* ℥vi. *cicer. rub.* lb.i. *rad. appii, gram. faniculi, & eryngii, an.* ℥iiii. *in sufficienti quantitate aquæ pro incessu; coquantur ista omnia in uxlusa sacco*; herein let the patient sit up to the navell: neither is is fit that the patient tarry longer in such a bath than is requisite, for the spirits are dissipated, and the powers resolved by too long stay therein. But on the contrary, if the patient remaine as long as is sufficient in these rightly made, the paine is mitigated, the extended parts relaxed, and the passages of urine opened and dilated, and thus the stone descendeth into the bladder. But if it be not moved by this meanes any thing at all out of the place, and that the same totall suppression of urine do as yet remaine, neither before the patient entred into the bath the putting of a *Cathæter* into the bladder did any thing availe, yet notwithstanding he shall try the same againe after the patient is come out of the bath, that hee may bee throughly satisfied whether peradventure there may bee any other thing in these first passages of the yard and neck of the bladder, which may with-hold the urine; for the *Cathæter* will enter farre more easily, the parts being relaxed by the warmenesse of the bath: then inject some oyle of sweet almonds with a syringe into the *urethra* or passage of the yarde; whilst all these things are in doing, let not the patient come into the cold aire. But here I have thought good to describe a chaire for a bath, wherein the patient may fitly sit. A decoction for a bath.

The

The figure of a chaire for a Semicupium.



A. *Sheweth the whole frame of the Chaire.*
B. *The hole wherein the patient muſt ſit.*
C. *The Ciſterne that holds the water.*
D. *A Cocke to empty the water when it groweth cold.*
E. *A Funnell whereby to poure in warme water.*

There may alſo be another decoction made for the bath, as thus: ℞. *rad. raph. alth. an.* ℔ ii. *rad. ruſc. petroſel. & aſparag. an.* ℔ i. *cumin. fœnicul. ameos an.* ℥iiii. *ſem. lini, fœnug. an.* ℥vi. *fol. marub. parietar. florum chamæm. melil. anethi, an.* m. ii. *bulliant omnia ſecundum artem in aquæ ſufficienti, & vini albi odoriferi exigua quantitate ad conſumptionem tertiæ partis pro Semicupio.* Alſo the ſame decoction may bee uſed for gliſters, adding thereto two yolkes of egges, and foure ounces of oyle of lillies, with ℥i. of oile of Juniper, which hath a certaine force to aſſwage the paine of the ſtone and colick. But a farre leſſe quantity of the decoction in a gliſter muſt be uſed in theſe diſeaſes, than uſually is appointed in other diſeaſes; otherwiſe there will be danger leſt the guts being diſtended ſhould more preſſe upon the kidneys and ureters, troubled in ſome ſort with inflammation, and ſo increaſe the paine and other ſymptomes. This following cataplaſme ſhall be profitably applyed to the grieved place, to wit, the loynes or flankes and bottome of the belly, for it is very powerfull to aſſwage paine, and help forwards the falling downe of the ſtone. ℞. *rad. alth. & raphani, an.* ℥iiii. *pariet. fœnic. ſenecionis, naſturt. berul. an.* m. i. *herniariæ* m. ß. *omnibus in aqua ſufficienti decoctis, & deinde contritis, adde olei aneth. chamæm. & 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 paine preſently (if there be but one ſtone, for ſometimes more with much gravell do againe 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 unleſſe he bee very weake, it is fit that he ride and walk a foote, and take ℥iv. of *ſpecies Lithontribon* in foure doſes with white wine, or the broth of red Cicers three houres before dinner and ſupper. Beſides, let him plentifully drink good wine, and after he hath drunke, let him hold in his

An Anodine Cataplaſme.

Signes of the ſtone fallen out of the *ureter* into the bladder.

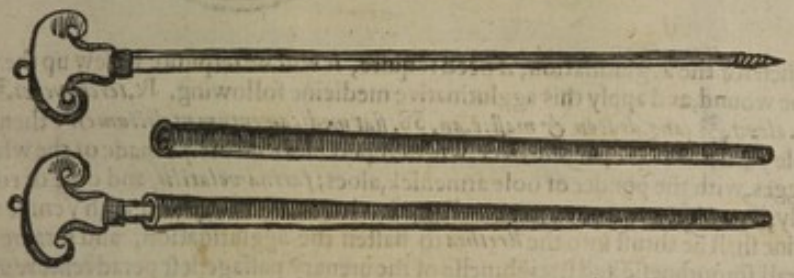
his urine as long as he can; that so it being gathered in greater plenty, it may presently thrust the stone out of the bladder with the more force: for which purpose you may also inject the following liquor into the bladder. ℞. *syrupi capill. ven.* ℥i. *aquæ alkekengi* ℥iii. *olei scorpionum.* ℈ß. Let it bee injected into the bladder with a syringe.

Chap. XXXIX.

What must be done the stone being fallen into the necke of the bladder, or passage of the yard.

After the stone is fallen out of the capacity of the bladder, and stops in the necke thereof, or passage of the yard, the Surgeon shall have a speciall care that he do not force or thrust backe the stone from whence it came, but rather that he press it gently with his fingers to the end of the yard, the passage being first made slippery by injecting some oyle of sweet almonds. But if it stop in the end of the *Glans*, it must bee plucked out with some crooked instrument; to which if it will not yeeld, a Gimblet with a pipe or case thereto, shall be put into the passage of the yard, and so it shall be gotten out, or else broken to pieces by the turning or twining about of the Gimblet, which I remember I have diverstimes attempted and done; for such Gimblets are made with sharpe screwes, like ordinary Gimblets.

The delineation of a Gimblet made to breake 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 businesse, their body nor point must bee no thicker than a small probe; lest whilst they are forced or thrust into the *urethra*, or urinary passage, they might hurt the bodies next unto them by their violent entrance.

Chap. XL.

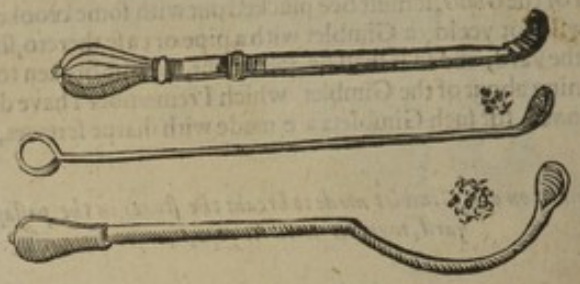
What course must be taken, if the stone sticking in the Urethra *or urinary passage, cannot be gotten out by the fore-mentioned arts.*

But if the stone be more thicke, hard, rough and remote from the end of the yard, than that it may be gotten out by the meanes formerly mentioned in the precedent chapter, and if that the urine be wholly suppresst therewith; then must you cut the yard upon the side with a streight wound: for you must not make incision on the upper part for feare of a fluxe of blood, for a large veine and artery lyeth thereunder; nor in the lower part, for

When the yard may be safely cut.

tor ſo it would ſcarce ever heale againe, for that it is a bloodleſſe part, and beſides, the continuall and acride falling of the urine would hinder the agglutination: wherefore the inciſion muſt be made on the ſide, on that part whereas the ſtone moſt reſiſts and ſwels out. For that part is the more fleſhie; yet firſt the end of the skin of the prepuce muſt be much drawn up ſo to cover the *Glans*, which being done, the *Urethra* ſhall be tyed with a threed a little above the ſtone, that ſo the ſtone may be ſtayed there, and may not fall back againe. Therefore then, inciſion being made, the ſtone muſt be taken forth, and the skin which was drawne more violently to cover the *Glans* is to be let goe backe againe; for ſo it will come to paſſe that a whole part of the skin may cover the cut yard, and ſo it may be the more ſpeedily united and the urine may naturally flow out. I have by this meanes oft-times taken forth the ſtone with the inſtruments here delineated.

Inſtruments fit to take the ſtone forth of the opened Urethra, *or urenary paſſage of the yard.*



An agglutinative medicine.

How to haſten the agglutination.

Then for the agglutination, if need require, it will be requiſite to ſew up the lips of the wound, and apply this agglutinative medicine following. ℞. *tereb. venet.* ℥iiii. *gum. elemi*, ℥i. *ſang. dracon. & maſtic. an.* ℥ß. *fiat medicamentum ut dictum eſt*: then the whole yard muſt be covered over with a repercuſſive medicine made of the whites of egges, with the pouder of bole armenick, aloes, *farina volatilis*, and oyle of roſes. Laſtly, if need ſo require, a waxe candle, or leaden ſtring annoynted with Venice turpentine ſhall be thruſt into the *Urethra* to haſten the agglutination, and retaine the naturall ſmoothneſſe and ſtreightneſſe of the urenary paſſage, leſt peradventure a caruncle grow therein.

Chap. XLI.

What manner of ſection is to be made when a ſtone is in a boyes bladder.

Why the boy muſt be ſhaken before cutting.

How to place the child before diſſection.

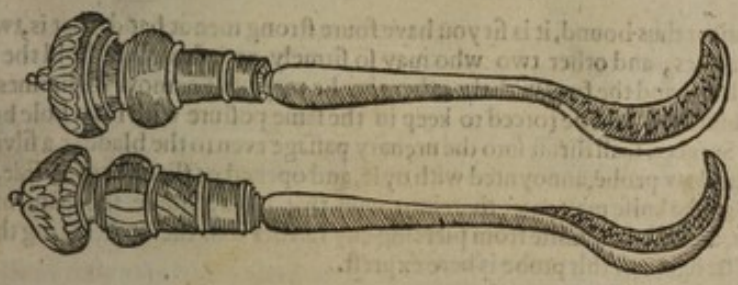
HItherto we have ſhewed, by what means it is convenient to draw ſmall ſtones out of the ureter, bladder and paſſage of the urine; now will we briefly ſhew the manner of taking of greater ſtones out of the bladder, which is performed by inciſion and iron inſtruments, and I will deliver the practice thereof firſt in children, then in men, and laſtly in women. Firſt therefore let the Surgeon take the boy (upon whom it is determined the worke ſhall be performed) under the arme holes, and ſo give him five or ſixe ſhakes, that ſo the ſtone may deſcend the more downewards to the neck of the bladder. Then muſt you cauſe a ſtrong man ſitting upon a high ſeat to lay the child upon his backe with his face from him ward, having his hips lying upon his knees. The child muſt lye ſomewhat high that he may breathe the freelier, & let not the nervous parts be too much ſtretched, but let all parts be looſe and free for the drawing forth of the ſtone. Furthermore, it is fit that this ſtrong man, the childs legges being bended backe, wiſh the child, that putting his legs to his hams, that he draw them up as much as he can, & let the other be ſure he keep them ſo; for this ſite of the child much

conduceth to well performing of the worke. Then let the Surgeon thrust two of the fingers of his left hand as farre into the childs fundament as hee is able; but let him with his other hand presse the lower belly, first wrapping a cloth about his hand, that so the compression may be the lesse troublesome, and lest inflammation should happen rather by this meanes than by the incision. Now the compression hath this use, to cause the stone descend out of the bottome of the bladder into the neck thereof under the *os pubis*, whither after it is arrived, it must be there kept, & as it were governed by the command of your hand, lest it should slide from that place whereto you have brought it. These things thus done, nothing now remaineth, but that the Surgeon, with a wound some two fingers breadth distant from the fundament, cut through all the flesh even to the stone on the left side of the *perinæum*. But in the interim, let him beware that he hurt not the *intestinum rectum*; for it may, and usually doth happen, that whilest the stone is brought out of the bottome of the bladder to the neck thereof, this gut is doubled in: now if it bee cut with your incision knife, it commeth to passe that the excrements may sometimes come out at the wound, and the urine by the fundament, which thing hath in many hindred the agglutination and consolidation of the wound; yet in some others it hath done little harme, because in this tender age many things happen, which may seeme to exceed nature: the incision being made, the stone must bee plucked forth with the instrument here expressed.

Where to divide the *perinæum*.

Nature very powerfull in children.

Hookes to pull stones forth of childrens bladders.



The stone being drawne out, a small pipe shall be put into the wound, and there kept for some space after, for reasons hereafter 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 be performed by reducing the generall cure of wounds, to the particular temper of the childs age, and the peculiar nature of the child in cure.

Generall rules must be reduced to particular bodies.

Chap. XLII.

How to cut men, for the taking out of the stone in the bladder.

SEeing wee cannot otherwise helpe such men as have stones in their bladders, we must come to the extreme remedy, to wit, cutting. But the patient must first be purged, and if the case require, draw some bloud; yet must you not immediately after this, or the day following hasten to the work, for the patient cannot but be weakened by purging & bleeding. Also it is expedient for some daies before to foment the privities with such things as relaxe and soften, that by their yeelding, the stone may the more easily be extracted. Now the cure is thus to be performed; The patient shall be placed upon a firm table or bench with a cloth many times doubled under his buttocks, and a pillow under his loynes & back, so that he may lie halfe upright with his thighs lifted up, and his legs and heels drawn back to his buttocks. Then shall his feet be bound with a ligature of three fingers breadth cast about his ankles, and with the heads thereof being drawn upwards to his neck, and cast a-

What to bee done before dissection.

How to lay the patient.

bout it, and ſo brought downewards, both his hands ſhall bee bound to his knees, as the following figure ſheweth.

The figure of a man lying ready to be cut for the ſtone.

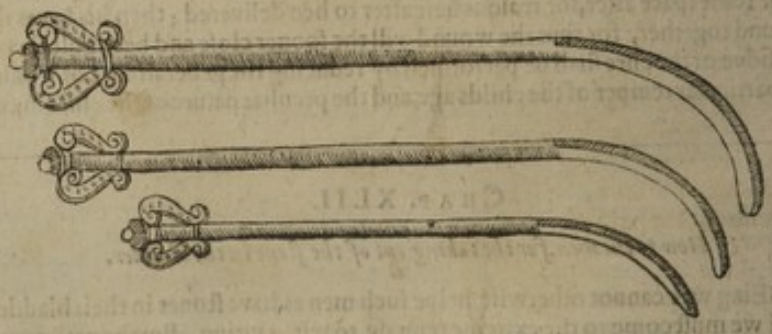


The patient thus bound, it is fit you have foure ſtrong men at hand; that is, two to hold his armes, and other two who may ſo firmely and ſtraightly hold the knee with one hand, and the foot with the other, that he may neither move his limmes, nor ſtirre his buttocks, but be forced to keep in the ſame poſture with his whole body.

Why the probe muſt be ſlit on the out-ſide.

Then the Surgeon ſhall thruſt into the urenary paſſage even to the bladder, a ſilver or iron and hollow probe, annoynted with oyle, 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 any farther into the bodies lying thereunder. The figure of this probe is here expreſt.

Probes with ſlits in their ends.



Why the ſeame of the *perinæum* muſt not be cut.

He ſhall gently wreſt the probe, being ſo thruſt in, towards the left ſide, and alſo he who ſtandeth on the patients 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 *perinæum*, the Surgeon may have the more liberty to make the inciſion upon the probe which is thruſt in and turned that way. But in making this inciſion, the Surgeon muſt be carefull that he hurt not the ſeame of the *perinæum* and fundament. For if that ſeame bee cut, it will not be eaſily conſolidated, for that it is callous and bloudleſſe, therefore the urine would continually drop forth this way. But if the wound be made too neare the fundament, there is danger, leſt by forcible plucking forth of the ſtone he may break ſome of the hæmorrhoide veins, whence a bleeding may enſue, which is ſcarce to be

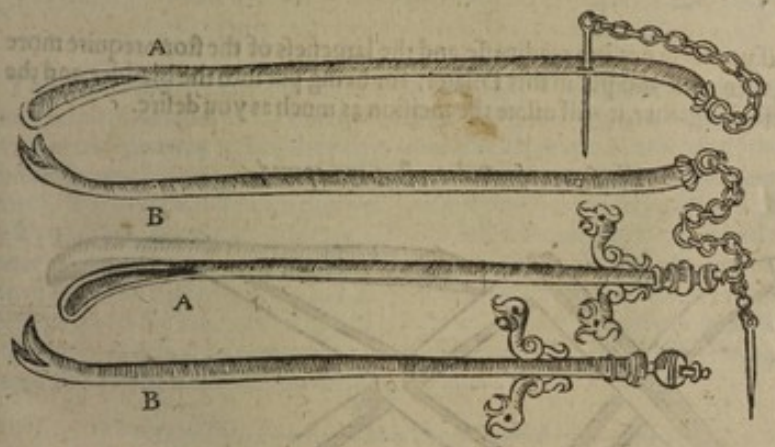
ſtopped

ſtopped by any meanes, or that hee may rend the *ſphincter* muſcle, or body of the bladder, ſo that it can never be repaired. Therefore it muſt be made the ſpace of two fingers from the fundament, according to the ſtraightneſſe of the fibres, that ſo it may be the more eaſily reſtored afterwards. Neither muſt the inciſion thus made, exceed the bigneſſe of ones thumbe, for that it is afterwards enlarged by putting in the Crowes beake 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 torne. Then preſently put into the wound ſome one of theſe ſilver inſtruments delineated here below, and called by the name of Guiders, for that they ſerve as guides to the other inſtruments which are to be put into the bladder; theſe are made with a round & prominent head, whereby it may bee put into the deſcribed cavity 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 be put under the former, being made forked at the end, that ſo it may, as it were, embrace the end of the former.

Where to make the wound to take forth the ſtone.

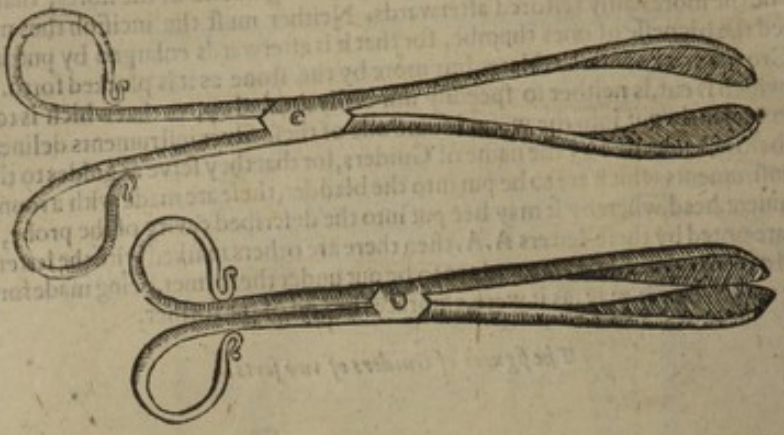
That which is torne is ſooner healed than that which is cut.

The figures of Guiders of two ſorts.



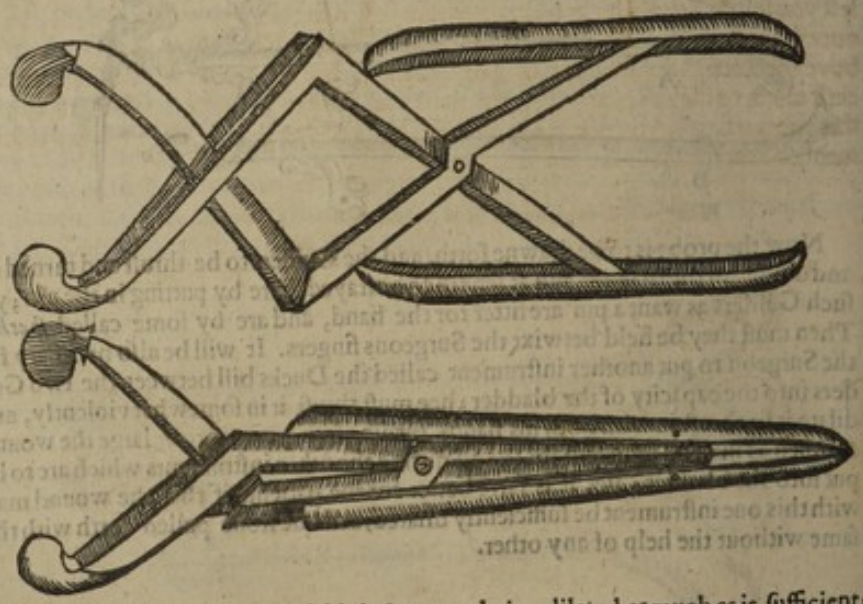
Now the probe is to be drawne forth, and the Guiders to be thruſt and turned up and downe in the bladder, and at length to be ſtayed there by putting in the pin; yet ſuch Guiders as want a pin are fitter for the hand, and are by ſome called *ſpathæ*. Then muſt they be held betwixt the Surgeons fingers. It will be alſo neceſſary for the Surgeon to put another inſtrument called the Ducks 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 every way to enlarge the wound as much as ſhall be ſufficient for the admitting the other inſtruments which are to be put into the bladder; yet it is farre better for the patient, if that the wound may with this one inſtrument be ſufficiently dilated, and the ſtone pulled forth with the ſame without the help of any other.

The effigies of an inſtrument called a Ducks bill.



Which if you have not in a readineſſe, 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.

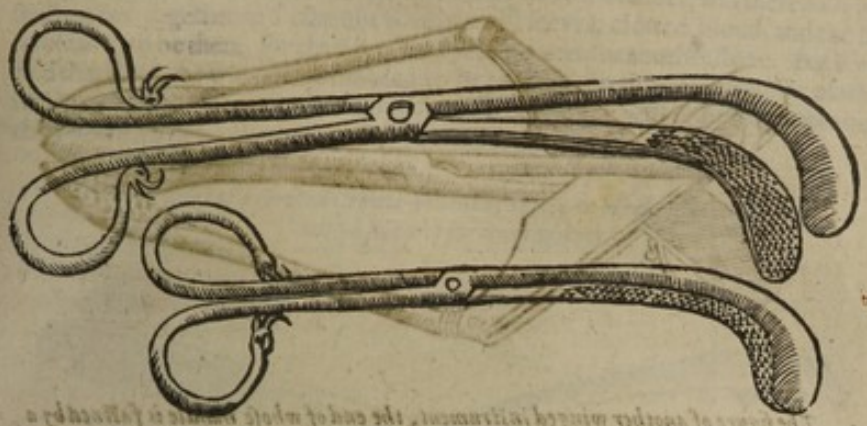
The figure of a Dilater ſhut and opened.



The wound by the helpe of this inſtrument being dilated as much as is ſufficient, then put in the ſtreight Ducks-bill before deſcribed, or the crooked here expreſt.

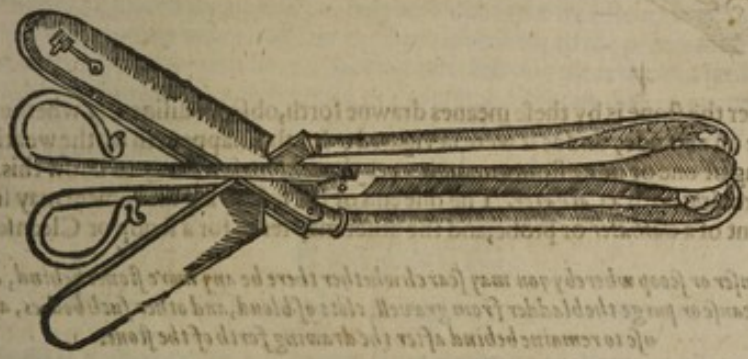
Crooked

Crooked Forcipes *like a Ducks-bill.*

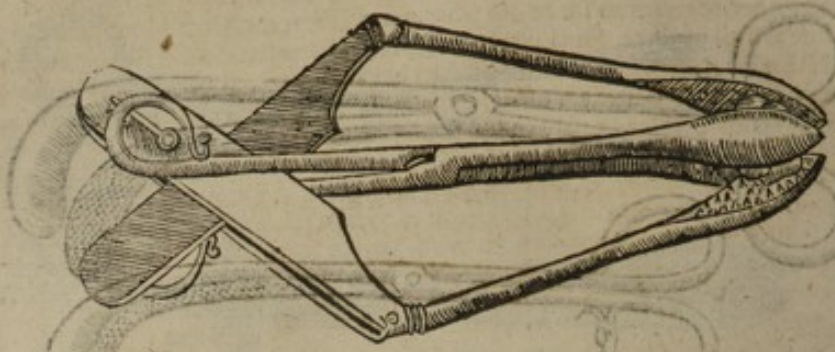


The ſtone may be ſought & taken hold of with theſe inſtruments, and being taken hold on, the branches of the inſtrument ſhall bee tyed together, leſt they ſhould ſuffer that to ſlide away which they have once taken hold of. Neither ſhall the ſtone be ſuddenly plucked out, but eaſily ſhaken too & again, and at the length gently drawn forth. Yet you muſt beware that you doe not preſſe it too ſtraightly in the *forceps*, leſt you ſhould breake it in pieces: Some, leſt 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 backe againe, which I thinke 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 inſtrument, ſo that the ſtone can ſlip forth on no ſide.

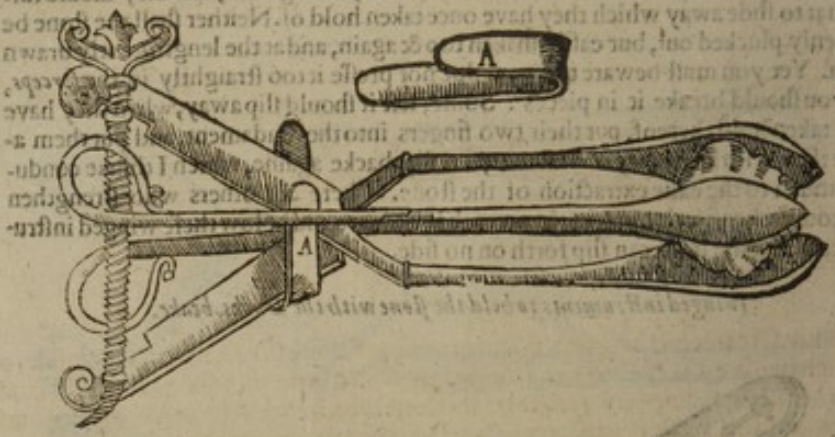
Winged inſtruments to hold the ſtone with the Ducks-beake.



The figure of another,



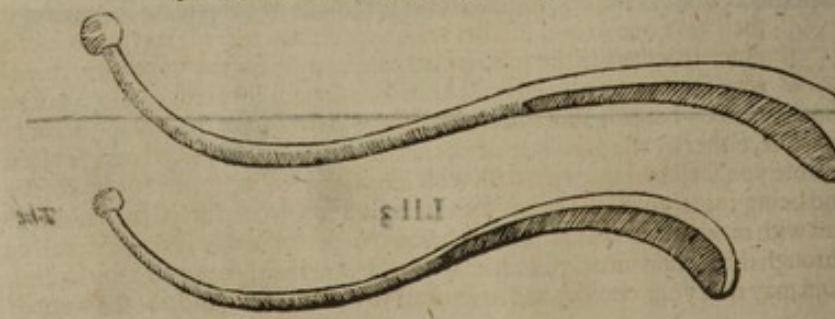
The figure of another winged inſtrument, the end of whoſe handle is faſtned by a ſcrew, as alſo a bended iron plate which is marked with this letter A. *for the firmer holding thereof.*



A note of more ſtones than one.

After the ſtone is by theſe meanes drawne forth, obſerve diligently whether it be worne on any ſide, and as it were lævigated; for that happeneth by the wearing or rubbing of one or more ſtones upon it; yet there is no ſurer way to know this, than by ſearching with a *Cathæter*. The one end of the following inſtrument may ſupply the want of a *Cathæter* or probe, and the other may ſerve for a ſcoop or Cleanſer.

A cleanſer or ſcoop whereby you may ſearch whether there be any more ſtones behind, as alſo cleanſe or purge the bladder from gravell, clots of bloud, and other ſuch bodies, as uſe to remaine behind after the drawing forth of the ſtone.



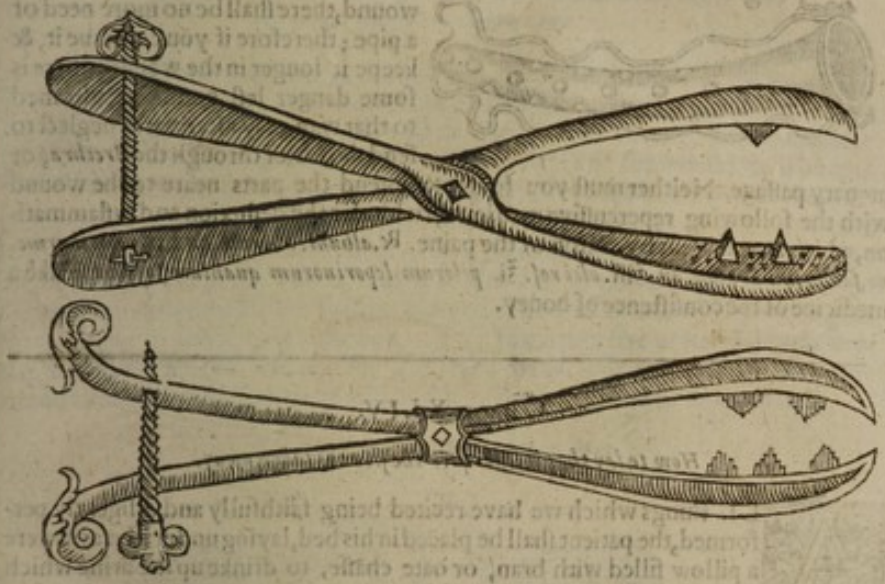
For

For if other ſtones remaine behinde, they ſhall bee drawne forth as the former, which being done, the end of the inſtrument, which is crooked and hollowed like a ſcoop or ſpoone, ſhall bee thruſt by the wound into the bladder, and therewith you ſhall gather together and take out what gravell ſoever, clotted bloud, and the like refuſe as ſhall be there, for that they may yeeld matter for another ſtone. But if you find that the ſtone which is in the bladder be too great, ſo that it may not be plucked forth without great and fearfull rending of the bladder, it will be better to take hold thereof with this Crowes bill and ſo break it to peeces.

How to cleanſe the bladder.

How to break a ſtone that cannot be taken out whole and at once.

The effigies of a toothed Crowes-bill made neatly to breake greater ſtones, with a ſcrew to force it together.



This Crowes bill hath onely three teeth, and thoſe ſharpe ones on the inſide, of which two are placed above, and one below, which is the middle-moſt, ſo that it falleth between the two upper. When the ſtone is broken, all the peeces thereof muſt be taken forth, and we muſt have a ſpeciall care, leſt any piece thereof lye hid; for that in time, increaſed by the acceſſe of a tough and viſcous matter, or conjoyned with other fragments by the interpoſition of the like matter as glew, may riſe to a ſtone of a large bigneſſe.

Chap. XLIII.

What cure muſt be uſed to the wound, when the ſtone is taken forth.

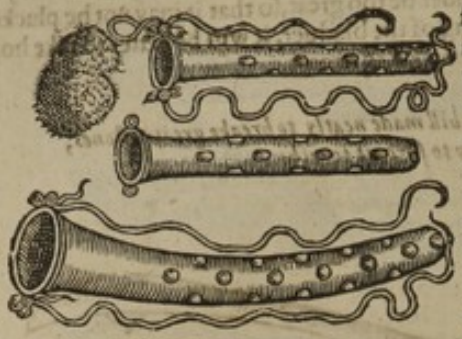
THE ſtone being drawne out, if the greatneſſe of the wound ſo require, it ſhall have one or two ſtitches with a needle and threed, leaving onely ſo much ſpace as ſhall be ſufficient to put in a pipe for the uſe we ſhall hereafter ſhew; your threed muſt be of crimſon ſilke waxed, and let it not be too ſmall, leſt it by binding ſhould cut aſunder the fleſhy lips of the wound, or rot in a ſhort time, either by the moyſture of the urine, or matter flowing from the ulcer. Therefore you ſhall take up much fleſh with the skin in ſewing it, leſt the lips of the wound being torne, your labour prove in vaine, and ſo you are forced to trouble the patient with making a new one. Things being 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, and ſo fit them to the wounds, and not the wounds

Of ſewing the wound when the ſtone is taken forth.

to

to them, which oft-times in want of instruments the Surgeons are forced to doe, to the great harme of the patient.

Silver pipes to be put into the bladder when the stone is drawne out.



These must have no holes in their sides (as those here expressed) but only in their ends, that all the matter of the wound, and the filth gathered and concrete in the bladder may flow and bee carryed forth this way. When cleere urine shall beginne to flow out of the wound, there shall be no more need of a pipe; therefore if you continue it, & keepe it longer in the wound, there is some danger lest nature accustomed to that way, may afterwards neglect to send the water through the *Urethra*, or urenary passage. Neither must you forget to defend the parts neare to the wound with the following repercussive medicine, to hinder the defluxion and inflammation, which are incident by reason of the paine. Re. *album. ovorum. nu.* 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 being faithfully and diligently performed, the patient shall be placed in his bed, laying under him as it were a pillow filled with bran, or oate chaffe, to drinke up the urine which floweth from him. You must have divers of these pillowes, that they may bee changed as neede shall require. Sometimes after the drawing forth of the stone, the bloud in great quantity falleth into the Cod, which unlesse you be carefull to provide against, with discussing, drying, and consuming medicines, it is to be feared, that it may gangrenate. Wherefore if any accidents happen in curing these kinde of wounds, you must diligently withstand them. After some few daies a warme injection shall be cast into the bladder by the wound, consisting of the waters of plantain, night-shade & roses, with a little syrupe of dried roses. It wil 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 happens, that after the drawing forth of the stone, clots of bloud and other impurity may fall into the urenary 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, lest it gangrenate.

Chap. XLV.

How to cure the wound made by the incision.

YOu must cure this wound after the manner of other bloody wounds, to wit, by agglutination and cicatrization, the filth, or such things as may hinder, being taken away by detergent medicines. The patient shall hasten the agglutination if hee lye crosse-legged, and keep a slender diet untill the seventh or ninth day be past. Hee must wholly abstaine from wine,

What things hasten the union.

wine, unlesse it bee very weak; in stead thereof let him use a decoction of barly and licoriſh, or mead, or water and sugar, or boyled water mixed with syrups of dryed roses, maidenhaire, and the like. Let his meat bee ponado, raisons, stewed prunes, chickens boiled, with the cold seeds, lettuce, purslaine, sorrell, borage, spinage, and the like. If he be bound in his belly, a Physitian shall be called, who may helpe it, by appointing either *Cassia*, a glister, or some other kind of medicine, as he shall thinke good.

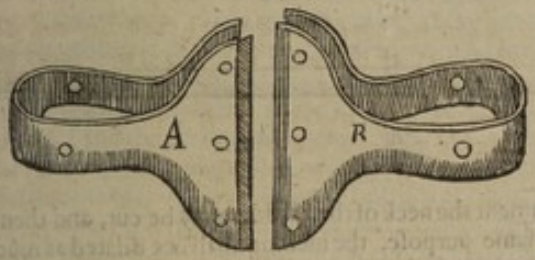
Chap. XLVI.

What cure is to be used to Ulcers, when as the urine flowes through them, long after the stone is drawne out.

MAny after the stone is drawne out, cannot have the ulcer consolidated, therefore the urine flowes out this way continually by little and little, and against the patients will during the rest of his life, unlesse the Surgeon helpe it. Therefore the callous lippes of the wound must be amputated, so to make a green wound of an old ulcer; then must they bee tyed up, and bound with the instrument wee terme 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 applyed, such as are Venice Turpentine, gum *Elemi*, *sanguis Draconis*, bole armenick, and the like; after five or sixe dayes the needles shall bee taken out, and also the stay taken away. For then you shall finde the wound almost glewed, and there will nothing remaine but onely to cicatrize it.

How to make a fresh wound of an old ulcer.

The figure of a Retinaculum *or Stay.*



A. shewes the greater. B. the lesser, that you may know that you must use divers according to the different bignesse of the wound.

If a *Retinaculum* or stay be wanting, you may conjoyne the lippes of the wound after this following manner. Put two quilles somwhat longer than the wound, on each side one, and then presently thrust them through with needles having thread in them, taking hold of the flesh between, as often as need shall require, then tying the thread upon them. For thus the wound shall be agglutinated, and the fleshy lips of the wound kept from being torne, which would be in danger if the needle & thread were onely used.

What to doe in want of a stay.

Chap.

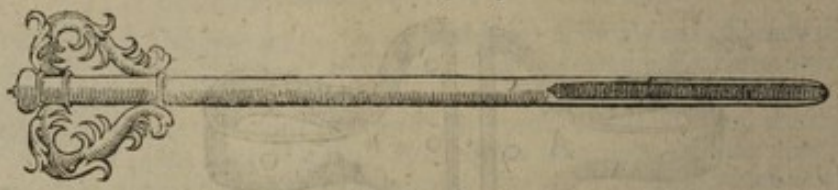
CHAP. XLVII.

How to take ſtones out of womens bladders.

How to ſearch for the ſtone in women.

WE know by the ſame ſignes that the ſtone is in a womans bladder as we do in a mans, yet it is far more eaſily ſearched by a *Cathæter*, for that the necke of the bladder in the ſhorter, broader, and the more ſtreight. Wherfore it may not onely be found by a *Cathæter* put into the bladder, but alſo by the fingers thruſt into the necke of the womb, turning them up towards the inner ſide of the *Os pubis*, and placing the ſicke woman in the ſame poſture as we mentioned in the cure of men. Yet you muſt obſerve that maides yonger than ſeven yeares old, that are troubled with the ſtone, cannot bee ſearched by the neck of the wombe, without great violence. Therefore the ſtone muſt be drawne from them by the ſame meanes as from boyes, to wit, by thruſting the fingers into the fundament; for thus the ſtone being found out, and the lower belly alſo preſſed with the other hand, it muſt be brought to the necke of the bladder, and then drawn forth by the forementioned meanes. Yet if the riper yeares of the patient permit it to bee done without violence, the whole worke ſhall be more eaſily and happily performed, by putting the fingers into the necke of the wombe, for that the bladder is nearer the neck of the womb, than it is to the right gut. Wherfore the fingers thus thruſt in, a *Cathæter* ſhall bee preſently put into the necke of the bladder. This *Cathæter* muſt bee hollow, or ſlit on the outſide like thoſe before deſcribed, but not crooked, but ſtreight, as you may perceive by the following figure.

A Cathæter *upon which, being put into the Bladder, the necke thereof may be cut, to draw out a ſtone from a woman.*



Upon this inſtrument the neck of the bladder may be cut, and then with the *Dilater* made for the ſame purpoſe, the inciſion ſhall bee dilated as much as need requires; yet with this caution, that ſeeing the necke of a womans bladder is the ſhorter, it admits not ſo great dilatation as a mans, for otherwiſe there is danger that it may come to the body of the bladder, whence an unvoluntary ſhedding of the water may enſue and continue thereafter. The inciſion being dilated, the Surgeon putting one or two of his fingers into the necke of the wombe, ſhall preſſe the bottome of the bladder, and then thruſt his crooked inſtruments or *forcipes* in by the wound, and with theſe he ſhall eaſily pluck out the ſtone, which he ſhall keepe with his fingers from ſlipping backe againe. Yet *Laurence Collo* the Kings Surgeon, and both his ſunnes (than whom I doe not know whether ever there were better cutters for the ſtone) doe otherwiſe performe this operation; for they doe not thruſt their fingers into the fundament or necke of the wombe, but contenting themſelves with putting in onely the Guiders (whereof we formerly made mention) into the paſſage of the urine, they preſently thereupon make a ſtreight inciſion directly at the mouth of the neck of the bladder, and not on the ſide, as is uſually done in men. Then they gently by the ſame way thruſt the *forcipes* hollowed on the outſide formerly delineated, and ſo dilate the wound by tearing it as much as ſhall be 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 be 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 be applyed with the more eaſe.

CHAP.

CHAP. XLVIII.

Of the suppression of the Urine by internall causes.

BEsides the formentioned causes of suppressed urine, or difficulty of making of water, there are many other, lest any may thinke that the urine is stopt onely by the stone or gravell, as Surgeons thinke, who in this case presently use diuretickes. Therefore the urine is suppresst by externall and internall causes. The internall causes are clotted bloud, tough phlegme, warts, caruncles bred in the passages of the urine, stones, and gravell. The urine is sometimes suppresst, because the matter thereof, to wit, the serous or waterish part of the blood, is either consumed by the feavourish heat, or carryed other wayes by sweats or a scouring; somtimes also the flatulencie there conteined, or inflammation arising in the parts made for the urine and the neighbouring members, suppresses the urine. For the right gut if it be inflamed, intercepts the passage of the urine, either by a tumour 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 suppresst in such as have the dropsie; or else by dulnesse or decay of the attractive, or separative faculty of the reines by some great distemper, or by the default of the animall faculty, as in such as are in a phrensie, lethargy, convulsion, apoplexie. Besides also a tough and viscide humour falling from the whole body into the passages of the urine, obstructs and shuts up the passage. Also too long holding the water somtimes causes this affect. For when the bladder is distended above measure, the passage thereof is drawn together and made more strait: hereto may be added that the too great distension of the bladder is a hinderance that it cannot use the expulsive faculty, and straiten it selfe about the urine to the exclusion thereof; hereto also paine succeeds, which presently dejects all the faculties of the part which it seazeth upon. Thus of late a certaine young man, riding on horseback before his Mistresse, and therfore not daring to make water, when he had great need so to doe, had his urine so suppresst that returning from his journy home into the city, he could by no meanes possible make water. In the meane time he had grievous paine in the bottom of his belly and the *perinæum*, with gripings and a sweat all over his body, so that he almost sowned. I being called, when I had procured him to make water by putting in a hollow *Cathæter*, and pressing the bottom of his belly, whereof he forthwith made two pints; 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. For thence forward there appeared no signes of the stone in the youth, neither was he afterwards troubled with the stopping of his urine.

In suppression of the urine we must not presently fly to diureticks.

Why the too long holding the urine causeth the suppression thereof.

A history.

CHAP. XLIX.

A digression concerning the purging of such things as are unprofitable in the whole body by the urine.

I Think it not amisse to testifie by the following histories, the providence of nature in expelling by urine such things as are unprofitable in the whole body. *Mounsieur Sarret* the Kings secretary was wounded in the right arme with a pistoll bullet; many and maligne symptomes happened thereupon, but principally great inflammations, flowing with much *sanies* and *pus* or quitture: it somtimes happened that without any reason this purulent and sanious effluxe of matter was stayd in the inflammation; wherof while we solicitously enquired into the cause, wee found both his stooles and water commixed with much purulent filth, and this through the whole course of the disease, whereof notwithstanding by gods assistance he recovered, and remaines whole and sound; we observed

A history.

ved that as long as his arme flowed with this filthy matter, so long were his excrements of the belly and bladder free from the sanious and purulent matter: as long on the contrary as the ulcers of the arme were dry, so long were the excrements of the guts and bladder sanious and purulent. The same accident befell a Gentleman called *Mounsieur da la Croix*, who received a deadly wound with a sword on the left arme, though *German Chavall*, and *Master Rasse* most expert Surgeons, and others, who together with me had him in cure, thought it was not so for this reason, because the *pus* cannot runne so long a way in the body, neither if it were so, could that bee done without the infection and corruption of the whole masse of blood, whilest it flowes through the veines; therefore to be more probable that this quantity of filth, mixed with excrements and urine, flowed by reason of the default of the liver, or of some other bowell, rather than from the wounded arme: I was of a contrary 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 arme plentifully flowed therewith; this on the contrary being dry, much purulent matter was voided both by stoole and urine. Another was, that as our whole body is perspirable, so it is also (if I may so terme it) confluxible. The third was an example taken from the glasses which the French terme Monte-vins (that is, Mount-wines) for if a glasse that is full of wine be set under another that is fill'd with water, you may see the wine raise it selfe out of the lower vessell to the upper through the midst of the water, & so the water descend through the midst of the wine, yet so, that they do not mixe themselves, but the one take & possess the place of the other. If this may be done by art, by things only naturall, & to be discernd by our eyes, what may be done in our bodies, in which by reason of the presence of a more noble soule, all the works of nature are far more perfect? What is it which we may despair to be done in the like case? For doth not the laudible blood flow to the guts, kidneyes, spleen, bladder of the gall, by the impulse of nature together with the excrements, which presently the parts themselves separate from their nutriment? Doth not milke from the breasts flow sometimes forth of the wombes of women lately delivered? Yet that cannot bee carryed downe thither, unlesse by the passages of the mamillary veines and arteryes, which meete with the mouthes of the vessels of the wombe in the middle of the streit muscles of the *Epigastrium*. Therefore no marvaile if according to *Galen* the *pus* unmixt with the bloud flowing from the whole body by the veines and arteryes into the kidneyes and bladder, bee cast forth together with the urine. These and the like things are done by nature, not taught by any counsell or reason, but onely assisted by the strength of the segregating and expulsive faculty; and certainely we presently dissecting the dead body, observed that it all, as also all the bowels thereof, were free from inflammation and ulceration, neither was there any signe or impression of any purulent matter in any part thereof.

A history.

How the pus may flow from the wounded arme, by the urine and excrements.

Lib. de loc. affect. 6. cap. 4.

CHAP. L.

By what externall causes the urine is suppresst; and prognostickes concerning the suppression thereof.

THere are also many externall causes, through whose occasion the urine may be suppresst. Such are bathing and swimming in cold water; the too long continued application of Narcoticke medicines upon the Reines, *perinæum* and share; the use of cold meats and drinkes, and such other like. Moreover, the dislocation of some *Vertebra* of the loines to the inside, for that it presseth the nerves disseminated thence into the bladder; therefore it causeth a stupidity or numnesse of the bladder. Whence it is, that it cannot perceive it selfe to bee vellicated by the acrimony of the urine, and consequently it is not stirred up to the expulsion thereof. But from whatsoever cause the suppression of the urine proceeds, if it persevere for some dayes, death is to bee feared, unlesse either a feaver, which may consume the matter of the urine, or a scouring or fluxe, which may divert it, shall happen thereupon. For thus by stay it acquireth an acride and venenate

Why the dislocation of a *vertebra* of the loins may cause a suppression of urine.

Why the suppression of the urine becomes deadly.

nate quality, which flowing by the veines readily infecteth the masse of blood, and carryed to the braine much molests it by reason of that similitude and sympathy of condition which the bladder hath with the *Meninges*. But nature, if prevalent, easily freeth it selfe from this danger by a manifest evacuation by stoole, otherwise it must necessarily call as it were to its aide, a feavourish heat, which may send the abounding matter of this serous humidity out through the skinne, either by a sensible evacuation as by sweat; becausse sweate and urine have one common matter: or else dispersse and breath it out by transpiration, which is an insensible excretion.

A feaver following thereon helps the suppression of urine.

Chap. LI.

Of bloody Urine.

The differences.

Some pisse pure blood, others mixt, and that either with urine, & then that which is expelled resembles the washing of flesh newly killed; or else with *pus*, or matter, and that either alone or mixed with the urine.

Causes.

There may be divers causes of this symptome, as the too great quantity of bloodgathered in the body, which by the suppression of the accustomed & periodicall evacuation, by the courses or hæmorrhoids, now turns its course to the reins & bladder; the fretting asunder of some vessell by an acride humour, or the breaking thereof by carrying or lifting of some heavie burden, by leaping, falling from high, a great blow, the falling of some wait upon the loins, riding post too violently, the too immoderate use of venery, & lastly, from any kind of painful & more violent exercise, by a rough & sharp stone in the kidneys, by the weakness of the retentive faculty of the kidneys, by a wound of some of the parts belonging to the urine, by the too frequent use of diuretick and hot meats and medicines, or else of things in their whole nature contrary to the urenary parts; for by these and the like causes, the reins are oft times so enflamed, that they necessarily impostumate, and at length the impostume being broken it turnes into an ulcer, casting forth quitture by the urine. In so great variety of the causes of bloody urine, we may gather whence the causes of this symptome may arise, by the depraved action of this, or that part, by the condition of the flowing blood, to wit, pure or mixt, and that either with the urine alone, or with *pus*. For example, if this bloody matter flow from the lungs, liver, kidneies, dislocated *Vertebræ*, the streight gut, or other the like part: you may discerne it by the seat of the paine and symptomes, as a feaver; and the propriety of the paine, and other things which have preceded, or are yet present. And we may gather the same by the plenty and quality, for if, for example, the *pus* flow from an ulcer of the arm, the purulent matter will flow by turnes, one while by the urine, so that little is cast forth by the ulcer; then presently on the contrary the urine becomes more cleere. That purulent matter which flows from the lungs by reason of an *Empyema*, or from the liver, or any other bowell placed above the midriffe, the *pus* which is cast forth with the urine, is both in greater plenty and more exactly mixed with the urine, than that which flowes from the kidneyes and bladder. It neither belongs to our purpose, or a Surgeons office, either to undertake, or deliver the cure of this affect. It shall suffice onely to note that the cure of this symptome is not to bee hoped for so long as the cause remaines. And if this blood flow by the opening of a vessell, it shall bee stayed by astringent medicines; if broken, by agglutinative; if corroded or fretted asunder, by sarcoticke.

Signes of what causes they proceed.

Cure.

Chap. LII.

Of the signes of ulcerated Kidneyes.

I Had not determined to follow or particularly handle the causes of bloody urines, yet because that which is occasioned by the ulcerated reines or bladder more frequently happens, therefore I have thought good briefly to speake thereof in this place. The signes of an ulcer of the reines are, pain in the loines, matter howsoever mixt with the urine, never evacuated by it selfe, but alwaies flowing forth with the urine, and reſiding in the botome of the chamberpot, with a ſanious and redde ſediment, fleshy and as it were bloody fibres ſwimming up and downe in the urine, the ſmell of the filth is not ſo great as that which flowes from the ulcerated bladder, for that the kidneyes, ſeeing they are of a fleshy ſubſtance, doe farre better ripen and digeſt the purulent matter than the bladder which is nervous and bloodleſſe.

Why the matter which flows from the kidneyes is leſſe ſtinking than that which flowes from the bladder.

Chap. LIII.

Of the ſignes of the ulcerated Bladder.

Differences.

Ulcers are in the bottome of the bladder and the necke thereof. The ſignes of an ulcer in the bladder are, a deepe paine at the ſharebones; the great ſtinch of the matter flowing therefrom; white and thin skins ſwimming up and downe in the water. But when the ulcer poſſeſſeth the necke of the bladder, the paine is more gentle, neither doth it trouble before the patient come to make water, but in the very 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 paine cauſed by the urine fretting of the ulcerated part in the paſſage by: neither is the matter ſeen mixed with the urine, as is uſuall in an ulcer of the upper parts, becauſe it is powred forth not together with the urine, but after it.

Chap. LIV.

Prognoſticks of the ulcerated Reines and Bladder.

Why ulcers of the bladder are cured with more difficulty.

Ulcers of the kidneies are more eaſily and readily healed than thoſe of the bladder; for fleshy parts more ſpeedily heale and knit, than bloodleſſe and nervous parts. Ulcers which are in the bottom of the bladder, are uncurable, or certainely moſt difficult to heale, for beſides that they are in a bloodleſſe part, they are daily vellicated and exaſperated by the continuall affluxe of the contained urine; for all the urine is never evacuated: now that which remaines after making water, becomes more acride by the diſtemper and heat of the part, for that the bladder is alwaies gathered about it, & dilated & ſtraitned according to the quantity of the conteined urine: therfore in the *Iſchuria*, that is, the ſuppreſſion or difficulty of making water, you may ſomtimes 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, unleſſe they be conſolidated in a ſhort time, remaine uncureable.

Chap. LV.

What cure must be used in the suppression of the Urine.

IN curing the suppression of the urine, the indication must be taken from the nature of the disease, and cause thereof, if it bee yet present or not. But the diversity of the parts, by which being hurt, the *Ischuria* happens, intimates the variety of medicines, neither must we presently run to diuretickes, and things breaking the stone, which many Empericks doe. For hence grievous and maligne symptomes often arise, especially if this suppression proceed from an acride humour, or blood pressed out by a bruise, immoderate venery, and all more vehement exercise, a hot and acride potion, as of *Cantharides*, by too long abstaining from making water, by a *Phlegmon*, or ulcer of the urenary parts. For thus the paine and inflammation are encreated, whence followes a gangrene, & at length death. Wherfore attempt nothing in this case without the advice of a Physitian, no not when you must come to Surgery. For diuretick can scarce have place in another case, than when the urenary passages are obstructed by gravell, or a grosse and viscide humour, or else in some cold countrey, or in the application of Narcoticks to the loines, although we must not here use these before we have first made use of generall medicines: now Diuretickes may be administred sundry waies, as hereafter shall appeare.

Scopes of curing.

To what suppression of the urine diuretickes must not be used.

To which and when to be used.

℞. *agrimon. urtic. parietar. furculos rubros habentiu, an.* m. i. *rad. asparag. mundat.* ℥iiii. *gran. alkekengi, nu.* xx. *sem. malvæ* ℥ß. *rad. acor.* ℥i. *bulliant omnia simul in sex libris aquæ dulcis ad tertias, deinde coletur.* Let the patient take ℥ iiii. hereof with ℥i. of sugar candy, and drinke it warme fasting in a morning, three houres before meat. Thirty or forty Ivie berries beaten in white wine, and given the patient to drink some two houres before meate, are good for the same purpose. Also ℥ i. of nettle seeds made into fine pouder and drunke in chicken broth, is good for the same purpose. A decoction also of Grummell, Goats saxifrage, pellitory of the wall, white saxifrage, the rootes of parsley, *asparagus, acorus, bruscus*, and orris drunke in the quantity of some three or foure ounces, is profitable also for the same purpose. Yet this following water is commended above the rest to provoke urine, & open the passages thereof, from what cause soever the stoppage therof proceed. ℞ *radic. osmund. regal. cyp. bismal. gram. petrosel. fœnic.* an. ℥ii. *raph. crassior. in taleol* ℥iiii. *macerentur per noctem in aceto albo acerrimo, bulliant postea in aqua fluvialis* ℔. x. *saxifrag. crist. marin. rub. tinct. milii solis, summitat. malvæ, bismal. an.* p. ii. *bernl. cicer. rub. an.* p. i. *sem. melon. citrul. an.* ℥ ii. ß. *alkekengi, gra.* xx. *glycyrhiz.* ℥ i. *bulliant omnia simul ad tertias: in colatura infunde per noctem fol. sen. oriental.* ℔. ß. *fiat iterum parva ebullitio, in expressione colata infunde cinam. elect.* ℥ vi. *colentur; iterum colatura injiciatur in alembicum vitreum, postea tereb. venet. lucid.* ℔ ii. *aq. vitæ* ℥ vi. *agitentur omnia simul diligentissime. Lutetur alembicum luto sapientiæ, fiat destillatio lento igne in balneo mariæ.* Use it after the following manner. ℞. *aq. stillatitiæ prescriptæ* ℥ ii. *aut* iii. According to the operation which it shall performe, let the patient take it foure houres before meat. Also raddish water destilled in *balneo mariæ* is given in the quantity of ℥ iiii. with sugar, and that with good successe. Bathes and *semicupia*, or halfe bathes artificially made, relaxe, soften, dilate, and open all the body; therefore the prescribed diuretickes mixed with halfe a dram of Treacle may be fitly given at the going forth of the bath. These medicines following are judged fit to cleanse the ulcers of the kidneyes and bladder. Syrupe of maiden-haire, of roses, taken in the quantity of ℥ i. with *hydromel*, or barly water: Asses or Goats milke are also much commended in this affect, because they cleanse the ulcers by their serous or whayish portion, and agglutinate by their cheesenesse. They must bee taken warme from the dugge, with honey of roses or a little salt, lest they corrupt in the stomacke; and that to the quantity of foure ounces, drinking or eating nothing presently upon it. The following Trochisces are also good for the same purpose. ℞. *quatuor sem. frigid. major. seminu papaverin albi, portulac. plantag. cydon, myrtil. gum. tragacanth. et arub. pinear.*

A diuretick water.

Why the use of diuretickes is better after bathing.

To cleanse the ulcers of the kidneyes and bladder.

Trochisces to heale the ulcers of the kidneies.

glycyrrhi. mund. hordei mund. macag. pſilii, amygdal. dulcium, an. ℥ i. *boli armen. ſanguin. dracon. ſpodii, roſar. maſtich. terræ ſigil. myrrhæ, an.* ℥ ii. *cum oxymelite, confician-tur ſecundum artem trochiſci.* Let the patient take ℥ ß. diſſolved in whay, ptiſan, barly water, and the like; they may alſo be profitably diſſolved in plantaine water, and injected into the bladder. Let the patient abſtaine from wine, and inſtead thereof let him uſe barly water, or *hydromel*, or a ptiſan made of an ounce of raiſins of the ſun, ſtoned and boyled in five pints of faire water, in an earthen pipkin well leaded, or in a glaſſe, untill one pinte be conſumed, adding thereto of liquorice ſcraped and beaten ℥ i. of the cold ſeeds likewiſe beaten two drams. Let it, after it hath boyled a little more, be ſtrayned through an hypocras bagge, with a quarterne of ſugar, and two drams of choice cinamon added thereto, and ſo let it be kept for uſuall drinke.

Drinke in ſtead of wine.

Chap. LVI.

Of the Diabete, *or inabilty to hold the Urine.*

What Diabete is.

THe *Diabete* is a diſeaſe, wherein preſently after one hath drunke, the urine is preſently made in great plenty, by the diſſolution of the retentive faculty of the reines, and the depravation of immoderation of the attractive faculty. The externall cauſes are the unſeaſonable and immoderate uſe of hot and diureticke things, and all more violent and vehement exerciſes. The internall cauſes are the inflammation of the liver, lungs, ſpleen, but eſpecially of the kidneyes and bladder. This affect muſt be diligently diſtinguiſhed from the excretion of morbifick cauſes by urine. The loines in this diſeaſe are moleſted with a pricking and biting pain, and there is a continuall & unquenchable thirſt: and although this diſeaſe proceed from a hot diſtemper, yet the urine is not coloured, red, troubled, or thick, but thin, and white or wateriſh, by reaſon the matter thereof makes very ſmall ſtay in the ſtomacke, liver, and hollow veine, being preſently drawn away by the heat of the kidneyes or bladder. If the affect long endure, the patient for want of nouriſhment falleth away, whence certaine death enſues. For the cure of ſo great a diſeaſe, the matter muſt be purged, which cauſes or feedes the inflammation or *phlegmon*, and conſequently blood muſt be let. We muſt abſtain from the foure cold ſeedes, for although they may profit by their firſt quality, yet will they hurt by their diuretick faculty. Refrigerating and aſtringent nouriſhments muſt bee uſed, and ſuch as generate groſſe humours, as Rice, thicke and aſtringent wine mixed with much water. Exceeding cold, yea Narcotick things ſhall be applyed to the loins, for otherwiſe by reaſon of the thickneſs of the muſcles of thoſe parts, the force, unleſs of exceeding refrigerating things, will not be able to arrive at the reins; of this kind are oile of white poppy, henbain, *opium*, purſlain, and lettuce ſeed, mandrage vinegar, and the like: of which, cataplaſmes, plaiſters, and ointments, may be made, fit to corroberate the parts, and correct the heat.

The cauſes.

Signes.

Why the urines are wateriſh.

The cure.

Narcoticke things to be applyed to the loines.

Chap. LVII.

Of the Strangury.

What the Strangury is.

THe Strangury is an affect having ſome affinity with the *Diabete*, as that wherin the water is unvoluntarily made, but not together at once, but by drops, continually and with paine. The externall cauſes of a ſtrangury are, the too abundant drinking of cold water, & all too long ſtay in a cold place. The internall cauſes are, the defluxion of cold humours into the urenary parts, for hence they are reſolved by a certain palſie, and the *ſphincter* of the bladder is relaxed, ſo that he cannot hold his water according to his deſire: inflammation alſo & all diſtemper cauſeth this affect, and whatſoever in ſome ſort obſtructs the paſſage of the urine, as clotted blood, thick phlegme, gravell, and the like. And becauſe, according to *Galens* opinion, all ſorts of diſtemper may cauſe this diſeaſe, divers me-

The cauſes.

dicines

dicines shall be appointed according to the difference of the distemper. Therfore against a cold distemper fomentations shall be provided of a decoction of mallows, roses, *origanum*, calamint, and the like, & so applied to the privities: then presently after let them be anointed with oile of bayes, and of *Castoreum*, and the like. Strong and pure wine shall be prescribed for his drinke, and that not onely in this cause, but also when the Strangury happens by the occasion of obstruction, caused by a grosse and cold humor, if so be that the body be not plethoricke. But if inflammation together with a *Plethora* or fulnesse hath caused this affect, wee may, according to *Galens* advice, heale it by blood-letting. But if obstruction bee in fault, that shall be taken away by diuretickes either hot or cold, according to the condition of the matter obstructing. We here omit to speake of the *Dysuria*, or difficulty of making water, because the remedies are in generall the same with those which are used in the *Ischuria*, or suppression of urine.

Com. ad aphor. 25. sect. 3.

Ad aphor. 48. sect. 7.

Chap. LVIII.

Of the Cholike.

Whensoever the Guts being obstructed, or otherwise affected, the excrements are hindred from passing forth, & if the fault bee in the small guts, the affect is termed *Volvulus*, *Ileos*, & *miserere mei*, but if it be in the greate rguts, it is called the Cholick, from the part affected, which is the *Colon*, that is, the continuity of the greater guts; but especially that portion of the greater guts, which is properly and especially named *Colon*, or the cholicke Gut. Therefore *Avicen* rightly defines the Cholicke, A paine of the Guts wherein the excrements are difficultly evacuated by the fundament. *Paulus Aegineta* reduceth all the causes of the Colicke how various soever to foure heads, to wit, to the grossenesse, or toughnesse of the humours impact in the coates of the guts: flatulencies hindred from passage forth: the inflammation of the guts: and lastly, the collection of acride and biting humors. Now we will treat of each of these in particular. Almost the same causes produce the grosseneſse of humors, and flatulencies in the guts, to wit, the use of flatulent, and phlegmaticke, tough, and viscide meats, yea also of such as are of good nourishment, if sundry thereof, and of sundry kinds be eaten at the same meale, and in greater quantity than is fit. For hence crudity and obstruction, and at length the collection of flatulencies, whereon a tensive paine ensues. This kind of Cholick is also caused by the use of crude fruits, and too cold drink, drunken especially when as any is too hot by exercise, or any other way: for thus the stomacke and the guts continued thereto, are refrigerated, and the humours and excrements therein conteined are congealed, and, as it were, bound up. The Cholicke which is caused by the inflammation of the kidneyes, happens by the Sympathy of the reines pained or troubled with the stone or gravell conteined in them or the ureters. Therefore then also paine troubles the patient at his hips and loynes, because the nerves, which arising from the *vertebra* of the loins, are oppressed by the weight of the stones and gravell, about the joint of the hippe are disseminated into the muscles of the loines and thigh. Also the ureters are pained (for they seeme nothing else but certaine hollow nerves) and also the cremaster muscles, so that the patients testicles may seeme to be drawne upwards with much violence. Hence great, phlegmaticke, and cholericke vomiting, and sweat of the whole body, all which doe not surcease before that the stone, or gravell shall bee forced downe into the bladder. Now vomiting happens in this affect, for that the ventricle by reason of its continuity and neighbourhood which it hath with the guts, suffers by consent or sympathy. For the stomacke is of the same kind or matter as the guts are, so that the guts seeme nothing else but a certaine production of the stomacke. Therefore if at any time nature endeavour to expell any thing that is troublesome in the kidneyes, ureters, coats of the guts, mesentery, *pancreas*, and hypochondryes, it causeth a Colicke with pain and vomiting. A hot and dry distemper also causeth the Colicke, producing a prick-

What *Ileos*, or *Ileus passio* is.

What *Colica passio* or the Cholicke is. *Lib. 3.*

Lib. 3. c. 43.

The manner of the Stone cholicke.

How a hot distemper causeth the Cholicke.

ing and biting paine by drying the excrements shut up in the guts, as also by wasting as it were the radical humours of that place provided for the lubricating of the guts. Acride, viscide, and tough phlegme causeth the same. There is also another cause of the Collicke which is not so common, to wit, the twining of the guts, that is, when they are so twined, folded, and doubled, that the excrements, as it were, bound in their knots, cannot be expelled, as it manifestly happens in the rupture called *Enterocele*, by the falling of the guts into the cod. Likewise also wormes generated in the Collicke Gut, whilest that they mutually fold or twine themselves up, doe also twine the *Colon* it selfe 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 dry body of the patient, or by his diet, that is, the use of too dry meats, or exercises and paines taken in the heate of the sunne, or by the greatnesse of businesse, the minde being carryed away, causeth the Collicke, with headache, and plenty of vapours flying upwards.

The folding of the guts the cause of the collick.

I remember I once dissected the body of a boy of some twelve yeares old, who had his guts folded with many as it were tyes or knots, of the restrained, too hard & dry excrements, the which he cast out by his mouth a little before his death, which brought him to his end, being not helped in time by fitting medicines. Now these are the causes of the Collick, according to the opinion of the ancient and moderne Physicians, of whose signes I judge it not amisse here to treat in particular. You shall know the patient is troubled with the stone collick by the paine 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 voyded stones or gravell together with his urine; by the paine of the hips and testicles for the formerly mentioned causes, & lastly, by that the patient casts forth by stoole or urine, for that the great & laborious endeavour of nature to cast forth the stone which is in the kidnies, is propagated by a certaine sympathy, & like study of the neighbouring parts stirring up the expulsive faculties each to his work. The signes of a flatulent collick are, a tensive pain, such as if the guts were rent or torne in pieces, together with a noise or rumbling in the belly. The force of the shut up wind is sometimes so great, that it renderh or teareth the guts in sunder, no otherwise than a swines bladder too hard blown up. Which when it happens, the patient dyes with much vomiting, becausethe stomack oppresst with wind, can conteine nor imbrace no meat. The collick which is occasioned by the too long keeping in of the excrements, is accompanied with the weight and pain of the belly, the tension of the guts, headach, apparent hardnes of the belly, & the complaint of the patient that he hath not gone to stoole in a long time. That which proceeds from a cholerick inflammation, yeelds a sense of great heat & pulsation in the midst of the belly, by reason of the veins and arteries which are in the *pancreas* and coats of the guts, and there are the other signes of a *Phlegmon*, although also this as it were inflammation may arise also from salt, acride & viscous phlegme, which nature can neither expel upwards by vomit, nor downewards by stool; this sundry times is associated with a difficulty of making water, for that when as the right gut is inflamed the bladder is prest by reason of their society or neighbourhood. The collick which proceeds from the contorsion of the guts shews it selfe by the excessive cruelty of the paine, arising for that the guts are not in their due site and place, and because the excrements by their too long detension acquire a preternaturall heat; & this is the cause of the death of many such as have Ruptures, for that the gut falling down from the naturall place into the Cod, being a preternatural place, is redoubled & kept there as it were bound, whereby the excrements being baked becomming more acridly hot cause inflammation, and by raising up flatulencies encrease the distension through all the guts, untill at length a deadly *Ileos* or collick arising, they come forth at the mouth. For prognosticks; it is better to have the paine in the collick to wander up and down, than to be fixed; it is good also that the excrements are not wholly suppresst. But the evill signes that here appeare pronounce the affect either difficult or deadly. Now these shew that it is deadly, intolerable tormenting paine, continuall vomiting, cold sweat, coldnesse of the extreme parts, hicketing by reason of the sympathy the stomack hath with the guts, a Phrensie by the consent of the braine with the stomacke, and oft-times a con-

A history.

Signs whereby we know that the collick proceeds from this or that cause.

Avicen li. 3. Hip. aphor. 10. sect. 4.

convulsion by drawing the matter into the nerves. But such as have griping and pain about their navil and loines, which can neither be helped by medicine nor otherwise, it ends in a Dropsie. The cure must be diversified according to the variety of the causes, for the stone collick is cured by medicines proper to the stone; that which is causèd by an *Enterocele*, is cured by the onely restoring the gut to its place; that which is occasioned by wormes, requires medicines fit to kill and cast forth the wormes. But that which proceeds from the weaknesse and refrigeration of the guts and stomack, is cured by heating and strengthening medicines aswell applyed outwardly as taken in inwardly by the mouth, or otherwaies. The beginning of the cure of that which is occasioned by tough flegme and flatulencies, is by the mitigation of the paine, seeing there is nothing which more dejects the powers than paine. To this purpose shall you provide bathes, *Semicupia*, fomentations of mallowes, marsh-mallowes, violet leaves, penyroyall, fennell, *Origanum*, the seeds of time and fænugreek, flowers of camomill, melilote, and other such like, which have power to hear, dry, attenuate, and rarifie the skin, so to dissipate the wind. But all such must be actually hot. Also the belly may be anointed with this following ointment. Rc. *olei chamam. aneth. butyr. recent. an.* ℥i. *sem. apii, petros. & galang. an.* ℥ß. *aq. vitæ, ol. salviæ aut thymi chimice extract. q.s.* The following liniment is much commended by *Hollerius*. Rc. *olei rut. & nardi, an.* ℥vi. *galbani cum aq. vit. dissoluti* ℥ii. *liquefactis simul adde* ℥*bet. æ gr.* iv. *croci gr.* vi. *fiat linimentum.* Also little bags made with millet, oates and salt fryed with a little white wine in a frying pan, shall be applyed hot upon the belly & flinkes, and renewed before they grow cold. You may, in stead of these bags, use oxe bladders halfe filled with a decoction of resolving things; as salt, rosemary, thime, lavander, bay-berries and the like: then inject a glyster being thus made. Rc. *quatuor remol. an.* m.i. *orig. puleg. calamenth. an.* m.ß. *anisi, carui an.* m.ß. *flor. aneth. an.* p.i. *bulliant in hydromele ad lib. i. in qua dissolve bened. laxat. mellis anthosati, succ. rub. an.* ℥i. *olei aneth. & chamam. an.* ℥iß. Let a glyster be made to bee injected at twice; for the guts being stretched out cannot conteine the accustomed dosis of a glyster: also this following glyster is much approved. Rc. *vini malvat. & olei nucum, an.* ℥iii. *aquæ vitæ,* ℥i. *olei juniperi, & rut. per quintam essent. extract. an.* ℥iii. Let this be injected as hot as the patient can endure. I have oft-times as by miracle helped intolerable paine causèd by the wind collick and phlegme with this glyster. *Avicen* prescribes a carminative glyster made of hysope, *origanum*, *acorus*, aniseeds and English galengall. Let the patient feed upon meats of good juice & easie digestion, as broths made with the yolks of egs, saffron, hot herbes and a nutmeg; let him drink good wine, as Muskedine, or Hypocras made with good wine so to heat the stomack & guts. For in *Galens* opinion, all windinesse is generated by a remisse heat. But if the pain shall continue, a large Cupping-glasse shall bee applyed to the navill to draw and dissipate the windinesse; the belly shall be bound with strong and broad ligatures, to strengthen the guts, and discusse the matter of flatulencies. The patients taught by nature, use this remedy, whilst none admonishing them, they presse the belly with their hands in the bitternesse of paine. But if the paine cannot be thus appeased, we must come to such medicines as worke by an occult propertie, as the dryed gut of a Wolfe, for a dram thereof made into pouder is given in wine with good successe. That collick which is causèd by a cholerick inflammation requires contrary medicines, to wit, bloodletting and a refrigerating diet; potions made of *Diacatholicon* and *Cassia* dissolved in barley water, also cooling glysters. *Avicen* prescribes narcoticks, for that being cold, they are contrary to the morbifick cause which is hot and dry; such are pils of *Philonium*. Also pils of *Hyera picra* in the quantity of ℈iv. with *opium* and saffron, of each one graine, may be used. Also baths are appointed, made of water wherein mallowes, marsh-mallowes, violet leaves, flowers of white lillies, lettuce, purslaine, have bin boyled, to correct the acrimonie of the cholericke and hot humours, whence the disease and symptome ariseth. That collick which is like to this, and proceeds from salt, acride, thick and tough phlegme, is cured, the humour being first attenuated and diffused, and at length evacuated by medicines taken by the mouth and otherwise according to the prescription of the learned Phisitian. But *Avicen* cures that which is occasioned by the suppression of the hardened excrements, and twining of them by meates

The cure.

Baths and anodine fomentations.

An oyntment.

Why glysters in the collick must be given in lesse quantity.

Specifick medicines.

The cure of a cholerick collick.

which

which have an emollient faculty, such as humecting broths, as that which is made of an old cock tired with running, & threshed to death, & so boyled with dill, polypody and a little salt, untill the flesh fall from the bones; also he useth detergent glysters such as this which followes. R. *betæ*, m. i. *furfuris*, p. i. *ficus*, nu. x. *alth.* m. i. *fiat decoctio ad* ℔ i. *in qua dissolve nitri & muriæ an.* ℥ ii. *sacch. rub.* ℥ i. *ol. sesamini*, ℥ ii. But if the obstruction be more contumacious, you must use more powerfull ones made *ex cyclamin. centaurio, & hiera diacolocinth. ad* ℥ ii. But if the obstruction do notwithstanding remaine, so that the excrements come forth at the mouth, *Marianus Sanctus* wisheth (by the counsell of many who have so freed themselves from this deadly symptome) to drink three pounds of quicksilver with water onely. For the doubled and as it were twined up gut is unfolded by the weight of the quicksilver, and the excrements are depresst and thrust forth, and the wormes are killed which gave occasion to this affect. *John* of S. *Germaines* that most worthy Apothecary hath told me that hee saw a Gentleman who when as hee could not bee freed from the paine of the collick by any means prescribed by learned Physitians, at length by the counsell of a certaine Germane his friend, drank three ounces of oile of sweet almonds drawne without fire, and mixed with some white wine and pellitory water, and swallowed a leaden bullet besmeared with quicksilver, and that bullet comming presently out by his fundament, he was wholly freed from his collick.

The force of quicksilver in the unfolding of the guts. A history.

Chap. LIX.

Of Phlebotomie, or Blood-letting.

What Phlebotomie is.

PHlebotomie is the opening of a veine, evacuating the blood with the rest of the humours; thus Arteriotomie, is the opening of an Artery. The first scope of Phlebotomie is the evacuation of the bloud offending in quantity, although oft-times, the Physicians intention is to draw forth the blood which offends in quality, or either way by opening a veine. Repletion which is caused by the quantity is two-fold, the one *ad vires*, that is, to the strength, the veines being otherwise not very much swelled; this makes men infirme and weake, nature not able to beare this humour, of what kinde soever it be. The other is termed *ad vasa*, that is, to the vessels, the which is so called comparatively to the plenty of bloud, although the strength may very well away therewith. The vessels are oft-times broke by this kind of repletion, so that the patient casts and spits up blood, or else evacuats it by the nose, wombe, hæmorrhoids, or *varices*. The repletion which is *ad vires* is knowne by the heavinesse and wearisomnesse of the whole body; but that which is *ad vasa* is perceived by their distension and fulnesse, both of them stand in neede of evacuation. But bloud is onely to bee let by opening a veine, for five respects: the first is to lessen the abundance of bloud, as in Phlethorick bodies, and those who are troubled with inflammation without any plenitude. The second is for divertion, or revulsion, as when a veine of the right arme is opened to stay the bleeding of the left nosthrile. The third is to allure or draw downe, as when the *saphena* is opened in the ankle to draw downe the courses in women. The fourth is for alteration or introduction of another quality, as when in sharpe feavers we open a veine to breathe out that bloud which is heated in the vessels, and cooling the residue which remaines behind. The fift is to prevent imminent diseases, as when in the Spring and Autumne we draw bloud by opening a veine in such as are subject to spitting of bloud, the squinancie, pleurisie, falling sicknesse, apoplexie, madnesse, gout, or in such as are wounded, for to prevent the inflammation which is to be feared. Before bloud-letting, if there bee any old excrements in the guts, they shall bee evacuated by a gentle glyster, or suppository, lest the mesaraicke veines should thence draw unto them any impuritie. Bloud must not be drawne from ancient people unlesse some present necessity require it, lest the native heat which is but languid in them should be brought to extreme debility, and their substance decay; neither must any in like sort be taken from children, for feare of

The use.

Repletion twofold.

The signes.

Five scopes in letting blood.

From whom we must not draw blood.

of reſolving their powers by reaſon of the tenderneſſe of their ſubſtance,& rareneſs of their habit. The quantity of bloud which is to be let, muſt bee conſidered by the ſtrength of the patient, and greatneſſe of the diſeaſe : therefore if the patient bee weake,and the diſeaſe require large evacuation,it will bee convenient to part the letting of bloud, yea by the interpoſition of ſome dayes. The veine of the forehead being opened is good for the paine of the hind part of the head ; yet firſt we foment the part with warme water, that ſo the skin may be the ſofter,and the bloud drawne into the veines in greater plenty. In the ſquinancie the veines which are under the tongue muſt be opened aſlant,without putting any ligatures about the neck for feare of ſtrangling. Phlebotomie is neceſſary in all diſeaſes which ſtop or hinder the breathing, or take away the voice or ſpeech, as likewiſe in all contuſions by a heavie ſtroake, or fall from high, in an apoplexie, ſquinancie, and burning feaver,though the ſtrength be not great, nor the bloud faulty in quantity or quality,bloud muſt not be let in the height of a fever. Moſt judge it fit to draw bloud from the veines moſt remote from the affected and inflamed part, for that thus the courſe of the humours may be diverted, the next veines on the contrary being opened the humours may be the more drawne into the affected part, and ſo increaſe the burden and paine. But this opinion of theirs is very erroneous, for an opened veine alwaies evacuates and disburdens the next part. For I have ſundry times opened the veines and arteries of the affected part, as of the hands & feet in the Gout of theſe parts ; of the temples in the Megrim ; whereupon the paine alwayes was ſomewhat aſſwaged, for that together with the evacuated bloud, the malignitie of the Gout,and the hot ſpirits(the cauſers 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 eyes,or in the Megrim or head-ach.

When and for what it is neceſſary.

13. *meth. cap. ult.*

CHAP. LX.

How to open a veine,and draw bloud from thence.

THE firſt thing is, to ſeat or place the patient in as good a poſture as you can,to wit,in his bed if he be weak; but in a chaire if ſtrong, yet ſo, that the light may fall directly upon the veine which you intend to open. Then the Surgeon ſhall rub the arme with his hand, or a warme linnen cloth, that the bloud may flow the more plenitfully into the vein. Then he ſhall bind the veine with a ligature a little above the place appointed to be opened, and hee ſhall draw back the bloud upwards towards the ligature from the lower part ; and if it be the right arme, he ſhall take hold thereof with his left hand; but if the left,then with his right hand, preſſing the veine in the meane time with his thumbe a little below the place where you meane to open it, leſt it ſhould ſlip away ; and that it may bee the more ſwolne by forcing up the bloud. Then with his naile hee ſhall marke or deſigne the place to be opened, and ſhall annoint it being ſo marked with butter or oyle whereby the skin may be relaxed,and the lancet enter more eaſily, and therefore the ſection may be the leſſe painefull. He ſhal hold his lancet between his thumb and fore finger,neither too neer,nor too far from the point;he ſhall reſt his other three fingers upon the patients arme,that ſo his hand may be the more ſteddy & leſſe trembling. Then ſhall he open the vein with an incition agreeable to the magnitude of the veſſell,& the indifferent thickneſſe of the conteined bloud ſomewhat aſlant,diligently avoiding the artery which lies under the *baſilica*,& the nerve,or tendon of the two-headed muſcle, which lyes under the Median veine. But for the Cephalicke it may be opened without danger. As much bloud as is ſufficient being drawne, according to the minde of the Phyſician,he ſhall looſe the ligature, and laying a little boulſter under, hee ſhall with a ligature bind up the wounded part to ſtay the bleeding ; the ligation ſhall be neither too ſtrait, nor looſe, but ſo that the patient may freely bend and extend his arme ; wherefore whileſt that is in doing he muſt not hold his arme ſtreight out, but gently bended,otherwiſe he cannot freely bend it.

How to place the patient.

Rubbing the arme.

Binding it before we open the veine.

Why the *baſilica* & median may not be opened ſo ſafely as the cephalick.

The binding up after blood-letting.

The

The figure of a Lancet to let bloud withall.



Chap. LXI.

Of Cupping-glasses, or ventoses.

The use of cupping glasses.

Cupping-glasses are applyed especially when the matter conjunct and impact in any part is to be evacuated, and then chiefly there is place for scarification after the cupping-glasses: yet they are also applyed for revulsion and divertion; for when an humour continually flowes down into the eyes, they may be applyed to the shoulders with a great flame, for so they draw more strongly and effectually. They are also applyed under womens breasts, for to stop the courses flowing too immoderately, but to their thighes for to provoke them. They are also applyed to such as are bit by venemous beasts, as also to parts possessed by a pestiferous *Bubo* or Carbuncle, so to draw the poyson from within outwards. For (as *Celsus* saith) a Cupping-glasse where it is fastned on, if the skin be first scarified, drawes forth bloud, but if it bee whole, then it draws spirit. Also they are applyed to the belly, when any grosse or thick windinesse, shut up in the guts, or membraines of the muscles of the *Epigastrium*, or lower belly causing the Collick, is to bee discussed. Also they are fastned to the Hypocondry's, when as flatulency in the liver, or spleene swels up the entraile lying thereunder, or in too great a bleeding at the nose. Also they are set against the Reines in the bottome of the belly, whereas the ureters run downe to draw downe the stone into the bladder, when as it stops 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 conteined matter. But to those parts whereto these cannot by reason of their greatnesse be applyed, you may fit hornes for the same purpose.

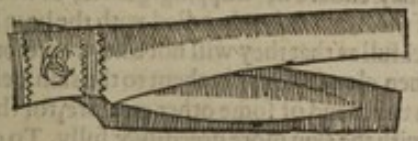
Lib. 8. cap. 2.

The

The figures of Cupping-glasses of different bigneſſe, with little holes in their bottomes, which ſhall be ſtopped with waxe when you apply them to the part; but opened when you would take them off, that ſo the aire may enter in with the more eaſe.

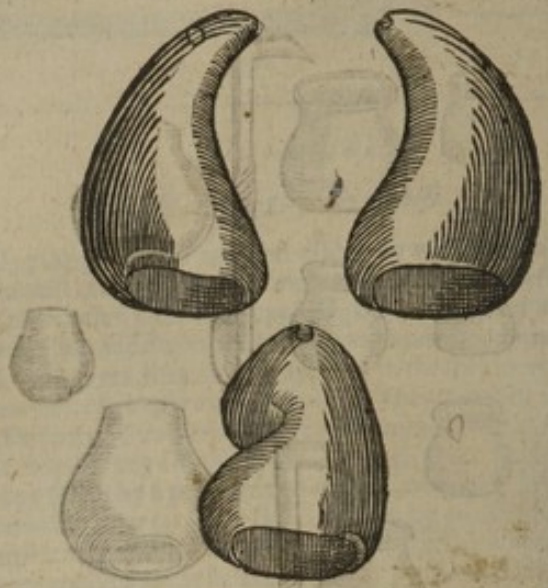


A Lancet.



Hornes

Hornes which without fire, by onely ſucking at the upper hole, draw from the parts lying under them.



Chap. LXII.

Of Leaches, and their uſe.

The uſe of Leaches.

IN thoſe parts of the body whereto Cupping-glaſſes and hornes cannot be applyed, to thoſe Leaches may for the moſt part be put, as to the fundament to open the coat of the hæmorrhoide veines, to the mouth of the wombe, the gums, lips, noſe, fingers. After the Leach being filled with bloud ſhal fal off, if the diſeaſe require a large evacuation of bloud, and the part affected may endure it, Cupping-glaſſes, or hornes, or other Leaches ſhall be ſubſtituted. If the Leaches bee handled with the bare hand, they are angred, and become ſo ſtomackfull as that they will not bite; wherefore you ſhall hold them in a white & clean linnen cloath, & apply them to the skin, being firſt lightly ſcarified, or beſmeared with the bloud of ſome other creature, for thus they will take hold of the fleſh, together with the skin more greedily & 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 bloud they have drawne, let him ſprinkle them with ſalt made into powder, as ſoone as they are come off, for thus they will vomit up what bloud ſoever they have ſucked. If you deſire they ſhould ſucke more bloud than they are able to containe, cut off their tailes as they ſuck, for thus they will make no end of ſucking, for that it runs out as they ſuck it. The Leaches by ſucking draw the bloud not onely from the affected part whereto they are applyed, but alſo from the adjacent and diſtant parts. Alſo ſometimes the part bleeds a good while after the Leaches be fallen away, which happens not by ſcarification after the application of Cupping-glaſſes or hornes. If you cannot ſtop the bleeding after the falling away of the Leaches, then preſſe the halfe of a beane upon the wound, untill it ſtick of it ſelf, for thus it will ſtay; alſo a burnt rag may be fitly applyed with a little boulſter and fit ligature.

How to apply them.

How to cauſe them to fall off.

The end of the ſeventeenth Booke.

OF THE GOUTE.

The Eighteenth Booke.

Chap. I.

The description of the Goute.

THe Goute is a disease occupying and harming the substance of the Joints by the falling downe and collection of a virulent matter accompanied by the foure humors. This word *Arthritis* or Goute, is generall for every joint so affected; yet it enjoyes divers particular names in sundry joints of the body: as that which falleth upon the joint of the Jaw, is termed *Siagonagra*, for that the Greekes call the Jaw *Siagon*; that which affects the necke is termed *Trachelagra*, for that the neck is in Greek termed *Trachelos*: that which troubles the backe bone is called *Rhachisagra*, for the spine is termed *Rhachis*: that which molests the shoulders *Omagra*, for the joint of the shoulder is stiled *Omos*: that which affects the joints of the Collar-bones *Cleisagra*, for that the Greeks call this bone *Cleis*: that in the Elbow, *Pechyagra*, for *Pechis* signifieth the elbow: the goute in the hand is called *Chiragra*, in the Hippe *Ischias*, in the knee *Gonagra*, in the feet *Podagra*, for that the Hand, Hippe, Knee, and Foote are in Greeke termed *Cheir*, *Ischion*, *Gony*, and *Pous*. When as there is great abundance of humours in a body, and the patient leads a sedentary life, not some one, but all the joints of the body are at once troubled with the Goute.

What it is.

Particulars gouts.

Chap. II.

Of the occult causes of the Goute.

THe humor causing the Goute is not of a more knowne, or easily expreſt nature than that which causeth the plague, *Lues venerea*, or falling sickenesse. For it is of a kind and nature cleane different from that which causeth a *Phlegmon*, *œdema*, *eryſipelas*, or *Scirrhus*; for, as *Aëtius* saith, it never commeth to suppuration like other humours, not for that, as I thinke, becauſe it happens in bloodles parts, but through the occasion of some occlut malignity. Hereto may be added that the humours which cause the forementioned tumors, when as they fall downe upon any part, not then truly when they are turned into *pus* or matter, do they cause so sharpe paines as that which causeth the Goute, for the paine thereof is farre more sharpe, than of that humour which breedeth an ulcerated *Cancer*. Besides these humours, when they fall upon the joints through any other occasion, never turne into knots, onely that which causeth the Goute in the joints,

Lib. 12. Cap. 12.

after it hath fallen thither, is at length hardened into a certaine knotty and as it were plaister-like substance to bee amended by no remedies. But seing it offends not the parts by which it flowes downe, (no more than the matter which creeping upwards from the lower parts to the braine, causeth the *Epilepsie*) as soone as it falleth into the spaces of the Joints it causeth cruell paine, one while with heate, another while with cold. For you may see some troubled with the Goute, who complaine that their pained Joints are burnt, there are others to whom they seeme colder than any ice, so that they cannot bee sufficiently heated to their hearts desire; verily you may sometimes see in the same body troubled with the Goute, that the Joints of the right side will as it were burne with heat, but on the left side will be stiffe with cold; or which is more, the knee in the same side to be tormented with a hot distemper, and the ancle troubled with a cold. Lastly, there sometimes happens a succession of paine in a succession of dayes, as the same joints will be this day troubled with a hot, to morrow with a cold distemper, so that wee need not marvaile to see Physitians prescribe one while hot, another while cold medicines against the same disease of the same part and body. Also it sometimes happens that the malignity of this humour doth not onely not yield to medicines, but is rather made worse, so that the patients affirme that they are far better when they have none, than when they have any remedyes applyed. For all things being rightly done, and according to reason, yet the disease will come againe at certain seasons by fits: and hereupon it is sayd by *Horace*:

The resemblance of the Goat to the Epilepsie.

The strange variety of the Gout.

Qui cupit, aut metuit, juvat illum sic domus aut res,
Ut lippum picta tabulæ, fomenta podagram.

Riches the covetous, and fearefull so doe please,
As pictures sore eyes, Bathes the Goute doe ease.

Certainely such as have this disease hereditarily, can no more bee helped and throughly freed therefrom, than those in whom the matter of the disease is become knotty, whereof *Ovid* thus speaketh:

Tollere nodosam nescit medicina podagram.

Physicke cannot the knotty Goute to heale.

These reasons have induced many to believe that the essence of this disease is unknowne, for there is a certaine occult and inexplicable virulency, the author of so great malignity and contumacy. Which *Avicen* seemes to acknowledge, when hee writes that there is a certaine kinde of Goute whose matter is so acute and maligne, that if it at any time bee augmented by the force of anger, it may suffice to kill the party by suddaine death. Therefore *Galen* himselfe writes that Treacle must bee used in all Arthriticall and gouty affects, and as I think, for no other reason, than for that it dries, wastes and weakens the malignity thereof. *Gordonius* is of the same opinion, but addeth withall, that the body must be prepared and purged before wee use Treacle. Therefore the matter of the gout is a thin and virulent humour, yet not contagious, offending in quality rather than quantity, causing extreme paines, and therfore instigating the humours together with the caliginous and flatulent spirits prepared or ready for defluxion upon the affected parts. Therefore as the bitings of Aspes, and stingings of Waspes cause cruell pain with sudden swelling and blistering, which is by the heat of the humours which the poyson hath tainted, and not by the simple solution of continuity, seeing that we daily see Shoo-makers and Taylors pricking their flesh with awles and needles without having any such symptome. Thus the virulencie of the gout causeth intolerable tormenting paine, not by the abundance, because it happens to many who have the gout, no signe of defluxion appearing in the joints; but onely by a maligne and inexplicable quality, by reason whereof these paines doe not cease unlesse abated by the helpe of medicines, or nature, or both. The recitall of the following histories will give much light to that unexplicable

Lib. 3. fen. 22. tract. 2. cap. 3.

Lib. de ther. ad Pisonem c. 15.

The matter of the gout partakes of occult malignity.

cable and virulent malignity of the matter causing the gout. Whilest King Charles the ninth, of happy memory, was at Burdeaux, there was brought to *Chappellaine* and *Castellan* the Kings Physicians, and *Taste* a Physician of Burdeaux, *Nicholas Lambert* and my selfe Surgeons, a certaine Gentlewoman some forty yeares old, exceedingly troubled for many yeares by reason of a tumor scarce equalling the bignesse of a pease, on the outside of the joynt of the left Hippe: one of her tormenting fits tooke her in my presence; shee presently beganne to cry and roare, and rashly and violently to throw her body this way and that way, with motions and gestures above a womans, yea a mans nature. For shee thrust her head between her legges, laid her feete upon her shoulders, you would have said shee had beene possessed of the Divell. This fit held her some quarter of an houre, during all which time I heedfully observed whether the grieved part swelled any bigger than it was accustomed, whether there happened any new inflammation; but there was no alteration as farre as I could gather by sight or feeling, but onely that shee cryed out more loudly when as I touched it. The fit passed, a great heate tooke her, all her body ranne down with swear, with so great wearinesse and weakenesse of all her members, that shee could not so much as stirre her little finger. There could bee no suspicion of an Epileptick fit, for this woman all the time of her agony did perfectly make use of all her senses, did speake, discourse, and had no convulsion. Neither did shee spare any cost or diligence, whereby shee might bee cured of her disease by the helpe of Physicians, or famous Surgeons; she consulted also witches, wizzards and charmers, so that shee had left nothing unattempted, but all art was exceeded by the greatnesse of the disease. When I had shewed all these things at our consultation, wee all with one consent were of this opinion, to apply a potentiall Cautery to the grieved part, or the tumour. I my selfe applyed it: after the fall of the Eschar very blacke and virulent *sanies* flowed out, which freed the woman of her paine and disease for ever after. Whence you may gather, that the cause of so great evill was a certaine venenate malignity, hurting rather by an unexplicable quality than quantity; which being overcome and evacuated by the Cautery, all paine absolutely ceased. Upon the like occasion, but on the right arme, the wife of the Queenes Coach-man at Amboise consulted *Chappellaine*, *Castellan*, and me, earnestly craving ease of her paine, for shee was so grievously tormented by fits, that through impatiency, being careless of her selfe, shee endeavoured to cast her selfe headlong out of her chamber window, for feare whereof shee had a guard put upon her. Wee judged that the like monster was to be assaulted with the like weapon, neither were we deceived, for using a potentiall cautery, this had like successe as the former. Wherefore the bitternesse of the paine of the gout is not occasioned by the onely weakenesse of the joints; for thus the paine should be continuall, and alwaies like it self; neither is it from the distemper of a simple humour, for no such thing happens in other tumours of what kinde soever they be of; but it proceeds from a venenate, maligne, occult and inexplicable quality of the matter: wherfore this disease stands in need of a diligent Physician and a painfull Surgeon.

A historie.

A terrible fit.

How an Epileptick fit differs from the gout.

Chap. III.

Of the manifest causes 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 bee rendred, wherein this malignity whereof wee have spoken lies hid and is seated. Therefore as of many 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 originall and their mothers wombe, which happens to such as are generated of gouty parents, chiefly if whilest they were conceived, this gouty matter did actually abound and fall upon the joynts. For the seed falls from all the parts of the body, as saith *Hippocrates*, and

The first primitive cause of the gout.

Lib. de aëre, &c. & aqua. Lib. 1. cap. 17.

Aristole affirmes *lib. de gener. animal.* Yet this causes not an inevitable necessity of having the gout, for as many begot of sound and healthfull parents are taken by the gout by their proper & primary default; so many live free from this disease, whose fathers notwithstanding were troubled therewith. It is probable that they have this benefit and priviledge by the goodnesse of their mothers seed, and the laudible temper of the womb; whereof the one by the mixture & the other by the gentle heat, may amend and correct the faults of the paternall seed; for otherwise the disease would become hereditary, and gouty persons would necessarily generate gouty; for the seed followeth the temper and complexion of the party generating, as it is shewed by *Avicen.* Another primitive cause is from unordinate diet, especially in the use of meat, drink, exercise and Venerie. Lastly by unprofitable humours which are generated and heaped up in the body, which in processe of time acquire a virulent malignity; for these fill the head with vapours raised up from them, whence the membranes, nerves and tendons, and consequently the joynts become more laxe and weake. They offend in feeding who eat much meat, and that of sundry kindes at the same meale, who drink strong wine without any 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 serous. Which if they flow downe unto the joynts, without doubt they cause this disease; for the joints are weake either by nature or accident in comparison of the other parts of the body: by nature, as if they be loose and soft from their first originall: by accident, as by a blow, fall, hard travelling, running in the sun by day, in the cold by night, racking, too frequent venery, 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 many crude humours, which by an unseasonable motion are sent into the sinews & 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 certaine times, as the courses, hæmorrhoides, vomit, scowring, causeth this disease. Hence it is, that in the opinion of *Hippocrates*, A woman is not troubled with the gout, unlesse her courses faile her. They are in the same case who have old and running ulcers suddenly healed, or *varices* cut and healed, unlesse by a strict course of diet they hinder the generation and increase of accustomed excrements. Also those which recover of great and long diseases, unlesse they be fully and perfectly purged, either by nature or art, these humours falling into the joynts, which are the relicks of the disease, make them to become goutie; and thus much for the primitive cause. The internall or antecedent cause is, the abundance of humours, the largenesse of the vessels and passages which run to the joynts, the strength of the amandating bowels, the loosenesse, softnesse and imbecility of the receiving joints. The conjunct cause is the humour it selfe impact and shut up in the capacities and cavities of the joynts. Now the unprofitable humour, on every side sent downe by the strength of the expulsive faculty, sooner lingers about the joynts, for that they are of a cold nature and dense, so that once impact in that place, it cannot be easily digested and resolved. This humour then causeth paine by reason of distension or solution of continnity, distemper, and besides the virulency and malignity which it acquires. But it savours of the nature, somtimes of one, sometimes of more humors; whence the gout is either phlegmonous, or erysipilatous, œdematous, or mixt. The concourse of flatulencies, together with the flowing down humours, and as it were tumult by the hinderance of transpiration, encreaseth the dolorificke distension in the membranes, tendons, ligaments and other bodies wherein the joint consists.

Li. 3. fen. 22. tract. 2. cap. 5. Another primitive cause of the gout.

Aph. 29. sect. 6. The antecedent cause of the gout. The conjunct. Five causes of the paine of the gout.

Chap. IV.

Out of what part the matter of the Gout may flow downe upon the joints.

THE matter of the gout commeth for the most part from the liver, or brain; that which descends from the braine is phlegmatick, serous, thin and cleare, such as usually drops out of the nose, endued with a maligne and venenate quality. Now it passeth out by the musculous skin and *pericranium*, as also through that large hole by which the spinall marrow, the braines substitute, is propagated into the spine, by the coats and tendons of the nerves into the spaces of the joints, and it is commonly cold. That which proceeds from the liver is diffused by the great veine and arteries filled and puffed up, and participates of the nature of the foure humours, of which the masse of the bloud consists, more frequently accompanied with a hot distemper, together with a gouty malignity. Besides this maner of the gout which is caused by defluxion, there is another which is by congestion; as when the too weak digestive faculty of the joints cannot assimulate the juices sent to them.

What and how the matter of the gout comes downe from the braine.

Gout by congestion.

Chap. V.

The signes of the arthritick humour flowing from the braine.

WHen the defluxion is at hand, there is a heavinesse of the head, a desire to rest, and a dulnesse with the paine 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 swolne with a certain œdematous tumour; the patients, seem to be much different from themselves by reason of the functions of the minde hurt by the malignity of the humour, from whence the naturall faculties are not free; as the crudities of the stomack, and the frequent and acride belchings may testifie.

Chap. VI.

The signes of a gouty humour proceeding from the liver.

THe right Hypocondrie is hot in such gouty persons, yea the inner parts are much heated by the bowell; bloud and choler carry the sway, the veins are large and swoln, a defluxion suddenly falls down, especially if there be a greater quantity of choler than of other humours in the masse of the bloud. But if, as it often falls out, the whole bloud, by meanes of crudities degenerate into phlegme and a wheyish humour; then will it come to passe, that the gout also, which proceeds from the liver, may be pituitous or phlegmatick, and participate of the nature of an *œdema*, like that which proceeds from the braine. As if the same masse of bloud decline towards melancholy, the gout which thence ariseth resembles the nature of a *scirrhus*; yet that can scarce happen, that melancholy by reason of the thicknesse and slownesse to motion may fall upon the joynts. Yet notwithstanding, because we speake of that which may bee of these, it will not bee unprofitable briefly to distinguish the signes of each humour, and the differences of gouts to be deduced from thence.

When the gout which proceeds from the default of the liver, assimulates the nature of an œdema.

Why the gout seldome proceeds from melancholy.

Chap. VII.

By what signes we may understand this or that humour to accompany the gouty malignity.

YOu may give a guesse hereat by the patients age, temper, season of the yeare, condition of the country where he lives, his diet and condition of life, the encrease of the paine in the morning, noone, evening or night, by the propriety of the beating, pricking, sharpe or dull paine; by numnesse, as in a melancholy gout or itching; as in that which is caused by tough phlegme, by the sensible appearance of the part in shape and colour (as for example sake in a phlegmaticke gout, the colour of the affected part is very little changed from its selfe, and the neighbouring well parts, in a sanguine gout it lookes red, in a cholerick it is fiery or pale, in a melancholy livid or blackish) by the heat and bignesse which is greater in a sanguine and phlegmatick than in the rest, by the change, and lastly by things helping and hurting. And there bee some, who for the knowledge of these differences wish us to view the patients urine, and feele their pulse, and consider these excrements which in each particular nature are accustomed to abound or flow, and are now suddenly and unaccustomarily suppresst. For hence may be taken the signes of the dominion of this or that humour. But a more ample knowledge of these things may be drawne from the humours predominant in each person, and the signes of tumours formerly delivered. Onely this is to be noted by the way, that the gout which is caused by melancholy is rare to be found.

Chap. VIII.

Prognosticks in the Gout.

BY the writings of Physitians the paines of the gout are accounted amongst the most grievous and acute; so that through vehemency of pain many are almost mad, and wish themselves dead. They have certain periods and fits according to the matter and condition of the humour wherein this maligne and inexplicable gouty virulency resides. Yet they more frequently invade in the Spring and Autumne; such as have it hereditarie are scarce ever throughly free therefrom, as neither such as have it knotty: for in the former it was borne with them, and implanted, and as it were fixed in the originall of life: but in the other the matter is become plaister-like, so that it can neither be resolved nor ripened: that which proceeds from a cold and pituitous matter, causeth not such cruell tormenting pain, as that which is of a hot, sanguine or cholerick cause, neither is it so speedily healed, for that the hot and thin matter is more readily dissolved; therefore commonly it ceaseth not untill fourty dayes bee past: besides also, by how much the substance of the affected part is more dense, and the expulsive facultie more weake, by so much the paine is more tedious. Hence it is, that those gouty paines which molest the knee, heele and huckle bone, are more contumacious. The gout which proceeds of a hot matter, rests not before the fourteenth or twentieth day. That which is occasioned by acride choler, by the bitternesse of the inflammation and pain causeth a difficulty of breathing, raving, and sundry times a gangrene of the affected part, and lastly death; and healed, it often leaves a palsie behinde it. Amongst all the gouty paines, the Sciatica challengeth the prime place, by the greatnesse of the paine and multitude of symptomes; it brings unquietnesse and watching, a feaver, dislocation, perpetuall lameneſse & the decay of the whole legge, yea and often times of the whole body. Now lameneſse, and leanneſse or decay of the part are thus occasioned, for that the decurrent humour forceth the head of the thigh-bone out of the cavity of the huckle-bone; this being forced out presseth the muscles, veines, arteries, and that notable and large nerve which runs alongst the

The gout frequent in the Spring & Fall.

What gout uncurable.

Gal. ad Thras. 49. Sect. 6.

Why the Sciatica causeth lameneſse.

the thigh even to the furtheſt joynts of the toes, and by the way is diverſly diſperſed over the muſcles of the whole leg. Therefore becauſe the head of the thigh is put out of its place, the patient is forced to halt; becauſe the veſſels and nerves are oppreſſed, the nouriſhment and ſpirits doe not freely flow into the parts thereunder, whence proceeds their decay. Yet it ſundry times happens, that the head of the thigh being not diſplaced, many halt becauſe the viſcide humour, which is naturally implanted in that place and continually flowes thither, both for the nutrition of theſe parts, and the lubrication of the joynt for quicker motion, is hardened by heat and idleneſſe, and the other unprofitable humours which flow downe do there concrete, and ſo intercept the liberty of motion. A groſſe and viſcide humour into what joint ſoever it falleth and ſtayeth, doth the ſame. For by concretion it turnes into a plaiſter like nature at or neare the joynt, poſſeſſing the cavities thereof, and it depraveth the figure of the part, making it crooked and knotted, which formerly was ſtreight and ſmooth. Furthermore every diſtemperature cauſed by the defluxion of humours, if it ſhall lye long upon any part, depraves all the actions, and oft-times wholly aboliſheth them; ſo that there may bee three cauſes of the leaneneſſe or decay of the joint by the gout, the obſtruction or compreſſion of the veſſels, idleneſſe and a hectick diſtemper: but two of lameneſſe, diſlocation and the concretion of an adventitious humour impact in the joynt. If contrary to cuſtome and reaſon the paines of the gout doe not goe away or returne at their accuſtomed periods, moſt grievous and dangerous diſeaſes thereon follow; for the matter accuſtomed to flow downe into the joints, if it ſeaze upon the ſubſtance of the liver, cauſes a Phlegmon; if it ſtay in the larger veines, a continuall feaver; if it flow into the membrane inveſting the ribs, a Pleuriſie; if it betake it ſelfe to the guts and adhere to their coats, the Collick or *Iliaca paſſio*; and to conclude, it produceth divers other ſymptomes, according to the diverſity of the parts whereto it flowes and abides. For thus ſundry that have beene troubled with the gout, become paralitick, becauſe the matter which formerly flowed downe into the joints, ſtayes in the ſubſtance and pores of the nerves, and ſo hinders the ſpirit that it cannot freely in its whole ſubſtance paſſe though them: hence therfore comes the reſolution of the part, whereinto the nerve is inſerted. Old men can never be quite or abſolutely cured of the gout, for that the maſſe of their bloud is ſo departed from its primary & native goodneſſe, that it can no more bee reſtored, than dead or ſowred wine. The gout which proceeds from a cold cauſe, invadeth ſlowly and by little and little, and is helped by the uſe of hot things; that which is from a hot matter, quickly ſhewes it ſelfe, and is helped by the uſe of cold things. Now, although the gout more frequently returnes in the ſpring and fall, yet it comes in the midſt of winter, the nerves being weakened by the exceſſe of cold, and the humours preſſed out; otherwhiles in the midſt of ſummer, the ſame being diffuſed and diſſipated. Laſtly, it comes at any time or ſeaſon of the year, if thoſe who are ſubject to this diſeaſe feed plenteouſly, and do all things according to their owne mindes and deſire. Thoſe who are troubled with the gout, feele and perceive change of weather, ſtormes, raines, ſnowes, windes and ſuch like, before they come. A ſoutherly conſtitution of the aire, for example, fils the body with humidities, and ſtirs up the humours that lye quiet in the body, and therefore cauſe defluxions upon the weaker parts, ſuch as the joints, both by nature, as being without bloud and fleſh, as alſo by accident, for that they a long time have been accuſtomed to bee ſo tormented; therefore their paines are increaſed in a wet ſeaſon. Many of theſe that are troubled with the gout, deſire venery in the bitterneſs of their paine, becauſe the internall heat wherewith they then are inflamed doth not diſſipate into ſpirits and aire, as the feaveriſh heat doth, but diſſolves, and as it were melts downe the ſeminall humour, which diſſolved, flowes to the genitalls, filleth and diſtends them. The ſame thing befalls carryage and running horſes, for in theſe by labour, much heat ſends flatulencies to the bottome of the belly. Yet venery is very hurtfull to ſuch as are troubled with the gout, becauſe it diſſipates the ſpirits and native heate, and encreaſeth the unnaturall heat; whereby it commeth to paſſe that the nervous parts are weakened, and the paine exaſperated. Rich men, that is, ſuch as feed riotouſly on variety of dainties, and in the meane ſpace live idlely and lazily

Three cauſes of the lameneſſe or decay of the limbes.

How the gout turnes into the paliſie.

Why the gout takes one in winter and the midſt of ſummer.

Why ſuch as have the goute upon them, doe oft-times deſire Venery.

Venery hurtfull in the gout.

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are more frequently and cruelly tormented with the gout than poore people, who live ſparingly and hardly: Wherefore there have been ſeene 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.

Chap. IX.

The generall method of preventing and curing the Gout.

THoſe who deſire to prevent the gout, muſt not glut themſelves with meat, muſt be quick to labour, and abſtaine from wine and Venery, or certainly muſt not uſe them, unleſſe for their healths ſake, muſt vomit and purge at certaine times. *Hippocrates* writes, that boyes are not troubled with the gout before the uſe of venery. Yet at this day many Eunuches are ſeene to have the gout, but eſpecially thoſe who abound with idleneſſe and pleaſure, yet theſe we have heretofore mentioned are very effectuall, not onely for the prevention, but alſo for the cure of the preſent diſeaſe. Yet wee muſt diligently diſtinguiſh the cauſes, what they be, & whence they may proceed, & oppoſe thereto remedies contrary in quantity and quality. There are abſolutely three diſtinct cauſes of the gout; A tainture from the parents; a corruption of the humours by diet and aire; a native, or adventitious weakeneſſe of the joints. Againſt theſe there is a twofold indication; the firſt is the evacuation and alteration of the peccant humours, the other the ſtrengthening of the weake joints. Theſe two ſhall be performed by diet conveniently appointed, purging, blood-letting, provocation of the hæmorrhoids, courſes, vomit, ſweat, urine, and fit application of locall medicines. Therefore, when the time ſhall come, wherein the gout accuſtometh to returne by courſe, the patient ſhall have a care of himſelfe 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 meanes revulſion and evacuation may bee made; as if the upper parts bee inflamed, blood ſhall bee drawne from the lower; if on the contrary the lower, out of the upper, alwayes obſerving the ſtreightneſſe of the fibres. Thus the right arme being troubled with a gouty inflammation, the *Sapheia* of the right legge ſhall bee opened, and ſo on the contrary; but if this generall blood-letting being premiſed, the paine ſhall not ceaſe, it will be requiſite to open the veine next to the paine, which I have often performed with happy ſucceſſe.

Aph. 30. Sect. 6.

Two generall ſcopes of curing the gout.

Whence blood muſt be let in the gout.

Yet phlebotomie hath not the like effect in all, for it is not availeable to ſuch as are continually and uncertainly troubled with gouty paines, or whoſe bodies are weake and cold, wherein phlegme onely is predominant. Wee may ſay the ſame of purging, for though it bee oft-times neceſſary, yet too frequently re-iterated, it proves hurtfull; furthermore, neither of theſe remedies is uſually very profitable to ſuch as obſerve no order in meate and drinke, which uſe Venery too intemperately, who abound with crude and contumacious humours; whoſe joynts by long vexation of the diſeaſe, have contracted a hectick diſtemper and weakeneſſe, ſo that they are departed from their naturall conſtitution, and ſuffered a great change of their proper ſubſtance. Wherefore as often as theſe greater remedies ſhall be uſed, a Phyſician ſhall be called, who according to his judgement may determine thereof. For oft-times diet proveth more availeable than medicines: therefore the Patient (if the matter of the gout bee hot) ſhall either drinke no wine at all, or elſe very much allayed, that is, as much as his cuſtome and the conſtitution of his ſtomacke can endure. A fit time for purging and bleeding is the Spring and Autumne, becauſe, according to the opinion of *Hyppocrates*, gouts reigne chiefely in theſe ſeaſons; in Autumne, for that the heate of the precedent Summer debilitateth the digeſtive faculty, the native heate being diſſipated: as alſo the eating of Summer fruits hath heaped up plenty of crude humours in the body, which eaſily flow downe into the paſſages of the joynts opened and dilated by the Summers heate:

What gouty perſons find no benefit by phlebotomy.

In what gout diet proves more effectuall than medicines.

Aph. 55. Sect. 6.

adde

adde hereunto that the inequality or variableneſſe of Autumne weakeneth all the nervous parts, and conſequently the joynts. But in the Spring, for that the humours forced inwards by the coldneſſe of the winter, are drawn forth from the center to the circumference of the body, and being attenuated, fall into the joints upon a very ſmall occaſion. Therefore there is great both neceſſity and opportunity for evacuation, which if it ſhall not avert the accuſtomed fit, yet it will make it more gentle and eaſie.

Chap. X.

Of Vomiting.

Vomiting is by all the Ancients exceedingly commended, not onely for the prevention, but alſo for the cure, eſpecially when as the matter floweth from the braine and ſtomacke; for the phlegmatick, ſerous and cholericke humours, which uſually flow from the joints, are excluded and diverted by vomit, and alſo there is attenuation of that phlegme, which being more thicke and viſcide, adhereth to the roots of the ſtomack: yet you muſt conſider and ſee that the patient bee not of too weake a ſtomacke and braine, for in this caſe vomiting is to bee ſuſpected. For the time, ſuch as have excrementitious humours flowing downe to the ſtomack through any occaſion, as by exerciſe and motion, muſt vomit before they eate; on the contrary, ſuch as are overcharged with an old congeſtion of humours, muſt vomit after they have eaten ſomething. Certainly it is ſafer vomiting after meat, then it is before. For the dry ſtomacke cannot, unleſſe with great contention and ſtraining, free it ſelfe from the viſcide humours impact in the coats thereof; and hence there is no ſmall danger of breaking a veine or artery in the Cheſt or Lungs, eſpecially if the patient bee ſtrait cheſted, and long necked, the ſeaſon cold, and hee unaccuſtomed to ſuch evacuation. I remember that with this kind of remedy I cured a certaine Gentleman of Geneva, grievouſly moleſted with a cruell pain in his ſhoulder, and thereby impotent to uſe his left arme; the Phyſicians and Surgeons of Lions ſeemed to omit nothing elſe for his cure. For they had uſed purging, phlebotomie, hunger, a Diet drinke of *Gudiacum* and *China* (although his diſeaſe was not occaſioned by the *Lues Venerea*) and divers other topick medicines, neither yet did they any thing availe. 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, & that of many & ſundry meats, as fat meat, onions, leeks; with ſundry drinks, as beare, ptiſan, ſweet and ſharpe wine, and that hee ſhould as it were overcharge his ſtomack at this meal, and preſently after get him to his bed; for ſo it would happen, that nature not enduring ſo great confuſion & perturbation of meats & drinks, wherof ſome were corrupted already in the ſtomack, & other ſome ſcarce altered at all, nature not enduring this confuſion and perturbation, would eaſily and of its owne accord provoke the ſtomack to vomit; which that it might the better ſucceed, he ſhould helpe forward natures endeavour, by thruſting his finger or a feather into his throat, that ſo the thick and tenacious phlegme might by the ſame meanes be evacuated: and not content to doe thus once, I wiſhed him to doe the like the ſecond & third day following, for ſo it verifieth that ſaying of *Hippocrates*: The ſecond and third day exclude the reliques of the firſt: afterwards, that hee ſhould vomit twice a moneth: chaw maſtick faſting: rub his necke and the pained part with *aqua vitæ*, ſtengthened by infuſing therein lavender, roſemary, and cloves groſly beaten: confirme his arme by indifferent exerciſe: hee performed all this, and ſo became free from his paine, and recovered the uſe of his arme. Thoſe who do not like ſuch plentifull feeding, ſhall drink a great quantity of warm water wherein radiſh roots have been boiled, and they ſhall have a care left by uſing their ſtomacks to this excretion by vomit they weaken the digeſtive and retentive faculty thereof. Wherefore ſuch as can naturally, ſhall thinke it ſufficient to vomit twice a moneth.

To what gout vomiting is to be uſed.

What time the fitteſt therfore.

A hiſtory.

How to make one vomit eaſily.

Lib. de vict. acut.

Chap.

Chap. XI.

The other generall remedies for the Gout.

How Diureticks are good for the gout.

THe defluxion of ſerous humours is very fitly diverted from the joints by the urine by the uſe of diureticke medicines. Therefore the roots of Sorrell, parſly, *ruſcus*, *aſparagus*, and graſſe, and the like, ſhall bee boyled in broth, and given to ſuch as have the gout: for when the urine floweth much and thick, the paine is leſſened. Many have found benefit by

Iſſues or fontanels.

iſſues; for the Arthritick malignity flowes forth of theſe, as by rivelets: experience ſhewes it in ſuch as are troubled with the *Lues Venerea*, for in thoſe that you cannot overcome the malignity by the proper antidote, that is, Quickſilver, they feele no greater eaſe of the pain, than by application of Cauſticks, and making of iſſues. They

Where to be made.

ſhall bee made in ſundry places according to the difference of the pained joints, to wit, in the beginning of the neck, if the defluxion proceed from the braine, 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 feete, ſome three fingers breadth under the knee, on the inſide: for thus there will follow more plentifull evacuation, by reaſon that the *Sapheia* runneth downe that way. Yet if the patient bee troubled

An actuall cautery.

with much buſineſſe, and muſt travell much on horſe-back, then ſhall they be made on the outſide of the legge, betweene the two bones thereof, that ſo they may trouble him the leſſe in riding. If any had rather uſe an actuall cautery, let him take ſuch an one as is triangular and ſharpe, that ſo hee may with more ſpeed and leſſe paine performe that which hee intends, and let him thruſt it through a plate of iron which hath a hole therein, and let the place bee marked leſt hee ſhould erre; the ulcer ſhall be kept open by putting in a pill of gold, ſilver, lint, of the root of orris, hermodactiles, gentian, waxe, wherewith ſome pouder of vitrioll, mercurie or allum ſhall be

Pills.

incorporated, leſt it ſhould fill up with fleſh ſooner than the Phyſician ſhall thinke fit. In the meane ſpace, the head, oft-times the originall of the evill, ſhall be evacuated by taking in the winter the pills *cochiæ*, and *de Aſſajereth*; but in ſummer *ſine quibus*, or *Imperiales*, before the Full of the Moone. ℞. *pul. hyeræ ſimp.* ℥i. *agar. recent. troch. & rhei an.* ℥ii. *myroball. chebul.* ℥ß. *tamarind.* ℈ii. *cum infuſione ſenæ, fiat maſſa de qua formentur pill.* vi. *pro drachma*; let the patient take two before ſupper every eighth day; the day after he ſhall drinke ſome broth of the decoction of Cicers and the Diureticke roots. Alſo theſe following pills will bee good to purge the phlegmaticke and ſerous humour. ℞. *pillular. fœtid. & de hermodactil. an.* ℥ß. *formentur cum ſucco vel ſyrup. roſar. ſolut.* Or elſe, ℞. *aloës.* ℥iii. *agarici trochiſ. & rhei, an.* ℥i. *maſſæ pilul. arthrit. & de hermodact. an.* ℈ii. *diacrid.* ℈i. *cum melle roſato fiat maſſa, capiat pondus,* ℥i. as the Phyſician ſhall thinke fit, by whoſe advice theſe ſhall be uſed and changed as occaſion ſhall offer it ſelf, and the nature of the humour cauſing the diſeaſe. The day after the purging, the patient ſhall take three houres before

Common pills with the addition of ſcamony.

meat half a dram of Treacle, to ſtrengthen the entrailes: pils are preferred before liquid medicines, for that by their long ſtay in the ſtomack they eaſily attract the noxious humor from the brain, & the other more diſtant parts. I have known ſome Phyſicians who mixing with ordinary pils a good quantity of ſcamony, as 7. or 8 grains, with a little ginger, leſt it ſhould hurt the ſtomack, have purged by ſtool a great quantity of ſerous humours; the day following they gave barly creame to correct the harme which the ſcamonie may have done to the ſtomacke. Others for the ſame

Treacle, how uſefull in the gout.

purpoſe give treacle, which doth not onely ſtrengthen the entrailes, but alſo weakens the virulencie of the gouty malignity; the orifice of the ventricle muſt be ſhut after meate, that ſo the vapours aſcending to the braine may bee reſtrained: for this purpoſe common Drige powder, Marmelate, or conſerve of roſes are good. In a

Cephalick fumigations.

wet ſeaſon uſe Cephalicke perfumes thus made. ℞. *thuris, vernicis, & maſtich. an.* ℥i. *granorum juniperi, baccarum lauri, an.* ℥ß. *ligni aloës* ℥ii. *aſſæ odoratæ* ℥i.ß. Let them bee groſly beaten; let the fume be received in tow or carded Cotton, and ſo applyed to the head. Alſo the excrementitious humours ſhall bee dried up by the following powder ſtrowed on the patients head for fifteene dayes. ℞. *fol. roſ. rub. ſenæ, ſtachad. utriuſque an.* m. ß. *milii,* ℥iiii. *furfuris loti in vino albo,* ℥iii. *florum chamæm. melil.*

melil. an. p i. *fem. aniſi,* ℥ i. *ſalis com.* ℥ ii. *fiat omnium pulvis.* Let it be put into linnen bagges, 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 chawed, and kept in the mouth in the forme of a maſticatory, in the time of the falling downe of the defluxion. R. *cubelarum, nucis moſchat. glycyrrhiz. aniſ. an.* ℥ i. *pyrethri,* ℥ ii. *maſtich. rad. ſtaphiſagr. eryngii, an.* ℥ ii. Let them all be made into pouder, and mixed together, & tyed up in a little taffaty to the bigneſſe of a haſell nut, and let them be rowled up and downe the mouth with the tongue to cauſe ſpitting or ſalivation. Working with the hands, and frictions of the armes, 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 cauſeth revulſion from the feet, but alſo the reſolution of that which is unprofitable.

Cephalicke bagges

A maſticatory.

Chap. XII.

What Diet is convenient for ſuch as have the Goute.

After the body is once fed, they muſt not returne to meat before that the concoction be perfected in the ſtomacke, leſt the liver be forced to draw by the meſaraicke veines that which is yet crude and ill digeſted, and as it were forced thence. Whence the depravation of the nutriment of the whole body; for the following decoctions doe not amend the default of the firſt. Let them make choice of meate of good juice and eaſie digeſtion, roſted for ſuch as are phlegmaticke, but boiled for ſuch as are cholericke: as they ſhall ſhun much variety at one meale, ſo muſt they eſchew the uſe of pulſes, milk-meats, ſallads, and ſharpe things, as verjuice, vinegar, the juice of oranges, and citrons. They ſhall not eat unleſſe they be hungry, and ſhall deſiſt therefrom before they be fully ſatisfied, if it be but for this, that whileſt the native heat is buſied in the digeſtion of meat plenteouſly eaten, it is diverted from the concoction of the noxious humors. The fleſh of great fowle, as ſwans, cranes, peacockes are not of laudible juice, and are with more difficulty digeſted in the ſtomacke. Some of the antients have diſallowed of the eating of Capons, and the like birds, becauſe they are ſubject to bee troubled with the Goute in the feete. Fiſhes are to be ſhunned, for that they heape up excrementitious humours, and are eaſily corrupted in the ſtomacke, yea & relaxe it by continuall uſe. Of the fleſh of beaſts veale is moſt to be commended, for that it breeds temperate blood, and laudible juice, and is eaſily digeſted. Neither in the meane time is mutton to bee found fault withall. But the like hunger or abſtinence muſt not be appointed to all men troubled with the Goute, for ſuch as are of a ſanguine and cholericke complexion, becauſe they are endued with much, and much waſting heate, are to be refreſhed with more plentifull nouriſhment; for hunger ſharpens choler, and ſo augments their paines; neither in the interim muſt they bee fed with too moiſt meates, for too much moiſture, beſides that it is the author of putrefaction, will cauſe defluxions, and draw downe the matter to the joints. Therefore the Cholericke humor muſt bee incraſſated and refrigerated by taking things inwardly, and applying things outwardly, leſt by its tenuity it ſhould fall downe into the grieved parts. To this purpoſe conduce brothes altered with lettuce, purſlaine, ſorrell, and the like herbs, and barly creames made with a decoction of the foure cold ſeeds. Phlegmaticke bodies, by reaſon that they have not ſo vigorous heate, doe as it were carry their provant about them, wherefore they muſt not be fed, neither with many nor with moiſt meats. All that are troubled with the Goute muſt ſhun thoſe things which are hard of digeſtion, and which are ſoone corrupted, for they all have a certain remiſs feaver which diminiſheth the native heat, & makes the meates apt to putrefie. Too plentifull drinking not onely of wine, but alſo of any other liquor is to be avoided. For by too great a quantity of moiſture the meat floats in the ſtomacke, and the native heat is in ſome ſort extinguiſhed, whence proceed crudities. Some phyſitians commend the uſe of white wine, for that it provokes

The fault of the firſt concoction, is not amended in the after.

Capons ſubject to the Gout.

Cholericke perſons cannot away with long faſting.

Phlegmaticke bodies in faſting feed upon themſelvs.

White wine not good for the gout.

vokes urine, which is not altogether to be disallowed if so be that the body bee free from excrements, otherwise by this, as it were a vehicle, especially if the temperature of the body be somewhat more hot, they shall be carryed down into the joints.

Claret may be the safelier drinke.

Therfore in such a case I should rather advise them to use claret, which is somewhat weake and astringent, for that it doth not so much offend the head nor joints, and it shuts and strengthens the orifices of the vessels. Yet it will bee more convenient wholly to abstaine therefrom, and in stead thereof to drinke a *Hydromel* made after this manner. ℞. *aquæ* ℔. iiii. *mellis opt.* q. i. *bulliant ad consumptionem* ℔. i. *bene despumando, adde ad finem, salviæ* p. i. *imo si æger sit pituitosus, cinamomi aut caryophyllorum momentum.* For cholerike persons make a sugred water thus. ℞. *aquæ fontis* ℔. iiii. *sacchari* ℔. ß. *colentur per manicam sine ebullitione, addendo in fine cinamomi* ʒ. ii. For thus the stomacke shall also be strengthened; also he may drinke *ptisan*, wherein at the end of the decoction shall bee boiled some dryed roses, or else some syrupe of pomegranates added thereto, lest it should offend the stomack; as soone as it comes from off the fire, let it stand and settle, and then straine it through an Hippocras bag, or cleane linnen cloath.

Hydromel most safely.

A *hyd. osaccharum.*

CHAP. XIII.

How to strengthen the Joints.

IT is a matter of much consequence for the prevention of this evill, to strengten the joints, whereby they may be able to resist the humors preternaturally falling downe upon them. Wherefore it is good morning and evening to rubbe them with *Oleum Omphacinum*, that is, oile made of olives not come to their perfect maturitie; or with oile of roses mixed with common salt finely poudered. It may also bee mixed with common oile, adding thereto the powder of harts horne, as that which hath an astringent and drying faculty. Also it is good to bath them in this following Lye. ℞. *cort. granat. nucum cupres. gallarum, sumach. cortic. querni, an.* ℥ ii. *salis com. alumin. roch. an.* ℥ i. *salviæ, rorismar. lavendul. lauri, ivæ arthretic. an.* m. i. *rosar. rub.* m. ß. *bulliant omnia in sex* ℔. *vini crassi & astringentis & lixivio parato ex aqua chalibeata & cinere querno.* Then foment the part with sponges or cotton clothes; after this fomentation shall be carefully wiped & dryed with hot linnen clothes, taking heed of cold. The juice of unripe Hawes tempered with oxycrate is a singular thing for this purpose. But if you desire to strengthen the joints weakened by a cold cause, then, ℞. *salviæ, rorism. thymi, lavendul. laur. absinth. an.* m. i. *caryophyl. zinzib. piperis, conquassatorum an.* ℥ i. *infundantur in aquæ vitæ & vini rubri astringentis, an.* ℔. iiii. *bulliant leniter in balneo mariæ.* With this liquor foment the joints morning and evening. Some thinke it good to strengthen the joynts, to tread grapes in vintage time, which if they be not able to doe, then let them wash their feete in the Muste or new pressed Wine. Also bagges may be thus made for the same purpose. ℞. *salis com. alum. roch. cort. granat. sumach. berberis, nucum cupressi, an.* ℥ iiii. *fol. salviæ, rorismar. rosar. rub. an.* m. ß. Let them be all put in linnen bags and boyled in Lye, and so make a decoction for to foment the joynts.

A fomentation to strengthen the joints.

The juice of hawes with oxycrate.

Bagges.

CHAP.

Chap. XIIII.

Of the Palliative Cure of the Goute and the materiall causes thereof.

HEREa lso must we consider the causes whence this disease proceeds, the temper of the diseased body, the parts affected, & those from whence it proceeds. For as these are not alwayes alike, so neither can one and the like remedy be usefull in every Goute. For first those which proceed of a cold cause require other remedies, than those which arise from a hot, and that which proceeds from any one simple humour, than that which ariseth from divers mixed together. For Choler alone causeth cruell paines, but tempered by the admixture of Phlegme, it becomes more gentle. Furthermore some remedies are good in the beginning, some in the encrease, and some at other times. Neither may we use repercussives in the Sciatica, as we may in the Goute of the feet and other joints; unlesse peradventure the part be fearefully enflamed. Taking these things to consideration we must observe that the Palliative cure of that Gout, which cannot absolutely be helped, as that which is hereditary and inveterate, is performed by foure scopes. The first is, by appointing a convenient diet in the sixe things which are termed not naturall. The second by evacuating and diverting the antecedent matter, both by purging and phlebotomy. The third, by applying topicke medicines according to the condition of the morbificke humour and nature of the part. The fourth, by correcting the symptomes, but especially the paine, whereof in these affects there is oft times so great excesse by reason of the unexplicable and invincible malignity of the virulent quality associating the humour, that it alone is oft times sufficient to kill the patient. And because the variety of morbificke causes, brings a variety of remedies, fitted to these foure intentions, therefore it behoves a physitian to be most attentive in the distinction of the causes. For he may be easily deceived and mistake one for another; for arthritick pains proceeding from a cold matter, if they be mitigated by the application of Narcoticke and cold medicines, it may induce us to beleeve that the materiall cause is hot, though really it bee not so; for Narcotickes asswage paine, not for that they are contrary to the cause thereof, but because they take away the sense by inducing a numnesse; on the contrary, the materiall cause may sometimes seeme cold, which notwithstanding is hot, for that it becoms better by application of hot medicines, that is, by taking an argument from that which helps, because contraries are cured by contraries, and the like preserved by the like. But herein consists the error, for that hot medicines profit not by their contrariety, but by the attenuation of the grosse matter, by the rarefaction of the skin and dissipating them into aire. Whence you may gather that an argument drawne from that which helpes and hurts, is very deceitfull: moreover it may happen that a large quantity of cold matter flowing down from the brain, may cause great pain by reason of the virulency, & a small quantity of choler mixed therwith, which serves for a vehicle to carry down the tough and slow phlegme into the joints, whence the patient becomes thirsty and feavourish by reason of the heate and inflammation of these parts, whereby such as are lesse cautelous and heedy will easily be induced to beleeve that some hot matter is the occasion of this Gout. Now when as not some one simple humour, but different by reason of mixture, causeth the Gout, the yellowish colour of the part may deceive one, as, if the evill matter should proceed from choler onely, which by the tenuity of its substance leaving the center, easily possesseth the circumference of the body or part: & notwithstanding much phlegm being as it were enraged by the admixtion of a little choler, may be the chiefe cause of the disease, and may peradventure be discovered by the encrease of paine in the night season. A feaver arising by meanes of paine and watching may encrease the conceived opinion of choler, which attenuating and diffusing the humours, drives them into the joynts, and causeth fiery urines, tinctured with much choller, and a quicke pulse. Yet notwithstanding the Physitian shall be in errour, if deceived with these appearances, he 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 be

The scopes of curing

Repercussives not to be used in the *sciatica*.

The palliative cure performed by foure scopes.

An argument taken from that which helpeth, or giveth ease, is not alwaies certaine.

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 fift. neglected for the cure of the ſymptomes. Beſides alſo it may come to paſſe, that choler may be the cauſe of the Gout, and notwithſtanding no ſignes therof may appeare in the skin, and ſurface of the affected part, becauſe the coldneſs of the ambient aire, and the force of applyed Narcoticks may have deſtroyed the colour of the juices lying therunder, and as it were imprinted a certain blackneſſe. It alſo happens, that the

The ſixt. body being overcharged with a great quantity of groſſe and viſcide humours, the expulſive faculty may diſcharge ſome portion thereof unto the joints, but leave the reſt impact in the cavity of ſome entraile, where cauſing obſtruction and putrefaction may preſently cauſe a feaver, and that intermitting, if it be ſmall, & obſtruct only the leſſer veins, & theſe of the habit of the body. Wherefore then it is not ſufficient that the Phyſitian employ himſelfe in the cure of the Gout, but it behoves him much more to attend the cure of the feaver, which if it bee continuall, it diſcredites the phyſitian, and endangers the patient; if it bee intermitting, it eaſily becomes continuall, unleſſe it be withſtood with fit remedies, that is, unleſſe you let blood, the belly being firſt gently purged, and nature be preſently freed by a ſtronger purge of the troubleſome burden of the humours. Now it is convenient the purge be ſomewhat ſtronger than ordinary, for if it ſhould bee too weake, it will ſtir up the humors, but not carry them away, & they thus agitated will fall into the pained and weak joints, and cauſe the Gout to encreaſe. By this it appeares how deceitfull that conjecture is, which relyes & is grounded on one ſigne, as often as we muſt pronounce judgement of morbificke cauſes. Wherefore to conclude wee muſt thinke that opinion moſt certaine concerning the matter of the diſeaſe, which is ſtrengthened with multiplicity of ſignes, as thoſe which are drawne from the colour of the part, the heate or coldneſſe manifeſt to the touch, thoſe things that helpe and hurt, the patients familiar and uſuall diet, temper, age, region, ſeaſon of the yeare, propriety of paine, the exacerbation or excels thereof, in what daies, & in what houres of the day, the length of theſe fits, the urine and other excrements comming from the patients body. But for that not a few are in that hereſie, that they thinke that we muſt neither purge nor let blood in the Gout, we muſt here convince that opinion. For ſeing that Phyſicke is the addition of that which wants, and the taking away of thoſe things that are ſuperfluous, and the Gout is a diſeaſe which hath its eſſence from the plenty of abounding humours, certainely without the evacuation of them by purging and bleeding, wee cannot hope to cure, either it, or the paine which accompanies it. *Metrius*, in his Treatiſe of the Gout writes, that it muſt be cured by purging, uſed not onely in the declination, but alſo in the height of the diſeaſe, which wee have found true by experience; and it is conſonant to this ſaying of *Hippocrates*; in paines wee muſt purge by the ſtoole. Beſides alſo, *Galen* profeſſeth that in great inflammations, feavers, and paines, he knew no greater nor ſurer remedy than to let blood, even to the fainting of the patient. If thoſe which are in this caſe ſhall not become better by purging and phlebotomy conveniently preſcribed, then it happens by meanes of drunkenneſſe, gluttony, and the like diſtemper. For hence abundance of crude humors are heaped up, which by their contumacy yeeld themſelves leſſe obedient to medicines. Therefore ſuch gouty perſons as are intemperate and given to gluttony and venery, may hope for no health by uſe of medicines.

Why ſtrong purges muſt bee given to ſuch as have the gout.

That judgement moſt certain which reſts upon multiplicity of ſignes.

Why we muſt uſe purging and bleeding in the gout.

Lib. de affect. ubi de Artheit. loquitur. Ad aph. 23. ſect. 1. Lib. de cur. per ſang. miſſionem.

Chap. XV.

Of locall medicines which may be uſed to a cold Gout.

It is not ſafe to uſe repercuſſives in the gout before purging.

Little doe topicke medicines availe, unleſſe the body of the gouty patient ſhall be purged from excrementitious humours; beſides alſo there is danger leſt by the uſe of repelling medicines, the virulency of the humours may be driven into the entrailes, which thing hath bin the cauſe of ſodaine death to many. Now in the firſt place we will ſpeake of locall medicines which are thought meet for a phlegmatick juice, becauſe this is more frequent, than that which is from a hot

a hot cauſe. At the beginning in every gout, the *ſciatica* excepted, wee muſt uſe aſtringent things which have a faculty to binde or ſtrengthen the joints, and to dry and waſte the excrementitious humour. As, ℞. *fol. ſabinæ* m. ß. *nucum cupreſſi* ℥iii. *aluminis roch.* ℥i. *gum. tragacanthæ* ℥iiii. *mucaginis pſilii & cydon. quantum ſufficit, fiat cataplaſma.* Or, ℞. *ſtercoris bubuli recentis* ℔. i. *mellis roſ.* ℥iiii. *olei roſ. & aceti an.* ℥ii. *bulliant ſimul parum, fiat cataplaſma.* Or elſe, ℞. *olei roſar. & myrtill. an.* ℥ii. *pulveris myrrhæ & aloes an.* ℥i. *acaciæ* ℥iiß. *incorporentur cum aqua gallarum coctarum, & fiat unguentum.* Some boyle ſage, camomile and melilote flowers, wormewood and dane-wort, of each a handfull in a ſufficient quantity of vinegar, then they put the grieved part into this decoction being warme; & by frequent uſing this medicine, it hath beene found to repell and conſume the noxious humour, not onely cold, but alſo cholericke; and alſo to ſtrengthen the part. The freſh fæces of Olives layd to the part, aſſwage paine: dryed Oranges boiled in vinegar, beaten and applyed doe the ſame. Or, ℞. *medii corticis ulmi* ℔.ß. *caudæ equin. ſtœchad. conſolid. majoris, an.* m.ß. *aluminis roch. thuris an.* ℥iii. *farin. hordei* ℥v. *lixivii com. quantum ſufficit, fiat cataplaſma ad formam pultis ſatis liquidæ.* Commonly then when as the part ſwelleth up, the paine is leſſened, for that the expulſive faculty driveth the humour from the center into the circumference of the part, that is, from within outwards; for in like ſort, ſuch as have the tooth ach have leſſe paine when their cheekes begin to ſwell.

An aſtringent Cataplaſme.

A diſcuſſing fomentation.

One partly aſtringent and partly diſcuſſing.

After repercuſſives, wee muſt come to thoſe which evacuate the conteyned humour by evacuating or reſolving it. For every defluxion of humours remaining in any part requires evacuation. Neither muſt we marvaile thereat, if the digeſted humour doth not vaniſh at the firſt time; for we muſt have regard to the cold phlegme which is thick and viſcide, as alſo of the part which is ligamentous, membranous and nervous, and conſequently more denſe than fleſhy parts. ℞. *rad. Bryon. ſigilli beat. Mariæ an.* ℥iv. *bulliant in lixivio, poſtea terantur, & colentur per ſetaceum, addendo farin. hordei & faburum an.* ℥i. *olei chamæm.* ℥iii. *fiat cataplaſma.* Or, ℞. *farin. hordei & lupin. an.* ℥iii. *ſulphuris vivi & ſalis com. an.* ℥i. *mellis com.* ℥v *pul. aloës & myrrhæ an.* ℥ß. *aq. vit.* ℥i. *cum lixivio fiat cataplaſma.* Or, ℞. *ſucci caulium rub. aceti boni, an.* ℥iiii. *farin. hordei* ℥iß. *pul. Hermodactyl.* ℥ß. *vitellos ovorum* nu. iii. *olei chamæm.* ℥iii. *croci* ℈ii. ſome burne the roots and ſtalkes of colworts, and mixe the aſhes with hogs greace and the powder of Orris, and ſo make a pultis. Or, ℞. *Lactis vaccini* ℔.ii. *micæ panis albi quantum ſufficit, bulliant ſimul, addendo pulveris ſubtilis florum chamæm. & meliloti an.* m. ß. *croci* ℈i. *vitellos ovorum* nu. iiii. *ol. roſar.* ℥iii. *butyri recentis* ℥i. *terebinth.* ℥ii. *fiat cataplaſma ad formam pultis ſatis liquidæ.* This Cataplaſme may be applyed with good ſucceſſe, not only to phlegmatick & cold, but alſo to any gout, at any time to mitigate the extremity of the paine in men of any temper, and it muſt bee changed twice or thrice a day. Alſo Treacle diſſolved in wine, and annointed on the part, is ſayd to aſſwage this paine. You may for the ſame purpoſe make and apply emplaſters, unguents, cerats and liniments: This may bee the forme of an emplaſter. ℞. *gummi ammoniaci, bdelii, ſtyracis, an.* ℥ii. *cum aceto & aqua vit. diſſolve, & adde farin. fœnugr.* ℥ß. *olei chamæm. & anethi, an.* ℥ii. *ceræ quantum ſufficit, fiat emplaſtrum molle.* Or, ℞. *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, ℞. *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 elſe, ℞. *ſucci rad. enul. camp. & ebuli an.* ℥iii. *rad. alth.* ℔. ß. *coquantur & colentur per ſetaceum, addendo florum cham. melil. ſambuci, roriſmar. & hyperici an.* p.ii. *nucum cupreſſi,* nu. iiii. *ol. cham. aneth. hyper. liliorum, de ſpica an.* ℥ii. *pinguedinis anatis, gallin. anſeris an.* ℥ß. *ranas virides vivas* nu. vi. *catellos duos nuper natos, bulliant omnia ſimul, in* ℔. ii. ß. *vini oderiferi, & unâ aquæ vit. ad conſumptionem ſuccorum & vini, & oſſium catellorum diſſolutionem, & fortiter exprimantur; expreſſioni adde terebinth.* ℥iii. *cer. quantum ſufficit. fiat emplaſtrum molle.* Alſo, *Emp. de vigo. Oxicroceum, de mucilaginibus, de meliloto* and the like mixed together, and ſoftened with a little

Why the gouty humour doth not preſently vaniſh upon the uſe of repercuſſives.

Greater diſcuſſers.

A Cataplaſme good for any gout at any time.

Diſcuſſing emplaſters.

little oyle or *axungia*, are of the like faculty, and good for the ſame purpoſe.

Ointments. Let this be the forme of an ointment. ℞. *anſerem pinguem, & imple catellis duobus, de quibus deme cutem, viſcera, caput & pedes; item accipe ranas* nu. x. *colubros detracta cute in fruſta diſſectos* nu. iv. *mithridat. & theriac. an.* ℥ß. *ſol. ſalviæ, roriſmar. thymi, rutæ, an.* m. ß. *baccarum lauri, & juniperi conquaſſat. an.* ℥i. *pulveris nuc. moſchat. ZinZib. caryophyl. & piper. an.* ℥i. *de eo quod ſtillabat fiat unguentum vel linimentum cum cera & terebinth. veneta, pauca aqua vitæ addita*; this marvelouſly aſſwageth the paine of the gout ariſing from a cold cauſe. Another, ℞. *Gummi pini, & lodani, an.* ℥iv *gummi elemi & picis naval. an.* ℥ß. *terebinth. venet. claræ* ℥vi. *chamæmel. & liliorum an.* ℥iv. *vini rub.* ℔. i. ß. *aq. vit. & ſalv. an,* ℥vi. *diſſolvantur omnia ſimul lento igne, baculo ſemper agitando, deinde adde pul. ireos, flor. baccarum lauri, & hermodactyl. and* ℥iiß. *maſtiches, myrrhæ & olibani an.* ℥ii. *farinæ fabar.* ℥iv. *incorporentur omnia ſimul, fiat unguentum molle.* Or elſe, ℞. *mucag. ſeminis fænugr. in aceto extract. quantum volueris, cui miſce mellis quantum ſufficit*; let them be boyled together untill they acquire the conſiſtence of an oyntment. Theſe things ſhall be changed, as often as

Diſcuſſing fomentations. need ſhall ſeeme to require. Alſo anodine and diſcuſſing fomentations are good to reſolve; as this, ℞. *ſol. rutæ, ſalv. roriſmar. an.* m. i. *bulliant cum aceto & vino*; and ſo make a decoction for a fomentation, which you may uſe not only in a cold gout, but alſo in a hot, becauſe it reſolveth and ſtrengtheneth the part by aſtriction, and

Remedies muſt be often changed in the gout. freeth it from the defluxion: you muſt have a care that the medicines which are uſed to paines of the gout be changed now and then. For in this kinde of diſeaſe that remedy which did good a little before, and now availeth, will in a ſhort time become hurtfull.

But if the contumacy and exceſſe of the pain be ſo great, that it will not yeeld to the deſcribed medicines, then it is fit, becauſe the diſeaſe is extreme, to uſe (according

A great diſcuſſer. to *Hypocrates* counſell) extreme remedies, ſuch as are thoſe which follow. ℞. *axungiæ gallinæ, olei laurini maſtic. & euphorb. an.* ℥i. *pulver. euphorb. & pyreth. an.* ℥i. *fiat litus*; herewith let the part bee rubbed every day, for it is a very effectuall medicine. For *euphorbium* and pellitory by their heat attenuate and reſolve, the capons greaſe and oile of bayes, relaxe, the oyle of maſtich ſtrengtheneth the part and hindereth a

An anodine. new defluxion. Alſo there is made a very anodine ointment of oyle of foxes, wherein earth-wormes, the roots of elecampane and bryonie have beene boiled, with a little turpentine and waxe; this ſoftens, attenuates and reſolves the cold humour impact in the joints. Or elſe, ℞. *ſeminis ſinapi pulveriſati, & aceto acerrimo diſſoluti,* ℥iii. *mellis anacardini* ℥ii. *aquæ vitæ* ℥i. *ſalis com.* ℥ii. Let them bee all mixed together, and applyed to the pained part. Or, ℞. *picis nigræ,* ℥iii. *terebinth. venetæ* ℥ii. *ſulphuris vivi ſubtiliter pulveriſati* ℥iii. *olei quant. ſufficit, liqueſiant ſimul, fiat emplaſtrum*; Let it bee ſpread upon leather, and laid upon the part for two or three dayes ſpace, if the patient perceive any eaſe thereby; if otherwiſe, let it be changed as we ſaid before. Some for the ſame purpoſe apply nettles thereto, and preſently after waſh the part in ſea or ſalt water. Others foment the part with vineger wherein pidgeons dung hath

A veſicatory againſt the contumacy of the conjunct matter. beene boiled. A veſicatory made of very ſower leaven, *cantharides*, and a little *aqua vitæ*, is very powerfull to evacuate the conjunct matter. For thus the maligne and virulent *ſerum*, or whayiſh humour is let out, whence followes ſome eaſe of the pain. Now there are ſome gouty paines, which cannot bee leſſened or aſſwaged unleſſe by remedies more powerfull than the diſtemper, therefore veſicatories ought not to be rejected, ſeeing that the Ancients in this affect have alſo made uſe of actuall cauteries, as we ſhall ſhew hereafter. *Chriſtopher Andreas* in his booke termed *Oëcoitarie* [that is, Domeſtick phyſicke] much commends Oxe dung wrapped in cabbage or vine leaves, and roaſted in the embers, and ſo applyed hot to the grieved part.

CHAP.

Chap. XVI.

Of locall medicines to be applied to a hot or ſanguine Gout.

THere muſt wee in the beginning make uſe of repercuſſives, ſuch as are cold and dry, that they may contend with the morbificke matter by both their qualities; alſo let them bee aſtrictive, to adde ſtrength to the part. But I would have you alwaies to underſtand that you muſt firſt premiſe generall medicines. Rc. *albuminum ovorum* nu. iv. *ſucci lactucæ & ſolani an.* ℥i. *aq. roſar.* ℥ii. *incorporentur ſimul, & fiat linimentum ſæpius renovandum.* Others take the meale of barly, lentils, *acatia*, oile of roſes, myrtles, and with a little vineger they make a cataplaſme; Or, Rc. *ſumach, myrtillorum, boli arm. an.* ℥ß. *acatiæ, corticum granat. baluſt. an.* ℥i. *aq. plantag. & roſar. an.* ℥iii. *ol. roſati* ℥ß. *aceti* ℥i. *farinæ hordei & lentium quantum ſatis erit, fiat cataplaſma.* This is very excellent and effectuall to ſtay or hinder phlegmonous and eryſipelatous tumours. Alſo you may make a Cataplaſme *ex mucagine Cydoniorum in aqua roſarum extracta, caſiæ fiſtula, oleo roſato, & aceto.* Or, Rc. *pampinorum vitis viridum*, m. ii. *terantur & bulliant in oxycrato ex aqua fabrorum, cui adde ſumach. conquaſſati* ℥i. *olei roſat.* ℥ii. *farinæ hordei quantum ſufficit, fiat cataplaſma.* Or elſe, Rc. *ſucci ſempervivi, hyoſcyami, & portulacæ an.* ℥iv. *corticum mali granati* ℥ß. *farinæ hordei* ℥v. *vini auſteri quantum ſufficit, fiat cataplaſma*; this is much commended, for it hath entring thereinto wine and the pomgranate pill, which both are very great aſtrictives; and the juices are exceeding cooling, the meale alſo hinders and thickens the ſanguine humours that are ready to flow downe, and make the medicine of a good conſiſtence. Another. Rc. *fol. hyoſcyami & acetoſæ an.* m. i. *involvantur papyro, & ſub cineribus coquantur, mox cum unguento populeon. aut roſat.* ℥ii. *incorporentur*; and then lay this Cataplaſme thus made warme unto the part. Another, Rc. *florum hyoſcyami* lb. ii. *ponantur in phiala vitrea, & reconde in fimo equino donec putruerint, accipe ex putredine* ℥ii. *in quibus diſſolve olei de junipero* ℥ß. *fiat linimentum aduſum.* Others beat the pulpe of a Gourd or Citrull in a mortar, and ſo apply it. Another, Rc. *mucag. ſem. pſilii, & cyton. extract. in aqua roſar. & ſolani an.* ℥iiii. *olei roſati omphacini,* ℥iii. *vini granatorum* ℥i. *vitellos ovorum cum albumine* nu. iii. *camphoræ* ℥i. *incorporentur ſimul, fiat linimentum.* Or elſe, Rc. *ol. roſat. omphacini* ℥iv. *album. ovorum cum vitellis* nu. vi. *ſucci plantag. & ſolani, an* ℥i. *farinæ hordei* ℥iii. *incorporentur ſimul, fiat cataplaſma.* Or, Rc. *farinæ fabarum & hordei an.* ℥iii. *olei roſati,* ℥ii. *oxycrati quantum ſufficit, coquantur ſimul, fiat cataplaſma.* Another, Rc. *mucag. ſem. pſilii* ℥iiii. *ol. roſati* ℥ii. *aceti* ℥i. *vitellos ovorum*, nu. iii. *croci* ℈i. *miſce.*

What repercuſſives are here required.

An excellent aſtringent cataplaſme.

Pliny reporteth that *Sextus Pomponius* the Governour of the hither Spaine, as hee overlooked the winowing of his corne, was taken by the paine of the gout in his feet, wherefore hee covered himſelfe with the Wheat above his knees, and ſo was eaſed, his feet being wonderfully dryed; and he afterwards uſed this kind of remedy. It is note worthy, which often happeneth, that the paine cannot bee altogether eaſed by ſuch like remedies, by reaſon of the abundance of bloud impact in the part; wherefore it muſt bee evacuated: which I have done in many with good ſucceſſe, opening the veine which was moſt ſwelled and nigh to the affected part; for the paine was preſently aſſwaged. Neither muſt wee too long make uſe of repercuſſives; leſt the matter become ſo hardened, that it can ſcarce bee afterwards reſolved, as when it ſhall bee concrete into knots and plaiſterlike ſtones: reſolving medicines are to bee mixed with repercuſſives conveniently applied, ſo to diſcuſſe the humour remaining as yet in the part, whereof ſhall bee ſpoken in the following Chapter.

Lib. 22. cap. 25.

Phlebotomy to evacuate the conjunct matter, and aſſwage paine.

Chap. XVII.

Of locall medicines for a cholericke gout.

What repercuſſives are heere required.

THe repercuſſives that muſt firſt be uſed in this kinde of gout ought to bee cold and moiſte, that ſo they may reſiſt both the qualities of choler: ſuch are the leaves of night-ſhade, purſlaine, houſe-leeke, henbane, ſorrell, plantaine, poppy, cold water, and the like, whereof may bee made divers compoſitions. As, ℞. *ſucci hyoſciami, ſempervivi. lactuc. an.* ℥ii. *farin. hordei* ℥i. *olei roſati,* ℥ii. *agitando ſimul fiat medicamentum*; let it bee applyed and often changed, for ſo at length it will aſſwage the inflammation. Some thinke the braine of a hogge mixed with white ſtarch, or barly meale and oile of roſes, an excellent medicine. The leaves of mallowes boyled in water, and beaten with a peſtell, and applyed, aſſwage pain. ℞. *mucag. ſem. pſilii extract. in aq. ſolani, vel roſarum* ℥ii. *farin. hordei* ℥i. *aceti q. ſ. fiat linimentum.* Or elſe, ℞. *unguent. roſat. meſuæ, & 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, ℞ *fol. caulium rub.* m. ii. *coquantur in oxycrato & terantur: adde ovorum vitellos tres, olei roſati* ℥iii. *farinæ hordei quantum ſufficit, fingatur cataplaſma*: Alſo you may take the crude juice of cole-worts, dane-weede, and roſes beaten and preſſed out, and of theſe incorporated with oyle of roſes and barly meale make a cataplaſme. In winter time, when as theſe things cannot bee had greene, you may uſe *unguentum infrigedans Galeni & populeon.* Or elſe, ℞. *ceræ albæ* ℥i. *croci* ℈i. *opii* ℈iiii. *olei roſati quantum ſufficit, marcerentur opium & crocus in aceto, deinde terantur & incorporentur cum cera & oleo, fiat ceratum*; ſpread it upon a cloth, & lay it upon the part, and all about it, and let it bee often renewed. Some cut Frogges open and apply them to the grieved part. It is confirmed by ſundry mens experience, that the paine of the *ſciatica*, when it would yeeld to no other remedy, to have beene aſſwaged by annoynting the part affected with the mucous water or gelly of Snailes, being uſed for the ſpace of ſeven or eight dayes; the truth whereof was aſſured mee by the worthy Gentleman the Lord of *Longemeau*, a man of great honeſty and credit, who himſelfe was troubled for ſixe moneths ſpace with the *ſciatica*. This water is thus made, Take fifty or ſixty red Snailes, put them in a copper pot or kettle, and ſprinkle them over with common ſalt, and keep them ſo for the ſpace of a day; then preſſe them in a courſe or haire cloth; in the expreſſed liquor dip linnen ragges, and apply them ſo dipped to the part affected, and renew them often. But if there bee great inflammation, the Snailes ſhall bee boyled in Vineger and Roſe-water. They ſay that Citrons or Oranges boyled in Vineger, and beaten in a mortar, and incorporated with a little barly or beane flower, are good againſt theſe paines. Or elſe, ℞. *pomorum coctorum in lacte lib.* i. *butyri* ℥i. *vitellos ovorum,* nu. ii. *aceti* ℥i. *fiat cataplaſma*. There are ſome who take cheeſe crud newly made, and mixe it in a mortar with oyle of Roſes and barly meale, and ſo apply it; it repreſſeth the inflammation and aſſwageth paine. Others mixe *Caſtia* newly extracted forth of the Cane, with the juice of Gourds or Melons. Others apply to the part the leaves of Cole-worts, and Dane-weede or ſmallage, or all three mixed together and beaten with a little Vineger. Others macerate or ſteepe an ounce of linſeed in Wurt, and make the mucilage extracted therefrom into a Cataplaſme with ſome oyle of Roſes and barly meale. Some put oyle of poppyes to the pulpe of Citrulls or Gourds being beaten, and ſo incorporate them together, and apply it.

A cerate with opium.

The water of Snailes.

A hiſtorie.

This following medicine hath its credit from a certain Gaſcoine of Baſas that was throughly cured therwith, when as he had bin vexed long & much with gouty pains, above the common cuſtome of ſuch as are troubled with that diſeaſe. Thus it is; Take a great ridge tile thick & ſtrong, and heat it red hot in the fire, then put it into ſuch another tile of the ſame bigneſſe, but cold, leſt it ſhould burne the bed-clothes, then forthwith fill the hot one with ſo many Dane-wurt leaves, that the patient may ſafely lay the affected part therein, without any danger of burning it. Then let the pati-

A particular ſhore.

ent

ent endure the heate that comes therefrom, and by sweate receive the fruit thereof, for the space of an houre, substituting fresh Dane-wurt leaves, if the former become too dry, as also another hot tile, if the former shall grow too cold before the houre bee ended. This being done, let the part bee dryed with warme and dry linnen clothes. Use this particular stove for the space of fifteene dayes, and that in the morning fasting; afterwards annoynt the part with this following oyntment. Rc. *succi ebuli* ℔. i. ß. *olei com.* ℔i. *misceantur simul*, and let them be put into a strait mouthed glasse, and well luted up; then let it boyle in *balneo Mariæ*, being first mixed with some wine, untill the halfe thereof bee consumed, for the space of tenne or twelve houres, then let it coole, and so keepe it for use, adding thereto in the time of annoynting, some few drops of *aqua vitæ*. It may bee annoynted twice or thrice in a day, long after meate. Moreover the roots and leaves of Dane-wurt boyled in water, beaten and applyed asswage paine; the oyle thereof chimically extracted performes the same.

An oinment of the juice of Dane-wurt.

But if the contumacious paine cannot bee mitigated by the described remedies, and becomming intolerably hot and raging, make the patient almost to swoune, then must wee fly to narcoticks. For although the temper of the part may bee weakened by these, the native heate diminished or rather extinguished; yet this is a far lesse inconvenience than to let the whole body bee wasted by paine; These things have a powerfull refrigerating and drying faculty, taking away the sense of the paine, and furthermore, incrassate, thin, acride and biting humours, such as cholericke humours are. Wherefore if the matter which causeth the paine be thick, wee must abstaine from narcoticks, or certainely use them with great caution. Rc. *mica panis secalini parum cocti in lacte* ℥ii. *vitellos ovorum*, nu. ii. *opii* ℥i. *succorum solani, hyosciami, mandragoræ, portulacæ, sempervivi, an.* ℥i. Let them bee mixed together and applyed, and often changed. Or else, Rc. *fol. hyosciami cicutæ, acetos. an.* m. i. *bulliant in oxycrato & contundantur, cumque vitellis ovorum crudorum* nu. ii. *& olei rosat.* ℥ii. *farinæ hordei quod sit satis, incorporentur, fiat cataplasma*; with the use thereof I am accustomed to asswage great pains. Or else, Rc. *Opii* ℥iii. *camphor.* ℨß. *olei nenuph.* ℥i. *lactis* ℥ii. *unguent. ros. Galeni* ℥iv. *incorporentur simul in mortario, applicentur*. Moreover, cold water applyed & dropped upon the part drop by drop, is narcotick and stupefactive, as *Hippocrates* affirmeth, *Aphor.* 29. *Sect.* 5. for a moderate numnesse mitigateth paine; there is also another reason why it may bee profitably used in all paines of the Gout, for that by repelling the humours, it hindereth their defluxion into the part. Mandrage apples boyled in milke, and beaten, doe the same thing; also the leaves of henbane, hemlock, lettuce, purslaine, being so boiled, doe the same. If any desire to use these more cold, hee must apply them crude, and not boyled.

When to use narcoticks.

A cataplasme with opium.

But the excesse of paine being mitigated, wee must desist from the use of such narcotickes, and they must rather bee strengthened with hot and digerating things; otherwise there will bee danger left it bee too much weakened, the temper thereof being destroyed, and so afterwards it may bee subject to every kinde of defluxion. Wherefore it shall bee strengthened with the formerly described discussing fomentations, and these ensuing remedies. As, Rc. *gum. ammoniaci & bdelii an.* ℥i. *dissolvantur in aceto, & passentur per setaceum, addendo styracis liquid. & farin. fænug. an.* ℨß. *pul. irios* ℥iiii. *olei chamæm.* ℥ii. *pulveris pyrethri* ℥ii. *cum cera fiat emplastrum molle*. Or else, Rc. *rad. enulæ, ebuli althea an* ℔. ß. *sem. lini, fænugr. an.* ℥ii. *ficuum ping.* nu. xx. *coquantur completè & trajiciantur per setaceum, addendo pul. euphorb.* ℥ii. *olei chamæm. aneth. & rutacei, an.* ℥iii. *medullæ cervi* ℥iv. *fiat cataplasma*. Yet you must use moderation in discussing, lest the subtler part of the impact humour being discussed, the grosser part may turne into a stony consistence, which also is to bee feared in using repercussives.

How to amend the harm dont by narcoticks.

Discussers.

A meane to be used in discussing.

I also omitted, that, according to the opinion of the Ancients, bathes of fresh water, wherein cooling herbes have been boiled, used three houres 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 acride vapours, the pores being open-

Bathes asswage the paine of the gout.

ed

ed, and the humours dissipated by the gentle warmenesse of the bath. After the bath, the body must be annoynted with *hydrelæum*, or oyle and water tempered together, lest the native heate exhale, and the body become more weake. Meates of more grosse juice are more convenient, as beefe, sheeps-feet, and the like, if so be that the patient can digest them, for these inspissate the cholerick bloud, and make it more unfit for defluxion.

How meats of grosse juice are profitable.

Chap. XVIII.

What remedies must be used in paines of the joynts proceeding of a distemper onely, without matter.

A historie.

PAines also happen in the joynts by distemper without any matter, which though rare, yet because I happened once to feele them, I have thought good to shew what remedies I used against them. I once earnestly busied in study, and therefore not sensible of such externall injuries as might befall mee; a little winde comming secretly in by the crannies of my studie, fell upon my left Hippe; at length wearied with study, as soone as I rose up to goe my way, I could not stand upon my feete, I felt such bitter paine without any swelling or humour which might bee discerned. Therefore I was forced to goe to bed, and calling to minde, that cold, which was absolutely hurtfull to the nerves, had bred mee that paine, I attempted to drive it away by the frequent application of very hot clothes; which, though they scorched and blistered the sound parts adjoyning thereto, yet did they scarce make any impression upon the part where the paine was settled, the distemper was so great, and so firmely fixed therein. And I layed thereto bagges filled with fryed oates and millet, and dipped in hot red wine; as also oxe bladders halfe filled with a decoction of hot herbs. And lastly, a woodden 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 vapour which asswaged the paine. Also browne bread newly drawne out of the oven, and sprinkled over with Rose-water, and applyed, did very much good. And that I might more fully expell this hurtfull cold, I put stone bottles filled with hot water, to the soales of my feete, that the braine might bee heated by the streightnesse and continuity of the nerves. At length, by the helpe of these remedies, I was very well freed from this contumacious distemper, when it had held mee for the space of foure and twentie houres.

Hip. ap. Ioan. Cæsar. A

Diverse remedies for paine arising from a cold distemper without matter.

There is another kind of gouty pain sometimes caused by a certain excrementitious matter, but so thin and subtle that it cannot bee discerned by the eyes. It is a certaine fuliginous or sootie vapour, like to that which passeth from burning candles or lampes, which adhers and concreets to any thing that is opposed thereto; which being infected by the mixture of a virulent serous humour whithersoever it runneth, causeth extreme paine, somewhiles in these, and otherwhiles in other joynts, unlesse you make a way therefore, when as it seeketh passage forth, which must be done by hornes, cupping-glasses, vesicatories, cauteries, or other the like art.

A fuliginous vapour sometimes the cause of the gout.

CHAP. XIX.

What is to be done after the fit of the gout is over.

IT is convenient when the paine is asswaged, that you strengthen the joints. Now, to strengthen them is not onely to binde and dry, but wholly to amend the weakenesse left in the part by the disease, that is, to discusse the humour, if any superfluity thereof remaine; but to humect the part, if the moysture bee exhausted and dryed up. But such as are troubled with the gout, after they are freed from their paine, have notwithstanding such impotency of their joynts that they cannot goe of a long time after; for that the nerves and tendons which are in great number in the feete, being moystened with much phlegme, are so relaxed, that they can no more sustaine or beare themselves upon their feete, than paper when it is wet can bee made to stand. Wherefore, that they may recover the use of their feete, the impacted humour must by all meanes be discussed, and spent with fomentations, cataplasmes, drying and astringent emplasters. You may use the formerly described fomentation, encreasing the quantity of alume and salt, and adding thereto a like quantity of *sulphur vivum:* then the following emplaster shall bee applyed thereto. R. *mas. emplast. contra rupturam* ℥iiii. *tereb.* ℥ii. *pulv. ros. rub. nucum cupress. gallarum, gran. myrtil. & fol. 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 bigneſse, and applyed to the top and sole of the foote. Draw over the plaster, and the whole legge a stocking made of a tanned dogges skinne; this emplaster strengtheneth the nerves, draweth forth the humour impact therein, and intercepts the desluxion. But the dogge-skinne stocking preserveth the native heate of the part, and for that it bindeth, hindreth the desluxion into the feete.

How to strengthen the joints.

Remedies for the weakneſse left in the joints after the paine is gone.

The benefit of a dog-skinne stocking.

CHAP. XX.

Of the Tophi, *or knots which grow at the joynts of such as are troubled with the Gout.*

SOme that are troubled with the gout, have knotty bunches growing in their joynts, which by the Ancients were called *Tophi*. These are generated by the congestion of grosse, viscide and crude phlegme, with a little admixtion of an acride and cholericke humour. These matters remaine settled in the part, for that it being too weake cannot digest and depresse them; wherefore being there impact, they easily concrete into a certaine plaster-like or chalke-like substance, whilest by the adventitious and burning heate caused by paine, and the gouty malignity, their more subtle part is dispersed, but the grosser subsides. Yet sometimes the unfit application of repercussive, or discussive medicines is a cause of the generation of these *Tophi*. For by the former, the impact matter is incrassated and gathered together; but by the latter, the subtle part being discussed, the remnant that subsides concretes into *Tophi*. Those medicines which are made to mollifie, ought to have a moderately heating, and humecting faculty, that they may diffuse, and as it were dissolve the impact matter; such is warme water, the decoction of emollient herbes, the decoction of Calves or Sheepes entrailes, heads and feete: after these or the like fomentations, you shall use the following medicine. R. *axungiæ, human. anseris & gallinæ, medul. cervin. an.* ℥ii. *tereb. ven.* ℥i. *aq. vit. parum, cera quantum sufficit, fiat unguentum molle.* Then this which followeth will bee good. R. *rad. alth. liliorum, bryon. lapath. acuti, an.* ℥iiii. *coquantur complete & trajiciantur per setaceum; adde gum. ammon. bdl. galb. opopanacis in aceto dissolutorum* ℥i. *medul. cervin.* ℥i, ß.

Whence the *tophi* are generated.

The unfit application of discussive & repercussive medicines cause the *tophi*.

Mollifying medicines.

℥ iß. *incorporentur ſimul, & applicentur.* Or elſe, ℞. *olei liliorum, amygd. dul. medullæ cruris cer. an.* ℥ ii ß. *mucag. ſem. lini, alth. fænugr. an.* ℥ i. *ceræ quantum ſufficit; fiat ceratum.* Or elſe ℞. *empl. de vigo cum mercurio, & cerat. de æſipo humida deſcript. Philagrii, an.* ℥. ii. *malaxentur ſimul cum oleo lilior. fiat maſſa.* Or elſe, ℞. *gum. ammon. opopan. galb. bdel. diſſolutorum in aceto, an.* ℥ ii. *panno lineo colatis, adde pulv. ſulph. nitr. ſinapi, pyrethri, an.* ℥ ß. *ſtyracis, liq. & axung. hum. an.* ℥ i. *reſ. pini, tereb. ven. an.* ℥ ß. *ceræ quantum ſufficit, fiat ceratum molle.* This which followes is thought moſt effectuall in the opinion of *Galen* and *Avicen.* ℞. *pedes porcel. bene ſalſos, nu.* iiii. *veterem pernam, cum illis coque: addendo ſub finem, radicis bryoniæ, lapath. acut. an.* ℥ iii. *axungiæ tauri, & medul. cervin. an.* ℥ i. *cum caſeo putrefacto fiat empl. molle ad uſum.* This which followes is alſo moſt effectuall. ℞. *caſei acris & putrefacti,* ℥ iiii. *pul. ſulph. vivi euphorb. & pyreth. an.* ℥ iii. *decoctionis veteris pernæ & porcellorum quod ſufficit ad incorporandum, ducantur in mortario, & fiat empl. ad uſum.* Or elſe, ℞. *ſpumæ nitri,* ℥ vi. *tereb.* ℥ ii. *olei veteris,* ℥ viii. *lixivii, quo lanæ pileorum lavantur, & ceræ quantum ſufficit, fiat ceratum ſatis molle.* After the uſe of emollients, a fumigation ſhall be made in this manner. Heat a cogle-ſtone, milſtone or bricke, red hot in the fire, take it forth, and caſt upon it a ſufficient quantity of very ſharp vinegar, & *aquavitæ*, the riſing vapour ſhall be diligently received by the affected member, for this hath a faculty to attenuate and cut groſſe, viſcide, and plaſter-like matter, yea alſo, and to break the skin; yet that is broken oft time of its owne accord, without the help of either medicine or inſtrument. To conclude, theſe medicins which are good to mollifie ſcirrhous tumors, the ſame are alſo good to ſoften the gouty knots and *tophi*. But wee muſt note that theſe knotty bunches are ſomtimes ſuppurated, not truly by the impact & plaſterlike matter, but by a new defluxion comming on a ſodain, & then it is neceſſary to make way for the conteined matter, which being done, firſt there commeth forth a humor like milk, then a plaſter-like matter, then it leaves behinde it an ulcer to be cured by applying thereto *Empl. gratia dei*, and others as the Surgeon ſhall think fit.

Lib. 10. ſimp. c. 7. fe. 22. lib. 3. tract. 2. cap. 21.

An effectuall fumigation.

Chap. XXI.

Of flatulencies conteined in the joints, and counterfeiting true Gouts, and of the remedies to be uſed thereto.

In what joints flatulencies are chiefly generated.

Signes of flatulencies.

OFt-times there is ſmall quantity of humour, which moves the paine of the gout; but much flatulencie mixed therwith, eſpecially in great joints, as in the huckle or hippe-bone, and the knees; they ſometimes cauſe 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 paine afflict the patient with any ſenſe of heavineſſe; if when you preſſe the tumour with your fingers, the place retaine no marke or impreſſion thereof, as happens in an *œdema*, but on the contrary, a flatulent ſpirit lifts it up as it were by renitency, as if one ſhould thruſt a pair of bellows which are filld with wind; hence the part cannot performe its duty, for that the ſpaces of the joints are poſſeſſed with aboundance of flatulencies, ſo that the liberty of motion is intercepted, and the member is kept as it were bound up. Many no very skillfull Surgeons putting their fingers to theſe kind of tumours, ſo that lifting up the one they preſſe down the other, when as they perceive the flatulency, as it were, riſing betweene their fingers, ſuppoſing it to bee the motion of *pus*, or matter already generated and flowing up and downe, as is uſuall 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 raſhneſſe they have cauſed many dangerous ſymptomes, as encreaſe of pain, defluxion of humours, by force whereof the bones have beene diſlocated, and brought to the patient an uncurable lameneſſe. But theſe flatulent gouts are ſeldome without ſome phlegmatick matter, which is neither too crude, nor viſcide. Such like flatulencies are not eaſily diſcuſſed, nor at the firſt endeavour, by reaſon of a cold diſtemper which they bring to the part, and the denſity of the membranes and ligaments by which the articulation

How flatulencies may make you beleeve there is pus or matter.

Why hard to cure.

ticulation is knit and fastened, so that scarce any part of that which is there shut up can breath forth of such strait passages. Therefore the cure must be undertaken with resolving, discussing, and drying fomentations; as for example, with a decoction of fennell, aniseeds, rue, chamomill, melilote, sage, rosemary, *origanum*, calamints, horehound, and the like, boyled in wine with a little Lye, rose vinegar, and common salt. This following ointment shall bee used after the fomentation. ℞. *olei chamæm. aneth. rut. lauri, an.* ℥ ii. *cum cera alba, fiat linimentum addendo aq. vitæ parum.* After you have anointed it, apply thereto this following cataplasme. ℞. *flor. cham. melil. aneth. ros. rub. pulv. an.* m i. *fol. malv. & absinth. an.* m ß. *furfur*, m i. *bulliant omnia simul cum lixivio, & vino rubro, deinde pistentur cum medulla panis, & farina fabarum, quantum sufficit, fiat cataplasma, addendo ol. rosar. & myrtin. an.* ℥ ii. Some highly approve of this following medicine for the wasting of flatulencies. ℞. *axun. suil.* ℥ iv. *calcis vivæ*, ℥ i ß. *terantur diligenter in mortario, & incorporata applicentur.* Or else, ℞. *stercor. caprar. cocti cum vino & aceto, an.* lb. ß. *tereb. venet. & mell. com. an.* ℥ ii. *aq. vitæ*, ℥ ß. *pul. rad. treos florent. & sabin. an.* ℥ iii. *olei rut. & aneth. an.* ℥ i. *farin. fabarum quantum sufficit.* Make a cataplasme to the forme of a pultis. Also stoupes dipped in oxycrate, and wrung out, shall be applyed: in this oxycrate shall be boyled wormewood, *origanum*, chamomill, melilote, rue, common salt, adding thereto some *aqua vitæ*. Then the part shall be bound up as strait as the patient can endure it; in conclusion, that the native strength may by little and little bee restored to the part, it shall be fomented with Lye made of the ashes of Oake-wood and the cuttings of vines, wherein shall be boyled, salt, *sulphur*, choise alome, and wetting linnen cloaths, or stoups therein, and applying them, it shall be straitly swathed up. Yet if great pain shall more cruelly vexe the part, then neglecting for a time the proper cure of the disease, you shall withstand the symptome by rubbing the part, and anointing it with some discussing oile, laying thereon some moist wooll & other anodyne things.

Chap. XXII.

Of the Ischias, *Hip-gout, or* Sciatica.

For that the hip-gout in the greatnesse of the causes, bitternesse of pain, and vehemency of other symptomes, easily exceeds the other kindes of Gout, therefore I have thought good to treate thereof in particular. The pain of the *Sciatica* is therefore the most bitter, and the symptomes most violent, for that the dearticulation of the huckle bone, with the head of the Thigh-bone, is more deepe than the rest; because also the phlegmaticke humour which causeth it, is commonly more plenteous, cold, grosse, and viscid, that flowes down into this joint, and lastly because the *Sciatica* commonly succeeds some other chronicall disease, by reason of the translation and falling down thither of the matter, become maligne and corrupt by the long continuance of the former disease. But the paine not onely troubles the hippe, but entering deepe, is extended to the muscles of the buttockes, the groines, knees, and very ends of the toes, yea often times it vexeth the patient with a sense of paine in the very *vertebræ* of the loines, so that it makes the patients, and also oft times the very Physitians and Surgeons to thinke it the wind or stone Collicke. The cause of such wandering and dispersed paine is to bee referred to the manifold distribution of the nerves which come to that joint from the loines and holy-bone, for they are sent into the muscles of the buttockes, and so dispersed over the whole legge to the very ends of the toes, as it is shewed in our Anatomy. Therefore the paine is largely extended, that is, to what part soever a nerve runs which comes from the affected Hippe. Often times there is no swelling, no redneſſe, nor distemper manifest to the eye, by reason that the veines are very few which rise into the surface and skinne of this part, and the humour lyes, as it were, sunke in; which is the cause that divers times the excrementitious humours mixed with flatulencie, runne so violently into the cavity of this joint, that relaxing the ligaments

Why it hath the most grievous symptomes.

The cause of the large spreading of the paine.

The thighbone often dislocated by the *Sciatica*.

gaments, as well proper as common, the head of the thigh-bone is easily driven out from hence, so that it may never be restored again, if it remain so for any space of time; for that in this time the humor falling down into this cavity, by delay concretes as it were into a stony body, and the head of the Thigh-bone weares it selfe another cavity in the neighbouring bone, but the lips of the true cavity, which are gristly, become more streit and depress, and lastly all the ligamentous bodies moistened with this excrementitious humour become more loose and weake, whence succeed many and most grievous symptoms, as lameness, & the decay not only of the thigh & leg, but at length of the whole body, and lastly a slow and hectick feaver. Which in continuance of time will consume the patient for the causes formerly mentioned. Therfore let Physitians and Surgeons have a care that they resist it at the first, and with such powerfull remedies as are mentioned in the following chapter, hinder the springing up and growth of the formerly mentioned symptomes.

Chap. XXIII.

The cure of the Sciatica.

Why we must open a veine in the *Sciatica*.

THough the *Sciatica* bee commonly occasioned by tough phlegme, yet if the patient be strong and abound with blood, and all things else consent, it shall bee good to draw blood by opening a veine; for phlebotomy equally evacuates all humors; therefore the falling downe of the humors into the part affected, is thereby hindered, or retarded. Verily I have knowne no speedier remedy to asswage the paine of inflammation, than blood-letting, being first made on the *Basilica* of the grieved side for revulsions sake; and then for evacuation of the conjunct matter on the *vena ischiadica*, which is at the outside of the ankle, if the paine of the *Sciatica* be more on the outside; or else on the *Sapheia*, which is on the inside of the ankle, if the inner parts bee more pained. The quantity of blood which is to be drawne must be left to the judgement of the physitian, without whose advise I would attempt nothing in this case. Also acride glysters are good, if there be nothing which may hinder, as ulcers of the guts, or hæmorrhoids. Rc. *rad. acor.* ℥ ii. *centaur. rut. salv. rorism. calam. origan. puleg. an.* m ß. *stachad. arabic. flo. cham.* ℥ ii. *centaur. rut. salv. rorism. calam. origan. puleg. an.* p i. *sem. anis. & fœnic. an.* ℥ ß. *fiat decoctio ad* lb. i. *in colatura dissolve melil. aneth. an.* p i. *sem. anis. & fœnic. an.* ℥ ß. *fiat decoctio ad* lb. i. *in colatura dissolve hiera & diaphen. an.* ℥ ß. *mellis anthos. sacch. rub. an.* ℥ i. *olei liliorum* ℥ iii. *fiat clyster.*

When the vena *ischiadica* and *sapheia* must be opened in the *sciatica*.

Strong purgations are also here usefull, as of *pillul. fœtid. arthritic. Assaiereth. de Hermodactilis*, and others used in phlegmaticke causes. *Electuarium Diacarthami* purgeth choller and phlegme. Often vomitings doe not onely evacuate the humors, but also make revulsion, as wee have formerly delivered. Bathes and sweates profit no otherwise than a decoction of *gajacum* or *sarsaparilla*. If heate molest the part, then foment it with oile of roses and vinegar, especially if the paine be deepe in, for vinegar by its tenuity pierceth to the bottome, and makes way for the oile, which of its owne nature is anodyne. After the use of generall medicines you shall apply attractive and resolving things: emplasters of pitch and *sulphur*, or of *Ammoniacum, euphorbium, Terebinthina, Propolis, Galbanum, Bdelium, Opopanax*, draw the humour from within to the surface or skinne. As in like sort also the chymicall oile of sage, rosemary, pellitory of Spaine, and such other like doe the same, which by reason of the tenuity of their substance, and their separation from earthy impurity, have farre more powerfull and expedite faculties to penetrate and discusse. Yet must you use none of all these without very good judgment and deliberation, otherwise there will be danger of inflammation.

Strong purgations in the *sciatica*.

There may also be made fomentations of discussing and resolving herbes, as the rootes and leaves of dane-weeds, orris, Bay and Juniper berries, the seeds of fænugreeke, anise, fennell, the leaves of sage, rosemary, chamomile, melilote, elder, and the like, boyled in wine and oyle: the following plaster is much commended by the antients to digest, or resolve and asswage the paine, with this which drawes forth thornes, splinters, and rotten bones. Rc. *sem. urtic. mundat. spuma borac. salis ammoniaci*

moniaci, rad. aristoloch. rotund. colocynth. terebinth. venet. an. ℥ x. *fænug. piperis longi, xylobalsam. thur. myrrhæ, adipis cap. gum. pini, an.* ℥ v. *ceræ,* ℔ ß. *lactis ficus sylv.* ℥ ß. *ex omnibus secundum artem præparatis cum olei liliorum, & vini generosi quantitat. sufficiente, fiat emplastrum.* Let it be applyed to the Hippe. Or, ℞. *sinapi acerrimo aceto dissoluti,* ℥ ii. *fermenti acris,* ℥ ß. *pul. hermodact.* ℥ ii. *mellis com.* ℥ iii. *tereb.* ℥ iv. *olei laur. & de spicâ, an.* ℥ ii. *sar. fænug.* ℥ i ß. *terræ formicarum cum ovis,* ℔ i. *fol. laur. salv. rut. roris marin. an.* m. ß. *vermium terrest. præpar.* ℔ ß. The earth with the egges and wormes shall bee boyled apart with the white wine, and herbes cut in pieces, and these being strained out, the rest of the things shall bee added according to art, and then it shall be applyed to the Hippe. Or else, ℞. *rad. enul. camp. sigil. salom. bryon. bismal. an.* ℥ ii. *coquantur complete & terantur, trajiciantur per setaceum, addendo farin. fænug. & hordei, an.* ℥ i. *olei liliorum, & chamæm. an.* ℥ iii. *tereb.* ℥ iv. *ceræ quantum sufficit, fiat cataplasma.* It resolves, asswageth pain, and calleth forth the humours to the skin. Or else, ℞. *rad. sigil. beatæ Mariæ,* ℥ vi. *empl. diachyl. albi,* ℥ iv. *croci in aqua vitæ dissoluti,* ℥ ii. *terebinth.* ℥ i. *ol. de spica nardi quantum sufficit, fiat empl.* Let it be spread upon leather and applyed warme. I have oftentimes suddenly asswaged the paine of the *sciatica* by putting to the pained Hip the root of black Bryony cut into slices, and applyed, when the matter was cold. Or else, ℞. *ceræ citrin. & tereb. abiet. an.* ℥ ii. *liquefiant simul in vase duplici, & ubi refrixerint, adde pulv. Hermodact.* ℥ ß. *flor. chamæm. irid. flor. an.* ℥ iii. *spicæ nardi, flor. thymi, an.* ℥ ii. *interioris cinamomi electi. & semin. nasturt. an.* ℥ ii. *croci,* ℈ iv. *malaxantur simul manibus axungia porci veteris non salita unctis, & fiat massa empl.* But if the paine be not by this meanes asswaged, then must we come to more powerfull medicines, as to use great Cupping Glasses applyed with much flame, and to vesicatories. As, ℞. *cantharid. quibus detractæ sunt alæ,* ℥ ii. *staphisagr.* ℥ iii. *sinapi,* ℥ i ß *fermenti acerrimi* ℥ ß. *incorporentur simul, & fiat vesicatorium.* Also blisters may be raised by applying the inner rinde of Travailers joy to the wait of some two drammes, a little beneath the grieved part: you must have a care that the ulcers that remaine after the skinne of the blisters is taken off, doe run, & be kept open for some time after, that so more of the humor conteined in the part may bee drawne away. But if wee cannot availe by these means, we must according to *Hippocrates* his counsaile, come to the last and extremest remedy. Such (saith he) as troubled with a long paine of the *sciatica*, have their Hippe fall out of joint, their leg consumes, & they become lame unlesse they be burnt: we have also read the same approved by *Celsus*. It is the last (saith he) and most effectuall medicine in longer diseases, to cauterize with hot irons the skinne of the Hippe in three or foure places; and then not to heale up these ulcers or fontenels as soone as may be, but to keepe them open by putting thereinto bullets of gold, or silver, or pills of Gentian, or waxe melted and wrought up with the powder of vitrioll, mercurie, and the like cathæretickes untill the affect against which we use this remedy be helped, for by this meanes many have bin helped. Therefore three or foure actuall cauteries, or hot irons shall be 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 nerves. Cauteryes here doe good, for that by heating the part, they heate and dissolve the cold humours, they cut, attenuate, and draw forth the grosse and viscide, so that they flow out by the ulcers, together with the quitture. Over and besides, the ligaments are strengthened by their cicatrization, and their loosenesse helped; & by this meanes the whole part is notably corroberated.

Blacke bryony discusseth.

A strong vesicatory.

The inner rinde of Travellers-joy a vesicatory.

Aph. vlt. sect. 6.

Lib. 4. cap. 22.

The use of cauteries in the *sciatica*.

Chap. XXIIII.

Of the flatulent convulsion, or convulsive contraction, which is commonly called by the French, Goute Grampe, *and by the English, the Crampe.*

What the Cramp is.

That which the French call *Goute grampe*, wee heare intend to treat of, induced thereto rather by the affinity of the name, than of the thing, for if one speake truly, it is a certaine kinde of convulsion generated by a flatulent matter, by the violence of whose running downe or motion, oft-times the necke, armes, and legs are either extended, or contracted into themselves with great paine, but that for a short time. The cause thereof is a grosse and tough vapor, insinuating it selfe into the branches of the nerves, and the membranes of the muscles. It takes one on the night, rather than on the day, for that then the heat and spirits usually retire themselves into the entrailes and center of the body; whence it is that flatulencies may bee generated, which will fill up, distend and pull the part whereinto they runne, just as wee see lute-strings are extended. This affect often takes such as swimme in cold water, & causeth many to be drowned, though excellent swimmers, their members by this means being so straitly contracted, that they cannot by any meanes be extended. For the skin by the coldnesse of the water is contracted and condensed, and the pores therof shut, so that the engendered flatulencies have no passage forth. Such as give themselves to drunkennesse and gluttony, or sloth and idlenesse, 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 body, and exercise of each part therof, for thus they gather strength, and the generation of the flatulent matter is hindered. In the very time when it takes one, the patient shall bee cured by long rubbing with warme clothes, and *aqua vitæ*, wherein the leaves of sage, rosemary, time, savory, lavander, cloves, ginger, and the like discussing and resolving things, have beene infused. The extension and flexion of the members or joints, and walking, are also good.

The cause thereof.

Who subject thereto.

The cure.

The End of the Eighteenth Booke.

OF THE LUES VENEREA, AND THOSE SYMPTOMES WHICH HAPPEN BY MEANES THEREOF.

The Nineteenth Booke.

Chap. I.

A description of the Lues Venerea.

THe French call the *Lues Venerea*, the Neapolitane disease, the Italians and Germans [as also the English] terme it the French disease, the Latines call it *Pudendagra*, others name it otherwise. But it makes no great matter how it bee called, if the thing it selfe bee understood. Therefore the *Lues Venerea* is a disease gotten or taken by touch, but chiefly that which is in uncleane copulation; and it partakes of an occult quality, commonly taking its originall from ulcers of the privie parts, and then further manifesting its selfe by pustles of the head, and other externall parts; and lastly, infecting the entrailes and inner parts with cruell and nocturnall tormenting paine of the head, shoulders, joynts, and other parts. In processe of time, it causeth knots and hard *Tophi*; and lastly corrupts and foules the bones, dissolving them, the flesh about them being oft-times not hurt; but it corrupteth and weakeneth the substance of other parts, according to the condition of each of them, the distemper and evill habit of the affected bodies, and the inveteration or continuance of the morbificke cause. For some lose one of their eyes, others both, some lose a great portion of the eye-lids, othersome looke very ghastly, and not like themselves, and some become squint-eyed. Some lose their hearing, others have their noses fall flat, the pallat of their mouthes perforated with the losse of the bone *Ethmoides*, so that in stead of free and perfect utterance, they faulter and fumble in their speech. Some have their mouthes drawne awry, others their yards cut off, and women a great part of their privities tainted with corruption. There bee some who have the *Urethra* or passage of the yard obstructed by budding caruncles, or inflamed pustles, so that they cannot make water without the helpe of a Catheter, ready to die within a short time, either by the suppression of the urine, or by a Gangrene arising in these parts, unlesse you succour them by the amputation of their yards. Others become lame of their armes, and othersome of their legges, and a third sort grow stiffe by the contraction of all their members, so that they have nothing left them sound but their voice, which serveth

What the *Lues venerea* is.

What hurt it doth to the body.

for no other purpose but to bewaile 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 a hecticke feaver and slow consumption? It fares farre worse with these, who have all their bodies deformed by a Leprosie arising therehence, and have all their throttles and throates eaten with putride and cancrous ulcers; their haire falling off from their heads, their hands and feet cleft with tetters and scaly chinkes: neither is their case much better, who, having their braines tainted with this disease, have their whole bodies shaken by fits of the falling sickenesse; who troubled with a filthy and cursed flux of the belly, doe continually cast forth stinking and bloudy filth. Lastly, there are no kinds of diseases, no sorts of symptomes, wherewith this disease is not complicate, never to be taken away, unlesse the virulencie of this murrain be wholly taken away, and impugned by its proper Antidote, that is, *argentum vivum*.

The Leprosie sometimes he offspring 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 certaine occult and specificke quality, which cannot be demonstrated; yet it may be referred to God, as by whose command this hath assailed mankind, as a scourge or punishment to restraine 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 strangury (which disease crafty Whores colour by the name of the whites) the malignity catcheth hold of the other; thus a woman taketh this disease by a man casting it into her hot, open and moist wombe; 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 wrinckles of the womans wombe, may be drawne in by the pores of the standing and open yard, whence succeede maligne ulcers, and a virulent strangury. This virulencie, like a torch or candle set on fire, will by little and little bee propagated and sent by the veines, arteries and nerves to the noble parts; whose malignity a strong liver not enduring, by the strength of the naturall expulsive facultie, will send it into the groines, whereon follow Abscesses, therefore called venereall Bubo's. These, if they returne in againe, and cast not forth matter by being opened, they will, by their falling back into the veins and arteries, infect the masse of the bloud by the like tainture, & thence will ensue the *Lues venerea*. Yet this disease may be got by a more occult manner of touch, as by breathing only. For it is not altogether besides reason and experience, that a woman long troubled with this disease, may by importunate and often kissing, transfuse malignity into a child; for the tender and soft substance of a little childe may bee altered, infected, and by little and little corrupted by receiving of filthy, and in their whole kinde maligne vapours. For it is knowne, and now vulgarly believed, that mid-wives by receiving the child of a woman infected with this disease, to have got this affect, the malignity being taken and drawne into their bodies through the pores of their hands by the passages of the veines and arteries. Neither doth it spare any condition, sexe, nor age of men: for, not onely whosoever use copulation, but such as onely lye with them, may bee taken by this virulencie; yea verily, if they onely lye in the sheets or coverings which retaine his sweat, or the virulencie cast forth by an ulcer. The same danger may assaile those who shall drinke in the same vessell after such as are troubled with this disease. For by the impure touch of their lips, they leave a virulent *sanies* and spittle upon the edges of the cup, which is no lesse contagious in its kinde than the virulencie of leprous persons, or the tome of madde dogs. Wherefore it is no marvell if children nursed by an infected nurse, draw in the seeds of this disease together

The *Lues venerea* is the scourge of whoremongers.

Venereall Bubo's returning in again occasion the *Lues venerea*.

The *Lues venerea* may be got by the only communication of vapours.

How nurses may infect children, and they their nurses.

gether with the milk, which is only bloud whitened in the breasts; or infected sucking children by their hot and ulcerated mouthes, may transfuse this malignity into the body of the nurse, by the rare, loose and porous substance of the dugs which it frequently sucketh.

This following history is very memorable to this purpose. A certaine very good Citizen of this Citie of Paris granted to his wife being a very chaste woman, that conditionally shee should nurse her owne child of which shee was lately delivered, shee should have a nurse in the house to ease her of some part of the labour: by ill hap, the nurse they tooke was troubled with this disease; wherefore shee presently infected the childe, the child the mother, the mother her husband, and hee two of his children who frequently accompanied him at bed and board, being ignorant of that malignity wherewith hee was inwardly tainted. In the meane while the mother when shee observed that her nurse childe came not forward, but cryed almost perpetually, shee asked my counsell to tell her the cause of the disease; which was not hard to bee done, for the whole body thereof was replenished with venereall scabs and pustles, the hired nurses and the mothers nipples were eaten in with virulent ulcers; also the fathers, and the two other childrens bodies, whereof the one was three, the other foure yeares old, were troubled with the like pustles and scabs. I told them that they had all the *Lues venerea*, which tooke its originall and first offspring by maligne contagion from the hired nurse. I had them in cure, and by Gods helpe healed them all, except the sucking child, which died in the cure. But the hired nurse was soundly lashed in the prison, and should have beene whipped through all the streets of the Citie, but that the magistrate had a care to preserve the credite of the unfortunate family. A historie.

CHAP. III.

In what humour the malignity of the Lues venerea *resides.*

ALthough in the opinion of many the antecedent cause of this disease be the masse of bloud conteining the foure humours, yet I had rather place the matter, and primary, and chief seat thereof in grosse and viscide phlegme infected with the maligne quality of the venereous venome, and from this beginning and foundation, I thinke by a certaine contagious growth it sooner or later infects the other humours, as each of them is disposed or apt to suffer. Of which my opinion there are many arguments, but this chiefely, That by the evacuation of a phlegmaticke humour, whether by the mouth and salivation, or by stoole, urine, or sweate in men of what temper soever, whether cholerick, sanguine or melancholy, the disease is helped or cured. Secondly, for that the excesse of paine is more by night than by day, because then the phlegme bearing sway, severs the *periostium* from the bone, or else offends it and the rest of the membranous and nervous bodies by the acrimony of its malignity. Thirdly, because the patients are hurt by the use of cold things, but usually finde benefit by hot medicines, whither they bee oyntments, plasters, fumigations, or whatsoever else, inwardly taken, or outwardly applyed. Fourthly, for that in venereous pustles, there is found a certaine hardnesse at the roote, though outwardly they make shew of choler or bloud. For being opened, you shall finde them stuffed with a certaine plaster-like and tophous matter, or else with tough phlegme, or viscous *pus*; whence arise these hard *tophi*, or bony excressences upon the bones, if not from phlegmaticke humours there heaped up and concrete? Fifthly, for that the spermaticke and cold parts doe primarily and principally feele the harme of this disease. Sixtly, for that the ulcers which over-spread the body by meanes of this disease, admit of no cure, unlesse you first cause sweats. Therefore if the matter of the disease, and such ulcers as accompany it were hot and dry, it would grow worse, and be rather increased by a decoction of *Guajacum*, the roots of *China*, or *Sarsaparilla*. Seventhly, because oft-times this disease, the seede thereof being taken or drawne into the body, so lyeth hid for the space

Why the paine is worse upon the night than on the day.

This disease sometimes lyes long hid in the body before it shew it selfe.

ſpace of a yeare, that it ſhewes no ſigne thereof, which happens 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 humour; yet may I not deny, but that other humours confuſed therewith may be alſo in fault, and defiled with the like contagion. For there are ſcarce any tumours which proceed from a ſimple humour, and that of one kinde; but as in tumours, ſo here the denomination is to be taken from that humour which carryeth the chiefe ſway.

Chap. IIII.

Of the ſignes of the Lues Venerea.

When the *Lues venerea* is lately taken, maligne ulcers appeare in the privities, ſwellings in the groines, a virulent ſtrangury runneth oft-times with filthy *ſanies*, which proceeds either from the *proſtata*, or the ulcers of the *uretbra*; the patient is troubled with paines in his joynts, head, and ſhoulders, and as it were breakings of his armes, legges and all his members, they are weary without a cauſe, ſo that neither the foot nor hand can eaſily performe his duty; their mouths are inflamed, a ſwelling troubles their throats, which takes away their freedom of ſpeaking & ſwallowing, yea of their very ſpittle; puſtles riſe over all their bodies, but chiefly certaine garlands of them engirt their temples and heads; the ſhedding or loſſe of the haire, diſgraceth the head and chin; and leaneneſſe deformeth the reſt of the body; yet all of theſe uſe not to appeare in all bodies, but ſome of them in ſome. But the moſt certaine ſignes 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 prognoſticke, if after it be cicatrized, it retaine the ſame callous hardneſſe; the Bubo's, or ſwellings in the groines to returne backe into the body without comming to ſuppuration, or other manifeſt cauſe: theſe two ſignes, if they concurre in the ſame patient, you may judge or foretell that the *Lues venerea* is either preſent, or at hand; yet this diſeaſe happeneth to many without the courſe of theſe two ſignes, which alſo bewrayeth it ſelfe by other manifeſt ſignes, as ulcers and puſtles in the reſt of the body, rebellious againſt medicines though powerfull, and diſcreetely applyed, unleſſe the whole body bee annoynted with *Argentum vivum*. But when as the diſeaſe becommeth inveterate, many become impotent to venery, and the malignity and number of the ſymptomes encreaſe, their paines remaine fixed and ſtable, very hard and knotted *tophi* grow upon the bones; and oft-times they become rotten and foule, as alſo the hands and feete by the corruption of ſalt phlegme are troubled with chops or clefts, and their heads are ſeazed upon by an *ophiaſis* and *alopecia*; whitiſh tumours with roots deepe faſtned in, ariſe in ſundry parts of the body, filled with a matter like the meate of a cheſnut, or like a tendon; if they be opened they degenerate into divers ulcers, as putride, eating, and other ſuch, according to the nature and condition of the affected bodies. But why the paines are more grievous on the night ſeaſon: this may bee added to the true reaſon wee rendred in the precedent Chapter; firſt for that the venereous virulencie lying as it were aſleepe is ſtirred up and enraged by the warmeneſſe of the bed and coverings thereof; Secondly, by reaſon of the patients thoughts which on the night ſeaſon are wholly turned and fixed upon the onely object of paine.

The moſt certaine ſignes of the *Lues venerea*.

Two other cauſes of the exceſſe of paine in the night.

Chap.

Chap. V.

Of Prognosticks.

IF the disease be lately taken, associated by a few symptomes, as with some small number of pustles, and little & wandring paines, and the body besides bee young and in good case, and the constitution of the season bee good and favourable, 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 many and maligne symptomes, as a fixed paine of the head, knots and rottennesse of the bones, ill natured ulcers in a body very much fallen away and weake, and whereof the cure hath beene already sundry times undertaken by Empyricks, but in vaine; or else by learned Physicians, but to whose remedies, approved by reason and experience, the malignity of the disease and the rebellious virulency hath refused to yeeld, is to be thought uncurable, especially, if to these so many evils, this bee added, that the patient bee almost wasted with a consumption and hectick leanenesse, by reason of the decay of the native moisture. Wherefore you must onely attempt such by a palliative cure; yet bee wary here in making your prognosticke: for many have beene accounted in a desperate case, who have recovered; for by the benefit of God and nature, wonders oft-times happen in diseases. Young men who are of a rare or laxe habit of body are more subject to this disease, than such as are of a contrary habit and complexion. For as not all who are conversant with such as have the Plague, or live in a pestilent aire, are alike affected; so neither all who lye or accompany with such as have the *Lues venerea*, are alike infected or tainted. The paines of such as have this disease, are farre different from the paines of the Gout. For those of the Gout returne and torment by certaine periods and fits, but the other are continuall and almost alwaies like themselves; Gouty paines possesse the joynts, and in these condense a plaster-like matter into knots; but those of the Pocks are rather fastened in the middest of the bones, and at length dissolve them by rottennesse and putrefaction. Venereous ulcers which are upon the yarde are hard to cure, but if being healed, they shall remaine hard and callous, they are signes of the disease lying hidde in the body.

The signes of a curable *Lues Venerea*.

The signes of an uncurable one.

How these pains differ from those of the gout.

Generally, the *Lues venerea* which now reigneth is farre more milde and easie to bee cured than that which was in former times, when as it first began amongst us: besides, each day it seemeth to bee milder than other. Astrologers think the cause hereof to bee this, for that the cœlestiall influences which first brought in this disease, in succeesse of time by the contrary revolutions of the Starres, lose their power and become weake; so that it may seeme somewhat likely, that at length after some few yeares it may wholly cease; no otherwise than the disease termed *Mentagra*, which was very like this in many symptomes, and troubled many of the Romans in the raigne of *Tiberius*; and the *Lichen*, which in the time of *Claudius* (who succeeded *Tiberius*) vexed not onely *Italy*, but all *Europe* besides. Yet Physicians had rather take to themselves the glory of this lesse raging disease, and to referre it to the many and wholsome meanes, which have beene invented, used and opposed thereto by the most happy labours of noble wits.

The *Lues venerea* becomes more gentle than formerly it was.

Chap.

Chap. VI.

How many, and what meanes there are to oppugne this diſeaſe.

Why the decoction of Guajacum is not ſufficient to impugne the diſeaſe.

MAny ſorts of remedies have beene found out by many to oppugne and overcome this diſeaſe. Yet at this day there are onely foure which are principally uſed. The firſt is by a decoction of *Guajacum*; 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 powerfull; for experience hath taught, that the decoction of *Guajacum* hath not ſufficient ſtrength to extinguiſh the venome of the venereous virulency, but onely to give it eaſe for a time; for becauſe it heates, attenuates, provokes ſweate and urine, waſtes the excrementitious humours by drying them, it ſeemeth to cure the diſeaſe, for that thereupon, for ſome time, the paine and all other ſymptomes ſeeme more remiſſe; but theſe endeavours are weake and deceitfull, as whereby that only which is more ſubtle in the humours in fault, is exhauſted and diſperſed by ſweat. But *Hydrargyrum*, as a certaine higher power, conteines therein all the power of *Guajacum*, yet much more excellent and efficacious; for beſides that it heats, attenuates, cuts, reſolves and dryes, it provokes ſweat and urine, and beſides it expels noxious humours upwards and downewards, by the mouth and ſtoole. By which evacuations not onely the more ſubtle, but alſo the more groſſe and fœculent excrements, wherein the ſeat of this diſeaſe is properly fixed, are diſperſed and evacuated; by which the Phyſician may bee bold to aſſure himſelfe of certaine victory over the diſeaſe. But after the uſe of the decoction of *Guajacum*, freſh paines and knots ariſe by the reliques of the more groſſe and viſcous humours left in the cavities of the entrailes; but *Hydrargyrum* leaves no reliques behind it.

Hydrargyrum is ſufficient to overcome the diſeaſe.

Chap. VII.

How to make choice of the wood Guajacum.

The faculty.

THat is preferred before the reſt, which is of a great logge, of a dusky colour, new, gummy, with a freſh ſtrong ſmell, an acride and ſomewhat biting taſte, the barke cleaving very cloſe to the wood. It hath a faculty to heat, rarifie, attenuate, attract, to cauſe ſweat, and move urine, and beſides by a ſpecifick property to weaken the virulency of the *Lues Venerea*. There are three ſubſtances taken notice of in this wood: the firſt is the barke, the other is a whitiſh wood which is next to the barke, the third is the heart of the wood, that is, the inner, blackiſh, and more dusky part thereof. The barke is the more dry, wherefore you ſhall uſe it when as you would dry more powerfully; the middle ſubſtance is more moiſt, becauſe it is more ſucculent and fat; that which lyeth betweene both is of a milde temper. Wherefore the two laſt are more convenient for delicate natures and rare bodies, which require leſſe drying. Furthermore, the barke muſt be given to denſe and ſtrong natures, that by the more fierie force thereof, the humours may be made more fluide, and the paſſages of the body more paſſable. But I would here bee underſtood to meane ſuch barke as is not putride and rotten with age, to which fault it is very ſubject, for that long before it bee ſhipped by our people, the wood lyeth in heapes upon the ſhore in the open aire, untill they can finde chapmen for it; which, when it is brought aboard, it is ſtowed in the hold or bottome of the ſhip, where beneath by the ſea through the chinkes of the bords, and above by the mariners, it uſually gathereth much dirt. When it is brought hither to us, it is bought and ſold by weight, wherfore 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 mouldineſſe and rottenneſſe. Wherefore I doe not like to give the decoction either of the barke or wood which is next thereto to ſicke people.

The parts.

The hot and fiery faculty of the barke.

Chap.

CHAP. VIII.

Of the preparation of the decoction of Guajacum.

FIrſt you muſt have your *Guajacum* ſhaved into ſmall pieces, and to every pound of the ſhavings, adde of faire water eight, ten, or twelve pints, more or leſſe as the nature of the party, and condition of the diſeaſe ſhall ſeeme to require, according to the rule of the formerly mentioned indications. Let the water be hot or warme, eſpecially if it be in winter, that ſo it may the more eaſily & throughly enter into the body of the wood, & draw into it ſelfe the faculties thereof in the ſpace of twenty foure houres, wherein it is macerated; then boyle it *in balneo*, to avoyd *empyreuma*, or taſte of fire, which it will contract by boyling it over a hot fire. Yet ſome nothing regard this, but thinke the patient ſufficiently ſerved, if they make a decoction in an earthen pot well glaſed, over a gentle fire, ſo that no part of the liquor may runne 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 boyled to the conſumption of half, a third, or fourth part, as the nature of the patient, & diſeaſe ſhall ſeem to require. There be ſome who mixe divers ſimples therwith, which have an occult and proper ſimpathy with that part of the body which is principally hurt by the diſeaſe, which at the leaſt may ſerve in ſtead of a vehicle to carry the faculties of the decoction thither where the diſeaſe moſt reigneth. Others adde thereto purging medicines, whoſe judgement I cannot approve of, for that I thinke it is not for the patients good to attempt two evacuations at once, that is, to expell the humors by ſweat by the habit of the body, and by purging by the belly; for that as much urine, ſo alſo much ſweat ſhewes little evacuation by ſtoole. For theſe two motions are contrary, which nature cannot brooke at once. For purging drawes from the circumference to the Center, but ſweat runs a quite contrary courſe, and this is the opinion of many & great phyſitians. This firſt decoction being boyled out, & ſtrained the like quantity of water ſhall be put to the ſtuffe, or maſſe, that ſo being boyled again without any further infuſion, & ſtrained, with the addition of a little cinamon for the ſtrengthening of the ſtomacke, the patient may uſe it at his meales, and betweene his meales, if he be dry, for his ordinary drinke. The quantity of the firſt decoction to be taken at once, ought to be ſome five or ſixe ounces, and it ſhall be drunke warm, that ſo it may be the ſooner brought into action, and leſt the actuall coldneſſe ſhould offend the ſtomacke; and then the patient being well covered, ſhall keep himſelf in bed, and there expect ſweat, which if it come ſlowly on, it ſhall bee helped forwards with ſtone bottles filled full of hot water, and put to the ſoles of the feet. If any parts in the interim ſhall bee much pained, they ſhall bee comforted by applying of ſwines bladders halfe filled with the ſame decoction heated. Neither will it bee unprofitable before the decoction bee drunke, to rubbe over all the body with warme linnen clothes, that by this meanes the humours may be attenuated, and the pores of the skinne opened. When he ſhall have ſweat ſome two houres, the parts oppoſite to the grieved places, ſhall firſt be wiped, then preſently, but more gently, the grieved parts themſelves, leſt a greater confluxe of humours flow thereto. Theſe things being done, he ſhall keep himſelf in bed, ſhunning the cold aire untill he be cooled and come to himſelfe againe, ſome two houres after, hee ſhall ſo dine, as the diſeaſe and his former cuſtome ſhall ſeeme to require; ſixe houres after, betaking himſelfe to his bed, hee ſhall drinke the like quantity of the decoction, and order himſelfe as before. But if he be either weake, or weary of his bed, it ſhall bee ſufficient to keepe the houſe without lying downe; for although he ſhall not ſweate, yet there will be a great diſſipation of the vapours, and venenate ſpirits, by inſenſible tranſpiration; for the *Lues venerea* by the onely communication of theſe, often times catcheth hold, and propagates it ſelfe in lying with a bedfellow tainted therewith. But as it is requiſite to have let blood, and purged the body by the adviſe of a phyſitian, before the taking of the decoction of *Guajacum*; ſo whileſt hee doth take it, it much conduceth to keepe the belly ſoluble (which

The proportion of the Guajacum to the water.

Why the decoction ought to be performed with a dry heat.

Whether it bee fit to adde purges to a decoction of *Guajacum*.

Hip. aph. 21. ſect. 6.

How, and in what quantity this decoction muſt be taken.

How to dry the ſweat of the body.

(which is much bound by the heat & drineſſe of ſuch a drink) and to preſerve the purity of the firſt veines by a glyſter, or laxative medicine taken every fifth, or ſixt day. But for the uſe of it, we muſt warily obſerve, taking indication not onely from the malignity, and contumacy of the diſeaſe, but alſo from the particular nature of the patient; for ſuch as have their body waſted by heat and leaneneſſe, and their skinne dry and ſcaily (whence you may gather a great aduſtion of the humours, and, as it were, a certaine incineration of the habit of the body) muſt more ſparingly make uſe of theſe things, but rather temper the body by humecting things taken inwardly, and applyed outwardly, as bathes, ointments without quickſilver, and other ſuch like things. And then a very weake decoction of *Guajacum* ſhall bee uſed for a few dayes before your unction with Quicke-ſilver. A more plentifull diet, as it drawes forth the diſeaſe, which of its owne nature is long, ſo a more ſparing and ſlender diet makes the ulcers more rebellious and contumacious, by a hecticke drineſſe.

How long this decoction muſt be uſed.

The manner of diet.

Therefore a middle courſe muſt be kept, and meats made choice of which are fit, and naturally engender good and laudible juice in the body. For it is not only great ignorance, but much more cruelty, to goe about to conteine all patients without any difference, within the ſtrait allowance of four ounces of Ship-bisket, and twelve damaske prunes: for I judge it farre better to diet the patient with Lambe, Veale, Kid, Pullets, fat Larkes, and Blacke-birds, as thoſe which have a farre greater familiarity with our bodies, than Prunes and the like Junkets. Let his bread bee made of white wheat, well leavened, neither too new, or tough, neither too old or hard. Let his drinke be made of the maſſe, or ſtrainings of the firſt decoction of *Guajacum* boiled with more water, as was formerly mentioned; yet if there ariſe any great weakeneſſe of the faculties, you may permit the uſe of ſome little wine, drinking eſpecially before each meale a cup of the laſt mentioned decoction. Let him avoyd ſleepe preſently after meat, for ſo the head is filled with groſſe vapoures. Paſſions or perturbations of the mind muſt alſo be avoyded, for that by theſe the ſpirits are inflamed and diſſipated; all delights of honeſt pleaſure are to be deſired, but venery wholly avoyded, as that which weakens all the nervous parts. Many in ſtead of a decoction of *Guajacum*, uſe a decoction of *China*. Now this *China* is the roote of a certain rush, knotty, rare, & heavie, when it is freſh, but light when it is waxed old; it is alſo without ſmell, whence many judge it voyd of any effectuall quality, it is brought into uſe out of *India*; it is thus prepared, it is cut into thin round ſlices, boyld in fountaine or river water, and is given to patients to drink morning and evening after this manner. ℞. *rad. chin. in talool. ſect.* ℥ ii. *aquæ font.* ℔ xii. *infundantur per hor.* xii. *& coquantur ad conſumption. tertiæ 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 maſſe remaining of the firſt, but with a leſſe quantity of water put thereto, which alſo by longer boyling may draw forth the ſtrength remaining in the maſſe, & be uſed at meals for ordinary drink. There are ſome who make a third decoction therof, but that is wholy unprofitable and unnſefull. *Sarſaparilla* is prepared alſo juſt after the ſame manner.

To whom, and what manner of wine may be allowed.

The deſcription of China.

The preparation.

Of Sarſaparilla.

Chap. IX.

Of the ſecond manner of curing the Lues venerea, *which is performed by friction, or unction.*

When the body muſt be prepared with humecting things before unction.

THe cure of the *Lues venerea* which is performed by unction and friction is more certaine, yet not in every kinde, condition and ſeaſon thereof. For if the diſeaſe bee inveterate from an humour, tough, groſſe, viſcous, and more tenaciouſly fixed in the ſolid parts, as you may gather by the knotty tumours of the bones; for then we are ſo farre from doing any good with a friction uſed at the firſt, that on the contrary wee bring the patient in danger of his life, unleſſe we ſhall have firſt prepared the humour to expulſion, by emollient & digeſting things firſt uſed. But if it be lately taken with moveable paines, puſtles, and ulcers in the

the jawes, throate, and privie parts, then may it be easily cured without such preparatives, especially if the humour be sufficiently obedient, and as it were prepared of it selfe, and its owne nature. Therefore first using generall medicines, you may afterwards come to use the unction with *Hydrargyrum*.

CHAP. X.

Of the choice, preparation and mixing of Hydrargyrum.

HYdrargum which is cleere, thinne, white and fluide, is the best: on the contrary, that which is livid, and not so fluide, is thought to be adulterated by the admixture of some lead. That it may be the purer, straine it through some sheepes leather, for by pressing it, when it is bound up, it passeth through by its subtlety, and leaves the filth and leaden drosse behinde it on the inside. Then it may be boyled in vinegar with sage, rosemary, time, chamomile, melilote, and strained againe, that so many waies cleansed, it may enter into ointments and plaisters. 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 meanes it may not bee able to gather it selfe into the former body: to which purpose you may also adde some *sulphur*, or sublimate, as we shall shew hereafter. It is most usually mixed with hogs grease, adding thereto some oyle of turpentine, nutmegs, cloves, sage, and *Galens* treacle. If a *Leucophlegmatia* together with the *Lues venerea* affect the body, then hot, attenuating, cutting, and drying things shall be added to the medicine, which shall be provided for unction; the same shall be done when as we would have it to enter into the substance of the bones. But if the patient be of a cholericke temper, and his blood easie to be inflamed, you shall make choice of lesse hot, attractive and discussing things. As when the body shall be replenished with knotty and scirrhous tumours, or squalide by excessive dryneſſe, then shall emollient and humecting things bee mixed therewith. But that such ointments may have a better consistence, I use to adde to each pound thereof, four, five, or sixe yolkes of hard egges. Therefore this shall be the forme of the ointment called Vigoes. ℞. *axung. porci*, ℔ i. *olei chamæm. anethi, mastich. & laurini, an* ℥ i. *styrac. liquid.* ℥ x. *rad. enulæ, camp. parum tritæ, & ebuli, an.* ℥ iii. *pul. euphorb.* ℥ ß. *vini oderif.* ℔ i. *bulliant omnia simul usque ad consumptionem vini, deinde colentur: colaturæ adde lythargyræ auri,* ℥ vi. *thuris, mastich. an.* ℥ vi. *res. pini,* ℥ i ß. *tereb. venet.* ℥ i. *argenti vivi,* ℥ iv. *ceræ albæ,* ℥ i ß. *liquefactis oleis, cum cera incorporentur omnia simul, fiat linimentum ad usum.* Or else, ℞. *argenti vivi præparati,* ℥ vi. *sublimiti,* ℥ ß. *sulphuris vivi,* ℥ ß. *axung. porci, salis expertis,* ℔ i. *vitellos ovorum sub cineribus coctorum,* nu. iii. *olei terebinth. & laurini, an.* ℥ ii. *theriac. vet. & methridat.* ℥ ß. *fiat linimentum ut artis est.* You shall compose it thus, first the *sublimatum* and *sulphur* shall be finely poudered, then some part of the *Argentum vivum* and hogs grease put to them, then presently after, some of the hard yolkes of egges, continually and diligently stirring and mixing them all together. All these being well incorporate, adde some more *argentum vivum*, hogges grease, and yolks of egges, and incorporate them with the former; at the last adde the oiles, then Treacle, and Mithridate, and so let them all be beaten together for a whole daies space, and thus you shall make an ointment of a good consistence, which I have often used with good successe. Yet the hogges grease shall be first boyled with the hot herbs good for the sinewes, as sage, rosemary, time, marjerome, lavander, and others which the season affoords. For so the *axungia* acquires a more attenuating faculty, and consolidating of those parts which the *Lues venerea* afflicts. Besides, when unguents are made for this purpose, that such virulency may be drawne from within outwards, by sweats and transpiration through the pores of the skinne, no man need doubt, but that they ought to be furnished with relaxing, rarifying, and attractive faculties. But *axungia*, besides that it is very fit to kill the *argentum vivum*, it also relaxeth and mollifieth. Now *Oleum laurinum, de spicâ, rutaceum*, rarifie, digest, and asswage paine. Turpentine also extinguisheth

How to kill argentum vivum.

What to mixe therewith.

An unction with argentum vivum.

Another.

How to make it

How to prepare the hogs-grease before you mixe the argentum vivum therewith.

guisheth, and bridleth the *argentum vivum*, moderately heates, resolves and strengthens the nervous parts. But *argentum vivum* is the proper antidote of the *Lues venerea*, as that which cures it howsoever used, drying by the subtlety of the parts, and provoking sweat. Verily Treacle and Methridate somewhat conduce to retund the virulency of this disease, but unlesse *argentum vivum* assist as a ferret to hunt, and an *alexiterium* to impugne the disease, they can doe no great matter.

Chap. XI.

How to use the Unction.

THe body and humours apt to cause or nourish a *plethora* or inflammation, being prepared by digestive syrupes, and evacuated by purging and bleeding as is fitting, according to the direction of some Physitian, the patient shall be shut up in a parlour or chamber, hot either by nature or art, & free from cold blasts of wind. For cold is most pernitious in this disease, both for that it hurts the nervous parts, already ill affected by reason of the disease, as also for that it lessens the efficacy of medicines. Wherefore many doe ill in this, who, whether in winter or summer, anoint their patients in a large room, exposed on every side to the winds. They deale somewhat more wisely, who put a cloath fastened like halfe a tent presently behinde the patient, though anointed by the fire side, so to keep away the cold aire from him. Yet it is safest to set, and anoint the patient either in a little roome, or else in some corner of a large roome, separated from the rest of the room by some hangings, and building a stove, or making some fire therein, for so he may stand or sit as he best likes, the longer, and with the lesse offence, and be equally heated on every side, whereas such as are anointed in a chimney by a fires side cannot but be heated unequally, being ready to burne on the one side, whilest the other is cold, which motions are contrary and hurtfull to that we require: besides, if the patient shall bee weake, hee cannot stand and endure the heat of the fire. Or if hee bee shamefac't, he will bee unwilling to shew all his body at once naked to the Surgeon, but he may without any harme, and with modesty, lying on a bed in a little roome, wherein a stove is made, have all his limmes anointed about the joints, and presently bound up, either with stoupes, or carded cotton, or browne paper.

Cold most hurtfull to such as are troubled with the *Lues venerea*.

Chap. XII.

What cautions to be observed in rubbing or anointing the patient.

HE shall be anointed or rubbed over with the ointmẽt in the morning, the concoction & distribution of the meat being perfected, which functions otherwise would not be well performed, the powers of nature being distracted into severall operations. Yet if the patient shall be weak, you may some houre before the unction, give him some gelly, the yolk of an egge, or some broath made of meate, boiled to pieces, but very sparingly, lest nature, intent upon the concoction of solid meats, or in great quantity, should bee drawne away from that which we intend. At first let onely the joints of the limmes be anointed, as about the wrests, elbowes, knees, anckles, shoulders. But afterward, if the patient shall be more strong, and a greater commotion of the humours and body seem necessary, the emunctories of the principall parts may also be anointed, and the whole spine of the backe; yet having much care, and alwaies shunning the principall and noble parts, lest we should doe as those butcherly Emperickes doe, who equally, and in like manner daube and rubbe over all the body, from the soles of the feete, to the crowne of the head: moreover, diligent regard must bee had of those parts, which are seazed upon by the symptomes of this disease, that they may bee more anointed, and that it may be more throughly rubbed in. Yet you must alwaies

The patient, if it may be conveniently done, must be anointed fasting.

In what places the body must be anointed.

waies begin your anointing or rubbing at those parts which are lesse offended, lest the humours should be drawne in greater measure to the grieved part. And as gentle frications do not sufficiently open the pores of the skin, so more strong and hard ones shut them up, cause paine, and more plentifully attract the morbificke matter. Wherefore it will be more convenient to use moderate frictions, taking indication from the strength of the patient, as that whereto we must still have the chiefe regard. There is also another thing wherto the physitian & Surgeon must diligently attend, as that, which if it be not carefully prevented, will either hasten the death of the patient, or make him subject to a relapse; 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 body, and each part thereof, much troubles and exerciseth the mindes of good Physitians, and maketh the art conjecturall, it is so farre from being attained to by Empericks. Yet we must endeavour by method and reason, that by the rule of indications so frequently mentioned, we may attaine to the knowledge thereof, as neare as may bee. For to have perfect knowledge hereof, and to say that those need only foure, others five, and other some sixe, more or fewer frictions at the beginning, which Emperickes commonly doe, is a thing both impossible and vaine. All these must bee changed and ordered according to the malignity and continuance of the disease, and the condition of the affected bodies. Verily wee must so long use frictions and unctions, untill the virulent humours bee perfectly evacuated by spitting and salivation, by stoole, urine, sweat or insensible transpiration. Which you may understand by the falling away & drying up of the pustles and ulcers, and the ceasing of the paines and other symptomes proper to this disease. In many, by reason of the more dense and compact habite of the body, nature is more slow in excretion. Yet I have learnt by long experience that it is best to anoint and chafe such twice in a day, to wit, morning and evening, sixe houres after meate. For so you shall profit more in one day, than by the single frictions of three dayes. But on the contrary, I have often, and with good successe, rubbed over but each other day more rare and delicate bodies, giving them one or two dayes rest to recollect their strength, which by the too much dissolution of their spirits becomming too weak, were not sufficient to expell the relicks of the morbifick matter. And certainly about the end of the appointed friction, especially when as the patients begin to fluxe at the mouth, the bodies, together with the noxious humors are made so fluid by the means of the precedent frictions, that one friction is then more efficacious, than two were at the beginning. Therefore as *Galen* bids, when as the disease is great, and the strength of the patient infirme, that wee should part our blood lettings, and draw a little and a little at once; so also here when as we shall observe nature stirred up, and ready bent to any kinde of evacuation by the mouth, stoole, or other like, you ought not to use any unction or friction oftner than once in a day, yea certainely it will bee better to intermit for some few dayes. For thus *Massa* reports, that there was a certaine man who almost wasted with a consumption, being continually afflicted with the most grievous paines of this disease, & reputed in a desperate case by other physitians, was notwithstanding at length recovered by him, when as hee had anointed him thirty seven times, putting some time between for the recovery of his strength. I my self have observed others, who thus, by the interposition of one or two dayes, being rubbed over some fifteene or seventeene times, have perfectly recovered. Wherefore you must take this course in resolved and weake bodies, yet in the interim must you have a care, that the frictions bee not too weak, and so few, that the morbifick cause may not be touched to the quick: for in this kinde of disease nature doth not of it selfe endeavour any Crisis, or excretion; it requires the auxiliary forces of medicines, by whose assistance it may expell all the malignity. These are signes of such a Crisis, either at hand, or already present, if the patient be so restlesse, so loath all things, that hee cannot remaine in one place either standing or lying, he can neither eat nor drinke, if he be oppressed with a continuall wearinesse, almost ready to swoune, yet have a good and equall pulse, and gripings in his belly afflict him with bloody & viscous dejections, untill at length nature after one or two dayes, portion of the morbifick matter being spent, be somwhat

Where to begin the unction.

What it is that maketh the art of Physick conjecturall.

Who must be rubbed over once, who twice in a day, and who but every other day.

Lib. de venæ sect.

Nature is not sufficiently able to expell the virulent matter.

Signes that the crisis is nigh.

freed, and all paines and ſymptomes ſo much abated, as the excretions have proceeded. But whereas medicines are not ſufficient in number or ſtrength, there followes an unperfect *Criſis*, which leaves behind it ſome relicks of the morbifick matter, which like leven do ſo by little & little infect the whole maſs of the humors, that oft-times after ten years ſpace, the diſeaſe riſeth as out of an ambuſh, or lurking hole, and becomes farre worſe than before. But wee muſt in like maner have a care leſt theſe medicines, that are either given inwardly, or applyed outwardly, be not too ſtrong; for by cauſing ſuch colliquation of the radicall moiſture and ſolid parts, many have been brought into an incurable conſumption. In others ſordid and putride 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 capacity of the mouth, ſo that it could not be bended to any part of the mouth for chawing, whereupon they have by little and little beene famiſhed. In other ſome there hath beene cauſed ſo great colliquation of humours, that for a whole moneth after, tough and filthy ſlaver hath continually flowed out of their mouths. Other ſome have the muſcles of their jawes 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 ſome of their teeth. But you muſt not alwaies ſo long anoint and chafe the body, untill a fluxe of the mouth or belly appeare. For you may finde ſundry perſons, who, if you ſhould anoint or rub them to death, you cannot bring them to fluxe at the mouth; yet theſe will recover notwithſtanding, excretion being made either by inſenſible tranſpiration, or evacuation of urine, or ſome gentle fluxe of the belly, either procured by art, or comming of it ſelfe. In which caſe I have obſerved that many have received much good by a purging decoction of *Guajacum*, adminiſtred according to the quantity of the peccant humor, and given for ſome dayes in the morning, adding thereto white wine, if the body abounded with tough and viſcide humours. Dyſenteryes, or bloody-fluxes cauſed by unctions, may be helped by Glyſters, wherein much hogs-greaſe is diſſolved to rotund the acrimony cauſed by the medicine and humor which nouriſheth the Dyſentery. Alſo new Treacle diſſolved in new milke, is thought wonderfully to mitigate this ſymptome.

Inconveniences following upon immoderate unctions.

For what perſons a purging decoction of *Guajacum* is good.

The cure of a Dyſentery occaſioned by too ſtrong friction.

Chap. XIII.

Of the third manner of Cure, which is performed by cerates, and emplaſters, as the ſubſtitutes of unctions.

For that ſundry by reaſon of the name, abhorre the uſe of friction, which is performed by the forementioned 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 needfull onely to uſe the things which are deſcribed by *Vigo*, but you may alſo deviſe other, which are more or leſſe anodyne, emollient, attenuating, diſcuſſing, or drying, according to the condition of the preſent diſeaſe, ſymptomes, humors and patient, never omitting *Hydrargyrum*, the onely antidote of this diſeaſe. Such emplaſters mitigate paines and knots, and reſolve all hardneſſe, and are abſolutely very effectuall, for continually ſticking to the body, they continually operate. Wherefore they are of prime uſe in relapſes of this diſeaſe, or when the humours are thicke and viſcous, or otherwiſe lye deepe in the body, and very difficult to roote out. But for that they worke more ſlowly oft times, ſuch as uſe them are forced at length to uſe ſome frictions to ſtimulate nature, and cauſe the ſpeedier excretion. Yet in ſome whoſe bodies and humours have beene fluid, either by nature or art, the applyed emplaſters have in three dayes ſpace procured evacuation ſufficient for the diſeaſe, ſo that if they had not beene taken away, they would have cauſed a colliquation, like that which we lately mentioned in too violent friction. Wherefore you ſhall

The cure by emplaſters more ſlow.

In what caſe they are chiefly uſefull.

ſhall uſe the like diſcretion in taking off theſe, as you uſe in your unctions and friction. In ſtead of *Emp. de Vigo*, this following may be fitly uſed. ℞. *maſſæ emp. de melil. & oxycrocei, an.* ℔ß. *argenti vivi extin.* ℥vi. *oleo laurino, & de ſpica, reducantur ad formam emplaſtri.* Theſe plaſters muſt be equally ſpread upon leather, and layd 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 arme, from the hand even to the ſhoulder, and all the legge, from the toppe of the knee, even to the ends of the toes, which thing I doe 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, untill nature be ſtirred up and provoked to cauſe excretion of the virulent humours. Yet if in the interim, great itching ſhall ariſe in the parts, you may take them off ſo long untill the parts ſhall be fomented with a decoction of the flowres of chamomile, melilote, red roſes, and the like, made in wine, to diſcuſſe that which cauſed the itching, and then you may lay them on againe. Some, to hinder the riſing of any itch, lay not the bare plaſter to the part, but cover it over with ſarcenet, ſo to keepe it from ſticking, and thus intercept the tranſpiration of the part, the cauſe of itching. They ſhall bee ſtronger or weaker, and lye 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, otherwhiles by a *Diarrhœa*, or fluxe of the belly; ſometimes by urines, but moſt frequently (which *Criſis* is alſo moſt certaine) by ſalivation. Sordide and virulent ulcers often breed in the mouth, tongue, pallate, and gummes by ſalivation, by reaſon of the acrimony of the virulent humors adhering to the ſides of the mouth: to hinder the growth of theſe, many inject glyſters made of emollient things, eſpecially at the beginning of the ſalivation, ſo to draw downwards the humours forcibly flying up in greater quantity than is fit, although the part it ſelfe may endure them.

The deſcripeion of an emplaſter.

What excretion beſt in this diſeaſe.

There are alſo ſome, who to the ſame end give a purging medicine at the very time when as the humours are ready to move upwards, the which I thinke is not a ſafe courſe. The cure of ſuch ulcers is farre different from the cure of others. For they ought by no meanes to bee repercuſſed or repelled, how enflamed ſoever they be, but onely to bee mitigated by anodyne gargariſmes, ſo onely to leſſen the heat, and that by this frequent waſhing of the mouth, you may hinder the ſticking or furring of vilcide humours to ſuch like ulcers. A decoction of barly, cowes milk warm, held and gargled in the mouth, the mucilages of the ſeeds of mallowes, marſh-mallowes, *pſilium*, lettuce, line extracted in the water of barly, mallowes, and pellitory of the wall, are good for this purpoſe; for thus the ulcers become more milde, and the tenacity of the adherent humours is looſed. You muſt at the firſt beware of ſtrong detergent medicines, for almoſt all ſuch have acrimony joyned 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 become worſe by the uſe of acride things. Therefore it ſhall be ſufficient to make uſe of the forementioned medicines, ſo to hinder the encreaſe of the filth, and inflammation of the ulcers, if ſo bee that ſuch ulcers be not too exceeding maligne and burning. For if it ſhall happen either by the powerfull efficacy of the applyed plaſters, or by the violence of nature in its motion of the ill humours upwards, that ſuch ſtore of viſcous, and groſſe humours are carryed to the mouth, that it wants little, but that the part it ſelfe is over-ruled by the morbificke matter, ſo that by the violence and continuance of the fluxe, the mouth and jawes become ſo ſwelled, that a gangrene is to be feared, by hindering the entrance of the ſpirits, and extinguiſhing of the native heat of theſe parts. In this caſe wee are forced to leave the proper cure for to withſtand the accidents, and for this purpoſe we uſe reſtrictive & repelling things, ſuch as are barly water, plantain, night-ſhade, knot-graſſe, ſhepheards Purſe, &c. with ſyrupe of roſes, violets, quinces, berberies, pomegranates, &c. alſo ſuch are the mucilages and decoctions of the ſeeds of lettuce, *pſilium*, quinces, plantaine, cucumbers, melons, white poppy, henbane, in the waters of roſes, plantaine, night-ſhade, water-lillies, wood-bine, &c. Alſo it is convenient to procure ſweats by ſtoves, or the application of any hot and

To avoyd the ulcers of the mouth.

To cure them.

Reeſtrictive & repelling gargariſmes.

dry things; for thus the humours which run forth of the veſſels into all the ſurface of the body, are diverted. But when as the courſe of the humours running to the mouth, is beginning to ſtoppe, and the tumours and ulcers begin to leſſen, then nothing hinders, but that we may uſe gently detergent things, as *ſyr. roſarum ſiccarum, mel roſatum, Diamoron, Dianucum*, and the like. But when it is time to dry the ulcers, they may be lightly touched with alome water, or with *aqua fortis*, ſuch as goldſmiths have uſed for the ſeparation of mettals. They may alſo frequently uſe drying gargariſmes made with aſtriction of the waters of roſes, plantaine, night-ſhade, ſheepheards purſe, knot graſſe, and dogges tongue, boiling therein *balauſtia, roſ. rub. myrtil. ſumach. alumen. acacia, berber. galla, 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 he can neither chaw, ſwallow, nor digeſt hard things. For nature wholly intent upon the excretion of the noxious and peccant humours, as alſo weakened by the bitterneſſe of paine, watchings, and unquietneſſe, and conſequently a great resolution of the ſpirits, cannot inſiſt powerfully upon the worke of concoction. Therefore he ſhall be fed with reare new layd egges, caudles of the ſame, barly creames, culeſſes made of a decoction of knuckles of veale, and a capon, and gellyes, and with theſe in ſmall quantity, but frequently adminiſtred, alwaies gargling his mouth before hee eate. For his drinke he ſhall uſe a decoction of *Guajacum* aromatized with a little cinamon, but if any deſire that the drinke ſhall become nouriſhment, for that the patients cannot feed on more ſolid meats, you may give them old wine, claret and thinne, mixed with ſome barly water. Some there are who ſteep ſome crummes of pure manchet in the aforeſaid wine, and then preſſe it out, but yet ſo, that there may ſome part of the bread remain therein, which may make it more nouriſhing, and leſſe ſharpe or acride. Others ſteepe 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 flowes out afterwards, more milde, and ſuch as the patient may uſe to mixe with his wine without any danger, for his better nouriſhment, and the recovery of his ſtrength.

To dry the ulcers of the mouth.

Manner of diet when the mouth is ulcerated.

To make their drinke nouriſhing.

For to refreſh the ſpirits in fear of fainting, Muskedine, Hippocras, roſe vinegar, and the like, put to the noſe to ſmell to, will be ſufficient, unleſſe peradventure the patient ſhould naturally abhorre ſuch things, for ſo they would rather deject the powers and ſpirits. In the interim you muſt have care of the belly, that you keep it open by gentle and emollient glyſters.

Chap. XIIII.

Of the fourth manner of curing the Lues venerea.

Some have deviſed a fourth manner of curing the *Lues venerea*, which is by *ſuffitus* or fumigations. I doe not much approve hereof, by reaſon of ſundry maligne ſymptomes which thence ariſe, for they infect and corrupt by their venemous contagion, the braine and lungs, by whom they are primarily and fully received, whence the patients during the reſidue of their lives have ſtinking breaths. Yea many while they have beene thus handled, have beene taken hold of by a convulſion, and a trembling of their heads, hands, & legges, with a deafeneſſe, apoplexie, and laſtly miſerable death, by reaſon of the maligne vapours of ſulphur and quickſilver, whereof *cinnabaris* conſiſts, drawne in by their mouth, noſe, and all the reſt of the body. Wherefore I can never approve the uſe of ſuch fumigations which are to bee received in fumes by the mouth and noſtrills for to work upon the whole body; yet I doe not diſlike of that, which is undertaken for ſome one part onely, as to dry up ill conditioned ulcers, which ſo affect it, that they cannot bee overcome by any other meanes, or for to diſperſe or digeſt knots, or to reſolve fixed paines, otherwiſe unmoveable. Theſe fumigations by reaſon

The hurt that followes upon fumigations.

What fumigations good.

ſon of the admixture of *Argentum vivum* have an attenuating, cutting, reſolving, and colliquating faculty. Thoſe who prepare theſe fumigations for the cure of the whole diſeaſe and body, take this courſe. They put the patient under a tent or canopy made cloſe on every ſide, leſt any thing ſhould expire, and they put in unto him a veſſell filled with hot coales, 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 ſmoake their horſes for the glaunders: they repeat this every day ſo long, untill they begin to fluxe at the mouth. The principall 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 faculty to reſolve and ſtrengthen the ſpirits, and nature, and correct the ſtench and evill quality 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 bee melted, and let there be powred or put thereto ſome *argentum vivum*, then let it all be poudred, adding thereto Antimony, Aloes, Maſtich, coproſe, orpiment, and Benjamin made into pouder, and framed into Trochiſces with ſome turpentine. Or elſe, ℞. *cinnabaris*, ℥ i. *ſtyracis rub. & calamitæ, nucis moſchat. an.* ℥ iii. *benzoini*, ℥ ß. *excipe terebinthin. fiant trochiſci ponderis* ℥ ii. for the foreſaid uſe. The *terebinthina* is added to incorporate the dry things, and the gums are added to yeild 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. ℞. *cinnabaris*, ℥ i. *benzoini, myrrhæ, ſtyracis, olibani, opopanacis, an.* ℥ ß. *maſtiches, macis, thuris, an.* ℥ ii. *exciptantur terebinthina, & fiat ſuffumigium.*

The common manner of uſing them.

The matter of them.

Trochiſces for fumigations.

Chap. XV.

The cure of the ſymptomes, or ſymptomaticke affects of the Lues venerea, *and firſt of the Ulcers of the Yard.*

CAllous and maligne ulcers in this diſeaſe may grow all over the yard; but theſe are far more maligne which ariſe on the prepuce, than thoſe that grow on the *Glans*, or nut of the yard. Now they are rebellious to the common medicines of ulcers which happen other waies, & they are alſo ſubject to turne into a gangrene, ſo that ſundry, who have not in time provided for themſelves by the uſe of *argentum vivum*, are forced for their negligence to ſuffer the loſſe of their *Glans*, and oft times of their whole yard. Yet I am of opinion that I thinke we muſt begin the cure of all ulcers of the yard with the generall remedies of ulcers. For all ulcers ariſing in theſe parts by reaſon of copulation, are not virulent. But when as we ſhall finde that we doe no good by this meanes, and that the diſeaſe notwithſtanding growes worſe and worſe, then muſt we come to make uſe of ſuch things as receive *argentum vivum*, that by theſe we may reſiſt the virulency which is ready to diſperſe it ſelfe over all the body, yet it is abſolutely neceſſary that all theſe things be endued with ſuch faculties as may retund the maligne acrimony of this venome, ſuch an one is this following *collyrium* of *Lanfranck*. ℞. *vini albi*, ℔ i. *aq. roſ. & plantag. an.* quart. i. *auripig.* ℥ ii. *viridis æris*, ℥ i. *aloes, myrrhæ, an.* ℈ ii. *terantur ſubtiliſſime, & fiat collyrium.* Alſo theſe ulcers may bee profitably touched with mercury water, or *aqua fortis* which the Goldſmiths have uſed, or elſe mercury in pouder, or our *ægyptiacum*: 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 very great caution, for fear of a gangrene, which eaſily happens to this part. But if ſuch ulcers are ſo ſtubborne, that they will not yeild to theſe remedies, then muſt we come to the friction or unction of the groines *perinæum*, and ulcers, with the ointments formerly preſcribed for the generall friction. Alſo fumigations may bee made, as wee mentioned in the former chapter. For thus at length the malignity of the virulent humour will be overcome, and the callous hardneſſe mollified; and laſt-

The ulcers of the prepuce more maligne than thoſe of the *Glans*.

Lanfranckes *Collyrium*.

ly the ulcers themselves cleansed, and being cleansed, consolidated. Sometimes after the perfect cure of such ulcers, there will appeare manifest signes of the *Lues venerea* in many, which shewed not themselves before, for that the virulency flowed forth of the running ulcers, and now this vent being stopt, it flowes backe into the body, and shewes signes thereof in other parts; and these men have need of a generall unction.

* This which by our Author is here termed *Stranguria virulenta*, & in Frech *Chaude pisse*, is the same which by other Authors is usually termed *Gonorrhœa virulenta*, & by us vulgarly in English the running of the Reines.

Chap. XVI.

How a Gonnorhœa *differeth from a * virulent strangury.*

EVen to this day very many have thought that the virulent strangury hath some affinity with the *Gonnorhœa* of the Ancients, but you shall understand by that which followes, that they are much different. For a *Gonnorhœa* is an unvoluntary effusion of seed running from the whole body to the genitals, by reason of the resolution and palsey of the retentive faculty of these parts, as it is delivered by *Galen, lib. de loc. affect.* This disease befalleth others by the collection of the bloud and seminall matter by the vessels of the whole body, which not turning into fat and good flesh, takes its course to the genitals; but on the contrary, a virulent strangury is a runnning, or rather dropping out of the urenary passage, of a yellowish, livide, bloudy, filthy *sanies*, like to *pus* or matter not well concocted, oftentimes fretting and exulcerating the passage with the acrimony, and causing a painefull erection of the yard, and distension of all the genitall parts. For in this erection there is caused as it were a convulsive contraction of these parts. And hence it is that the patients complaine, that they feele as it were a string stretched stiffe in that part, which drawes the yard as it were downewards. The cause hereof is a grosse and flatulent spirit, filling and distending by its plenty, the whole channell or hollow nerve; yea, verily, the whole porous substance of the yard. If to these sympromes this be added, that the urenary passage be exulcerated, a grievous paine afflicts the patient whilest he makes water, for that the ulcers are irritated by the sharpe urine passing that way. Such a virulent strangury or running of the reines oft-times continueth for two or three yeares space: but the *Gonnorhœa*, or running of the seed cannot endure so long, but that it will bring the body to an extreme and deadly leaneneſſe, for that the matter of the seed is of the more benigne and laudible portion of the bloud, as you may perceive by those who have too immoderately used copulation but the space of one night. For such have their faces more leane and lanke, and the rest of their bodies enervated, languisheth and becommeth dull. By this we have delivered, it may be perceived that the running of a virulent strangury, is not the running of a seminall humour, fit for generation of issue, but rather of a viscous and acride filth, which hath acquired a venenate malignity by the corruption of the whole substance.

What a virulent strangury is.

The cause of the convulsive distension of the yard.

Vid. Auth. de fœtu. mal. apud Galen.

What kind of matter floweth forth in a virulent strangury.

Chap. XVII.

Of the causes and differences of the scalding, or sharpenesse of the urine.

THe heat or scalding of the water, which is one kinde of the virulent strangury, ariseth from some one of these three causes, to wit, repletion, inanition and contagion. That which proceeds from repletion, proceeds either from too great abundance of bloud, or by a painefull and tedious journey in the hot sunne, or by feeding upon hot, acride, diureticke and flatulent meats, causing tension and heat in the urenary parts, whence proceeds the inflammation of them and the genitall parts, whence it happens that not onely a seminall, but also much other moisture may flow unto these parts, but principally to the *prostata*, which are glandules situate at the roots, or beginning of the necke of the bladder,

The cause of a particular repletion of the privie parts.

in which place the ſpermaticke veſſels end; alſo abſtinence from venery cauſeth this plenitude in ſome who have uſually had to doe with women, eſpecially the expulſive faculty of the ſeminall and urenary parts being weake, ſo that they are not of themſelves able to free themſelves from this burden. For then the ſuppreſſed matter is corrupted, and by its acrimony contracted, by an adventitious and putredinous heat, it cauſeth heate and paine in the paſſage forth. The *proſtata* ſwelling with ſuch inflamed matter, in proceſſe of time become ulcerated, the abſceſſe being broken. The purulent *ſanies* dropping and flowing hence alongſt the urinary paſſage cauſes ulcers by the acrimonie, which the urine falling upon, exaſperates, whence ſharpe paine, which alſo continueth for ſome ſhort time after making of water, and together therewith by reaſon of the inflammation, the paines attraction, and the vaporous ſpirits diſtenſion, the yard ſtands and is contracted with paine, as wee noted in the former chapter. But that which happens through inanition, is acquired by the immoderate and unfit uſe of venery, for hereby the oily and radicall moiſture of the forementioned glandules is exhauſted, which waſted and ſpent, the urine cannot but be troubleſome and ſharpe by the way to the whole *urethra*. From which ſenſe of ſharpe paine, the ſcalding of the urine hath its denomination. That which comes by contagion, is cauſed by impure copulation with an unclean perſon, or with a woman, which ſome ſhort while before hath received the tainted ſeed of a virulent perſon, or elſe 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 infects the whole body with the like contagion, no otherwiſe than the ſting of a Scorpion or *Phalangium*, by caſting a little poiſon into the skinne, preſently infects the whole body, the force of the poiſon ſpreading further than one would believe, ſo that the partie falls downe dead in a ſhort while after. Thus therefore the ſeminall humour conteined in the *proſtata*, is corrupted by the tainture of the ill drawne thence by the yard, and the contagion infects the part it ſelfe; whence followes an abceſſe, which caſting forth the virulency by the urenary paſſage, cauſeth a virulent ſtrangury; and the maligne vapour carryed up with ſome portion of the humour unto the entrailes and principall parts, cauſe the *Lues venerea*.

The cauſes of the inanition of the genitall parts.

The reaſon of a contagious ſtrangury.

Chap. XVIII.

Prognoſticks in a virulent ſtrangury.

WEE ought not to be negligent or careleſſe in curing this affect, for of it proceed pernicious accidents, as wee have formerly told you, and neglected, it becomes uncurable, ſo that ſome have it run out of their urenary paſſage during their lives; oft-times to their former miſery is added a ſuppreſſion of the urine, the *proſtata* and neck of the bladder being inflamed and unmeaſurably ſwelled. Copulation, and the uſe of acride or flatulent meates encreaſe this inflammation, and alſo together therewith cauſe an *Iſchuria*, or ſtoppage of the urine; they are worſe at the change of the moone: certaine death followes upon ſuch a ſtoppage; as I obſerved in a certaine man, who troubled for ten yeares ſpace with a virulent ſtrangury, at length dyed by the ſtoppage of his water. He uſed to be taken with a ſtopping of his urine, as often as he uſed any violent exerciſe, and then he helped himſelf by putting up a ſilver Catheter, which for that purpoſe he ſtill carryed about him; it happened on a certaine time, that he could not thruſt it up into his bladder, wherefore he ſent for me, that I might helpe him to make water, for which purpoſe when I had uſed all my skill, it proved in vaine: when he was dead, and his body opened, his bladder was found full and very much diſtended with urine, but the *proſtata* preternaturally ſwelled, ulcerated, and full of matter reſembling that, which formerly uſed to run out of his yard, whereby you may gather, that this virulency flowes from the *proſtata*, which runs forth of the yard in a virulent ſtrangury, and not from the Reines

A virulent ſtrangurie continues with ſome during their lives.

A hiſtory.

From what part the matter of a virulent ſtrangury flowes.

Reines, as many have imagined. Certainely, a virulent ſtrangury, if it be of any long continuance, is to be judged a certaine particular *Lues venerea*, ſo that it cannot bee cured unleſſe by frictions with *Hydrargyrum*. But the ulcers which poſſeſſe the neck of the bladder are eaſily diſcerned from theſe which are in the body or capacity thereof. For in the latter the filth comes away as the patient makes water, and is found mixed with the urine, with certaine ſtrings or membranous bodies comming forth in the urine: to theſe may be added, the farre greater ſtinch of this filth which iſſueth out of the capacity of the bladder. Now muſt wee treat of the cure of both theſe diſeaſes, that is, the *Gonnorhœa* and virulent ſtrangury, but firſt of the former.

Chap. XIX.

The chiefe heads of curing a Gonnorhœa.

Diet. LEt a Phyſitian be called, who may give direction for purging, bleeding and diet, if the affect proceed from a fulneſſe and abundance of blood and ſeminall matter; all things ſhall bee ſhunned which breed more bloud in the body, which increaſe ſeed, and ſtirre to venery. Wherefore he muſt abſtaine from wine, unleſſe it be weak and aſtringent, and he muſt not onely eſchew familiarity with women, but their very pictures, and all things which may call them into his remembrance, eſpecially if he love them dearly; ſtrong exerciſes do good, as the carrying of heavie burdens even until they ſwear, ſwimming in cold water, little ſleepe, refrigerations of the loines and genitall parts by annoynting them with *unguentum roſatum refrigerans Galeni & nutritum*, putting thereupon a double cloth ſteeped in oxycrate, and often renewed. But if the reſolution or weakneſſe of the retentive faculty of theſe parts bee the cauſe of this diſeaſe, contracted by too much uſe of venery before they arrive at an age fit to performe ſuch exerciſe; in this caſe ſtrengthening and aſtringent 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 a ſtrangury occaſioned by repletion.

For the decay of the retentive faculty.

Chap. XX.

The generall cure both of the ſcalding of the water, and the virulent ſtrangury.

Diet. WEe muſt diverſly order the cure of this diſeaſe, according to the variety of the cauſes and accidents thereof. Firſt, care muſt be had of the diet, and all ſuch things ſhunned as inflame the bloud, or cauſe windineſſe; of which nature are all diuretick and flatulent things, as alſo ſtrong and violent exerciſes. Purging and bleeding are convenient, eſpecially, if fulneſſe cauſe the affect. Womens companies muſt be ſhunned and thoughts of venereous matters; the patient ought not to lye upon a ſoft bed, but upon a quilt or matterice, and never, if he can helpe it, upon his back; boyled meats are better than roaſted, eſpecially boyld with ſorrel, lettuce, purſlain, cleanſed barly, & the four cold ſeeds beaten, for ſauce, let him uſe none, unleſſe the juice of an orange, pomgranate, or verjuice; let him ſhun wine, and in ſtead thereof uſe a decoction of barly and liquerice, a *hydrmoel*, or *hydroſaccharum* with a little cinamon, or that which is termed *Potus divinus*. In the morning let him ſup of a barly creame wherein hath beene boyled a *nodulus* of the foure cold ſeedes beaten together with the ſeedes of white poppy; for thus it refrigerateth, mitigateth and cleanſeth; alſo the ſyrups of marſh-mallowes and maiden-haire are good. Alſo purging the belly with halfe an ounce of *Caſſia*, ſometimes alone, otherwhiles with a dram or halfe a dram of Rubarbe in pouder put thereto, is good. And theſe following pils are alſo convenient. Pills. Rc. *maſſæ pilul. ſine quibus* ℈i. *rhei electi* ℥ß. *camphoræ gr.* iiii. *cum terebinthina formentur pilulæ*; let them bee taken after the firſt ſleep. Venice turpentine alone, or adding thereto

ſome

some Rubarbe in pouder, with oyle of sweet almonds newly drawne without fire, or some syrupe of maiden-hair is a singular medicine in this case, for it hath an excellent lenitive and cleansing faculty, as also to helpe forwards the expulsive facultie, to cast forth the virulent matter contained in the *prostatæ*. You may by the bitternesse perceive how it resists putrefaction and you may gather how it performes its office in the reines and urenary parts, by the smell it leaves in the urine after the use thereof. But if there bee any who cannot take it in forme of a bole, you may easily make it potable, by dissolving it in a mortar with the yolk of an egge and some white wine, as I learned of a certaine Apothecary, who kept it as a great secret. If the disease come by inanition or emptinesse, it shall be helped by fatty injections, oily and emollient potions, and inwardly taking and applying these things which have the like faculty, and shunning these things which caused the disease. How to cure that which happens by contagion, or unpure copulation, it shall bee abundantly shewed in the ensuing chapter.

The force of Venice turpentine in this disease.

How to bee made potable.

CHAP. XXI.

The proper cure of a virulent strangury.

FIRST we must begin with the mitigation of paine, and staying the inflammation, which shall be performed by making injection into the *urethra* with this following decoction warme. ℞. *sem. psilii, lactuca, papav. albi, plantag. cydon. lini, hyosciami albi, an.* ʒ ii. *detrahantur mucores in aquis solani & rosar. ad quantitatem sufficientem, adde trochisc. alborum Rhasis camphoratorum in pollinem redactorum,* ʒ i. *misce simul, & fiat injectio frequens.* For this because it hath a refrigerating faculty, will help the inflammation, mitigate pain, and by the mucilaginous faculty lenifie the roughnesse of the *urethra*, and defend it by covering it with the slimy substance, against the acrimony of the urine and virulent humours. In stead hereof you may use cowes milk newly milked, or warmed at the fire. Milk doth not only conduce hereto being thus injected, but also drunk, for it hath a refrigerating and cleansing faculty and by the subtlety of the parts it quickly arrives at the urenary passages. Furthermore it will be good to anoint with *cerat. refriger. Galeni addita camphora*, or with *ceratum santalinum*, *ung. comitissæ*, or *nutritum*, upon the region of the kidneyes, loines and *perinæum*, as also to anoint the Cods and Yard. But before you use the foresaid ointments or the like, let them be melted over the fire, but have a care that you make them not too hot, lest they should lose their refrigerating quality, which is the thing we chiefly desire in them. Having used the foresaid ointment, it will be convenient to apply thereupon some linnen clothes moistened in oxycrate composed *ex aquis plantaginis, solani, sempervivi, rosarum*, and the like. If the patient bee tormented with intollerable paine in making water, and also some small time after, as it commonly commeth to passe, I would wish him that he should make water putting his yard into a chamber-pot filled with milke or water warmed. The paine by this meanes being asswaged, we must come to the cleansing of the ulcers by this or the like injection. ℞. *hydromelitis symp.* ʒ iv. *syr. de rosis siccis, & de absinth. an.* ʒ ß. *fiat injectio.* But if there be need of more powerfull detersion, you may safely adde, as I have frequently tryed, a little *ægyptiacum*. I have also found this following decoction to bee very good for this purpose. ℞. *vini albi odoriferi,* ℔ ß. *aquar. plantag. & ros. an.* ʒ ii. *auripigmenti,* ʒ ß. *viridis æris,* ℈ i. *aloës opt.* ʒ ß. *pulverisentur pulverisanda, & bulliant simul.* Keep the decoction for to make injection withall. You may encrease or diminish the quantity and force of the ingredients entring into this composition, as the patient and disease shall seeme to require. The ulcers being thus cleansed, we must hasten to dry them, so that we may at length cicatrize them. This may be done by drying up the superfluous moisture, and strengthening the parts that are moistened and relaxed by the continuall defluxion, for which purpose

An injection to stay inflammation.

The faculties of milke against a virulent strangury.

How to make water without paine.

Detergent injections.

How the cleansed ulcers may be dryed.

pose this following decoction is very profitable. ℞. *aq. fabrorum*, ℔ i. *pfidiarum*, *balaust. nucum cupres. conquassatorum*, *aa.* ʒ i. *semin. sumach. & berber. an.* ʒ ii. *syrup. rosar. & de absinth. an.* ʒ i. *fiat decoctio.* You may keepe it for an injection to be often injected into the *urethra* with a syringe, so long as that there shall no matter or filth flow out thereat, for then there is certaine hope of the cure.

Chap. XXII.

Of Caruncles, or fleshy excrescences which sometimes happen to grow in the Urethra, *by the heat or scalding of the urine.*

How caruncles come to grow upon the ulcers of the genitall parts.

A Sharpe humour which flowes from the Glandules termed *Prostatæ*, and continually runs alongst the urenary passage, in some places by the way it frets, and exulcerates by the acrimony the *urethra* in men, but the necke of the wombe in women. In these, as also is usuall in other ulcers, there sometimes growes up a superfluous flesh, which oft times hinders the casting or comming forth of the seed & urine by their appropriate and common passage, whence many mischieves arise; whence it is that such ulcers as have caruncles growing upon them must be diligently cured. But first we must know whether they be new or old. For the latter are more difficultly to bee cured than the former, because the caruncles that grow upon them become callous and hard, being oft times cicatrized. Wee know that there are caruncles, if the *Catheter* cannot freely passe alongst the passage of the urine, but findes so many stops in the way, as it meets with Caruncles that stop the passage; if the patient can hardly make water, or if his water runne in a very small streame, or two streames, or crookedly, or onely by droppe and droppe, with such tormenting paine that he is ready to let goe his excrements, yea and oft times doth so, after the same manner as such as are troubled with the stone in the bladder. After making water, as also after copulation, some portion of the urine and seed stayes at the rough places of the caruncles, so that the patient is forced to presse his yard, to presse forth such reliques. Sometimes the urine is wholly stopped, whence proceeds such distention of the bladder, that it causeth inflammation, and the urine flowing backe into the body, hastens the death of the patient. Yet sometimes the urine thus suppresst, sweats forth preternaturally in sundry places, as at the fundament, *perinæum*, cod, yard, groines. As soone as we, by any of the forementioned signes, shall suspect that there is a Caruncle about to grow, it is expedient forthwith to use means for the cure therof; for a caruncle from a very little beginning doth in a short time grow so bigge, that at the length it becomes incureable, verily you may easily ghesse at the difficulty of the cure by that we have formerly delivered of the essence hereof, besides, medicines can very hardly arrive thereat. The fittest season for the undertaking thereof is the spring, and the next thereto is winter; yet if it be very troublesome, you must delay no time. Whilest the cure is in hand, the patient ought wholly to abstain from venery, for by the use thereof, the kidneyes, spermaticke vessels, *prostatæ*, and the whole yard, swell up and waxe hot, and consequently draw to them from the neighbouring and upper parts, whence aboundance 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 bee easily offended, whence might ensue many and ill accidents. Neither must wee be frighted if at some times wee see blood flow forth of secret or hidden caruncles. For this helpes to shorten the cure, because the disease is hindered from growth, by taking away portion of the conjunct matter, the part also it selfe is eased from the oppressing burden, for the materiall cause of caruncles is superfluous blood. Wherfore unlesse such bleeding happen of it selfe, it is not amisse to procure it by thrusting in a *Catheter* somewhat hard, yet with good advise. If the Caruncles be inveterate, and callous, then must they be mollified by fomentations, ointments, cataplasmes, plasters, and fumigations; you may thus a make fomentation, ℞. *rad. althæ. & lilior. alb. an.* ʒ iv. *rad. bryoniæ, & fœnicul.*

Callous caruncles hard to cure.

Signes.

The suppresst urine comes forth whereas it can get vent.

The fittest time for the cure.

Why venery must be eschewed.

The particular cure.

A fomentation.

nicul. an. ℥ j ß. *fol. malvar. violarum, parietar. & mercur. an.* m ß. *sem. lini, fænugr. an.* ℥ ß. *caricas ping.* nu. xii. *florum chamæm. & melil. an.* p i. *contundantur contundenda, & incidenda incidantur, bulliant omnia in aqua communi*: make a fomentation, and apply it with ſoft ſponges. Of the maſſe of the ſtrained-out things, you may make a cataplaſme after this manner. ℞. *prædicta materialia, terantur, & trajiciantur, adde axungia porci, unguenti baſilicons, an.* ℥ ii. *fiat cataplaſma*: let it be applyed preſently after the fomentation. You may uſe this following liniment whileſt the cataplaſme is providing. ℞. *unguenti alth. & agrippæ an.* ℥ ß. *æſipi humidæ, & axung. humanæ, an.* ℥ i. *butyri recentis, olei lilior. & chamæm. an.* ℥ vi. *liquefiant ſimul, addendo aquæ vitæ* ℥ ii. *fiat linimentum*: let it bee applyed outwardly upon the part wherein the Caruncles are. For the ſame purpoſe plaſters ſhall bee applyed, which may bee diverſified, and fitted as you ſhall thinke good; yet *Emplaſtrum de Vigo* truly made, exceedeth all the reſt in a mollifying faculty, and in waſting ſuch callous hardneſſe. The following fumigation is alſo good for the ſame purpoſe; take ſome pieces of a mille-ſtone (for this wee uſe in ſtead of the *pyrites* mentioned by the Ancients) or elſe ſome Brickes of a large ſize, after they are heated hot in the fire, let them be put into a pan, and ſet under a cloſe ſtoole, then cauſe the patient to ſit thereon, as if hee were going to ſtoole, then poure upon the hot ſtones equall parts of very ſharpe vinegar, and very good *Aqua vitæ*, and caſting clothes about him, that nothing may exhale in vaine: let him receive the aſcending vapour at his Fundament, *Perinæum, Scrotum*, and *Urethra*. Moreover, that this medicine may worke the better effect, you may put the Patient naked into the Barrell noted with this letter A. ſo that he may ſit upon a ſeate or borde perforated on that part, whereas his Genitalls are, then place the pan holding the hot ſtones between his legges; then preſently ſprinkle the ſtones with the forementioned liquor, by the doore marked with the letter, B. Thus the Patient ſhall eaſily receive the fume that exhales therefrom, and none thereof bee loſt, he covering and vailing himſelfe on every ſide. Such a fumigation, in *Galens* opinion, hath a faculty to penetrate, cut, reſolve, ſoften and digeſt ſcirrhous hardneſſes.

A cataplaſme.

A liniment.

Vigoes emplaſter effectuall to ſoften a caruncle.

A ſuffumigium.

Ad Glauc. lib. 2. cap. 5.

A Barrell fitted to receive the Fume in.



CHAP.

Chap. XXIII.

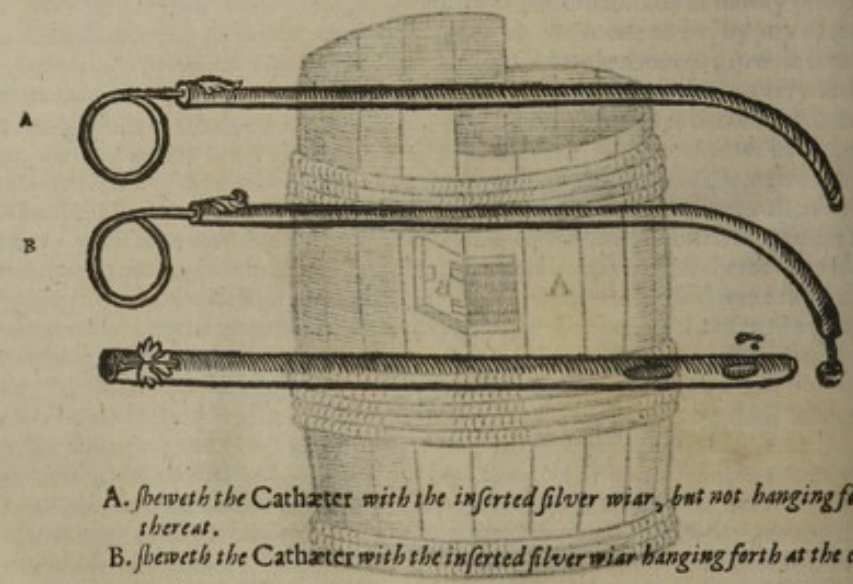
What other remedies ſhall be uſed to Caruncles occaſioned by the Lues venerea.

Particular defaults of the *Lues venerea* not to be cured unleſſe by the generall remedy of the virulency.

BUT if you ſuſpect that theſe Caruncles come or are occaſioned by a virulent humour, or the maligoity of the *Lues venerea*, it is meet that the patient obſerve ſuch a diet as uſually is preſcribed to ſuch as are troubled with the *Lues venerea*; let him uſe a decoction of *Guajacum*, and let the *perinæum* and the whole yard bee anointed with ointment made for the *Lues venerea*; otherwiſe the Surgion will loſe his labour. In the interim whileſt hee ſhall ſweat in his bed, he ſhall bee wiſhed to hold betweene his legges a ſtone bottle filled with hot water, or elſe a hot bricke wrapped in linnen cloathes, moiſtened in vinegar and *aqua vitæ*; for thus the heat and vapour will aſcend to the genitalls, which, together with the helpe of the applyed ointment, will diſſolve the matter of the Caruncles, and being thus ſoftened, they muſt be conſumed with convenient medicines. Wherefore firſt if they become callous, or cicatrized (which you may ſuſpect if they caſt forth no excrementitious humidity) they ſhall be exaſperated, excoriated and torne with a leaden *Cathæter* having a rough button at the end like a round file. He ſhall ſo long uſe the *Cathæter* put into the *Urethra*, thruſting it up and downe the ſame way ſo long and often as hee ſhall thinke fit for the breaking and tearing the Caruncles, hee ſhall permit them thus torne to bleed freely, ſo to eaſe the affected part. You may alſo for the ſame purpoſe put into the *Urethra* the *Cathæter* marked with this letter B. whereinto putting a ſilver wiar 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 meanes I have helped many much perplexed with the teareſull danger of this diſeaſe. Some better like of the *Cathæter* marked with the letter A. being thus uſed: it is thruſt into the *Urethra* with the prominent cutting ſides downewards, and then preſſing the yard on the outſide cloſe with your hand to the *Cathæter* in the place where the Caruncles are, it is drawn forth againe.

Caruncles if callous, muſt firſt be ſoftened.

Cathæters fit to weare aſunder, or teare Caruncles.



A. *ſheweth the* Cathæter *with the inſerted ſilver wiar, but not hanging forth thereat.*

B. *ſheweth the* Cathæter *with the inſerted ſilver wiar hanging forth at the end.*

A pouder to waſte caruncles.

The thus torne Caruncle ſhall bee ſtrawed over with the following pouder, being very effectuall to waſte and conſume all Caruncles of the privities without much paine. ℞. *herb. ſabin. in umbra exſiccat.* ℥ ii. *ocræ, antimon. tuth. præparat. an.* ℥ ß. *fiat pulv. ſubtiliſſimus*, let it bee applyed in the following manner. Put the powder into the

the pipe or *Cathæter* having holes in the ſides thereof, the which is the lowermoſt of the laſt deſcribed. Then put the *Cathæter* into the urenary paſſage untill the ſlit or openneſſe of the ſide come to the Caruncle, then into the hollowneſſe of the *Cathæter* put a ſilver wiar, wrapped about the end with a little linnen ragge, which as it is thruſt up, will alſo thruſt up the pouder therwith, untill it ſhall come to the ſlit againſt the caruncle, then will it adhere to the caruncle, bloody by reaſon of the late attrition. Then ſhall you draw forth the *Cathæter*, firſt twining it about, that ſo it may not ſcrape off the pouder againe. If intollerable paine hereupon happen, it ſhall bee aſſwaged, and the inflammation reſtrained by the following injection. Rc. *ſuccorum portulacæ, plantag. ſolani, & ſempervivi, an.* ℥ ß. *albumen ovorum*, nu. vi. *agitentur diu in mortario plumbeo*; let it be injected warme into the *urethra* with a ſyringe. In ſtead hereof you may alſo make uſe of another injection, which is formerly preſcribed. Neither will it be unprofitable to apply repercuſſives to the genitalls, to hinder pain and inflammation. You may alſo uſe other medicines, having a faculty to conſume the Caruncle, amongſt which theſe following are excellent. Rc. *viridis æris, auripigmenti, vitriol. Rom. aluminis roch. an.* ℥ ii. *infundantur omnia in acet. acerrimo, atque inter duo marmora in pollinem redigantur*: then let it be expoſed to the ſummer ſunne, and dryed, againe infuſed in ſharp vinegar, and then as before grownd upon a marble, ſo that you ſhall finde nothing ſharpe with your fingers, laſtly let it be oppoſed to the ſunne untill it may bee made into moſt ſubtle pouder, and all the acrimony be vaniſhed, which will be commonly in eight dayes ſpace. Then, Rc. *ol. roſat.* ℥ iv. *lythargyri* ℥ ii *coquantur ad ignem, quouſque coierint in emplaſt. ſolidæ conſiſtentiæ, ab igne tum ſemotis, adde pulv. prædict.* ℥ ii. let them bee mixed with a ſpatula, and put upon the fire untill it come to ſo hard a conſiſtence, that it will ſticke to a waxe candle, or lead wiar, ſo that it may not come off by handling with your hands. The Surgeons of *Montpelier*, uſe this medicine: This following is another, Rc. *tuthiæ præpar.* ℥ vi. *antimonii*, ℥ iii. *trochiſc. alborum, Rhaſ. camphorat.* ℥ i. *corticis granati, aluminis uſti, an.* ℥ i ß. *ſpongiæ uſtæ*, ℈ ii. let them all be made into pouder: then, Rc. *ung. diapompholigos, & alb. Rhaſis, an.* ℥ ii. *miſceantur cum prædictis pulveribus in mortario plumbeo, & diu agitentur*: let a very fine ragge bee ſpread over with this ointment, and wrapped about a waxe candle, and ſo thruſt into the *Urethra*, and then draw forth the candle againe by twining it a contrary way; ſo let the end of the ragge hang out of the yard, ſo to plucke it forth againe, when as you ſhall thinke it hath done what it can to the Caruncle, which is, when it hath covered it with the medicine with which it was ſpread. Some alſo make waxe candles with a ſlender, but ſtiffe weeke, whoſe end, which is to be put to weare and conſume the Caruncle, is compoſed of the following medicine. Rc. *emplaſtri nigri, vel diachylonis ireati* ℥ ii. *pul. ſabinæ, ocræ, vitriol. Rom. calcin. pul. mer. an.* ℥ ß. *omnia liqueſcant ſimul ad dictum uſum.* Whileſt the cure ſhall bee in hand by theſe following medicines, let the patient bee carefull that he ſo ſhake his yard after making water, that he may ſhake forth all the reliques of the urine which may chance to ſtoppe at the Caruncles; for if but one droppe ſhould ſtay there, it would be ſufficient to ſpoile the whole operation of the applyed medicines. After that the Caruncle ſhall bee worne away and wholly conſumed by the deſcribed medicines, which you may know by the urine flowing forth freely, and in a full ſtreame, and by thruſting up a *Cathæter* into the bladder without any ſtoppage; then it remaines that the ulcers be dryed & cicatrized; for which purpoſe the following injection is very powerfull and effectuall, and without any acrimony. Rc. *aq. fabrorum* lb ß. *nuc. cupreſſ. gallar. cort. granat. an.* ℥ i ß. *alum. roch.* ℥ ß. *bulliant omnia ſimul ſecund. art.* ſo make a decoction for an injection, which you ſhall uſe ſo long, untill no excrementitious humidity diſtill out of the yard. The following pouder dryes more powerfully, and conſequently haſtens forwards cicatrization, and it is alſo without acrimony. Rc. *lapidem calamin. lotum, teſtas ovorum uſtas, corallum rubrum, corticem granat. comminue omnia in pollinem*; let this pouder be uſed to the ulcers, with a waxe candle joyned to ſome *unguentum deſiccativum rubrum*, or ſome ſuch like thing. Alſo ſtrings or rods of lead thruſt into the *urethra* as thicke as the paſſage will ſuffer, even to the ulcers, being firſt beſmeared with quickſilver, and kept in day and night as long as the patient can endure, are good to be uſed. For

How to apply it.

An injection to hinder inflammation.

An emplaſter uſed by the Surgeons of *Montpelier* for Caruncles.

Another emplaſter.

How to apply it.

A caution in making water.

Signes that the Caruncle is worne away.

An epuloticke injection.

Quickſilver by drying cauſeth cicatrization.

they dry by their touch and cicatrize, they dilate the urenary passage without paine, and lastly hinder the sides of the ulcer from corrupting one another.

Chap. XXIIII.

Of venereall Buboes, *or swellings in the Groines.*

The efficient and materiall causes of venereous Bubo's.

THe virulency of the *Lues venerea* is sometimes communicated to the Liver, which if it have a powerfull expulsive faculty, it expells it into the groines, as the proper emunctories thereof, whence proceed venereall Bubo's. The matter of these for the most part is abundance of cold, tough, and viscous humours, as you may gather by the hardnesse and whitenesse of the tumour, the pravity of the paine, and contumacy of curing; which also is another reason, besides these that wee formerly mentioned, why the virulency of this disease may bee thought commonly to fasten it selfe in a phlegmaticke humour. Yet sometimes venereall Bubo's proceed from a hot, acride and cholericke humour, associated with great pain and heat, and which therupon often degenerate into virulent & corroding ulcers. Some venereous Bubo's are such conjoyned accidents of the *Lues venerea*, that they foretell it; such are these which for a small while shew a manifest tumour, and suddenly without any manifest occasion hide themselves againe, and returne backe 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 be healed, the *Lues venerea* yet remaining uncured. Such are these which are usually seen, and which therefore compared with the former may be termed simple and not implicit. For the cure, you must not use discussing medicins, lest resolving the more subtle part, the grosser dregs become impact and concrete there; but much lesse must we use repercussives, for that the matter is virulent. Wherefore onely atrractive and suppurating medicines are here to bee used, agreeable to the humour predominant and causing the tumour, as more hot things in ædematous and scirrhous tumours, than in those which resemble the nature of a *phlegmon* or *erysipelas*: the indication taken from the rarity and density of bodies insinuates the same variety. The applying of cupping glasses is very effectuall to draw it forth. But when as it is drawne forth, you shall forthwith apply an emplasticke medicine, and then you shall come to suppuratives. When the tumour is ripe it shall be opened with a potentiall cautery, if it proceed from a cold cause; 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 any tent, but onely to apply pledgets. The residue of the cure shall bee performed by detergent medicines, and then if need require, the patient shall be let blood, and the humours evacuated by a purging medicine, but not before the perfect maturity thereof.

What Bubo's foretell the *Lues venerea*.

Cupping.

A potentiall Cautery.

Chap. XXV.

Of the Exostosis, *bunches or knots growing upon the bones by reason of the* Lues Venerea.

The matter of knots, and virulent *Tophi*.

HArd Tumours, *Exostoses* and knots have their matter from thicke and tough phlegme, which cannot be dissolved, unlesse by hot medicines, which have a mollifying & dissolving faculty. For which purpose, besides those medicines which usually are applyed to scirrous tumours, you must also make use of *arg. viv.* commonly after this manner. ℞. *empl. filii Zach. & Ceronei, an.* ℥iii. *euphorb.* ℥ß. *emplast. de vigo,* ℥ii. *cerat. æsyp. descript. Philagr.* ℥i. *argent. vivi extinct.* ℥vi. *fiat emplastrum.* Spread it upon leather for your use. In the meane space let the patient observe a sparing dyet; for thus hee shall bee helped,

An emplaster against the bunching out of the bones.

helped, if ſo be that the ſubſtance of the bones be yet unperiſhed. For if it be putrefyed & rotten, then the deſcribed medicines are of no uſe, but you muſt of neceſſity lay bare the bone, either by inciſion, or elſe by an actuall or potentiall cautery; but I had rather doe it with an actuall, for that it extracts the virulency impact in the bones, as alſo it haſtens the abſceſſe, or falling away of the corrupted bone. It ſhall be of a convenient figure to cauterize the bone, as, round, ſquare or long. I uſually, before the application of ſuch a Cauſtick, firſt divide the fleſh that lyes over it with an inciſion knife, that ſo the paine may be the leſſe, becauſe the fleſh cannot be burnt through but in a long time, by which the fire may come to the bone. But it will not bee amiſſe, before wee treat of this art, firſt to conſider the nature of the rottenneſſe of the bones.

Chap. XXVI.

Why the bones become rotten, and by what ſignes it may be perceived.

That ſolution of Continuity which is in the bones, is called by *Galen*, *Catagma*. This uſually is the cauſe of rottenneſſe; for, bones that are grated, bruiſed, rent, perforated, broken, luxated, inflamed and diſpoiled of the fleſh and skin, are eaſily corrupted; for diſpoyled of their covering, they are altered by the appulſe of the aire, which they formerly never felt, whence alſo their bloud and proper nouriſhment is dryed up and exhauſted. Beſides alſo, the *ſanies* running downe by reaſon of wounds and old ulcers, in proceſſe of time, faſtens it ſelfe into their ſubſtance, and putrefies by little and little; this putrefaction is encreaſed and cauſed by the too much uſe of oily and fatty medicines, as moiſt and ſuppurate things; for hence the ulcer becommeth more filthy and maligne, the fleſh of the neighbouring parts groweth hot, is turned into *pus*, which preſently falling upon the bone lying under it, inflames it. Laſtly, the bones are lubject to the ſame diſeaſes, as the fleſh that lyeth under them is; beſides alſo according to *Galen*, the beginning of inflammation oft-times proceeds from the bones; but they beat not, becauſe, according to the opinion of the ancients, pulſation is a dolorificke motion of the Arteries, but the bones want ſenſe. Which verily I cannot deny, but alſo we muſt confeſſe that the membrane that encompaſſeth them, and the arteries that enter into their body, are endued with moſt exquiſite ſenſe. Wherefore the arteries compreſſed and waxing hot by reaſon of the inflamed bone, cauſe a ſenſe of paine in the *perioſtium*, ſo that the patients complaine of a dull and deepe paine, as it were ſunke into the ſubſtance of the bones. The rottenneſſe or corruption is oft-times manifeſt to the eye, as when the bone is laid bare, for then it varieth from the naturall colour, and becomes livide, yellowiſh or blacke. Otherwiſe you may perceive it by touch, as by ſearching it with a probe, as when you meet with any inequality or roughneſſe, or when by but gently touching it, your probe runs into the ſubſtance of the bone, as into rotten wood, for a bone is naturally hard, but being rotten, becomes ſoft. Yet hardneſſe is not an infallible ſigne of a ſound bone. For I have ſeene rotten and bared bones, to have ſometimes growne ſo hard, by the appulſe of the aire, that a Trepan could not, without a ſtrong endeavour, enter them. Alſo the rottenneſſe of the bone is known by the condition of the filth which flowes forth of the ulcer, for it is not onely more thin and liquid, but alſo more ſtinking. Furthermore, ſuch ulcers have a ſoft, looſe and watery fleſh; beſides alſo, they are untoward and rebellious to ſarcotick & epuloticke medicines; to which if they chance to yeeld and be cicatrized, yet within a ſhort while after the ſcarre will relent of its own accord, for that nature, deſtitute of the firm and ſound foundation of the bones, cannot build up a laudible and conſtant fleſh. Neither is it ſufficient that the Surgeon know certainly that the bone is rotten and corrupt, it is furthermore fit he know, whether this corruption be ſuperficiary, or pierce deepe into the ſubſtance of the bone, that he may know how much of the bone muſt bee ſcailed. For ſcailing is the onely cure of that which is corrupted; now it is ſcailed by that which dryes ex-

Gal. meth. 6.

The frequent cauſe of the rottenneſſe of bones.

Hip. lib. de ulc. & fract. Gal. lib. de tum. cont. nat.

Signes of the rottennеſſe.

Hardneſſe is no infallible ſigne of ſound bones.

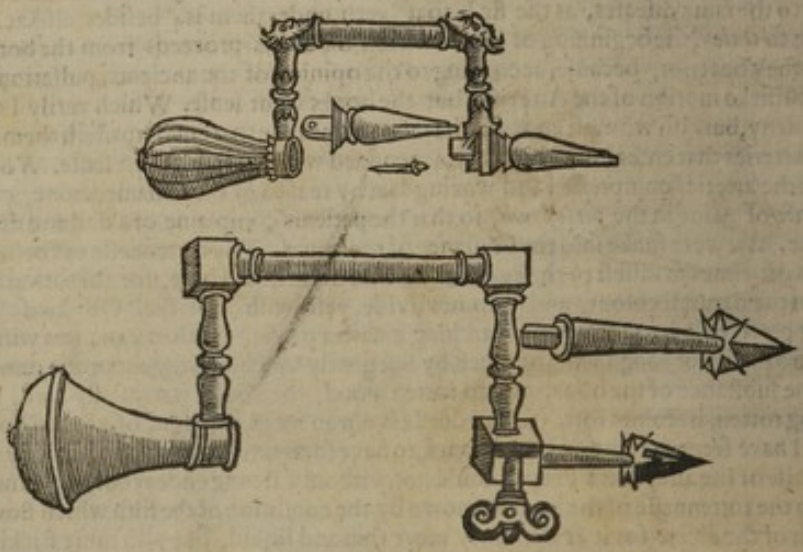
The cure of a rotten bone.

ceedingly, and drawes forth all the humidity, aſwell the excrementitious, the author of the rottenneſſe, as the alimentary. For thus it remaines without bloud and nouriſhment, and conſequently life alſo; whence it muſt of neceſſity ſcaile or fall off, being deſtitute of the glue or moiſture which joyned it to the ſound parts in vicinity and communion of life, like as leaves which fall away from the trees, the humidity being exhauſted, by which, as by glue, they adhered to the boughes. For this purpoſe Catagmatick powders are prepared to amend the corruption which is onely ſuperficiary. R. *pul. aloes, cretæ combuſtæ, pompholygos, an.* ℥ii. *irecs flor. ariſtoloch. rot. myrrh. ceruſſæ, an.* ℥i. *pul. oſſeor. combuſt.* ℥ß. *terantur ſubtiliſſ. fiat pulvis*; let it bee applyed either alone by it ſelfe, or elſe with hony and a little *aqua vitæ*. Alſo the following emplaſter being applyed, ſtirs up nature to the excluſion of the broken bones, and cleanſeth the ulcers from the more groſſe and viſcide *ſanies*. R. *cer. nov. reſ. pini, gum. ammon. & elemi, an.* ℥vi. *tereb.* ℥iii. *pul. maſtich. myrrh. an.* ℥ß. *ariſtol. rot. ireos flor. aloes, opopan. euphorb. an.* ℥i. *olei roſati quantum ſufficit, fiat emplaſt. ſecundum artem. Euphorbium*, according to *Dioſcorides*, takes off the ſcailes of bones in one day. Hereto alſo conduceth *Emp. de betonica*. Or, R. *olei caryophyl.* ℥ß. *camph.* ℥ii. *miſceantur ſimul in mortario, & utere*. But if that part of the bone which is corrupt cannot thus be taken away, then muſt you uſe the ſcailing Trepans and Scrapers deſcribed formerly in wounds of the head; eſpecially if any more great or ſolid bone bee foule. Furthermore the here deſcribed Trepan will be good to perforate the rotten bone in many places where it is corrupted, untill, as it were, a certaine bloudy moyſture iſſue forth at the holes; for thus it more freely enjoyes the aire, and alſo the force of the medicines admitted by theſe holes works more powerfully.

A catagmatick powder.

A deſquamatory or ſcailing plaſter. *Dioſc. lib. 3. cap. 78.*

A Trepan with two triangular bits & a pin to hold them in the ſtocke: as alſo another Trepan having foure-ſquare & ſixe-ſquare bits conveniens for to be uſed in the rottenneſſe of greater bones.



But if the rottenneſſe be more deepe, and the bone more hard, either by nature or accident, as by the occaſion of the too long admiſſion of the aire, then the rotten ſcailes ſhall bee cut off by the inſtruments deſcribed in wounds of the head, driving them into the bone with leaden mallets, leſt the part ſhould bee too much offended or ſhaken with the blow. The ſcailes and fragments ſhall bee taken forth with mullets, the ſignes that all the rottenneſſe is taken away, are the ſolidneſſe of the bone thereunder, and the bloudy moiſture ſweating out thereat.

Signes that the rottenneſſe is taken away.

Chap.

Chap. XXVII.

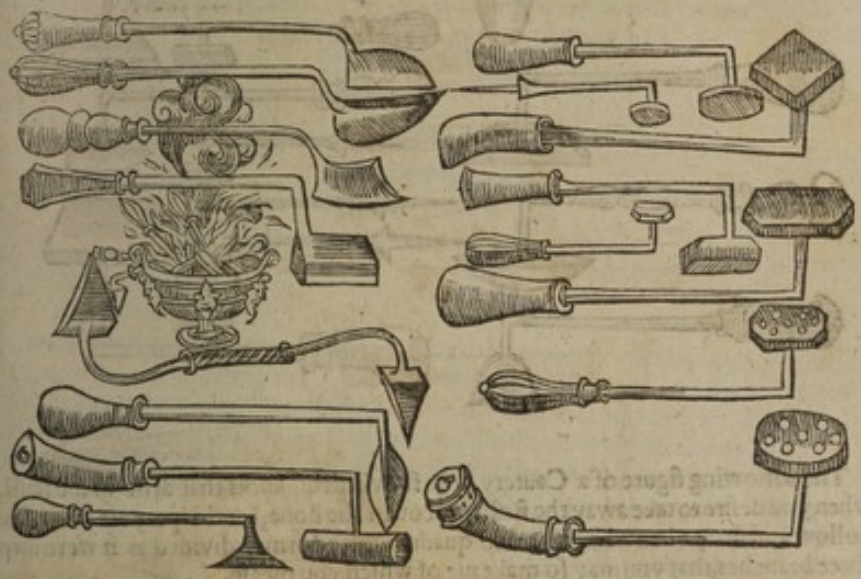
Of actuall & potentiall Cauteries.

BUT if the described remedies cannot take place, by reason of the malignity or magnitude of the rottennesse, then must wee come to actuall and potentiall cauteries. But I should rather approve of actuall, because by strengthening the part, they consume the excrementitious humours wherewith it is overcharged, to wit, the matter of the *Caries*; which is not so effectually performed by potentiall cauteries. Yet are we oft-times forced to use these, to please the patients which are terrified at and affraid of hot irons. Potentiall Cauteries are *aqua fortis*, *aqua vitrioli*, scalding oyle, melted *sulphur* and boyling, and the like; in pouring on of which I would have the Surgeon to bee prudent and industrious, lest he should rashly violate the neighbouring sound parts by the burning touch of these things; which his temerity would cause vehement paines, inflammations and other horride symptomes. For actuall cauteries, their variety in figure is so great, that it cannot bee defined, much lesse set downe in writing; for they must be varied according to the largenesse of the rottennesse, and the figure and conformation of the fouled bones. Such as are more usuall I have thought good here to delineate unto you, content onely to admonish you thus much, that some of these work by pricking, some by cutting, some flatwise, and other some with their points made to the forme of an Olive leafe.

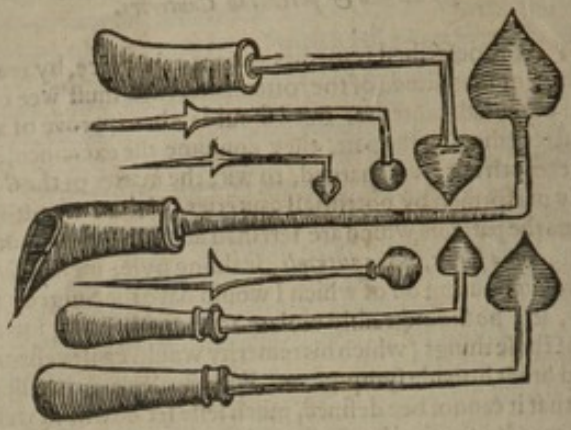
Actuall Cauteries to be preferred before potentiall.

Potentiall Cauteries.

Sundry formes of actuall Cauteries fit in all necessary cases of all parts.



Other Cauteries.

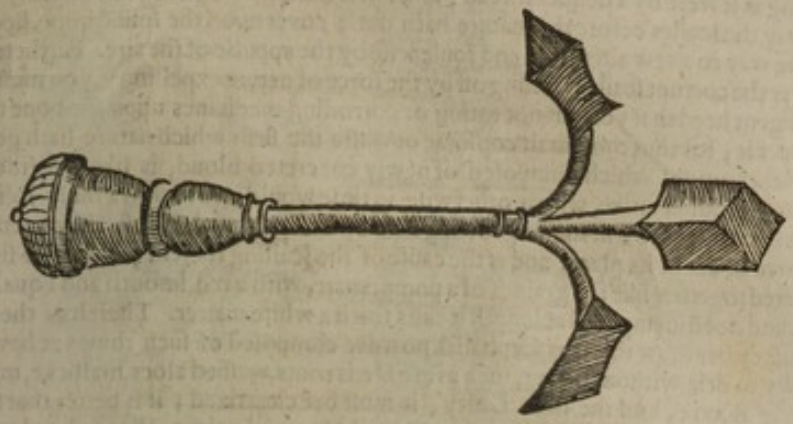


Other Cauteries for the same purpose.



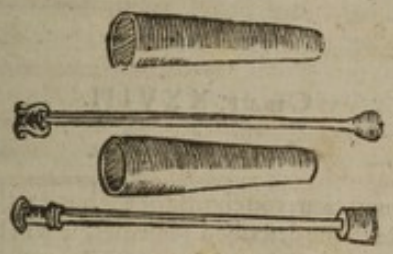
The following figure of a Cautery is fit for virulent knots that arise in the scull, when you desire to take away the flesh that covers the bone; for this purpose it is made hollow and sharpe in a triangular and quadrangular forme, divided as it were into three branches, that you may so make use of which you please.

The figure of a hollow and cutting Cauterie.



The Cauteries whose formes are hereafter expreſt take place in rotten bones that lye deep in, wherein you cannot make uſe of the formerly deſcribed without touching of the neighbouring ſound parts. To avoyd which danger you ſhall put your Cautery even to the bone through an iron pipe, which may keep the neighbouring and fleſhy parts from burning.

Actuall Cauteries with their pipes.



Great diſcommodities enſue upon too raſh, that is, too frequently applyed Cauteries, or too long adhering to the bone; for by this immoderate and fiery heat not onely the excrementitious humidity of the rotten bone is conſumed, but alſo the radicall and ſubſtantiall moiſture of the part is exhauſted, wherein alone nature, endeavouring to caſt off the corrupt ſcailes, and ſever the ſound from the rotten bone, and to ſubſtitute fleſh, ſtands and conſiſts. Whereof, the meaſure of applying of Cauteries ought to be taken from the greatneſſe of the rottenneſſe, and the excrementitious, or after a manner foaming humidity ſweating through the pores of the bone. But before you preſſe your cautery into the rotten bone which lies very deep in, as that which happens in the thigh bone, and upon other very fleſhy parts, you muſt diligently defend the neighbouring, ſound and fleſhy parts, as it were with a covering, for that the humour diffuſed by the touch of the fire, burns the other places whereunto it diffuſeth it ſelfe like ſcalding oyle. After the cauterization you muſt helpe forwards the falling away of the ſcailes, by ſometimes dropping in out oyle of whelpes, being made ſcalding hot. This oyle, though very fit for this purpoſe, yet doe I not iudge it fit to uſe it too often, it may ſuffice to have dropped it in ſome twice or thrice. For at length it may violate the ſound bone, that lyes under the rotten, by the oyly, ſubtle and moiſt ſubſtance. Furthermore, a bone is the moſt dry part of the body, therefore unctuous and moiſt medicines are contrary to its temper and conſiſtence. But it conduceth often and gently to move the ſcailes already

Manner of applying of Cauteries.

Oile of whelpes helps forwards the caſting off of ſcailes.

ready beginning to separate themselves, and it hastens the slackenesse of nature in casting them off. Yet may you not use force, unlesse peradventure when as they hang as it were by a slender thread; otherwise if the unwary Surgeon forcibly pluck away the scailes before that nature hath put a cover upon the sound bone, hee shall give way to a new alteration and foulenesse by the appulse of the aire. Furthermore, after the corrupt scaile 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 bloud, is like in softnesse to newly crudled milke, which otherwise in time would grow into a more solid and hard consistence. This undergrowing flesh by little and little thrusts the rotten bone above it, out of its place; and is the cause of the scailing thereof; it is at the first gathered together like the graines of a pomgranate, with a red, smooth and equall *sanies*, and not stinking, and at length it casts forth a white matter. Therefore then wee must rather straw thereon Cephalick powder composed of such things as have a faculty to drie without biting, such as are Orris roots, washed aloes, masticke, myrrhe, barly flowre, and the like. Lastly, it must bee cicatrized; it is better that scailes of bones fall away of themselves by the onely force of nature, than to be plucked away by the force of medicines or instruments; becausse, such as are too violently and forcibly plucked away, leave 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 acride medicines; for paine hereupon arising, hath divers times caused inflammation, convulsion and other pernicious sympromes. Therefore it is better to commit this businesse to nature, which in succesſe of time, by making use of the expulsive faculty, will easily free it selfe from this rotten substance; for that which is quick as farre as it is able, will still put away that which is dead from it.

A caution in moving the scailes of burnt bones.

Cephalick powders of what composed.

Chap. XXVIII.

Of a vulnerary potion.

But if the contumacious rottennesse of the bone and also a rebellious ulcer shall not yeeld to the described remedies, it will bee convenient to prescribe a vulnerary potion to the patient. For nature helped by such a potion, hath to my knowledge sundry times done wondrous things, in the amendment of corrupt bones, and consolidation of ulcers. For these potions though they doe not purge the noxious humours away by stoole, yet are they wondrous effectuall to cleanse ulcers, and free them from the excesse of excrementitious humours, to cleanse the bloud, and purge it from all impurity, to agglutinate broken bones, and knit the sinewes. I have here thought good to speake of them, and chiefly, for that they were much commended by the Ancients, but neglected by the moderne Physicians and Surgeons. But if the cure of wounds and old ulcers be performed by detersion, and the reposition of the lost substance, what medicine can sooner or rather do it than that, which by its admirable and almost divine force so purgeth the bloud, that thereof, as from a fit and laudible matter, the flesh or any other lost substance may be fitly restored, and the part recover its former union? But if fistulous Ulcers, Cancers, Gouts & the like diseases be offended by the use of salt, spiced, acride meates and others which are of subtle parts, as mustard, onions and garlike, or any other excesse in meat, or drinke; why may they not become milde and gentle by medicated and contrary meats and drinks, or at least bee reduced to a more equall 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 vulnerary potions.

Scabious.

Scabious.	*The capillaryes.*
Sanicle.	*Herbe Robert.*
Bugle.	*Doves foot.*
Mouſ-eare.	*Dogges tongue.*
Burnet.	*Avenes.*
Madder.	*Prunella.*
Tanſie.	*Oſmund.*
Tops of hempe.	*Clarye.*
Tops of Brambles.	*Gentian.*
Sowes bread.	*Herniaria.*
Comfory the greater and leſſer.	*Red Colewurt or Cabbage.*
Vervine.	*Scordium.*
Biſſorte.	*Cattes minte.*
Mugwurte.	*Cinque foile.*
Periwincle.	*River Crabs.*
Centaury.	*Mace.*
Adders tongue.	*Bolearmenick.*
Betonie.	*Petum or Tobacco.*
Carduus benedictus.	*Mead-ſweet.*
The cordiall flowers.	*Colts-foot.*
Ariſtolochia, or Birth-wurts.	*Dandelion.*
Speedwell.	*Plantaine.*
Agrimonie.	*St. Johns wurte.*

Of all theſe the Surgeon ſhall make choice according to the mind and judgement of the Phyſician, ſuch as he ſhall thinke fit and proper to every 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 diſeaſe. You may make drinkes not only of the decoctions of theſe, but alſo of their juices in white wine, or *œnomel*, which are good not onely to purifie the maſſe of the bloud, to cleanſe ſanious, virulent, filthy and diſſenterious ulcers, but alſo to drive away putrefaction, ſcail bones, diſſolve clotted bloud in bruiſes, to draw, plucke out and exterminate all ſtrange bodies, as I have often obſerved to my great admiration. They are compoſed uſually after this manner. ℞. *ſavic. bugul. ſcabioſ. beton. ſcord. neper. an.* m. ß. *uvar. mund. ſem. hyper. & card. ben. an* ℥i. *trium flor. cord. an.* p. ii. *coquantur complete in aq. communi; poſtea in ſine adde vini alb. mel. roſ. & cinnam. quod ſufficit, fiat decoctio, colatur per manicam.* Let him drink ℥iii. in the morning 3. houres before dinner. You may alſo with good ſucceſſe make injections with the ſame liquor into fiſtulous and ſinuous ulcers, as alſo to waſh the ſordid ulcers therewith. You may alſo boile the ſame ſimples, as herbs, flowers and ſeeds in the patients broths, that ſo they may acquire a medicinable and nouriſhing faculty. For the time of the affect, wherein you may with good ſucceſſe make uſe of theſe, we have read in *Guido*, that he 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 bloud, whence there would be danger of a defluxion, upon the affected part. Wherefore when the matter is come to ſuppuration, when as there nothing remains, but to cleanſe the ulcer and fil it with fleſh, no inflammation as now remaining in the part, I judge theſe potions may then be uſed with good ſucceſſe.

The forme of a vulnerary potion.

In what time of the diſeaſe they are chiefly to be uſed.

CHAP.

Chap. XXIX.

Of Tetters, Ring-wormes or Chops occasioned by the Lues venerea.

Upon the cure of the *Lues venerea*, usually Tetters and Chops happen thereupon, which make furrowes in the palmes of the hands & soles of the feet. They acquire their matter from salt phlegme, or adust choler, or the reliques of the venereous virulency sent thither. The cure especially when as the disease is grown old, is difficult, by reason that the humour hath long accustomed to flow that way, & for that it hath corrupted the habite of the part by the continuall defluxion; but the cure is more easie if the disease bee newly bred. Now you may know it is newly bred by the redness, accompanyed by a great itching, and not only a drines of the skin, but also a thickness & denseness thereof. That which is old, besides these fore-recited signs, have scaily & branlike hardnesses conjoined therewith, which by scratching & rubbing cast off scailes. For general medicines, the distemper of the liver & habit of the body must be corrected, which by the occasion of the former disease & remedies apt to inflame the bloud, cannot but much swerve from their native temper. This may be done by diet conveniently appointed, by purging and altering medicines, bleeding, bathing, applying of cupping-glasses and horns. For topick or particular medicines, wash such as are newly or lately bred with the following water which dries and is of subtle parts. ℞. *aq. ros. & pariet. an* ℥i. *aq. alum.* ℥ii. *calc.* ℥ii. *alum.* ℥iii. *pul. subl.* ℈iiii. *fiat lent. et munim. ebul. in baln. mar.* This water shall bee made more or lesse forcible according to the condition of the disease. Or, ℞. *ol. tart.* ℥ii. *sp. com.* ℥iv. *misc. fiat unguent. ad usum.* If the Physician shall think good, let the patient use a decoction of *Guajacum*, but that very weak. But old Tetters and Chops must be softned with emollient, attenuating and inciding decoctions, as also with liniments, ointments and plasters having the same effect. Then let the residue of the cure be performed by fumigations, such as this which followes. ℞. *pul. cinab.* ℥ii. *lad. ass. odor. stirac. cal. an.* ℥ß. *olib. mastic. an* ℥iii. *olei tart. & theriac. q. s. fiant trochisci*; use at each time some ℥ß. of them, and let only the affected parts receive the smoak. Some commend the rubbing of the hands with the following medicine. Take the ashes of wine lees, make thereof a lie, & strain it though an hypocras bag, then put thereto some renner, let them be well mixed together in a mortar, and herewith let the hands be rubbed or washed. Or, ℞. *unguent. ennul.* ℥iii. *fugit.* ℥ii. Or else, ℞. *ref. pini*, ℥i. *cerus.* ℥ß. *argent. viv.* ℥iii. *succi citri & lapath. acut. an.* ℥ß. Let them be incorporated & make a liniment to be used to the part. If to this you adde sublimate so washed & prepared, as women use for their faces, you shall make it more effectuall. Others take burnt alume made into powder, and incorporated with the yolke of an egge, the juice of Citrons, and a little aloes dissolved in *oxymel scilliticum*.

Signes of the new bred disease.

The cure of newly come Tetters.

A water drying virulent tetters.

The cure of old tetters.

A Fumigation.

A Liniment.

Chap. XXX.

Of curing the Lues Venerea *in infants and little children.*

Infants oft-times conceive the seeds of this disease in the wombs of their mothers, and are borne infected therewithall, pustles presently arising over all the bodies, infecting with the like disease as many nurses as give them suck; they scarce ever recover thereof, for that they contracted the disease from their first conformation. But such as are somewhat bigger, if they chance to catch the disease after they are born by sucking som infected nurse, or by any other occasion or kind of contagion, often times receive cure. For first, you shal cause the nurse to use the *aqua theriacalis* hereunder described, for the space of 20 or more daies, that so she may the better arm her self against the contagion of this disease, & yeeld milk which may have the faculty both of meat and medicine; she shall be carefull as often as she gives the child suck, to wash and dry her teat or pap, lest the virulency

The cure.

virulency that the child breathes out at his mouth, be impact in the little holes of the teat through which the milk flowes out. Now the puſtules of little children ſhall bee anointed with ſome ointment that receives *argentum vivum* in ſome ſmall quantity, as *unguentum enulatum cum mercurio*, or the like. Then ſhall it be ſwathed or bound up in ſwathes and clothes aired with the formerly deſcribed fumigations. For the reſt, it ſhall be kept as warm as you can in ſome warm place. Theſe & the like muſt be done not in one continued courſe, but at ſeverall ſeaſons, otherwiſe it is to be feared, that it would cauſe ulcers to ariſe in the mouth, or elſe ſalivation. If any ulcers ariſe in the mouth and ſpread therein, they ſhall be 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 be preſently changed, for it being otherwiſe nouriſhed with tainted and virulent bloud, can never be healed. Many have by theſe meanes recovered; but ſuch as have periſht, have not periſht by the default of medicines, but by the malignity and vehemency of the diſeaſe.

A deſcription of the aqua Theriacalis, *or treacle water formerly mentioned.*

℞. *raſur. interior. ligni ſancti gummoſi*, ℔ ii. *polypod. querni*, ℥ iv. *vini albi dulcedinis expertis* ℔ ii. *aquæ fontan. puriſſ.* ℔ viii. *aquar. cichor. & fumar. an.* ℥ iv. *ſem. junip.* A treacle water *heder. & baccar. lauri an.* ℥ ii. *caryophil. & macis, an.* ℥ ß. *cort. citri ſaccharo condit. conſ. roſ. anthos, cichor. bugloſ. borag. an.* ℥ ß. *conſ. annulæ camp. theriac. vet. & mithrid. an.* ℥ ii. diſtill them all in *balneo Mariæ* after the following manner. Let the *Guajacum* bee infuſed in equall parts of wine and the forementioned waters for the ſpace of twelve houres, and the reſidue of the things in that which remaines of the ſame wine and waters for ſixe houres ſpace, beating ſuch things as may require it, then let them bee mixed altogether, that ſo the liquor may be endued with all their faculties. Which that it may be the more effectually performed, let them be boyled, put up in glaſſe bottles cloſely ſtopped for ſome three or four hours ſpace, in a large kettle filled with boiling water, then let them be put into a glaſſe alembicke, and ſo diſtilled. Give ℥ iv. of this diſtilled liquor at once, being aromatized with ℈i. of cinamon, and ℈ i. of *Diamargariton*, and ℥ ß. of ſugar, to give it a pleaſing taſte. Such a drinke doth not onely retunde the virulency of the *Lues venerea*, but ſtrengthens the noble parts. *Rondeletius* makes an *aqua theriacalis* after this manner. ℞. *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*: reſerve the water for uſe; whereof let the patient take ℥ ii. with ℥ iii. of ſorrell and bugloſſe water: he wiſheth this to be done when he ſhall enter into bed or a ſtove; for ſo this diſtilled liquor will cauſe ſweat more eaſily, and mitigate paine, whether given by it ſelfe, or with a decoction of Grommell, or of *chyna*, or burre-docke roots; yet if the patient bee of a phlegmaticke conſtitution, hee ſhall uſe a decoction of *Guajacum* in ſtead of a decoction of *chyna*, for it penetrates more ſpeedily, by reaſon of its ſubtlety, of parts, and alſo expells the dolorificke matter.

The manner of making it.

Rondeletius his Treacle water.

The End of the Nineteenth Booke.

OF THE SMALL POCKS AND MEAZLES: AS ALSO OF VVORMES AND THE LEPROSIE.

THE TWENTIETH BOOKE.

CHAP. I.

Of the causes of the Small Pockes and Meazles.

FOR that the small Pocks and Meazles are diseases, which usually are forerunners and foretellers of the plague, not only by the corruption of humours, but oft times by default of the aire; moreover, for that wormes are oft times 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 humours in the body. Now the small pocks are pustles, and the meazels spots which arise in the top of the skinne by reason of the impurity of the corrupt blood sent thither by the force of nature. Most of the Antients have delivered that this impurity is the reliques of the menstruous blood remaining in the body of the infant, being of that matter from whence it drew nourishment in the wombe, which lying still or quiet for some space of time, but stirred up at the first opportunity of a hotter summer, or a southerly or rainy season, or a hidden malignity in the aire, and boyling up, or working with the whole masse of the blood, spread or shew themselves upon the whole surface of the body. An argument hereof is, there are few or none who have not beene troubled with this disease, at least once in their lives, which when it begins to shew it selfe, not content to set upon some one, it commonly seazeth upon more: now commonly there is as much difference betweene the small pockes and meazles, as there is between a Carbuncle and a pestilent *Bubo*. For the small pocks arise of a more grosse and viscous matter, to wit, of a phlegmaticke humour. But the meazles of a more subtle and hot, that is, a cholericke matter, therefore this yeilds no markes thereof, but certaine small spots without any tumour, and these either red, purple, or blacke. But the small pockes are extuberating pustles, white in the midst, but red in the circumference, an argument of blood mixed with chol-

What the small pockes and Meazles are. Their matter.

ler, yet they are ſcarce knowne at the beginning, that is, on the firſt or ſecond day they appeare; but on the third and fourth day they bunch out and riſe up into a tumour, becomming white before they turne into a ſcab; but the meazles remaine ſtill the ſame. Furthermore the ſmall pockes pricke like needles by reaſon of a certaine acrimony, and cauſe an itching; the meazles doe neither, either becauſe the matter is not ſo acride and biting, or elſe for that it is more ſubtle, it eaſily exhales, neither is it kept ſhut up under the skinne. The patients often ſneeſe when as theſe matters ſeek paſſage out, by reaſon of the putride vapoures aſcending from the lower parts upwards to the braine. They are held with a continuall feaver, with paines in their backes, itching of their noſe, head-ach, and a vertiginous heavineſſe, and with a kinde of ſowning or fainting, a nauſeous diſpoſition, and vomiting, a hoarſeneſſe, difficult and frequent breathing, an inclination to ſleepe, a heavineſſe of all the members, their eyes are fiery and ſwollen, their urine redde and troubled. For prognoſtickes, wee may truely ſay thus much, That the matter whence this affect takes its originall, partakes of ſo malign, peſtilent and contagious a quality, that not content to mangle and ſpoile the fleſhy parts, it alſo eates and corrupts the bones, like the *Lues venerea*, as I obſerved not onely in *Anno Dom.* 1568. but alſo in divers other yeares, whereof I thinke it not amiſſe to ſet downe this notable example.

Why the Meazles doe not itch.

Prognoſtickes.

A hiſtorie.

The daughter of *Claude Piquè* bookſeller, dwelling in S. *James* his ſtreet at *Paris*, being ſome foure or five yeeres old, having beene ſicke of the ſmall pockes for the ſpace of a month, and nature could not overcome the malignity 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 inſunder; alſo it conſumed a great part of the toppe of the ſhoulder-bone, and the head of the bladebone: of this thing I had witneſſes with me, *Marcus Myron* phyſitian of *Paris*, and at this preſent the Kings chiefe phyſitian, *John Doreau* Surgeon to the *Conte de Bryane*, the body being diſſected in their preſence. Alſo you may obſerve in many killed by the malignity of this diſeaſe, and diſſected, that it cauſeth ſuch impreſſion of corruption in the principall parts, as brings the dropſie, ptiſick, a hoarſeneſſe, *Aſthma*, bloody fluxe ulcerating the guts, and at length bringing death, as the puſtles have raged or raigned over theſe or theſe entrailes, as you ſee them to do over the ſurface of the body; for they do not only moleſt the externall parts, by leaving the impreſſions and ſcarres of the puſtles and ulcers, rooting themſelves deepe in the fleſh, but alſo oft times they take away the faculty of motion, eating aſunder, and weakening the joints of the elbow, wreſt, knee and ancle. Moreover ſundry have been deprived of their ſight by them, as the Lord of *Guymenay*, others have loſt their hearing, and otherſome their ſmelling, a fleſhy excreſcence growing in the paſſages of the noſe and eares. But if any reliques of the diſeaſe remaine, and that the whole matter thereof bee not expelled by the ſtrength of nature, then ſymptomes afterwards ariſe, which ſavour of the malignity of the humour, yea and equall the harme of the ſymptomes of the *Lues venerea*.

What grievous and pernitious ſymptomes may happen by the ſmall pockes.

CHAP. II.

Of the cure of the Small Pockes and Meazles.

The cure.

THe cure of this diſeaſe uſeth to bee divers, according to the condition of the humour free from, or partaker of the venenate quality. For if it partake of malignity, and the childe bee a ſucking childe, ſuch things ſhall be given to the Nurſe as may infringe and overcome the ſtrength of the malignity, as wee ſhall ſhew more at large, when wee come to treat of the cure of children which are ſick of the plague; howſoever it be, the child muſt be kept in a warm roome free from winde, and muſt bee wrapped and covered with ſcarlet cloathes, untill the pockes come forth. There ſhall bee provided for the Nurſe medicated brothes with purſlaine, lettuce, ſorrell, ſuccory, borage, and French barly bound

up

up in a cloth. She ſhall ſhun all ſalt, ſpiced and baked meates, and in ſtead of wine drinke a decoction of liquerice, raiſons and ſorrell roots. She ſhall alſo take purging medicines, as if ſhe were ſicke of the ſame diſeaſe, that ſo her milke may become medicineable. Laſtly, ſhee ſhall obſerve the ſame diet as is uſually preſcribed to ſuch as have the plague. You ſhall give the child no pappe, or if you give it any, let it bee very little. But if the child be weaned, let him abſtaine from fleſh, untill the feaver have left him, and the pocks bee fully come forth: in ſtead of fleſh let him feed on barly and almond creames, chicken brothes, wherein the fore-named herbes have beene boyled, ponadoes, gellies, culaſſes, prunes and raiſons. Let his drinke bee a priſan made of French barly, graſſe and ſorrell roots, or with a nodula containing the foure cold ſeeds, the pulpe of prunes and raiſons, with the ſhavings of Ivory and hartſ-horne; Betweene meales the ſame decoction may be mixed with ſome ſyrupe of violets, but not of roſes or any other aſtringent ſyrupe, leſt wee hinder the courſe and inclination of the humour outwards. Let his ſleepe be moderate, for too ſound ſleep drawes back the mater to the center, and encreaſeth the feaver; you muſt neither purge, nor draw bloud the diſeaſe increaſing or being at the height, unleſſe peradventure there bee a great plenitude, or elſe the diſeaſe complicate with other, as with a pleuriſie, inflammation of the eyes, or a ſquinancie which require it, leſt the motion of nature ſhould be diſturbed; but you ſhal think it ſufficient to looſe the belly with a gentle glyſter: but when the height of the diſeaſe is over, and in the declenſion thereof, you may with *Caſia* or ſome ſtronger medicine evacuate part of the humours and the reliques of the diſeaſe. But in the ſtate and increaſe it is better to uſe ſudorificks, which by attenuating the humours and relaxing the pores of the skin may drive the cauſe of the diſeaſe from the center to the circumference, which otherwiſe reſiding in the body might bee a cauſe of death; as I and *Richard Hubert* obſerved in two maides, whereof one was foure, and the other ſeventeene years old; for we diſſecting them both being dead, found their entrailes covered with ſcabby or cruſted puſtles, like thoſe that break forth upon the skin. We muſt not think that a bleeding at noſe at the beginning of the diſeaſe, or in the firſt foure or five dayes ſhould carry away the matter and originall of the diſeaſe, for nevertheleſſe the pocks will come forth; but for that this is a true and naturall *criſis* of this diſeaſe, as that which is carryed to the ſurface and circumference of the body, ſuch bleeding muſt not be ſtopped, unleſſe you feare it will cauſe ſowning. The matter ſhall bee drawne out with a decoction of figs, husked lentils, citron ſeeds, the ſeeds of fennell, parſly, ſmallage, roots of graſſe, raiſons and dates. For ſuch a decoction, certainly if it have power to cauſe ſweat, hath alſo a faculty to ſend forth unto the skin the morbificke humour; the ſeeds of fennell and the like opening things relaxe and open the pores of the skin; figges lenifie the acrimonie of the matter, and gently cleanſe, the lentils keepe the jawes and throate, and all the inward parts from puſtles, and hinder a fluxe by reaſon of their moderate aſtriction, but having their huskes on, they would bind more than is required in the diſeaſe; dates are thought to comfort the ſtomack, and citron ſeeds to defend the heart from malignity, liquerice to ſmooth the throat, and hinder hoarſneſſe and cauſe ſweat. But theſe things ſhall be given long after meat, for it is not fit to ſweat preſently after meat; ſome there bee who would have the child wrapped in linnen clothes ſteeped in this decoction being hot, and afterwards hard wrung forth. Yet I had rather to uſe bladders or ſpunges, or hot bricks for the ſame purpoſe; certainly a decoction of millet, figges and raiſons, with ſome ſugar, cauſeth ſweat powerfully. Neither is it amiſſe whileſt the patient is covered in all other parts of his body, and ſweats, to fan his face, for thus the native heat is kept in & ſo ſtrengthened, and fainting hindred, and a greater excretion of excrementitious humours cauſed. To which purpoſe you may alſo put now and then to the patients noſe a *nodulus* made with a little vinegar & water of roſes, camphire, the powder of ſanders, and other odoriferous things which have a cooling faculty, this alſo will keepe the noſe from puſtles.

The child muſt haveno pappe.

How ſound ſleepe doth harme in this diſeaſe.

Of purging, bleeding, and ſudorificks.

A hiſtory.

A ſudorificke decoction.

not

When it is beſt to procure ſweat.

Chap. III.

What parts must be armed against, and preserved from the Pocks.

THe eyes, nose, throte, lungs, and inward parts ought to be kept freer from the eruption of pustles than the other parts; for that their nature and consistence is more obnoxious to the malignity of this virulency, and they are easilyer corrupted and blemished. Therefore lest the eyes should be hurt, you must defend them when you first begin to suspect the disease, with the eyelids, also moistening them with rose-water, verjuice or vinegar, and a little Camphire. There are some also who for this purpose make a decoction of Sumach, berbery-seeds, pomgranate pills, aloe, sand a little saffron; the juice of sowre pomgranates, and the water of the whites of egges dropped in with rose-water, are good for the same purpose; also womans milke mixed with rose-water and often renewed, and lastly, all such things as have a repercussive quality. Yet if the eyes bee much swolne and red, you shall not use repercussives alone, but mixe therewith discussers and cleansers, such as are fit by a familiarity of nature to strengthen the sight; and let these bee tempered with some fennell or eye-bright water. Then the patient shall not looke upon the light or red things for feare of paine 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 aloes, tuttye and Antimonie in the water of fennell, eye bright and roses. The formerly mentioned nodulus will preserve the nose, and linnen clothes dipped in the fore-said astringent decoction, put into the nosthrils and outwardly applyed. We shall defend the jawes, throate and throttle, and preserve the integrity of the voice by a gargle of oxycrate, or the juice of sowre pomgranates, holding also the grains of them in their mouths, & often rouling them up & down therein, as also by nodula's of the seeds of *psilium*, quinces & the like cold & astringent things. We must provide for the lungs & respiration by syrupes of jujubes, violets, roses, white poppyes, pomgranats, water-lillies, and the like. Now when as the pocks are throughly come forth, then may you permit the patient to use somewhat a freer diet, and you must wholly busie your selfe in ripening and evacuating the matter, drying and scailing them. But for the meazels, they are cured by resolution onely, and not by suppuration; the pocks may bee ripened by annoynting them with fresh butter, by fomenting them with a decoction of the roots of mallowes, lillies, figs, line-seeds and the like. After they are ripe, they shall have their heads clipped off with a paire of sizzers, or else bee opened with a golden or silver needle, lest the matter conteined in them, should corrode the flesh that lyes thereunder, and after the cure, leave the prints or pockholes behinde it, which would cause some deformity; the *pus*, or matter being evacuated, they shall be dryed up with *unguent. rosat.* adding thereto ceruse, litharge, aloes and a little saffron in powder; for these have not onely a faculty to dry, but also to regenerate flesh; for the same purpose the floure of barly and lupines are dissolved or mixed with rose-water, and the affected parts annoynted therewith with a fine linnen ragge; some annoint them with the swathe of bacon boiled in water and wine, then presently strow upon them the floure of barly or lupines, or both of them. Others mixe crude hony newly taken from the combe, with barly floure, and therewithall annoint the pustles so to dry them; being dryed up like a scurfe or scab, they annoint them with oyle of roses, violets, almonds, or else with some creame, that they may the sooner fall away, the pustles being broken; tedious itchings sollicite the patients to scratch, whence happens excoriation and filthy ulcers, for scratching is the occasion of greater attraction. Wherfore you shall bind the sick childs hands, and foment the itching parts with a decoction of marsh mallowes, barly and lupines, with the addition of some salt. But if it bee already excoriated, then shall you heale it with *unguent. album camphorat.* adding thereto a little powder of Aloes or *Cinnabaris*, or a little *desiccativum rubrum*. But if notwithstnding all your application of repelling medicines, pustules,

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-arres.

Remedies for excoriation.

puſtles nevertheleſſe break forth at the eyes, then muſt they be diligently cured with all manner of *Collyria*, having a care that the inflammation of that part grow not to that bignes, as to break the eies, & that which ſomtimes happens to drive them forth of their proper orbes. If any cruſty ulcers ariſe in the noſthrils, they may be dryed and cauſed to fall away by putting up of oyntments. Such as ariſe in the mouth, palate and throat, with hoarſeneſſe and difficulty of ſwallowing, may be helped by gargariſmes made with barly water, the waters of plantaine and chervill, with ſome ſyrupe of red roſes, or *Diamoron* diſſolved therein; the patient ſhall hold in his mouth ſugar of roſes or the tablets of *Elect. diatragacanth. frigid.* The Pock-arres left in the face, if they bunch out undecently, ſhall be clipped away with a paire of ſizzers, and then annointed with freſh *unguent. citrin.* or elſe with this liniment. R. *amyli triticei, & amygdalarum excorticatarum, an.* ℥ß. *gum. tragacanth.* ℥ß. *ſeminis melonum, fabarum ſiccarum excorticat. farinæ hordei, an.* ℥iiii. Let them all bee made into fine powder, and then incorporated with roſe-water, and ſo make a liniment, wherewith anoynt the face with a feather; let it bee wiped away in the morning, waſhing the face with ſome water and wheat bran; hereto alſo conduceth *lac virginale*; Gooſe, ducks and Capons greaſe are good to ſmooth the roughneſſe of the skin, as alſo oile of lillies; hares bloud of one newly killed and hot is good to fill and plaine, as alſo whiten the Pock-holes, if they bee often rubbed therewith. In ſtead hereof many uſe the ſwathe of Bacon rubbed warme thereon; alſo the diſtilled waters of beane flowers, lilly roots, reed-roots, egge-ſhels, and oile of egs are thought very prevalent to waſte and ſmoothe the Pock-arres.

For the ulcers of the mouth and jawes.

To help the unſightly ſcars of the face.

A Diſcourſe of certaine monſtrous creatures which breed againſt nature in the bodies of men, women, and little children, which may ſerve as an induction to the enſuing diſcourſe of worms.

As in the *macrocoſmos* or bigger world, ſo in the *microcoſmos* or leſſer world there are winds, thunders, earthquakes, ſhowres, inundations of waters, ſterilities, fertilities, ſtones, mountaines and ſundry ſorts of fruits and creatures thence ariſe. For who can deny but that there is winde conteined ſhut up in flatulent abſceſſes, and in the guts of thoſe that are troubled with the cholicke? Flatulencies make ſo great a noyſe in divers womens bellies, if ſo be you ſtand neare them, that you would think you heard a great number of frogs croaking on the night time: That water is contained in watery abſceſſes, and the belly 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 body is no otherwiſe ſhaken and trembles, than the earth when it is heard to bellow, and felt to ſhake under our feet. He which ſhall ſee the ſtones which are taken out of the bladder, & come from the kidnies and divers other parts of the bodie, cannot deny but that ſtones are generated in our bodies. Furthermore wee ſee both men & women who in their face, or ſome other parts, ſhew the impreſſion, or imprinted figure of a cherry, plumb, ſervice, fig, mulberry & the like fruit; the cauſe hereof is thought to be the power of the imagination concurring with the formative faculty, and the tenderneſſe of the yeelding and waxe-like *embryon*, eaſie to be brought into any forme or figure by reaſon of the proper and native humidity. For you ſhall find that all their mothers whileſt they went with them have earneſtly deſired or longed for ſuch things, which, whileſt they have too earneſtly agitated in their mindes, they have tranſ-ferred the ſhape unto the childe, whileſt that they could not enjoy the things themſelves. Now who can deny but that bunches on the backe, and large wens reſemble mountaines? Who can gainſay, but that ſqualide ſterility may bee aſſimulated to the hectick dryneſs of waſted and conſumed perſons? and fertility deciphered by the body diſtended with much fleſh and fat, ſo that the legs can ſcarce ſtand under the burden of the belly? But that divers creatures are generated in one creature, that is, in man, and that in ſundry parts of him, the following hiſtories ſhall make it evident.

A comparison between the bigger and leſſer world.

The generation of wind in mans body.

Of water.

Of ſtones.

Of fruits from the firſt conformation.

Hollerius tels that a certaine Italian by frequent ſmelling to the herbe Baſill had a Scorpion bred in his braine, which cauſed long and vehement paine, and at length death;

Lib de morb. inter cap. 1.

death; therefore I have here expreſt the figure of that Scorpion found when as his braine was opened.

The figure of a Scorpion.



It makes *Hollerius* conjecture of the cauſe and originall of this Scorpion, probable for that *Chryſippus*, *Dyophanes* and *Pliny* write, that of baſill beaten betweene two ſtones, and laid in the ſun, there will come Scorpions.

Lib. 1. de part. morbis cap. 7.

Fernelius writes that in a certaine ſouldier, who was flat noſed, upon the too long reſtraint or ſtoppage of a certaine filthy matter that flowed out of the noſe, that there were generated two hairy wormes of the bigneſſe of ones finger, which at length made him mad, he had no manifeſt feaver, and he died about the twentieth day: this was their ſhape, by as much as we can gather by *Fernelius* his words.

The effigies of the wormes mentioned by Fernelius.



A hiſtory.

Lewes Duret a man of great learning and credit, told mee that hee had come forth with his urine, after a long and difficult diſeaſe, a quick creature, of colour red, but otherwiſe like in ſhape a Millepes, that is, a Cheſlope, or Hog-louce.

The ſhape of a Millepes caſt forth by urine.



A hiſtorie.

Count *Charles* of *Mansfeldt*, laſt ſummer troubled with a grievous and continuall feaver, in the duke of *Guiſes* place caſt forth a filthy matter at his yard, in the ſhape of a live thing almoſt juſt in this forme.

The ſhape of a thing caſt forth by urine.



Mon-

Monſtrous creatures alſo of ſundry formes are alſo generated in the wombes of women; ſomewiles alone, otherwhiles with a *mola*, and ſometimes with a child naturally and well made, as frogs, toads, ſerpents, lizzards: which therefore the Ancients have tarmed the Lumbards brethren, for that it was uſuall with their women, that together with their naturall and perfect iſſue they brought into the world wormes, ſerpents, and monſtrous creatures of that kinde generated in their wombes, for that they alwaies more reſpected the decking of their bodies, than 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 putride matter, or certainely very ſubject to putrefaction and corruption, and conſequently opportune to generate ſuch unperfect creatures. *Jonbertus* telleth that there were two Italian women, that in one moneth brought forth each of them a monſtrous birth; the one that marryed a Tailor, brought forth a thing ſo little, that is reſembled a Rat without a taile; but the other a Gentlewoman, brought forth a larger, for it was of the bigneſſe of a Cat; both of them were black, and as ſoone as they came out of the wombe, they ran up high on the wall, and held faſt thereon with their nailes. *Licoſthenes* writes that in *Anno Dom.* 1494. a woman at *Cracovia*, in the ſtreete which taketh name from the holy Ghoſt, was delivered of a dead child, who had a ſerpen faſtned upon his back, which fed upon this dead child, as you perceive by this following figure.

Nicolaus Flor. Gord. lib. 7. c. 18.

Lib. error. popul.

The figure of a ſerpent faſtned to a child.



Levinus Lemnius tels a very ſtrange hiſtory to this purpoſe. Some few yeares agone (ſaith he) a certaine woman of the Iſle in Flanders, which being with child by a Sailer, her belly ſwelled up ſo ſpeedily, that it ſeemed ſhee would not bee able to carry her burden to the terme preſcribed by nature; her ninth moneth being ended, ſhe calls a midwife, and preſently after ſtrong throwes and paines, ſhee firſt brought forth a deformed lumpe of fleſh, having as it were two handles on the ſides, ſtretched forth to the length and manner of armes, and it moved and panted with a certain vitall motion, after the manner of ſpunges and ſea-nettles; but afterwards there came forth of her wombe a monſter with a crooked noſe, a long and round necke, terrible eies, a ſharpe taile, and wonderfull quick of the feet, it was ſhaped much after this manner.

Lib. de occult. nat. mir. cap. 8.

The

The ſhape of a monſter that came forth of a womans wombe.



As ſoone as it came into the light it filled the whole roome with a noiſe and hiſſing, running to every ſide to finde out a lurking hole wherein to hide its head, but the women which were preſent, with a joynt conſent fell upon it, and ſmothered it with cuſhions, at length the poore woman wearied with long travell, was delivered of a boy, but ſo evilly entreated and handled by this monſter, that it died as ſoone as it was chriſtened.

Libde diuinis natur. characteriſmis.

Cornelius Gemma a Phyſician of *Lovaine*, telleth that there were many very monſtrous and ſtrange things caſt forth both upwards and downewards out of the belly of a certaine maid of *Lovaine*, of the age of fifteene yeares. Amongſt the reſt, ſhe caſt forth at her fundament, together with her excrements, a living creature ſome foot and halfe long, thicker than ones thumbe, very like an eele, but that it had a very hairy taile; 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 maides belly.



A hiſtorie.

Maſter *Peter Barque* and *Claude le Grand*, Surgeons of *Verdun*, lately affirmed to mee that they cured the wife of a certaine Citizen of *Verdun*, which out of an Abſceſſe broken in the belly, caſt forth a great number of wormes, together with the quitture, and theſe were of the thickneſſe of ones finger, with ſharpe heads, which ſo gnawed her guts, that the excrements for a long time came forth at the ulcer, but now ſhe is perfectly recovered.

A hiſtorie.

Anthony Benenius a Phyſician of *Florence* telleth that one *John Menuſierus*, a man of fourty yeares of age, troubled with continuall paines at his ſtomacke, was often at the point of death, neither found he any helpe by the counſels of many Phyſicians which hee uſed. At length comming to have his advice, hee gave him a vomit, by meanes whereof hee caſt up a great quantity of corrupt and putride matter, yet was hee not thereby eaſed of his paine. Therefore he gave him another vomit, by force whereof he caſt up much matter like to the former, and together therewith a worme of foure fingers long, having a red round head, of the bigneſſe of a great peaſe, covered over the body with a ſoft downineſſe, with a forked taile, in manner of an halfe moone, going upon foure feet, two before, and two behind.

The

The figure of a worme cast forth by vomit.



Why should I mention the prodigious bodies which are found in Abscesses, as stones, chalke, sand, coales, snaile-shels, strawes, hay, hornes, haires, and many kinds 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 we shall consider that nature, the fruitfull parent of all things, hath put divers portions and particles of the universall matter whereof the greater world is composed into this microcosmos, or little world, man; whereby he might the rather seem to be made to the resemblance and form of the greater. Wherefore it so desports it selfe here, that it may counterfeit and resemble all the actions and motions which it useth to performe in the scene of the greater world, in this little one, if so be that matter be not wanting.

The efficient & materiall causes of such things as are preternaturally generated in our bodies.

CHAP. IIII.

Of the wormes which use to breed in the guts.

A Grosse, viscide and crude humour is the materiall cause of wormes, which having got the beginning of corruption in the stomacke, is quickly carried into the guts,, and there it putrefies, having not acquired the forme of laudible *Chylus* in the first concoction. This, for that it is viscide, tenaciously adheres to the guts, neither is it easily evacuated with the other excrements; therfore by delay it further putrefies, & by the efficacy of heat, it turns into the matter and nourishment for wormes. This alimentary humour being consumed, unlesse some fresh supply the want thereof, which may ease their hunger, they move themselves in the guts with great violence, they cause grievous and great paines, yea, and oft-times they creep up to the stomack, and so come forth by the mouth, and sometimes they ascend into the holes of the palate, and come forth at the nose. Wormes are of three sorts; for some are round & long, others broad and long, others short & slender. The first are called by the Ancients, *Teretes*, that is, round; for that they are long and round. The second are named *Teniæ*, for that their bodies are long & broad like a rowler or swathe. The third are termed *Ascarides*, for that they commonly wrap themselves up round. Other differences of wormes are taken from their colours, as red, white, black, ash-coloured, yellowish. Some also are hairy, with a great head like the little fish which the French call Chabot, we, a Millers-thumbe; in some diseases many wormes are generated and cast forth by the fundament, as small as haires, and usually of colour white, and these are they which are called *Ascarides*. The diversity of colours in wormes proceedeth not from the like distinct diversity of humours whereof they are generated. For the melancholicke and choleticke humour by their qualities are wholly unfit to generate wormes. But this manifold variety in colour, is by reason of the different corruption of the chylous or phlegmaticke humour whereof they are bred. The long and broad wormes are oftentimes stretched alongst all the guts, being like to a mucous or albuminous substance, and verily I saw one voided by a woman, which was like to a serpent, and some sixe foote long; which ought not to seeme strange, seeing it is noted by the Ancients, that they have seene wormes so long, as the length of the whole guts, that is, seven times the length

How worms are generated.

The reason that they sometimes come forth at the mouth.

The differences of worms.

A history.

A history. length of ones body. *Wierus* writes that he ſaw a country man who voided a worme eight foot and one inch long, in head and mouth reſembling a Ducke, which therefore I have thought good here to expreſſe.

The figure of a worme, generated in, and caſt forth of the Guts.



In obſervat. *Valeriola* affirmeth that he ſaw a worme above nine foote long. Now as wormes differ in ſhape, ſo are their places of generation alſo different. For the round and long wormes are commonly generated in the ſmaller guts, the reſt in the greater, but eſpecially the *Aſcarides*: none breede in the ſtomacke, as that which is the place of the firſt concoction. There truely the matter which breedeth theſe wormes, gets the firſt rudiment of corruption, but comes to perfection onely in the guts; they breed in ſome infants in their mothers bellies, by the pravity and corrupt nature of the humour flowing from the mother for the nouriſhment of the childe, which for that then they doe not expell it by ſiege, it by delay putrefieth the more, and yeeldes fit matter for the breeding of wormes, as ſome have obſerved out of *Hippocrates*.

In what places of the belly wormes are generated.

Ad ſextum lib. 4. de morbis. Laſtly, wormes breed in people of any age that are Belly-Gods and given to gluttony, as alſo in ſuch as feed upon meats of ill juice, and apt to corrupt, as crude ſummer fruits, cheeſe, and milke-meates. But to know in what part of the Guts the wormes doe lurk, you muſt note, that when they are in the ſmall guts, the patients complain of a paine in their ſtomacke, with a dogge-like appetite, whereby they require many and ſeverall things without reaſon, a great part of the nouriſhment being conſumed by the wormes lying there; they are alſo ſubject to often fainting, by reaſon of the ſympathy which the ſtomacke, being a part of moſt exquiſite ſenſe, hath with the heart, the noſe itches, the breath ſtinkes, by reaſon of the exhalations ſent up from the meat corrupting in the ſtomacke; through which occaſion they are alſo given to ſleep, but are now and then waked therefrom by ſuddaine ſtartings and feares; they are held with a continued and ſlow feaver, a dry cough, a winking with their eielids, and often changing of the colour of their faces. But long and broad wormes, being the innates of the greater guts, ſhew themſelves by ſtooles repleniſhed with many ſloughes, here and there reſembling the ſeedes of a Musk-melon or cucumber. *Aſcarides* are knowne by the itching they cauſe in the fundament, cauſing a ſenſe as if it were Ants running up and downe; cauſing alſo a *teneſmus*, and falling downe of the fundament. This is the cauſe of all theſe ſymptomes; their ſleepe is turbulent and often clamorous, when as hot, acride and ſubtle vapors, raiſed by the wormes from the like humor and their foode, are ſent up to the head; but found ſleep by the contrary, as when a miſty vapour is ſent up from a groſſe and cold matter. They dream they eate in their ſleepe, for that while the wormes doe more greedily conſume the chylous matter in the guts, they ſtirre up the ſenſe of the like action in the phantaſie. They grate or gnaſh their teeth by reaſon of a certaine convulſifick repletion, the muſcles of the temples and jawes being diſtended by plenty of vapours. A dry cough comes by the conſent of the vitall parts ſerving for reſpiration, which the naturall, to wit, the *Diaphragma* or midriffe, ſmit upon by acride vapoures, and irritated as though there were ſome humour to bee expelled by coughing. Theſe ſame acride

Signes of wormes in the ſmall guts.

Signes of wormes in the great guts.

Signes of *Aſcarides*.

fumes

fumes assailing the orifice of the ventricle, cause either a hicketting, or else a fainting, according to the condition of their consistence, grosse or thin; these carryed up to the parts of the face cause an itching of the nose, a darkenesse of the sight, and a suddaine changing of the colour in the cheeks. Great wormes are worse than little ones, red than white, living than dead, many than few, variegated than those of one colour, as those which are signes of a greater corruption. Such as are cast forth bloody and sprinkled with blood, are deadly, for they shew that the substance of the guts is eaten asunder; for oft-times they corrode and perforate the body of the gut wherein they are conteined, and thence penetrare into divers parts of the belly, so that they have come forth sometimes at the Navell, having eaten themselves a passage forth, as *Hollerius* affirmeth. When as children troubled with the wormes draw their breath with difficulty, and waxe moist over all their bodies, it is a signe that death is at hand. If at the beginning of sharpe feavers, round wormes come forth alive, it is a signe of a pestilent feaver, the malignity of whose matter they could not endure, but were forced to come forth. But if they be cast forth dead, they are signes of greater corruption in the humours, and of a more venenate malignity.

Why wormes of divers coloures are more dangerous.

CHAP. V.

What cure to bee used for the Wormes.

IN this disease there is but one indication, that is, the exclusion or casting out of the wormes, either alive or dead, forth of the body, as being such that in their whole kinde are against nature; all things must bee shunned which are apt to heap up putrefaction in the body by their corruption, such as are crude fruits, cheese, milke-meats, fishes, and lastly such things as are of a difficult and hard digestion, but prone to corruption. Pappe is fit for children, for that they require moist things, but these ought to answer in a certaine similitude to the consistence and thicknesse of milke, that so they may the more easily be concocted & assimulated, & such only is that pap which is made with wheat flower, not crude, but baked in an oven, that the pappe made therewith may not be too viscide nor thicke, if it should onely bee boyled in a panne as much as the milke would require; or else the milke would bee too terrestriall, or too wateriſh, all the fatty portion thereof being resolved, the cheesy and whayish portion remaining, if it should boile so much as were necessary for the full boiling of the crude meate; they which use meale otherwise in pappe yeild matter for the generating of grosse and viscide humours in the stomacke, whence happens obstruction in the first veines and substance of the liver, by obstruction wormes breede in the guts, and the stone in the kidneyes and bladder. The patient must be fed often, and with meates 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 putride matter, the patient shall be purged, and the putrefaction represt by medicines mentioned in our treatise of the plague. For the quick killing and casting of them forth, syrupe of Succory, or of lemmons with rubarbe, a little Treacle, or Mithridate, is a singular medicine, if there be no feaver you may also for the same purpose use this following medicine. ℞. *cornu cervi pul. rasur. eboris, an.* ℥ i ß. *sem. tanacet. & contra verm. an.* ℥ i. *fiat decoctio pro parva dosi, in colatura infunde rhei optimi,* ℥ i. *cinam.* ℈ i. *dissolve syrupi de absinthio* ℥ ß. make a potion, give it in the morning three houres before any broath. Oyle of Olives drunke, kills wormes, as also water of knot-grasse drunke with milke, and in like manner all bitter things. Yet I could first wish them to give a glyster made of milke, hony and sugar, without oyles and bitter things, lest shunning thereof, they leave the lower guts, and come upwards, for this is naturall to wormes, to shunne bitter things, and follow sweet things. Whence you may learne, that to the bitter things which you give by the mouth, you must alwaies mixe sweet things, that allured by the sweetnesse, they may devour them more greedily, that so they may kill them. Therefore I would

The generall indications of curing the wormes.

Wherefore, and wherewith such as have the wormes must be purged.

Hartſhorne good againſt the wormes.

would with milke and Sugar, mixe the ſeeds of centaury, rue, wormewood, aloes, and the like: harts-horne is very effectuall againſt wormes, wherefore you may infuſe the ſhavings thereof in the water or drinke that the patient drinkes, as alſo to boile ſome thereof in his brothes. So alſo treacle drunke or taken in broth, killeth the wormes; purſlaine boiled in brothes, and deſtilled and drunke, is alſo good againſt the worms, as alſo ſuccory and mints, alſo a decoction of the leſſer houſe-leek and ſebeſtens given with ſugar before meate; it is no leſſe effectuall to put wormeſeeds in their pap, and in roaſted apples, and ſo to give them it. Alſo you may make ſuppoſitories after this manner, and put them up into the fundament. ℞. *coralli ſubalbi, raſura eboris, cornu cervi uſti, ireos an.* ℥ ii. *mellis albi* ℥ ii ß. *aquæ centinodiæ q. ſ. ad omnia concorporanda, fiant Glandes*: let one be put up every day, of the weight of ℥ ii. for children; theſe ſuppoſitories are chiefly to bee uſed for *Aſcarides*, as thoſe which adhere to the right gut. To ſuch children as can take nothing by the mouth, you ſhall apply cataplaſmes to their navells made of the pouder of cummin ſeeds, the floure of lupines, worme-wood, ſoutherne wood, tanſie, the leaves of Artichokes, rue, the pouder of *coloquintida*, citron ſeeds, aloes, arſemart, horſe mint, peach leaves, *Coſtus amarus*, *Zedoaria*, ſope and oxe gall. Such cataplaſmes are oft times ſpred over all the belly, mixing therewith aſtringent things for the ſtrengthening of the part, as oile of myrtles, Quinces and maſtich; you may alſo apply a great onion hollowed in the midſt, and filled with Aloes and Treacle, and ſo roaſted in the embers, then beaten with bitter almonds, and an oxe gall. Alſo you may make emplaſters of bitter things, as this which followes. ℞. *fellis bubuli, & ſucci abſinthii, an.* ℥ ii. *colocyn.* ℥ i. *terantur & miſceantur ſimul, incorporentur cum farina lupinorum*: make hereof an emplaſter to be laid upon the Navell.

Suppoſitories againſt the *Aſcarides*.

A plaiſter againſt the wormes.

Liniments and ointments may bee alſo made for the ſame purpoſe to anoint the belly, you may alſo make plaſters for the navell of *Pillula Ruff.* anointing in the meane time the fundament with hony and ſugar, that they may bee chafed from above with bitter things, and allured downewards with ſweete things. Or elſe take wormes that have beene caſt forth, dry them in an iron pan over the fire, then pouder them, and give them with wine or ſome other liquor to bee drunke, for ſo they are thought quickly to kill the reſt of the wormes. Hereto alſo conduceth the juice of citrons, drunke with the oile of bitter almonds, or ſallade oile. Alſo ſome make bathes againſt this affect of wormewood, galls, peach leaves boiled in water, and then bathe the childe therein.

A caution.

But in curing the wormes, you muſt obſerve that this diſeaſe is oft times entangled with another more grievous diſeaſe, as an acute and burning feaver, a fluxe or ſcouring, and the like, in which (as for example ſake) a feaver being preſent and conjoyned therewith, if you ſhall give wormſeeds, old Treacle, myrrhe, aloes, you ſhall encreaſe the feaver and fluxe, for that bitter things are very contrary to the cure of theſe affects. But if, on the contrary, in a fluxe whereby the wormes are excluded, you ſhall give corrall, and the floure of Lentiles, you ſhall augment the feaver, making the matter more contumacious by dry and aſtringent things. Therefore the Phyſitian ſhall be carefull in conſidering whether the feaver bee a ſymptome of the wormes, or on the contrary it bee eſſentiall, and not ſymptomaticke, that this being knowne, hee may principally inſiſt in the uſe of ſuch medicines as reſiſt both affects, as purging and bitteriſh in a feaver and wormes, but bitter and ſomewhat aſtrictive things in the wormes and fluxe.

A feaver ſometimes a ſymptome and ſometimes a diſeaſe.

CHAP.

CHAP. VI.

A short description of the Elephantiasis *or Leprosie, and of the causes thereof.*

THis disease is termed *Elephantiasis* because the skinne of such as are troubled therewith, is rough, scabious, wrinckled and unequall, like the skin of an Elephant. Yet this name may seem to be imposed thereon by reason of the greatnesse of the disease. Some from the opinion of the Arabians have termed it *Lepra* or Leprosie (but unproperly, for the *Lepra* is a kinde of Scab and disease of the skinne, which is vulgarly called *Malum sancti manis)* which word for the present we will use, as that which prevailes by custome and antiquity. Now the Leprosie (according to *Paulus*) is a Cancer of the whole body, the which (as *Avicen* addes) corrupts the complexion, forme and figure of the members. *Galen* thinkes the cause ariseth from the errour of the sanguifying faculty, through whose default the assimulation in the flesh and habite of the body is depraved, and much changed from it selfe, and the rule of nature. But *ad Glauconem*, hee defines this disease, An effusion of troubled or grosse blood into the veines and habit of the whole body. This disease is judged great, for that it partakes of a certaine venenate virulency, depraving the members and comelinesse of the whole body. Now it appeares that the Leprosie partakes of a certaine venenate virulency by this, that such as are melancholicke in the whole habit of their bodies, are not leprous. Now this disease is composed of three differences of diseases. First it consists of a distemper against nature, as that which at the beginning is hot and dry, and at length the ebullition of the humours ceasing, and the heat dispersed, it becomes cold and dry, which is the conjunct cause of this symptome. Also it consists of an evill composition or conformation, for that it depraves the figure and beauty of the parts. Also it consists of a solution of continuity, when as the flesh and skin are cleft in divers parts with ulcers and chops: the leprosie hath for the most part 3. generall causes, that is, the primitive, antecedent, & conjunct: the primitive cause is either from the first conformation, or comes to them after they are born. It is thought to be in him from the first conformation, who was conceived of depraved & corrupt menstruous blood, & such as enclined to melancholly; who was b got of the leprous seed of one or both his parents, for leprous persons generate leprous, because the principall parts being tainted and corrupted with a melancholy and venenate juice, it must necessarily follow that the whole masse of blood and seed that falls from it, and the whole body should also be vitiated. This cause happens to those that are already born, by long staying & inhabiting in maritime countries, whereas the grosse and misty aire, in succesſe of time, induceth the like fault into the humours of the body; for that, according to *Hippocrates*, such as the aire is, such is the spirit, and such the humours. Also long abiding in very hot places, because the blood is torrified by heate, but in cold places, for that they incrassate, and congealing the spirits, doe after a manner stupefie, may bee thought the primitive causes of this disease. Thus in some places of *Germany* there are divers leprous persons, but they are more frequent in *Spaine* and over all *Africa*, then in all the world beside, and in *Languedoc*, *Provence* and *Guyenne*, are more than in whole *France* besides. Familiarity, copulation, and cohabitation with leprous persons, may be reckoned amongst the causes thereof, because they transferre this disease to their familiars by their breath, sweat and spittle left on the edges of the pots or cuppes. This disease is also caused by the too frequent use of salt, spiced, acride and grosse meates, as the fleth of Swine, Asses, Beares, Pulse, milke-meats; so also grosse and strong wines, drunkennes, gluttony, a laborious life, full of sorrow and cares, for that they incrassate, and as it were burne the blood. But the retention of melancholy excrements, as the suppression of the hæmorrhoids, courses, small pockes and meazells, as also a quartaine feaver accustomed to come at set times; the drying up of old ulcers, for that they defile the masse of the blood with a melancholy drosse and filth. Now you must understand that the cause of the leprosie by the retention of the superfluities, happens because the corrupt blood is not evacua-

Lib. 4. cap. 1. Lib. 2. cap. 11.

There is a certaine hidden virulency in the Leprosie.

The primitive cause of a Leprosie.

How they may be leprous from their first conformation.

ted, but regurgitates over the whole body, and corrupts the blood that ſhould nouriſh all the members; wherefore the aſſimulative faculty cannot well aſſimulate by reaſon of the corruption and default of the juice, and thus in concluſion the Leproſie is cauſed. The antecedent cauſes are the humours diſpoſed to aduſtion and corruption into melancholy by the torride heat; for in bodies poſſeſſed with ſuch heat, the humours by aduſtion eaſily turne into melancholy, which in time acquiring the malignity and corruption of a virulent and venenate quality, yeelds a beginning and eſſence to the leproſie. The conjunct cauſes are the melancholy humors which are now partakers of a venenate and maligne quality, and ſpread over the whole habite of the body, corrupting and deſtroying it firſt by a hot and dry diſtemper, and then by a cold and dry, contrary to the beginnings of life. For hence inevitable death muſt enſue, becauſe our life conſiſts in the moderation of heate and moiſture.

The antecedent cauſe of a Leproſie.

The conjunct cauſe.

How it comes to be deadly.

CHAP. VII.

The ſignes of a Leproſie, breeding, preſent, and already confirmed.

THE diſpoſition of the body and humors to a Leproſie is ſhewed by the change of the native and freſh colour of the face, by that affect of the face, which is commonly called *Gutta roſacea*, red & blackiſh ſuffuſions and puſtles, the falling away of the haires, a great thirſt, and a drineſſe of the mouth both by night & day, a ſtinking breath, little ulcers in the mouth, the change of the voice to hoarſeneſſe, a deſire of venery above nature and cuſtome. Now there are foure times of this diſeaſe, the beginning, encreaſe, ſtate and declenſion. The beginning is when as the malignity hath not yet gone further than the inner parts and bowells, wherupon the ſtrength muſt needs be more languid. The encreaſe is when as the virulency comes forth, & the ſigns & ſymptoms are every day encreaſed in number & ſtrength. The ſtate is when as the members are exulcerated. The declenſion is, when as the aſpect of the face is horride, the extreme parts fall away by the profundity and malignity 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 ſignes of this diſeaſe being preſent, have chiefe regard to the head. For the ſignes of diſeaſes more properly and truely ſhew themſelves in the face, by reaſon of the ſoftneſſe and rarity of the ſubſtance therof, and the tenuity of the skin that covers it; wherefore a blacke and aduſt humour diffuſed thereunder, eaſily ſhewes it ſelfe, and that not onely by the mutation of the colour, but alſo of the Caracter and bulke, and oft times by manifeſt hurting it. Wherefore you muſt obſerve in the head whether it have ſcaules, and whether in the place of thoſe haires 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 haires, through corruption of the hairy ſcalpe that ſhould be ſtored with ſuch nouriſhment, and of the habit it ſelfe, and through the unfitneſſe thereof to containe haires; laſtly by the acrimony of the vapoures ſent up from the aduſt humours and entrailes, fretting aſunder the rootes of the haires. But if not onely the haire, but alſo ſome portion of the skin and fleſh about the rootes of the haire, come away by pulling, it is an argument of perfect corruption: let this therefore be the firſt ſign of a leproſie. A ſecond & very certain ſigne is, a numerous & manifeſt circumſcription of round and hard puſhes or puſtles under the eie-browes, & behind the eares and in ſeverall places of the face, reſembling round and hard kernells, occaſioned by the default of the aſſimulating faculty. The cauſe of this default is the groſſeneſſe of the flowing nouriſhment, by which meanes it being impact, and ſtopping in the ſtraitneſſe of the way, it growes round at it were compaſſed about in the place whereas it ſticks, and by the meanes of the crudity, for that it is not aſſimulated, and by delay, it is further hardned. The third

The beginning of a Leproſie.

The encreaſe.

The ſtate.

The declenſion.

The firſt ſigne of the Leproſie.

II.

third ſigne is, the more contract and exact roundneſſe of the eares, their groſſeneſſe, and as it were grainy ſpiſſitude or denſeneſſe; the cauſe of their roundneſs is the conſumption of the flaps & fleſhy part through want of nouriſhment, and exceſs of heat; but the occaſion of their grainy ſpiſſitude is the groſneſſe of the earthy nouriſhment flowing thither. The fourth ſign is a lion-like wrinkling of the forehead, which is the reaſon that ſome terme this diſeaſe *morbus leoninus*; the cauſe hereof is the great dri- IIII. Why it is called *morbus leoninus.*
neſſe of the habit of the body, which alſo is the reaſon that the barke of an old oak is rough and wrinkled. The fifth is, the exact roundneſſe of the eyes, and their fixt and immoveable ſteddineſſe; verily the eyes are naturally almoſt round, yet they appeare obtuſe and ſomewhat broad on the foreſide, but end in a *Conus* on the hind part, by reaſon of the concourſe and figure of the muſcles and fat inveſting the[illegible]. Therefore theſe being conſumed either through defect of laudible nouriſhment, or elſe by the acrimonie of the flowing humour, they are reſtored to their proper figure & roundneſs. Now the muſcles which moved the eyes being conſumed, and the fat which facilitated their motion waſted, it comes to paſſe that they ſtand ſtiffe and unmoveable, being deſtitute of the parts yeelding motion, and the facility thereof. The ſixth ſigne V. VI.
is, the noſtrils flat outwardly, but inwardly ſtrait and contracted, that is, an earthy & groſſe humour 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 thickneſſe of this humour; but they are depreſſed and flatted by reaſon of the reſt of the face and all the neighbouring parts ſwoln more than their wont; adde hereto that the partition is conſumed by the acrimony of the corroding and ulcerating humour ſent thither, which makes them neceſſarily to be depreſt, & ſend forth bloudy ſcabs. The ſeventh, is the lifting up, thickneſſe and ſwelling of the lips, the filthineſſe, ſtinke VII.
and corroſion of the gums by acride vapours riſing to the mouth; but the lips of Leprous perſons are more ſwolne by the internall heat burning and incraſſating the humours, as the outward heat of the Sun doth in the Moores. The eighth ſigne is the VIII.
ſwelling & blackneſſe of the tongue, and as it were varicous veins lying under it; becauſe the tongue, being by nature ſpongious and rare, is eaſily ſtored with excrementitious humours, ſent from the inner parts unto the habit of the body: which ſame is the cauſe why the grandules placed about the tongue above and below, are ſwolne hard & round, no otherwiſe than ſcrophulous or meazled ſwine. Laſtly, all their face riſeth in red bunches or puſhes, and is over-ſpread with a duskie and obſcure redneſs; the eies are fiery, fierce and fixed, by a melancholick chachectick diſpoſition of the whole body, manifeſt ſignes whereof appeare in the face by reaſon of the forementioned cauſes; yet ſome leprous perſons have their faces tinctured with a yellowiſh, others with a whitiſh colour, according to the condition of the humor, which ſerves for a *Baſis* to the leprous malignity. For hence Phyſicians affirme that there are three ſorts of Leproſies, one of a rediſh black colour, conſiſting in a melancholick humour; another of a yellowiſh greene, in a cholericke humour; another in a whitiſhy ellow, grounded upon aduſt phlegme. The ninth ſigne is a ſtinking of the breath, as alſo of IX.
all the excrements proceeding from leprous bodies, by reaſon of the malignity conceived in the humours. The tenth is, a hoarſneſſe, a ſhaking, harſh and obſcure voyce X.
comming as it were out of the noſe, by reaſon of the lungs, recurrent nerves, and muſcles of the throttle tainted with the groſſeneſſe of a virulent and aduſt humour; the forementioned conſtriction & obſtruction of the inner paſſage of the noſe; and laſtly, the aſperity and inequality of the weazon by immoderate dryneſſe, as it happens to ſuch as have drunk plentifully of ſtrong wines without any mixture. This immoderate drineſſe of the muſcles ſerving for reſpiration makes them to bee trouled with a difficulty of breathing. The eleventh ſigne is very obſervable, which is a XI.
Morphew or defædation of all the ſkin, with a dry roughneſſe and grainy inequality, ſuch as appears in the skins of plucked geeſe, with many tetters on every ſide, a filthy ſcab, and ulcers not caſting off onely a branlike ſcurfe, but alſo ſcailes and cruſts. The cauſe of this dry ſcab, is the heat of the burning bowels & humours, unequally contracting and wrinkling the skin, no otherwiſe than as leather is wrinkled by the heat of the Sun or fire. The cauſe of the filthy ſcab & ſerpiginous ulcers, is the eating and corroding condition of the melancholy humour, and the venenate corruption,

it also being the author of corruption, so that it may be no marvell if the digestive faculty of the liver being spoyled, the assimulative of a maligne and unfit matter sent into the habit of the body cannot well nor fitly performe that which may be for the
XII. bodies good. The twelfth is, the sense of a certain pricking, as it were of goads or needles over all the skin, caused by an acride vapour hindred from passing forth, and
XIII. intercepted by the thickness of the skin. The thirteenth is a consumption and emaciation of the muscles which are betweene the thumbe and fore-finger, not onely by reason that the nourishing and assimulating faculties want fit matter wherewith they may repaire the losse of these parts, for that is common to these with the rest of the body, but because these muscles naturally rise up unto a certaine mountanous 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 inner part
XIIII. of the muscle *Trapezites*. The fourteenth signe is the diminution of sense, or a numnesse over all the body by reason that the nerves are obstructed by the thickness of the melancholick humour 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 motions sake, and by this note I chiefly make tryall of leprous persons, thrusting a somewhat long and thick needle somewhat deep into the great tendon endued with most exquisite sense, which runs to the heel, which, if they do not well feele, 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; & therefore when as you prick them somewhat deep, they feel
XV. 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 humours sent thither by the strength of the bowels, infecting with the like tainture the parts wherein they remain: adde hereto that the animal sensitive faculty is there decayed, and as often as any faculty hath forsaken any part, the rest
XVI. presently after a manner neglect it. The sixteenth is, they are troubled with terrible dreames, for they seeme in their sleep to see divels, serpents, dungeons, graves, dead bodies, and the like, by reason of the black vapours of the melancholie humour troubling the phantasie with black and dismall visions, by which reason also such as
XVII. are bitten of a mad dog feare the water. The seventeenth is, that at the beginning and in the increase of the disease they are subtle, crafty and furious by reason of the heat of the humours & bloud; but at length in the state and declension they become crafty and suspicious, the heat and burning of the bloud and entrailes decaying by little and little; therefore then fearing all things whereof there is no cause, & distrusting of their owne strength they endeavour by craft, maliciously to circumvent those with
XVIII. whom they deal, for that they perceive their powers to faile them. The eighteenth is, a desire of venery 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 humour is most fit) which are agitated, & violently carried through the veins and genitall parts by the preternaturall heat; but at length when this heate is cooled, and that they are fallen into a hot and dry distemper, they mightily abhor venery, which then would bee very hurtfull 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
XIX. dissipated by venery. The nineteenth is, the so great thickness of their grosse and livide bloud, that if you wash it, you may finde a sandy matter therein, as some have
XX. found by experience, by reason of the great adustion and assation thereof. The twentieth is, the languidnesse & weakness of the pulse (by reason of the oppression of the vitall and pulsifick faculty by a cloud of grosse vapours). Herewith also their urine sometimes is thick and troubled, like the urine of carriage beasts, if the urenary vessels be permeable and free; otherwise it is thin, if there be obstruction, which only suffers that which is thin to flow forth by the urenary passages; now the urine is oftentimes of a pale ash-colour, and oft-times it smels like as the other excrements do in this disease. Verily there are many other signes of the Leprosie, as the slowness of the belly by reason of the heat of the liver, often belchings by reason that the stomack is troubled

bled by the refluxe of a melancholy humour, frequent sneesing by reason of the fulnesse of the braine; to these, this may be added most frequently, that the face and all the skin is unctuous or greasie, so that water powred thereon, will not in any place adhere thereto: I conceive it is by the internall heat dissolving the fat that lies under the skin, which therfore alwaies lookes as if it were greased or anointed therewith in leprous persons. Now of these forementioned signes, some are univocall, that is, which truly and necessarily shew the Leprosie: othersome are equivocall or common, that is, which conduce as well to the knowledge of other diseases as this. To conclude, that assuredly is a Leprosie which is accompanied with all, or certainely the most part of these forementioned signes.

Why their faces seeme to bee greasie.

CHAP. VIII.

Of Prognosticks in the Leprosie; and how to provide for such as stand in feare thereof.

Why the Leprosie is uncurable.

THe Leprosie is a disease which passeth to the issue, as contagious almost as the plague, scarce curable at the beginning, uncurable when as it is confirmed, because it is a *Cancer* of the whole body; now if some one *Cancer* of some one part shall take deepe root therein, it is judged uncurable. Furthermore the remedies which to this day have bin found out against this disease, are judged inferiour and unequall in strength thereto. Besides, the signes of this disease doe not outwardly shew themselves before that the bowels be seazed upon, possessed and corrupted by the malignity of the humour, especially in such as have the white Leprosie, sundry of which you may see about *Burdeaux*, & 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 many daies in the Sun. There is another thing that increaseth the difficulty of this disease, which is an equall pravity of the three principall faculties whereby life is preserved. The deceitfull and terrible visions in the sleepe, and numnesse in feeling, argue the depravation of the animall faculty; now the weaknesse of the vitall faculty is shewed by the weaknesse of the pulse, the obscurity of the hoarse and jarring voice, the difficulty of breathing, and stinking breath; the decay of the naturall is manifested by the depravation of the work of the liver in sanguification, whence the first and principall cause of this harme ariseth. Now becaus wee cannot promise cure to such as have a confirmed Leprosie; and that we dare not do it to such as have been troubled therewith but for a short space, it remains that we briefly shew how to free such as are ready to fall into so fearefull a disease. Such therefore must first of all shun all things in diet and course of life whereby the bloud and humours may be too vehemently heated, whereof we have formerly made some mention. Let them make choice of meats of good or indifferent juice, such as we shall describe in treating of the diet of such as are sick of the plague; purging, bleeding, bathing, cupping, to evacuate the impurity of the bloud, and mitigate the heat of the liver, shall bee prescribed by some learned Physician. *Valesius de Tarenta* much commends gelding in this case, neither do I think it can be disliked. For men subject to this disease may be effeminated by the amputation of their testicles, anb so degenerate into a womanish nature, and the heat of the liver boyling the bloud, being extinguished, they become cold & moist, which temper is directly contrary to the hot & dry distemper of Leprous persons; besides the Leprous being thus deprived of the faculty of generation, that contagion of this disease is taken away which spreadeth and is diffused amongst mankind by the propagation of their issue.

The cure.

Their diet.

Gelding good against the Leprosie.

The End of the Twentieth Booke.

OF POYSONS,

AND OF THE BITING OF A MAD DOGGE, AND THE BITINGS AND STINGINGS OF OTHER VENEMOUS CREATURES.

THE ONE AND TWENTIETH BOOK.

CHAP. I.

The cause of writing this Treatise of Poysons.

FIVE reasons have principally moved me to undertake to write this Treatise of poysons, according to the opinion of the Ancients. The first is, that I might instruct the Surgeon what remedies must presently be used to such as are hurt by poysons, in the interim whilst greater meanes may bee expected from a Physician. The second is, that hee may know by certaine signes and notes such as are poysoned or hurt by poysonous meanes, and so make report thereof to the Judges, or to such as it may concerne. The third is, that those Gentlemen and others who live in the Countrey, and farre from Cities and store of greater meanes, may learne something by my labours by which they may helpe their friends bitten by an Adder, madde Dogge, or other poysonous creature, in so dangerous, sudden and usuall a case. The fourth is, that every one may beware of poysons, and know their symptomes when present, that being knowne, they may speedily seeke for a remedie. The fifth is, that by this my labour all men may know what my good-will is, and how well minded I am towards the common wealth in generall, and each man in particular, to the glory of God. I doe not here so much arme malicious and wicked persons to hurt, as Surgeons to provide to helpe and defend each mans life against poyson; which they did not understand, or at least seemed not so to doe, which taking this my labour in evill part, have maliciously interpreted my meaning.

But now at length, that wee may come to the matter; I will begin at the generall division of poysons, and then handle each *species* thereof severally: but first let us give this rule; That, Poyson is that which either outwardly applyed or struck in, or inwardly taken into the body, hath power to kill it, no otherwise, than meate well dreſt is apt to nourish it. For *Conciliator* writes, that the properties of poyson are contrary to nourishments in their whole substance, for as nourishment is turned into bloud, and in each part of the body whereto it is applyed to nourish, by perfect assimulation is substituted in the place of that portion which flowes away each moment. Thus

What is to be accounted poyson.

Thus on the contrary poyſon turnes our bodies into a nature like it ſelfe and venenate, for as every agent imprints the force and qualities thereof in the ſubject patient, thus poyſon by the immoderation of faculties in their whole nature contrary to us, changeth our ſubſtance into its nature, no otherwiſe than fire turneth chaffe in a moment into its owne nature, and ſo conſumes it. Therefore it is truly delivered by the Ancients, who have diligently pryed into the faculties of naturall things, that it is Poyſon that may kill men by deſtroying and corrupting their temper, and the compoſure and conformation of the body. Now all poyſons are ſaid to proceed either from the corupt aire, or from living creatures, plants and mineralls, or by an artificiall malignity in diſtilling, ſubliming and diverſly mixing of poyſonous and fuming things. Hence ariſe ſundry differences of poyſons; neither doe they all worke after the ſame manner; for ſome corrupt our nature by the unmeaſurableneſſe of the manifeſt and elementary qualities whereof they conſiſt, others from a ſpecifick and occult propertie. Hence it is that ſome kill ſooner than otherſome; neither is it true, that all of them preſently aſſaile the heart, but others are naturally at deadly ſtrife with other parts of the body, 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 ſome which are apt preſently to comfort and ſtrengthen the heart; others the brain, as *ſtachas*; others the ſtomack, as Cinamon; Alſo there are ſome poyſons which work both waies, that is, by manifeſt and occult qualities, as *Euphorbium*; for that both by the exceſſive heate and the whole ſubſtance, or the diſcord of the whole ſubſtance with ours, corrupts our nature. An argument hereof is, that Treacle, which by its quality is manifeſtly hot, infringeth the force thereof, as alſo of all others of an occult property. Poiſons which work by an occult and ſpecifick property, do not therefore doe it, becauſe they are too immoderately hot, cold, dry, moiſt; but for that they are abſolutely ſuch, and have that eſſence from the ſtars and cœleſtiall influence, which is apt to diſſolve and deſtroy the ſtrength of mans 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 poyſons do not onely kill being taken into the body, but ſome being put or applyed outwardly; neither doe venimous creatures only harme by their ſtinging and biting, but alſo by their excrements, as ſpittle, blood, the touch and breath.

The differences of poyſons.

All poyſons have not a peculiar Antipathy with the heart.

Chap. II.

How poyſons being ſmall in quantity, may by their only touch cauſe ſo great alterations.

IT ſeemeth ſtrange to many, how it may come to paſſe, that poyſon, 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 ſwels up the body into a great bigneſſe. Neither ought it to ſeeme leſſe ſtrange, how Antidotes and Counter-poyſons, which are oppoſed to poyſon, can ſo ſuddenly breake and weaken the great and pernicious effects thereof, being it is not likely that ſo ſmall a particle of poyſon or Antidote can divide it ſelfe into ſo many, and ſo far ſevered particles of our body. There are ſome (ſaith *Galen*) who thinke that ſome things by touch onely, by the power of their quality, may alter thoſe things which are next to them, and that this appeares plainly in the ſea *Torpedo*, as that which hath ſo powerfull a quality, that it can ſend it alongſt the fiſhers rod to the hand, and ſo make it become torpide or numbe. But on the contrary, Philoſophers teach, that accidents, ſuch as qualities are, cannot without their ſubjects remove and diffuſe themſelves into other ſubjects. Therefore *Galens* other anſwer is more agreeable to reaſon, that ſo many and great affects of poyſons and remedies ariſe either from a certaine ſpirit or ſubtle humidity; not truly, for that this ſpirit and ſubtle humidity may be diſperſed over the whole body and all the parts thereof which it affects,

Cap. 5. lib. 6. de locis affect.

fects, but that little, which is entred the body, as cast in by the stroake 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, untill from an exceeding small portion of the bloud, if the stroake shall light into the veines, it shall spread over the whole masse of bloud; or of phlegme, if the poyson shall chance to come to the stomacke, and so the force thereof shall bee propagated and diffused over all the humours and bowels. The doubt of Antidotes is lesse, for these being taken in greater quantity, when they shal come into the stomack, warmed by the heat of the place, they become hot, & send forth vapours, which suddenly diffused over the body by the subtlety of their substance, doe by their contrary forces dull and weaken the malignity of the poyson. Wherefore you may often see when as Antidotes are given in lesse quantity than is fit, that they are lesse prevalent, neither doe they answer to our expectation in overcomming the malignity of the poyson; so that it must necessarily follow that these must not onely in qualities, but also in quantiy bee superiour to poysons.

The true reason of the wondrous effects of poysons.

CHAP. III.

Whether there be any such poysons as will kill at a set time?

TO the propounded question; whether there may be poysons which within a certaine and definite time (put case a moneth or yeare) may kill men, *Theophrastus* thus answers; of poysons, some more speedily performe 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 than others; they do not this of their owne or proper nature, as Physicians rightly judge, but because the subject upon which they light, doth more or lesse resist or yeeld to their efficacie. Experience sheweth the truth hereof; for the same sort of poyson in the same weight and measure given to sundry men of different tempers and complexions, will kill one in an houre, another in sixe houres, or in a day, 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 othersome not at all; also with some it will worke gently, with othersome with paine and gripings. Of which diversity there can no other cause be assigned, than mens different natures in complexion & 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 labour against the strength of the poyson, or how pervious or open the passages of the body may bee whereby the poyson may arrive at the heart and principall parts. For in such (for example sake) as have the passages of their arteries more large, the poyson may more readily and speedily enter into the heart together with the aire that is continually drawn into the body.

No poysons kill in a set time.

How poysons come to kil sooner or later.

CHAP. IIII.

Whether such creatures as feed upon poysonous things be also poysonous, and whether they may be eaten safely and without harme?

DUcks, Storkes, Hernes, Peacocks, Turkies, and other birds, feed upon Toads, Vipers, Aspes, Snakes, Scorpions, Spiders, Caterpillers, & other venemous things. Wherfore it is worthy the questioning, whether such like creatures nourished with such food, can kill or poyson such persons as shall afterward eat them? *Matthiolus* writes that all late Authors, who have treated of poysons, to be absolutely of this opinion, That men may safely and without any danger feed upon such creatures, for that they convert the beasts into

Such things as feed upon poyson may be eaten without danger.

to

to their nature after they have eaten them, and on the contrary, are not changed by them. This reason though very probable, yet doth it not make these beasts to be wholly harmelesse, especially if they be often eaten or fed upon. *Dioscorides* and *Galen* seeme to maintaine this opinion, whereas they write, that the milke, which is nothing else than the relented bloud, 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 their milke becomming purging, becomes both meat and medicine to the childe. The flesh of Thrushes, which feed upon Juniper berries, savours of Juniper. Birds that are fed with worme-wood or Garlike, either tast bitter, or have the strong sent of Garlike. Whitings taken with garlike, so smell thereof, that they will not forgoe that smell or taste by any salting, frying or boyling, for which sole reason, many who hate garlike, are forced to abstain from these fishes. The flesh of Rabbits that feed upon Pennyroyall and Juniper, savour of them; Phisicians wish that Goats, Cows, and Asses, whose milke they would use for Consumptions or other diseases, should bee fed some space before, and every day with these or these herbs which they deeme fit for the curing of this or that disease. For *Galen* affirmes that hee doubts not, but that in successe of time the flesh of creatures will be changed by the meats whereon they feed, and at length savour thereof. Therefore I do not allow that the flesh of such things as feed upon venemous things should be eaten for food, unlesse it bee some long space after they have disused such repast, and that all the venome bee digested and overcome by the efficacy of their proper heat, so that nothing thereof may remaine in tast, smell or substance, but bee all vanished away. For many dye suddenly, the cause of whose deaths are unknowne, which peradventure was from nothing else, but the sympathy and antipathy of bodies, for that these things cause death and disease to some, that nourish others ome [according to our vulgar English proverbe; That which is one mans meate is another mans Poyson.]

Lib. de simp. facult.

The occasion of sudden death in many.

CHAP. V.

The generall signes of such as are poysoned.

Common signes of such as are poysoned.

WEE will first declare what the generall signes of poyson are, and then will we descend to particulars, whereby we may pronounce that one is poysoned with this or that poyson. We certainly know that a man is poysoned, when as hee complaines of a great heavinesse of his whole body, so that hee is weary of himselfe; when as some horrid and loathsome taste sweats out from the orifice of the stomacke to the mouth and tongue, wholly different from that taste that meat, howsoever corrupted, can send up: when as the colour of the face changeth suddenly, somewhiles to blacke, sometimes to yellow, or any other colour, much differing from the common custome of man; when nauseousnesse with frequent vomiting, troubleth the patient, and that hee is molested with so great unquietnesse, that all things may seeme to bee turned upside downe. Wee know that the poyson workes by the proper, and from the whole substance, when as without any manifest sense of great heate or coldnesse, the patient sownes often with cold sweats, for usually such poysons have no certaine and distinct part wherewith they are at enmity, as *cantharides* have with the bladder. But as they worke by their whole substance, and an occult propriety of forme; so doe they presently and directly assaile the heart, our essence and life, and the fortresse and beginning of the vitall faculty. Now will wee shew the signes whereby poysons, that worke by manifest and elementary qualities, may be knowne. Those who exceed in heate, burne or make an impression of heat in the tongue, the mouth, throate, stomacke, guts, and all the inner parts, with great thirst, unquietnesse, and perpetuall sweats. But if to their excesse of heate they bee accompanyed with a corroding and putrefying quality, as Arsenicke, Sublimate, Rose-ager or Ratsbane, Verdegreace, Orpiment, and the like, they then cause in the stomack

Signes of hot poysons.

ſtomacke and guts intolerable pricking paines, rumblings in the belly, and continuall and intolerable thirſt. Theſe are ſucceeded by vomitings, with ſweats ſomewhiles hot, ſomewhiles cold, with ſwounings, whence ſuddaine death enſues. Poyſons that kill by too great coldneſſe, induce a dull or heavie ſleepe, or drowzineſſe, from which you cannot eaſily rouze or waken them; ſometimes they ſo trouble the braine, that the patients performe many undecent geſtures and anticke trickes with their mouthes and eyes, armes and legges, like as ſuch as are franticke; they are troubled with cold ſweats, their faces become blackiſh or yellowiſh, alwayes ghaſtly, all their bodies are benummed, and they dye in a ſhort time unleſſe they be helped; poyſons of this kinde are Hemlock, Poppie, Nightſhade, Henbane, Mandrage. Dry poyſons are uſually accompanied by heate with moiſture, for although *ſulphur* bee hot and dry, yet hath it moiſture, to hold the parts together, as all things which have a conſiſtence have, yet are they called dry, by reaſon that dryneſſe is predominant in them: ſuch things make the tongue and throate dry 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 ſquallide by dryneſſe, the patients cannot ſleepe; poyſons of this kinde are Lytharge, Ceruſſe, Lime, Scailes of Braſſe, Filings of Lead, prepared antimony. On the contrary, moiſt poyſons induce a perpetuall ſleep, a fluxe or ſcouring, the reſolution of all the nerves and joints, ſo that not ſo much as the eyes may be faithfully conteined in their orbes, but will hang as ready to fal out; the extreme parts, as the hands, feet, noſe and ears corrupt & putrefie, at which time they are alſo troubled with thirſt by reaſon of their ſtrong heat, alwaies the companion of putrefaction, & oft times the author thereof: now when this commeth to paſſe, death is at hand. Very many deny that there can be any moiſt poyſons found, that is, ſuch as may kill by the efficacy of their humidity, becauſe there are no ſuch things to bee found, as may come to the fourth degree of moiſture. Yet there is an example that averres 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 ſleepe, tooke him by the arme, all the fleſh being putrefied, fell off, and preſently the bones alſo fell aſunder, being deprived of their fleſh, which could not happen, unleſſe by exceſſe of the venemous humidity which lay hid in the teeth and ſpittle of the ſerpent. Alſo wee have found it noted by *Hippocrates*, that in a rayny, humide, and ſoutherly conſtitution of the yeare, it happened by the maligne violence of the venenate and putrefying humidity, that the fleſh of the armes and legges becomming rotten, fell away by peecemeale, and the bones remained bare; yea alſo and the bones themſelves in ſome, putrefyed and fell away: neither certainely doth the *Lues venerea* kill by any other meanes, than by a fretting and putrefying force of humidity, by whoſe efficacy the ſolidity of the bones is diſſolved; then much more the fleſh may bee tainted and conſumed by putrefaction.

Signes of cold poyſons.

Signes of dry poyſons.

Signes of moiſt poyſons.

A hiſtory.

Sect. 3. lib. 3. epid.

The *Lues venerea* kills by exceſſe of moiſture.

To theſe and ſuch poyſons which worke by a manifeſt and elementary faculty, when as they ſhall bee received into the body after what manner ſoever, you ſhall forthwith oppoſe their contraries, and if by chance it bee not manifeſt, what, and of what diſtinct kind of poyſon that is, you muſt know that ſuch poyſons as worke by occult properties, it is not by reaſon as yet found out how they will affect the body, but onely by experience. Therefore to theſe you muſt oppoſe their like antidotes, which may by their whole ſubſtance ſtrengthen the heart and vitall faculty, and withſtand the ſtrength of the poyſon. But to this our diſtinction of poyſons, working by a manifeſt and elementary quality, their opinion is contrary, who affirme that the venome of all poyſonous beaſts are therefore cold, for that ſuch as are bitten or ſtung with them, are forthwith felt to bee colder than 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 doe, lye under ſtones, under which, you may often finde them ſtiffe and numbe, and ſo unapt for motion, that you may eaſily take them up in your hand. But the coldneſſe that is perceived or felt in ſuch as are bitten or ſtung, is not occaſioned by the coldneſſe of the poyſon, but by the abſence of the naturall heate, withdrawing it ſelfe in the very inſtant of the ſtroake, from the ſurface

All poyſons are not cold.

face into the center of the body, both for the defence of the heart, as the principall part, as also for that there is nothing, which so much dissipates, or so much oppugnes the vitall heat, as poyson (of what kinde soever it be) doth.

Why such as are poysoned or stung, are cold.

Chap. VI.

How, or by what meanes to shunne, or eschew Poysons.

IT is a matter of much difficulty to avoyd poysons, because such as at this time temper them, are so throughly prepared for deceit and mischief, that they will deceive even the most wary and quick-sighted; for they so qualifie their ingrate taste and smell, by the admixture of sweet and well smelling things, that they cannot easily bee perceived even by the skillfull. Therefore such as feare poysoning, ought to take heed of meates cooked with much art, very sweete, salt, soure, or notably endued with any other taste. And when they are oppresst with hunger or thirst, they must not eate nor drinke too greedily, but have a diligent regard to the taste of such things as they eate or drinke; besides, before meat let them take such things as may weaken the strength of the poysons; such as is the fat broth of good nourishing flesh meats; in the morning let them arme themselves with treacle or mithridate, and conserve of roses, or the leaves of rue, a wallnut and dry figs; besides, let him presently drinke a little draught of Muskedine or some other good wine; when one suspects hee hath taken any poyson in meat or drinke, let him forbeare sleeping. For besides that the force of poyson is oft times so rapid, that it consumes our life in a short space, as fire doth stubble, as also for that it is drawne more inwardly into the secret passages of the body by sleepe. Wherefore in such a case it is better to procure vomit by drinking *Hydraleum* warme, or butter dissolved in warme oyle, or a decoction of line, or fenugreeke seedes, or fat broth, for thus the received poyson is also cast forth therewith, or else the acrimony thereof retunded, and the belly loosed.

What such as feare poysoning must observe in their diet.

Why sleepe is hurtfull.

Why and how vomit must be procured.

You may see this by daily experience, for caustickes, vesicatories, and the like acrid things being applyed to an anointed part, will not blister nor exulcerate the part. Neither doth the vomit conduce onely in this, that it excludeth the poyson, but it shewes either by the taste, smell, or colour, the kinde of the taken poyson; so that then by using the proper Antidote, it may bee the more easily and speedily resisted, yet notwithstanding if you conceive that the poyson have descended deeper into the Guts, you may with a glyster draw away the rest thereof which adheres to the coats of the Guts. But if the patient cannot vomit, then shall some purging medicine be given him forthwith, and such as are thought more particularly to resist poyson, such as are Agaricke, Aloes, the lesser Centaury, Rubarbe and other things, according to the direction of the learned Physitian. Then shall you administer glysters made with *Cassia*, fatty decoctions, sheeps suet, or butter or Cowes milke, with the mucilages of Line seed, *psilium* seeds, quince seeds, and other such things as are usually given in a Dysentery, or bloody fluxe, that such things may hinder the adhesion of the poyson to the coates of the guts, and by their unctuousnesse retunde the acrimony of the poyson, and mitigate if any thing shall already be ulcerated, and absolutely defend the sound parts from the maligne effects of the poyson. But let this be a perpetuall rule, That the poyson bee speedily drawne backe by the same way it entred into the body; as, if it entred by smelling in at the nostrills, let it bee drawne back by sneesing, if by the mouth into the stomack, let it be excluded by vomit; if by the fundament into the belly, then by glister; if by the privities into the wombe, then by *metrenchites* or injections made therinto; if by a bite, sting or wound, let revulsion bee made by such things as have a powerfull attractive faculty; for thus we make diversions, that by these we may not onely hinder the poyson from assailing the heart, but also that by this means we may draw it from within outwards. Wherfore strong ligatures cast about the armes, thighes and legges, are good in this case. Also large cupping

When and wherewith they shall be purged.

The cure of poysoned wounds.

cupping glasses applyed with much flame to sundry parts of the body, are good. Also bathes of warme water, with a decoction of such things as resist poyson, as southerne wood, calaminte, rue, betony, horehound, penny royall, bayes, *scordium*, smallage, scabious, mints, valerian, and the like, are good in this case. Also sweates are good, being provoked so much as the strength of the patient can endure. But if he be very wealthy, whom we suspect poysoned, it will bee safer to put him into the belly of an oxe, horse or mule, and then presently into another assoone as the former is cold, that so the poyson may bee drawne forth by the gentle and vaporous heate of the new killed beast; yet doe none of these things without the advise of a Physitian, if it may conveniently be had.

CHAP. VII.

How the corrupt or venemous Ayre may kill a Man.

THE aire is infected and corrupted by the admixture of maligne vapours, either arising from the unburied bodies of such as are slaine in great conflicts, or exhaling out of the earth after earth-quakes, for the aire, long pent up in the cavities and bowells of the earth, and deprived of the freedome and commerce of the open aire, is corrupted, and acquires a maligne quality, which it presently transferreth unto such as meet therewith. Also there is a certaine malignity of the aire which accompanieth thunders, and lightnings, which savoures of a sulphureous virulency, so that whatsoever wilde beastes shall devoure the creatures killed therewith, they become madde, and dye immediately; for the fire of lightning hath a farre more rapid, subtle, and greater force than other fires, so that it may rightly be termed a Fire of Fires.

By how many, and what meanes the aire may be infected

How thunders and lightnings may infect the aire.

An argument hereof is, that it melteth the head of a spear, not harming the wood, and silver and gold, not hurting the purse wherein it is conteined. Also the aire is infected by fumigations, which presently admitted into the body and bowels by the mouth and nose in respiration, by the skinne and arteries in perspiration, doth easily kill the spirits and humours being first infected, and then within a short space after, the solid substance of the principall parts, & chiefly of the heart being turned into their nature, unlesse the man be first provided for by sneesing, vomiting, sweating, purging by the belly, or some other excretion. For that poyson which is carryed into the body by smell is the most rapid & effectuall, by so much as a vapor or exhalation is of more subtle & quicklier piercing essence than an humor. Yet notwithstanding, wilt thou say, it is not credible, that any can be kild by any vapor raised by the force of fire, as of a Torch, or a Warming-pan, for that the venenate quality of the thing that is burnt, is dissipated and consumed by the force of the fire, purging and cleansing all things. This reason is falsly faigned to the destruction of the lives of careless people; for sulphureous brands kindled at a cleere fire, doe notwithstanding cast forth a sulphureous vapour. Whether doe not *Lignum aloes* and Juniper, when they are burnt in a flame, smell lesse sweetly?

Whether the vapour that ariseth from a burnt thing may poyson one.

Pope *Clement*, the seventh of that name, the Uncle of our Kings Mother, was poysoned by the fume of a poysonous Torch that was carryed lighted before him, and dyed thereof. *Matthiolus* telleth, that there were two Mountebanks in the market place of *Sienna*, the one of which, but smelling to a poysoned gilly-flower given him by the other, fell downe dead presently.

A history.

A certaine man not long ago, when he had put to his nose, and smelled a little unto a pomander, which was secretly poysoned, was presently taken with a *Vertige*, and all his face swelled, and unlesse that hee had gotten speedy helpe by sternutatories and other meanes, hee had died shortly after of the same kinde of death that Pope *Clement* did.

The safest preservative against such poysons, is not to smell to them: moreover, some affirme, that there are prepared some poysons of such force, that being anointed but on the saddle, they will kill the rider, & others, that if you but anoint the stir-

rops therwith, they will send so deadlie poysonous a qualitie into the rider, through his boots, that he shall die therof within a short time after: which things, though they be scarce credible, because such poysons touch not the naked skin, yet have they an example in nature, whereby they may defend themselves. For the *Torpedo* sends a narcoticke, and certainelie deadlie force, into the arme, and so into the bodie of the Fisher, the cords of the net being between them.

Chap. VIII.

That every kinde of Poyson hath its proper and peculiar Signes and Effects.

AS poysons are distinct in *species*, so each *species* differs in their signes and effects; neither is it possible to find anie one kinde of poyson, which may be accompanied or produce all the signes and effects of all poysons, otherwise Physitians should in vaine have written of the signes and effects of each of them, as also of their proper remedies & antidotes. For what kind of poyson shall that be, which shall cause a burning heat in the stomack, bellie, liver, bladder & kidneies, which shall cause a hicketting, which shall cause the whole body to tremble and shake, which shall take away the voice and speech, which shall cause convulsions, shall weaken the pulsificke facultie, which shall intercept the freedome of breathing, which shall stupefie and cast into a dead sleepe, which shall together, and at once cause a *Vertigo* in the head, dimnesse in the sight, a strangling, or stoppage of the breath, thirst, bleeding, feaver, stoppage of the urine, perpetuall vomiting, rednesse, lividnesse, and paleness of the face, resolution of the powers, and manie other things, all which are caused by all sorts of poyson. Lastly, no bodie will denie, but that hot poysons may kill more speedily than cold, for that they are more speedily actuated by the native heat.

Hot poysons kill sooner than cold.

Chap. IX.

The Effects of Poysons 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 some virulencie, but yet some more than othersome. They are most virulent that are inflicted by venemous beasts, as Aspes, Vipers, Water-snakes, and all kindes of Serpents, Basiliskes, Dragons, Toads, Mad dogges, Scorpions, Spiders, Bees, Waspes, and the like. They are lesse maligne, which are of creatures wanting venome, as of Horses, Apes, Cats, Dogges not mad, and manie other things, which though of their owne nature they are without poison, yet in their bites there is something more dolorificke and ill natured, than in common wounds inflicted by other occasions: I beleeve that in their slaver or *sanies*, there is something, I know not how to terme it, contrarie to our nature, which imprints a maligne qualitie in the ulcer, which also you may observe in the tearings or scratchings of such creatures as have sharpe clawes, as Lions and Cats. Moreover manie affirme that they have found by experience, that the bites of men are not altogether without virulencie, especially of such as are red haired and freckled, cheiflie 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 mans biting, which is neither red haired nor freckled, neither angrie; this happens not by meanes of the spittle, nor by anie maligne qualitie, but by reason of the contusion, caused by the bluntnesse of the teeth, not cutting, but bruising the part, for being not sharp, they cannot so easily enter the flesh, unlesse by bruising and tearing, after the manner of heavie and blunt

Lib. 2. cap. 27. The bites of all wild beasts are virulent.

The bites of a red haired man virulent.

ſtroaks and weapons, wounds being occaſioned by ſuch are more hard to bee cured, than ſuch as are made by cutting and ſharp weapons. But of the fore-ſaid bitings of venemous creatures, there are few which doe not kill in a ſhort ſpace, and almoſt in a moment, but principally if the poiſon be ſent into the bodie by a live creature, for in ſuch poiſon there is much heat; alſo there is therein a greater tenuity, which ſerves as vehicles thereto into what place or part ſoever 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 houre, as the poiſon of Aſpes, Baſiliskes and Toads; others not unleſſe 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 quantity, doe in a ſhort ſpace cauſe great and deadly mutations in the bodie, as if they had breathed in a peſtiferous aire, and with the like violence, taint and change into their owne nature all the members and bowels, by which theſe ſame members do in the time of perfect health change laudible meats into their nature and ſubſtance. The place whereas theſe poiſonous creatures live, & the time, conduce to the perniciouſneſſe of the poiſon, for ſuch as live in drie, mountanous and ſun-burnt places kill more ſpeedily than ſuch as be in moiſt and mariſh grounds: alſo they are more hurtfull in winter than in ſummer; and the poiſon is more deadly which proceeds from hungry, angry and faſting creatures, than that which comes from ſuch as are full and quiet; as alſo that which proceeds from young things, chiefly when as they are ſtimulated to venery, is more powerfull than that which comes from old & decrepite; from females worſe than from males; from ſuch as have fed upon other venemous things, rather than from ſuch as have abſtained from them, as from ſnakes which have devoured toads, vipers which have fed upon ſcorpions, ſpiders & Caterpillers. Yet the reaſon of the efficacie of poyſons depends from their proper, that is, their ſubtle or groſſe conſiſtence, & the greater or leſſe aptneſſe of the affected body to ſuffer. For hot men that have larger & more open veins & arteries, yeeld the poiſon freer paſſage to the heart. Therefore thoſe which have more cold & 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 reſiſts pernicious venome. If the poiſon worke by an occult and ſpecifick propertie, it cauſeth the cure and prognoſtick to be difficult, and then muſt we have recourſe to Antidotes, as theſe which in their whole ſubſtance reſiſt poyſons, but principally to treacle, becauſe there enter into the compoſition thereof medicines which are hot, cold, moiſt and drie: whence it is, that it retunds and withſtands all poiſons, chiefly ſuch as conſiſt of a ſimple nature, ſuch as theſe which come from venemous creatures, plants and minerals; and which are not prepared by the deteſtable art of empoiſoners.

Connuſed wounds harder to heale than ſuch as are cut.

Why treacle retunds the force of all ſimple poyſons.

CHAP. X.

What cure muſt bee uſed to the bitings and ſtingings of venemous beaſts.

CUre muſt ſpeedily bee uſed without any delay to the bites and ſtingings of venemous beaſts, which may by all meanes diſperſe the poyſon, and keepe it from entring into the body; for when the principall parts are poſſeſſed, it boots nothing to uſe medicines afterwards. Therefore the Ancients have propounded a double indication to leade us to the finding out of medicines in ſuch a caſe, to wit, the evacuation of the virulent and venenate humour, and the change or alteration of the ſame and the affected body. But ſeeing evacuation is of two ſorts, to wit, univerſall, which is by the inner parts, and particular, which is by the outward parts. We muſt begin at the particular, by ſuch to pick medicines as are fit to draw out, and retund the venome; for we muſt not alwaies begin a cure with generall things, as ſome thinke, eſpecially in externall diſeaſes, as wounds, fractures, diſlocations, venemous bites and punctures. Wherefore

A double indication in the cure of venemous bites.

hereto as speedily as you may, you shall apply remedies fit for the bites & punctures of venemous beasts, as for example, the wounds shall bee presently washed with urine, with sea-water, *aqua vitæ*, or wine, or vineger wherein old treacle or mustard shall be dissolved. Let such washing be performed very hot, and strongly chafed in, and then leave upon the wound and round about it, linnen ragges, or lint steeped in the same liquor. There be some who thinke it not fit to lay treacle thereto, because, as they say, it drives the poyson in. But the authority of *Galen* convinceth that opinion, for he writeth that if treacle be applyed to this kind of wounds before that the venome shall arrive at the noble parts, it much conduceth. Also reason confutes it; for vipers flesh enters the composition of treacle which attracts the venome by the similitude of substance, as the Load-stone draweth iron, or Amber strawes. Moreover, the other simple medicines which enter this composition, resolve and consume the virulencie and venome, and being 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 applyed outwardly for evacuation, must bee of subtle parts, that they may quickly insinuate themselves into every part to retund the malignity of the poyson; wherefore garlike, onions, leeks, are very good in this case, for that they are vaporous; also *scordium*, rue, *dictamnus*, the lesser Centaury, horehound, rocket, the milkie juice of unripe figs, and the like, are good; there is a kind of wilde bugloss amongst all other plants, which hath a singular force against venemous bites, whence it is termed *Echium* and *viperinum*, and that for two causes; the first is, because in the purple flowers that grow amongst the leaves, there is a resemblance to the head of a viper or adder. Another reason is, because it heales the biting of a viper not onely applyed outwardly, but also helpeth such as are bitten, being drunke in wine, yea, and will not suffer those that have lately drunke thereof to bee bitten at all. Wilde time hath the like effect; though these oft-times agree with the poyson in quality as in heate, yet doe they helpe in discussing and resolving it: yet, as much as wee may, wee must labour to have evacuation and alteration together. It is most convenient, if the part affected will permit, to apply large cupping-glasses with much flame and hornes; also sucking is good, the mouth being first washed in wine wherein some treacle is dissolved, and with oile, lest any thing should adhere thereto, for it will hinder it, if so be the mouth bee no where ulcerated. It is good also to apply horseleaches; some wish to apply to the wound, the fundaments of hens or turkies that lay egges, for that such are opener behinde, first putting salt upon them that they may gape the wider, shutting their beaks and opening them now & then lest they should be stifled, and ever and anon to substitute others in stead of such as die or are suffocated; for thus it is thought the poyson is drawne forth, and passeth into the bird by the fundament. There bee others which had rather apply to the wound live birds cut asunder in the midst, and so laid to hot, for that they ghesse these resist poyson by a naturall discord. But certainely it is by their heate whereby they doe not onely digest toads, aspes, vipers, scorpions and other venemous things, but also weare asunder and soften sand, stones, and most dry and stony seeds in their gizzards; wherefore we must think them very good to draw out the poyson and dissipate it. But nothing is so forcible to disperse and retund the venome, as the impression of cauteries, especially actuall, for a hot iron workes more effectually and speedily, and causeth an ulcer which will remaine open a longer time. Wherefore to cause the speedier falling away of the eschar, you shall scarifie it to the quick, and then plentifully annoint the place. For thus the poyson will the sooner passe forth. But this must bee done before the poyson enters far into the body, for otherwise Cauteries will not only do no good, but further torment the patient, and weaken him to no purpose. Let drawing plasters be laid to the wound & neighbouring parts, made of *Galbanum*, turpentine, blacke pitch, and other gummy and resinous things. After the falling away of the Eschar, *basilicon* shall bee applyed, quickned with a litle Precipitate, for it is very effectuall in these cases, for that it draweth forth the virulent *sanies* out of the bottome of the wound, neither doth it suffer the wound to bee closed speedily. To which purpose they put in a piece of a spunge, or a roote of Gentian or Hermodactyll,

Lotions fit for venemous bites.

Lib. de theriaca.

Treacle outwardly applyed and inwardly taken good against venemous bites.

The force of Echium.

The efficacie of Cauteries against venemous bites.

The force of Precipitate against venemous wounds.

ſtyll, or ſome acride medicine, as *ægyptiacum* or Precipitate mixed with the powder of Alume, or a cauſtick beaten to powder. But you muſt alwaies obſerve this, that with your ointments you muſt alwaies mixe ſome Treacle or Mithridate, or the juice of *hypericon*, or the like, which have power to attract and diſperſe the poyſon, and cleanſe the ulcer; yet if too vehement heat ſhall cauſe ſuch paine as is likely to bring a gangrene by the diſſipation of the ſpirits, then neglecting the cure of the proper diſeaſe for a time, wee muſt labour to correct the ſymptome. But in this caſe you muſt obſerve this rule, that you let no bloud, give no purging medicine, nor glyſter, nor vomit, nor uſe no bath, nor other thing that may procure ſweat, untill three daies be paſt after the bite or ſting. In the meane ſpace, let the patient ſhun all manner of labour, but chiefely venery, leſt by cauſing an agitation of the humours, the poyſon get ſooner to the heart. Therefore then it is time to uſe univerſall evacuations, when as you ſhall ſuſpect that the poyſon is diffuſed over the veines and whole inner part of the bodie beſides. Before you ſhall give nothing, unleſſe medicines of Treacle or Mithridate and the like things, which have a faculty to reſiſt poyſon, and ſtrengthen the whole body by their benigne and vitall vapour, although their ſubſtance goe no further than the ſtomack. Thus pills when they are ſwallowed, though they goe no further than the ſtomacke, yet doe they draw matter out of the joints and head; and ſtrong glyſters, though they paſſe no further than the guts, yet by their quality diffuſed further with the vapour, they draw from the moſt diſtant parts; yet you muſt giue an Antidote, not onely more powerfull than the poyſon in quality, but alſo greater in quantitie, that ſo it may the more eaſily overcome and expell the poyſon. Wherefore you muſt give it twice in a day, and continue it ſo long untill you ſhall know that the ſtreagth of the poyſon is weakned and overcome by the remiſſion and decay of the maligne ſymptomes. Yet in the meane while, you muſt not neglect the diſtemper cauſed in the part by the poyſon, but muſt rather correct it by the application of remedies contrary to the diſtemper, as by cold things, if great heat afflict the affected part and whole bodie; by hot things on the contrary, if it ſeeme as cold as a ſtone, which oft-times happens. And let thus much ſuffice for the generall cure of poyſons: now will we come to their particular cure.

When hot things are not convenient for poyſoned wounds.

Antidotes muſt be given in great quantities.

Chap. XI.

Why dogges ſooner become mad than other creatures, and what bee the ſignes thereof.

Dogges become mad ſooner than other creatures, becauſe naturally they enjoy that temper and condition of humours which hath an eaſie inclination to that kinde of diſeaſe, and as it were a certaine diſpoſition, becauſe they feed upon carrion and corrupt, putride and ſtinking things, and lap water of the like condition; beſides the trouble and vexation of loſing their maſters, makes them to runne every way, painfully ſearching and ſmelling to every thing, and neglecting their meat. A heating of the bloud enſues upon this paines, and by this heate it is turned into a melancholy, whence they become madde. But yet dogges doe not alway become mad by meanes of heat, but alſo by occaſion of cold, that is, by contrary cauſes, for they fall into this diſeaſe not onely in the dog-daies, but alſo in the depth of winter. For dogges abound with melancholike humours, to wit, cold and drie. But ſuch humours as in the ſummer through exceſſe of heate, ſo in the depth of winter by conſtipation and the ſuppreſſion of fuliginous excrements, they eaſilie turn into melancholie. Hence followes a very burning and continuall feaver, which cauſeth or bringeth with it a madneſſe. Adde hereto, that in the depth of winter the heate which is contained within is redoubled, and in like manner as the ſcorching heate in ſummer, it breeds and turnes the humours into melancholie. Alſo dogges become madde by contagion, as ſuch as are bitten by another madde dogge. A mad dog hath ſparkling and fierie eies, with a fixed looke, cruell and a ſquint, hee carries his head heavily, hanging downe towards the ground, and ſomewhat on one ſide, hee

Dogs naturally ſubject to madneſſe.

Dogs become mad, not onely in the heat of ſummer, but alſo in the depth of winter.

hee gapes, and thrusts forth his tongue, which is livide and blackish; and being short breathed, casts forth much filth at his nose, and much foaming matter at his mouth; in his gate, as if he suspected and feared all things, he keepeth no one or certain path, but runs one while to this side, another while to that, and stumbling like one that is drunke, he oft-times falleth downe on the ground; he violently assailes whatsoever he meets withall, whether it bee man, tree, wall, dog, or any thing else; other dogs shun him, and presently sent him a farre off. But if another unawares chance to fall foule on him, he yeelds himselfe to his mercy, fawnes upon him, and privily labours to get from him, though hee be the stronger & greater. Hee is unmindfull of eating and drinking, he barkes not, yet he bites all he meets without any difference, not sparing his master, as who at this time hee knowes not from a stranger or enemie. For it is the property of melancholie to disturbe the understanding, so that such persons as are melancholike, doe not onely rage against, and use violence to their friends and parents, but also upon themselves. But when as he sees water, he trembles and shakes, and his haires stands up on end.

Why melancholike persons hurt themselves.

Chap. XII.

By what signes we may know a man is bitten of a mad dog.

IT is not so easie at the first to know a man that is bitten with a mad dogge; and principally for this reason, because the wound made by his teeth causeth no more pain than other wounds usually do; contrary to the wounds made by the sting or bite of other poysonous creatures, as those which presently after they are inflicted, cause sharpe paine, great heat, swelling and abundance of other maligne accidents, according to the nature of the poyson; but the malignity of the bite of a mad dogge appeares not before that the venome shall invade the noble parts. Yet when you are suspicious of such a wound, you may acquire a certaine knowledge and experience thereof by putting a piece of bread into the quitture that comes from the wound. For if a hungry dog neglect, yea more fly from it, and dare not so much as smell thereto, it is thought to bee a certaine signe that the wound was inflicted by a madde dogge. Others adde, That if any give this piece of bread to hens, that they will die the same day they have eaten it; yet this latter, I making experiment thereof, failed, for devouring this virulent bread, they became not a jot the worse. Wherefore I think the former signe to be the more certaine, for dogs have a wonderfull and sure smelling faculty, whereby they easilie sent and perceive the malignitie of the like creature. But when as the raging virulencie hath invaded the noble parts, then the patients, becomming silent and sorrowfull, thinke of many things, and at the beginning make a noise with their teeth; they make no answer to the purpose, they are more testie than ordinarie, and in their sleepes they are troubled with dreames, and strange phantasies, and fearfull visions, and lastly, they become affraid of the water. But after that the poison hath fixed it selfe into the substance of the noble parts, then all their faculties are disturbed, all the light of their memorie, senses, reason and judgement is extinguished. Wherefore becomming starke mad, they know not such as stand by them, nor their friends, no nor themselves, falling upon such as they meet withall, & themselves with their teeth, & nailes & feet. Often twitchings like convulsions do suddenly rise in their limbs; I judge them occasioned by extraordinary drinesse, which hath as it were wholly drunk up all the humiditie of the nervous parts; there is a great drinesse of the mouth with intolerable thirst, yet without any desire of drink, because the mind being troubled, they become unmindful & negligent of such things as concerne them, and are needful for them; the eyes look fierie & red, & all the face is of the same colour; they still think of dogs, and seem to see them, yea and desire to bark and bite just after the maner of dogs; I conjecture that the virulent humour hath changed all the humours & the whole body into the like nature, so that they think themselves also dogs; whence their voice becomes hoarse by much endevouring to barke, having forgot all decencie,

The bite of a mad dog not very painefull at the first.

Signes of the bite of a mad dogge.

Signes by which you may gather that the noble parts are tainted.

Why men becomming mad barke like dogs.

cie, like impudent dogs, to the great horrour of the beholders. For their voice growes hoarse by reason of the great drynesse of the *aspera arteria*; they shun the light, as that which is enemy to melancholy, wherewith the whole substance of the braine is repleniſhed; on the contrary, they desire darkenesse, 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 drinesse) and they fly from looking-glasses, because they imagin they see dogs in them, whereof they are much affraide, by reason whereof they shun the water and all polite and cleare bodies which may supply the use of a looking-glasse; so that they throw themselves on the ground, as if they would hide themselves therein, lest they should be bitten againe: for they affirme that he which is bitten by a mad dog, alwaies hath a dog in his minde, and so remaines fixed in that sad cogitation. Wherefore thinking that he sees him in the water, he trembles for feare, and therefore shuns the water. Others write that the body by madnesse becommeth wondrous dry, wherefore they hate the water, as that which is contrary thereto, being absolutely the moistest element, and so they say that this is the reason of their fearing the water. *Ruffus* writes that madnesse is a kinde of melancholie, and that feare is the proper symptome thereof, according to *Hippocrates*; wherefore this or that kind of melancholie begets a feare of these or these things, but chiefly of bright things, such as looking-glasses and water, by reason that melancholie persons seeke darkenesse and solitarinesse, by reason of the black corruption of the humour wherewith they abound. They fall into cold sweats, a fomie, stinking and greenish matter flowes from the ulcer, by reason of the heat of the antecedent cause and ulcerated part. The urine most commonly appeares watrish, by reason that the strainers, as it were, of the kidnies, are straitned by the heat and drinesse of the venome. Yet sometimes also it appears more thick and black, as when nature powerfully using the expulsive faculty, attempts to drive forth by urine the melancholy humour, the seat of the venome. Also sometimes it is wholly suppresst, being either incrassated by hot drynesse, or else the mind being carried other waies, and forgetfull of its owne duty, untill at length the patients, vexed by the cruelty of so many symptomes, and overcome by the bitternesse of pain, die frantick, by reason that medicines have not been speedily and fitly applyed. For few of those who have used remedies in time, have perished of this disease.

Why they shun the light.

Why they are affraid of the water.

Aphor. 25. sect. 6.

The bite of a mad dog taken in hand in time, is for the most part curable.

CHAP. XIII.

Prognosticks.

WE cannot so easily shun the danger we are incident to by mad dogs, as that of other beasts, by reason he is a domestick creature, and housed under the same roofe with us. The virulency that resides in his foame or slaver is hot and dry, maligne, venenate and contagious, so that it causeth a distemper like it selfe, in the body whereto it shall apply it selfe, and spread it selfe over the whole body by the arteries; for it doth not onely hurt when as it is taken in by a bite or puncture, but even applyed to the skin, unlesse it be forthwith washed away with salt water or urine. Neither doth this venome hurt equally or at all times alike, for it harms more or lesse, according to the inclination of the aire to heat or cold, the depth of the wound, the strength of the patients body, and the ill humours thereof, and their disposition to putrefaction, the freedome and largenesse of the passages. Now maligne symptomes happen sooner or later, as in some about the fourtieth day, in others about sixe moneths, and in others a yeare after. There be some who thereupon are troubled with the falling sicknesse, and at length grow mad: such as fall into a feare of the water, never recover. Yet *Avicen* thinks their case is not desperate, if as yet they can know their face in a glasse; for hence you may gather, that all the animall faculties are not yet overthrowne, but that they stand in need of strong purgations, as we shall shew hereafter. *Aëtius* tels that there was a certaine Philosopher, who taken with this disease and a feare 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, he forthwith cryed out,

The venome of a mad dog applie'd outwardly only, may cause madnesse.

Whether the *Hydrophobia* or feare of water be incurable.

A history.

Quid

Quid canis cum Balneo? (t) What hath a dog to doe with a Bath? which words being uttered, he threw himselfe forcibly into the Bath, and fearelesly dranke of the water thereof, and so was freed from his disease together with his erroneous opinion. It is a deadly signe to tumble themselves on the ground, to have a hoarse voice, for that is an argument that the weazon is become rough by reason of too excessive dryness. Finally, the principall parts being possessed, there is no recovery or life to be hoped for. Men may fall mad, though they bee not bit by a mad dog. For as the humours are often inflamed of themselves, and cause a *Cancer* or Leprosie, so do they also madnesse in melancholie persons. The bites of vipers and other venemous creatures cause not like symptomes to these that come by the biting of a mad dog, because they die before such can come forth or shew themselves. Great wounds made by mad dogs are not equally so dangerous as little, for from the former, great plenty of venemous matter flowes out, but in the latter it is almost all kept in.

Chap. XIIII.

What cure must be used to such as are bitten by a mad dog.

A history. THis case also requires speedy remedies, for such things are in vaine which come long after the hurt. The Lawyer *Baldus* experienced this to his great harme; for being by chance lightly bit in the lip by a little dog wherwith he was delighted, not knowing that he was mad, & neglecting the wound, by reason of the smallnesse thereof, after some foure moneths space, he died mad, having then in vaine assayed all maner of medicines. Wherefore observing these things both for evacuation, as also for alteration, which we have formerly mentioned in the generall cure of wounds inflicted by the bite or sting of venemous creatures, and by all the meanes there specified, we must draw forth the venome; and if the wound be large, then suffer it to bleed long and much, for so some part of the poyson 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 fourty daies be passed. Sorrel beaten and applied to the wound, and the decoction thereof taken inwardly, is very effectuall in this case, as *Aëtius* affirmes. To the same purpose you may with good successe make a lotion and friction with mustard dissolved in urine or vinegar, leaving upon the wound a double cloth moistned in the same decoction: lastly, all acride, biting and very attractive medicines are convenient in this case. Wherefore some apply Rocket boyled and beaten with butter and salt; others take the flowre of *Orobus*, and temper it with hony, salt and vinegar, and apply it hot. Horse-dung boyled in sharpe vinegar, or brimstone beaten to powder and tempered with ones spittle, is good. Also black pitch melted with some salt, and a little *Euphorbium* mixed therewith and so applied, is good. Some write, that the haires of the dogge whose bite caused the madnesse, applyed by themselves, by their sympathie or similitude of substance draw the venome from within outwards; for so a Scorpion beaten and applied to the place whereas it stung, by drawing out the poyson that it sent in, restores the patient to health, both these by often experience are affirmed to have certaine event. Others chaw unground wheat, and lay it upon the wound, others roast beanes under hot embers, then huske them and cleave them, and so apply them. Also the wound may be wholesomely washed and fomented with a decoction of Docks, and then the herb beaten may be applyed thereto; also the patient may drinke the decoction; and by this one remedy *Aëtius* affirmes that he hath recovered divers; for thus it moves urine plentifully, which is thought much to conduce to the cure of this disease. There be some who apply the leaves of betony and nettles beaten with common salt; others make a medicine to the same purpose and after the same manner of an Onion, the leaves of Rue and salt. Yet the rest are exceeded by Treacle dissolved in *aqua vitæ* or strong wine, and rubbed hard upon the part, so that the bloud may follow, laying upon the wound when you have wiped it, clothes dipped in the same medicine, then presently apply garlike or onions beaten with common

The force of Sorrell.

The force of Docks.

A history.

mon ſalt and turpentine: by this onely remedy I freed one of the daughters of *Madamoiſelle de Gron* from the ſymptomes of madneſſe, and healed the wound, when as a mad dog had bit her grievouſly in the calfe of the right leg. Alſo it is good preſently to eate garlick with bread, and then to drinke after it a draught of good wine, for garlicke by its ſpirituous heate will defend the noble parts from poyſon. There bee ſome who wiſh to eate the roſted liver of the dog that hurt them, or elſe 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 drunke with wine and butter. Others the powder of river-crabs, burnt and drunke in wine. Or, ℞. *rad. gentianæ* ℥ii. *aſtacorum fluviatilium in fumo combuſt. & in pollinem redact.* ℥iii. *terræ ſigill.* ℥ß. *miſce.* give ℥i. of this ſame powder in the decoction of river crabs, & let them drink thereof oft at ſundry times. Many have caſt themſelves into the ſea, neither have they thence had any helpe againſt madneſſe, as *Ferrand Pozet* the Cardinall teſtifieth in his booke of poyſons; wherefore you muſt not relie upon that remedie, but rather you muſt have recourſe to ſuch things as are ſet downe in the books of Phyſicians, and approved by certaine and manifold experience. But ſeeing that no poyſon can kill, unleſſe it be taken or admitted into the body, we muſt not fear any harme by ſprinkling our bodies with the *ſanies* of a mad dogge, viper, toad, or any other ſuch like venemous creature, if ſo bee that it be preſently wiped or waſhed cleane away.

A hiſtory.

Leaping into the ſea no certaine remedy againſt madneſs.

CHAP. XV.

What cure muſt be uſed to ſuch as feare the water, but yet are able to know themſelves in a glaſſe.

SUch as have not their animal faculty as yet orecome by the malignity of the raging venome, muſt have ſtrong purgations given them. Wherefore, if in any caſe Antimonie bee uſefull, then is it in this, as that which cauſeth ſweats, looſeth the belly, and procures vomiting. For it is a part of extreme and dangerous madneſſe to hope to overcome the cruel malignity of this poyſon 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 poyſon by cauſing ſweats. Alſo many and frequent treacle potions are good, to retund the venome, and ſtrengthen the bowels; alſo it will be fitting to give them water and all other liquid things, which they ſo much abhorre, 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 warme and light place, that the poyſon which by coldneſſe is forced in, may be the readilier drawne out by the means of heat, and the ſpirits bee recreated by the brightneſſe of the aire, and therefore move from the center to the circumference of the body, and let the roome be perfumed with ſweet things. To eat very hot and ſalt things preſently at the beginning, as onions, leeks, all ſpiced meats, and ſtrong wine not allaied, ſeems not to be beſides reaſon; becauſe ſuch things by their ſpirituous heat hinder the diffuſion of the poyſon over the body, and ſtrengthen the filled entrailes. There be ſome alſo that would have them to feed upon groſſe and viſcous meats, which by obſtructing the veſſels, may hinder the paſſage of the poyſon to the heart and other parts; and by the ſame reaſon it will be better to fill themſelves with meate to ſatietie, than otherwiſe, becauſe the malignity of humours is encreaſed by hunger, than which, nothing can be more harmfull to venemous wounds. Yet within a ſhort while after, as within five or ſixe dayes, they muſt returne to a mediocritie, and uſe all things temperate, boiled meats rather than roaſted, and that in a decoction of opening things, ſo to move urine. Laſtly, they muſt keep ſuch a diet as melancholike perſons ought to do; neither ſhall they let bloud, leſt ſo the poyſon ſhould bee further drawne into the veines; but it is good that the patients body be ſoluble from the very firſt. Let their drinke be wine indifferently allayed with water, *oxymel ſimplex*, or the ſyrupe of the juice of Citron with boiled water; or elſe this following

The force of Antimonie againſt madneſs.

Julep

Why sleepe is hurtfull to such as are bitten by a mad dog, and all such as are poysoned.

Julep. R. *succi limonum, & malorum citri, an.* ℥ß. *suc. gran. acid.* ℥ii. *aquæ acetosæ, min. & ros. an.* ℥i. *aq. font. coct. quantum sufficit, fiat Julep, ut artis est.* Sleep is to be avoided untill the force of the poyson is abated, for by sleep the humours flow back into the bowells. All things that resist poyson must bee given any way whatsoever, as lemons, oranges, *angelica* rootes, gentian, tormentill, burnet, vervine, *carduus benedictus*, borage, bugloss, and the like. Let all things that are afterwards set before the patient be meats of good juice, such as are veale, kid, mutton, partridge, pullets, capons, and the like.

CHAP. XVI.

Of the biting of a Viper or Adder, and the symptomes and cure thereof.

The bites of vipers how virulent.

THe remedies that were formerly mentioned against the bitings of madde dogges, the same may bee used against all venemous bites and stings, yet nevertheless each poyson hath his peculiar antidote. Vipers or Adders (as we vulgarly terme them) have in their gummes, or the spaces betwene their teeth, little bladders filled with a virulent *sanies*, which is pressed out into the part that they

The symptoms.

bite with their teeth. There forthwith ariseth a pricking paine, the part at the first is much swollen, and then the whole body, unlesse it be hindred: grosse and bloody filth sweats out of the wound, little blisters rise round about it, as if it were burnt, the wound gnawes, and as it were feeds upon the flesh, great inflammation possesseth the liver and the gummes, and the whole body becomes very dry, becomming of a yellowish or pale colour, with thirst unquenchable; the bellie is griped by fits, a cholericke vomiting molesteth them, the stomacke is troubled with a hicketting, the patients are taken with often sownings, with cold sweate, the forerunner of death, unlesse you provide by fit medicines for the noble parts, before the poyson shall invade them. *Mathiolus* tells that he saw a countrie-man, who, as he was mowing a

A history.

meadow, by chance cut an Adder in two with his sithe, which when he thought it was dead, he tooke the one halfe whereon the head remained, without any feare in his hand, but the enraged creature, turning about her head, cruelly bit him by one of his fingers, which finger as men usually doe (especially when as they thinke of no such thing) hee put into his mouth, and sucked out the blood and poyson, and presently fell downe dead.

A history.

When as *Charles* the ninth was at *Montpelier*, I went into the shop of one *Farges* an Apothecary, who then made a solemne dispensation of Treacle, where not satisfying my selfe with the looking upon the vipers which were there in a glasse, ready for the composition, I thought to take one of them in my hands, but whilest that I too curiously and securely handled her teeth which were in her upper jaw, covered with a skinne, as it were a case to keepe the poyson in, the beast catched hold of the very end of my fore-finger, and bit me in the space which is betweene the naile and the flesh; whence presently there arose great pain, both by reason of the part endued with most exquisite sense, as also by the malignity of the poyson: forthwith I exceeding straitly bound my finger above the wound, that so I might presse forth the blood and poyson, lest they should diffuse themselves further over the body. I dissolved old treacle in *aqua vitæ*, wherein I dipped and moistened cotton, and so put it

Remedies for the bite of a viper.

to the wound, and within a few dayes I throughly recovered by this onely medicine. You may use in stead of Treacle, Mithridate and sundry other things, which by reason of their heat are powerfull drawers, as a squill rosted in hot embers, garlicke and leeks beaten and applyed, barly floure tempered with vinegar, hony, and goats dung, and so applyed like a pultis. Some thinke it sufficient forthwith to wash and foment the wound with vinegar, salt, and a little hony. *Galen* writes that the

Lib. de tox. 1 c.

poyson inflicted by the bite of a viper, may bee drawne forth by applying to the wound the head of a viper, but othersome apply the whole viper beaten to mash.

CHAP.

CHAP. XVII.

Of the Serpent called Hæmorrhous.

THE Serpent *Hæmorrhous* is so called, because by his biting hee causeth blood to droppe out of all the passages of the wounded bodie; hee is of a small bodie, of the bignesse of a viper, with eies burning with a certaine fierie brightnesse, and a most beautifull skinne. The backe of him (as *Avicen* writes) is spotted with manie blacke and white spots, his necke little and his taile verie small: the part which he bites, forthwith growes blackish, by reason of the extinction of the native heat, which is extinguished by such poison which is contrarie thereto in its whole substance. Then followes a paine of the stomacke and heart, these parts being touched with the pestiferous qualitie of the poison. These paines are seconded by vomiting, the orifice of the ventricle being relaxed by a *Diarrhœa*, the retentive faculties of all the parts of the bellie being weakened, and the veines which are spred through the guts, not being able to retaine the blood conteined in them. For the blood is seen to flow out, as in streams, from the nose, mouth, eares, fundament, privities, corners of the eies, rootes of the naile, and gums, which putrefie, the teeth falling out of them. Moreover there happens a difficultie of breathing, and stoppage of the urine, with a deadlie convulsion.

The Hæmorrhous why so called.

Wonderfull bleedings.

The cure is forthwith to scarifie, and burne the bitten part, or else to cut it quite off, if that it may be done without danger of life, and then to use powerfullie drawing Antidotes.

The figure of the serpent Hæmorrhous.



CHAP. XVIII.

Of the Serpent called Seps.

THE Serpent *Seps* is so called, because it causeth the part which it bites, forthwith to putrefie, by reason of the cruell malignitie of its poyson. It is not much unlike the *Hæmorrhous*, but that it curles or twines up the taile in divers circles. *Pausanias* writes that this serpent is of an ash-colour, a broad head, small necke, bigge bellie, writhen taile, and as he goes, hee runs aside like a crabbe. But his skin is variegated and spotted with severall colours, like to Tapistrie. By the crueltie of his caustick and putrefying venome, hee burnes the part which he hath bit, with most bitter paine; he causeth the shedding of the haires, and as *Aëtius* addeth, the wound at the first casteth forth manifest blood, but within a little while after, stinking filth. The putrefyed affected parts waxe white, and the bodie all over becomes of the colour of that scurfe, which is termed *Alphos*, so that by the wickednesse of this putrefactive poison, not onely the spirits are resolved, but also the whole bodie consumed, as by fire, a pestilent carbuncle, and other putride tumours, arising from a hot and humide or suffocating constitution of the aire. Now for the remedies, they must be such as are formerly prescribed against the bitings of a viper.

The reason of the name, and description of the *Seps*.

The symptoms.

The

The Figure of the Serpent Seps.



Chap. XIX.

Of the Basiliske or Cockatrice.

The efficacy of of the poyson of the Basilisk.

THe Basiliske far exceeds all kinds of Serpents in the curstnes of its poyson. Therefore it is affirmed by *Nicander*, that into what place soever he comes, other venemous creatures do forthwith flie thence, for that none of them can so much as endure his hissing; for he is thought to kill all things even with this, & not with his biting and touch only; besides, if any of them hasten to get anie meate or drinke, and perceive that the Basiliske is not farre from thence, he flies back, and neglects the getting of nourishment necessarie for life. *Galen* writes, that the Basilisk is a yellowish serpent, with a sharpe head, and three risings distinguished with white spots, and rising up in forme of a crowne, by reason whereof hee is stiled the King of Serpents. Certainely the violence of his poyson in killing men is so great, that he is therefore thought to kill men, and other creatures by his sight onely. *Solinus* affirmes, that the body of a dead Basiliske hath wondrous faculties. Wherefore the inhabitants of *Pergamum*, in ancient times, gave a mightie price for one, to hang upon the joistes 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 carkasse; but if constrained by hunger they doe touch it, then they forthwith fall downe dead in the same place: and this happens not onely by eating their body, but also by devouring the bodies of such beasts as are killed by their bitings. They kill the trees and shrubs by which they passe, not onely by their touch, but even with their breath. Amongst the westerne Æthiopians is the fountaine *Nigris*, neer which there is a serpent called *Catablepas*, small in bodie, and slow, having a great head; which it scarce can carrie, but that it lies alwaies upon the ground, otherwise it would kill abundance of people, for it forthwith kills all that see the eyes thereof, the Basiliske hath the same force; he is bred in the province of *Cyrene*, of the length of some twelve fingers, with a white spot in his head, resembling a crowne; he chaseth away all serpents with his hisse: Weasels are the destruction of such monsters: thus it pleased nature, that nothing should be without its equall; they assaile them in their dennes, being easily knowne by the barrennesse or consumption of the soile. 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 be nothing which he might fear, hath opposed the weake creature the Cocke, by whose crowing onely he is terrified and put to flight. *Erasistratus* writes, that a golden yellownesse affects the bitten part of such as are hurt by a Basiliske, but a blackenesse and tumour possesseth the rest of the body, all the flesh of the muscles within a while after falling away peecemeale. An antidote against this must be made of a dramme of *Castoreum* dissolved

Why the Basiliske is thought to kill by his onely sight.

Lib. de theriac.

Plin. lib. 8. cap. 21.

The *Catablepas*.

Nothing in nature without its equall.

Symptoms.

Cure.

in

in wine and drunken, or else in the juice of poppie. But *Aëtius* thinkes it superfluous to write remedies against the Basiliske, when as the sight and hearing onely kills such as either see or heare her.

The figure of a Basiliske.



Chap. XX.

Of the Salamander.

The malignity of a Salamander.

THe Salamander kils not onely such as it bites by making a venemous impression, but it also infects the fruits and herbs over which it creeps, with a spittle or grosse moisture which sweats out of all the bodie, to the great danger of the health and life of such as eat these things at unawares: wherfore it need not seeme strange, which is received by some late writers, that some families have all died by drinking water out of pits, whereinto a Salamander by accident was fallen. For if it shall creepe upon a tree, it infects all the fruit with the qualities of cold and moist poyson, wherein it yeelds not to Aconite.

The temper of her.

Aetius writes that such as are infected with the poyson of a Salamander, certaine parts of their bodie grow livide, so that they fall away often, being putrefyed. At the first there appeare white spots over the body, then red, afterwards blacke with putrefaction, and the falling away of the haires. The cure is, to procure vomit, to loose the belly with a glyster, and to give them Treacle and Mithridate in potions. *Avicen* prescribes the same things against this kinde of poyson as against *opium*, by reason of the cold nature of them both; the proper antidote is turpentine, *styrax*, nettle seeds, and cypresse leaves. *Dioscorides* writes that the Salamander is a kind of Lizard dull, variegated, and which is falsly reputed not to be burnt by fire. But *Pliny* saith she is so cold, that she extinguisheth the fire by her touch onely, being laied upon hot coales. On the contrary, *Mathiolus* saith that cast into a great flame, they are quickly consumed. It is easie out of *Aetius* to reconcile these disagreeing opinions; This creature, saith hee, passeth through a burning flame, and is not hurt, the flame dividing it selfe and giving her way, but if shee continue any time in the fire, the cold humour being consumed in her, she is burnt. Now the Salamander is black, variegated, with yellow spots, starre-fashion.

Symptomes.

The cure.

Lib. 2. cap. 54.

How a Salamander may be said to live in the fire.

The figure of a Salamander.



Chap. XXI.

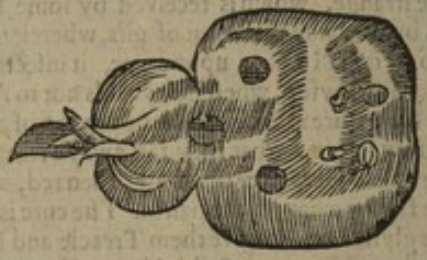
Of the Torpedo.

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 become torpid & numb; in muddy shoars it lives upon fish, which she catcheth by craft. For lying in the mud, she so stupefyes those that are nigh her, that she easily preyes upon them; she hath the same power over men, for she sends a numnesse not onely into the arm of the fisherman, but also over all his body, although his fishers pole be betweene them.

The effigies of a Torpedo.



Chap. XXII.

Of the Bitings of Aspes.

Symptomes.

THE wound which is made by an Aspe is very small, as if a needle were thrust into the part, and without any swelling. These symptomes follow upon her bite, suddaine darknesse clouds their eyes, much agitation in all their bodies, but gentle notwithstanding; a moderate paine of the stomacke troubles them, their foreheads are continually troubled with convulsive twitchings, their cheeks tremble, and their eye-lids fall gently to rest and sleep; the blood which flowes from the wound is little, but blacke; death no longer deferred than the third part of a day, will take them away by convulsions, unlesse you make resistance with fitting remedies The male Asp makes two wounds, the female four, as it also happens in the bitings of vipers. Now for that the poyson of Asps congeals the blood in the veines and arteries, therefore you must use against it such things as

Cure.

are

are hot & subtle of parts, as mithridate or treacle dissolved in *aqua vitæ*, and the same powred into the wound; the patient must be warmed by bathes, frictions, walking, and the like. When as the hurt part becommeth purple, black or greene, it is a signe that the native heat is extinct and suffocated by the malignity of the venome. Therefore then it is best to amputate the member, if the partie bee able to endure it, and there be nothing which may hinder. *Vigo* writes, that he saw a Mountebank at Florence, who, that he might sell the more of his Antidotes, and at the better rate, let an Aspe to bite him by the finger, but he died thereof some foure houres after. To the same purpose you may reade *Mathiolus*, whereas hee writes that those Impostors or Mountebanks to cozen the better, and deceive the people, use to hunt and take vipers and aspes long after the spring, that is, then whenas they have cast forth their most deadly poyson; then they feed them with meats formerly unusuall to them, so that by long keeping and care, at the length they bring it to passe, that they put off a great part of their venemous nature; neither being thus satisfied, they make them oftentimes to bite upon pieces of flesh, that so they may cast forth into them the venome which is contained in the membraine betweene their teeth and gums. Lastly, they force them to bite, licke and swallow downe an astringent medicine, which they compose and carry about for the same purpose, that so they may obstruct the passages by which the venome used to flow out, for thus at length their bites will be harmelesse, 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 remedy against all poisonous bites. *Christopher Andrew* in his book called *ecoiatria*, writes, that the Ilands of Spaine are every-where full and stored with serpents, aspes, and all sorts of venemous beasts, against whose bites they never observed or found any benefit in treacle. But the efficacie of the following Antidote is so certaine and excellent, and approved by so manifold experience, that in the confidence thereof, they will not bee affraid to let themselves bee bitten by an Aspe. Now this medicine is composed of the leaves of Mullet, Avenes & red stock Gilly flowers in like quantity, which they boile in sharpe vinegar and the urine of a sound man, and therewith foment the wounded part. Yet if he have not taken nor used any thing of a good while after the wound, it will be better and more certaine, if the patient drinke three ounces of this decoction fasting two houres before meate.

A history.

By what means Aspes may bee made lesse hurtfull. *Gal. lib. de Ther. ad pisones.*

Against the bites of what serpents treacle doth no good.

A certain remedy against the bitings of aspes.

CHAP. XXIII.

Of the biting of a Snake.

I Have thought good in a true history to deliver the virulent malignity of the bite of a snake, and the remedies thereof. When as King *Charles* the ninth was at Moulins, *Mounsier Le Feure*, the Kings Physician, and I were called to cure the Cooke of the Lady of Castelpers. Who gathering hoppes in a hedge to make a salad, was bit on the hand by a snake that there lay hid, hee putting his had to his mouth, sucked the wound to ease the paine by sucking forth the venome. But his tongue forthwith swelled so bigge, that he could not speak his mind: besides his whole arme, even to his shoulder, was in like sort much swelled, his paine was so vehement, that it made him swoune twice in my presence, his face was wan and livid like to a dead body, and though I despaired of his recovery, yet not suffering him to bee quite forsaken, I washed his mouth with treacle dissolved in white wine, and gave him some thereof to drinke, adding thereto some *aqua vitæ*. I opened his swolne arme with many and deepe scarifications, especially in the place where he was hurt, I suffered the bloud which was wholly serous and sanious, to flow more plentifully, I washed the wounds with treacle and mithridate dissolved in *aqua vitæ*, and then I put him exceeding warme in bed, procuring sweat, and making him to lie awake, lest sleep should draw the poyson inwards to the entrailes. I by these meanes so farre prevailed, that on the day after hee was freed from all his maligne symptomes. Therefore I judged it onely remained

A historie.

The cure.

for a perfect cure, that the wound should be long kept open and washed with treacle, neither was I deceived, for within a few dayes he was perfectly recovered.

Chap. XXIV.

Of the bitings of Toads.

The bites of toads how harmfull.

Though Toads want teeth, yet with their hard & rough gums they so straitly presse or pinch the part which they shall take hold on, that they will force their poison thereinto, and so over the whole body by the pores of the pressed part. Moreover, they cast forth their venome by urine, spittle and vomit upon herbes, but chiefly upon Strawberries, the which they are reported greatly to affect. Hence many suddenly and ignorantly catch their deaths.

A history.

I heard from a man of very good credit, that there were two merchants not farre from the Citie *Tholouse*, who whilest dinner was providing, walked into the garden that belonged to the Inne, where they gathered some sage leaves, and unwashed as they were, put them into their wine. They had not as yet dined, when being taken with a sudden *Vertigo*, the whole Inne seemed to run round, then losing their sight, they fell into a sowne, intermixed now and then with convulsions. But they stammered with their lippes and tongues becomming blacke; a froward and horrid look with continuall vomiting, and a cold sweat, the forerunner of death, which presently seazed upon them, their bodies becomming exceedingly much swolne. But the Justices of the place suspecting that they were poysoned, made the Inne-keeper and the Guests to be apprehended, being examined, they all constantly & with one voice answered, that the dead parties ate of the same meat and drinke which the rest did, but onely that they put sage into their wine. A Physician was asked the question whether sage might be poysoned; he answered, it might: but to come to the purpose, that it must appeare whether any venemous creature had poysoned the plant with her spittle or venemous *sanies*. This which was lightly pronounced, and only by conjecture, was by the eye found to bee true. For at the roote thereof there was found a hole in the ground full of Toads, who got out by putting in of warme water, made it credible that the plant was poysoned by their spittle and urine, whereby you may understand how unwisely they doe, who devoure herbes and fruits newly gathered without washing. Also we must take heed lest falling asleep in the fields, wee lye not neere the holes which toads or other venemous beasts of the like nature have made their habitation. For thence a venemous or deadly aire may be drawn into the lungs.

The symptomes occasioned by the poyson of toads.

May frogs.

For the same cause wee must abstaine from eating of frogs in the moneth of May, because then they engender with toads. Oxen in feeding sometimes lick up small toads together with the grasse, which presently will breed their great harme, for thereupon the oxen swell so big, that they often burst withall. Neither is the venome of toads deadly only being taken inwardly, but even sprinkled upon the skin, unless they forth-with wipe the place, & wash it with urine, water & salt. Such as are poisoned by a toad turn yellow, swell over all their bodies, are taken with an Asthmaticke difficultie of breathing, a *Vertigo*, convulsion, sowning, and lastly by death it selfe. These so horrid symptoms are judged inherent in the poyson of toads, not only by reason of the elementary qualities therof, coldnes & moisture, which are chiefly predominant therein; but much rather by the occult property which is apt to putrefie the humors of that body whereto it shall happen. Therfore it wil be convenient to procure vomit, especially if the poison be taken by the mouth, to give glysters, & to weaken the strength of the poison by hot and attenuating Antidotes, as treacle & 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*, affirmes the same things of the cursed venome of toads, as we have formerly delivered: yet that they seldome bite, but that they cast forth either their urine, the which they gather in a great quantity in a large bladder, or else their venemous spittle or breath against such as they meete withall, or assaile; besides, the herbs which are tainted by their poisonous breath, but much

The cure.

more such as are sprinkled with their spittle or urine, are sufficient to kill such as eate them. The Antidotes are juice of betonie, plantaine, mugwurt, as also the bloud of Tortoises made with flower into pils, and forthwith dissolved in wine, and drunken. *Pliny* writes that the hearts and spleens of toads resist poison. The vulgar opinion is false, who thinke that the toad-stone is found in their heads, which is good against poyson. Antidotes against the poyson of toads.

CHAP. XXV.

Of the stinging of a Scorpion.

A Scorpion is a small creature with a round bodie in forme of an egge, with many feet, and a long taile consisting of many joints, the last whereof is thicker and a little longer than the rest, at the very end thereof is a sting, in some two, hollow and replete with cold poyson, the which by the sting it casts into the obvious body; it hath five legs on each side forked with strong clawes, not unlike to a Crab or Lobster, but the two foremost are bigger than the rest; they are of a blackish or sootie colour, they goe aside, aside; and oft-times fasten themselves with their mouthes and feet so fast to men, that they can scarce be plucked therehence. There be some who have wings like the wings of Locusts, wasting the corn & all green things with their biting and burning. Such are unknown in France. These flee over divers Countries like winged Ants. This is likely to be true by that which *Mathiolus* writes, that the husbandmen in Castile in Spain, in digging the earth oft-times finde a swarm of Scorpions, which betake themselves thither against winter. *Pliny* writes, that Scorpions laid waste a certaine part of Æthiopia, by chasing away the inhabitants. The Ancients made divers kinds of Scorpions, according to their varietie or difference of colours, some being yellow, others browne, rediſh, ash-coloured, greene, whitish, blacke, duskie; some have wings, and some are without. They are more or lesse deadly according to the countries they inhabite. In Tuscanie and Scythia they are absolutely deadly, but at Trent and in the Iland Pharos their stinging is harmlesse. The place stung by a Scorpion presently begins to be inflamed, it waxeth red, growes hard and swels, and the patient is againe pained, hee is one while hot, another while cold, labour presently wearies him, and his paine is somewhiles more and somewhiles lesse, he sweats and shakes as if he had an Ague, his haire stands upright, paleneſſe discolours his members, and hee feels a paine, as if he were pricked with needles over all his skin, wind flieth out backwards, he strives to vomit and goe to stoole, but doth nothing, he is molested with a continuall feaver and sowning, which at length proves deadly, unlesse it be remedied. *Dioscorides* writes, that a Scorpion bearen and laid to the place where he stung, is a remedy thereto, as also eaten roasted to the same purpose. It is an usuall, but certaine remedy to anoint the stung place with the oyl of Scorpions. There be some who drop into the wound the milkie juice of figs, others apply thereto Calamint beaten, other some use barly meale-mixed with a decoction of Rue. Snailes beaten together with their shels, and laid thereon presently asswage pain. *Sulphur vivum* mixed with turpentine, and applyed plaster-wise, is good; as also the leaves of Rue beaten & laid thereto. In like sort also the herbe *Scorpioides*, which thence tooke its name, is convenient, as also a bryony root boiled and mixed with a little sulphur and old oile. *Dioscorides* affirmes Agarick in powder or taken in wine to be an Antidote against poysons, verily it is exceeding good against the stingings or bitings of serpents. Yet the continuall use of a bath stands in stead of all these, as also sweat and drinking wine somewhat alaid. Now Scorpions may bee chased away by a fumigation of *Sulphur* and *Galbanum*; also oile of Scorpions dropped into their holes, hinders their comming forth. Juice of radish doth the same. For they will never touch one that is besmeared with the juice of radish or garlike, yea verily, they will not dare to come neare him.

The description of a Scorpion. His taile.

Winged Scorpions.

Symptomes.

Lib. 2. cap. 10. & lib. 6. cap. 44.

Lib. 3. cap. 1.

Scorpions chased away with the juice of garlicke or Radishes.

Chap. XXVI.

Of the ſtinging of Bees, Waſpes, &c.

BEes, Waſpes, Hornets and ſuch like, cauſe great paine in the skin wounded by their ſtinging, by reaſon of the curſtneſſe of the venome which they ſend into the body by the wound, yet are they ſeldome deadly, but yet if they ſet upon a man by multitudes, they may come to kill him. For thus they have ſometimes been the death of horſes. Wherefore becauſe ſuch as are ſtung by theſe, by reaſon of the cruelty of pain, may think they are wounded by a more virulent and deadly creature, I thinke it not amiſſe to ſet downe what ſignes follow upon their ſtingings. Great paine preſently ariſeth, which continueth untill the ſting left in the part is taken forth, the part becomes red and ſwolne, and there riſeth a puſh or little bliſter. The cure is, forthwith to ſucke the wound very hard, and thereby to draw forth the ſtings, which if they cannot thus be gotten out, the place, if nothing hinder, is to be cut, or elſe temper aſhes with leven or oile, and ſo apply them: the part alſo may be very conveniently put into hot water, and there fomented for an houres ſpace, and at length waſhed in ſea-water. Creſſes beaten and applied, aſſwage the paine and diſcuſſe the humour cauſing the tumour. Oxe dung macerated in oile and vinegar, and applyed hot, doth the ſame. There are ſome who apply to the part the ſame creatures beaten, as we formerly ſaid of Scorpions; beans chawed and laid to the part aſſwage paine. Vinegar, hony 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 hony, is judged very effectuall, but it is much the better, mixed with treacle. Waſpes will not ſting nor bite ſuch as anoint their bodies with the juice of mallowes mixed with oile. They may bee quickly chaſed away with the fume of brimſtone and ſuch like things. A waſpe is ſaid, if ſhee find a viper dead, to dip her ſting in the others poyſon, and thence men learned to empoiſon the heads of their arrowes. The rough and hairy wormes, which are commonly called Bear-wormes, eſpecially thoſe which breed about a Pine tree, cauſe great itching, redneſſe & ſwelling in the part which they bite, touch or grate upon very hard. A remedy hereof is onions beaten with vinegar, and the reſt of the things formerly mentioned.

The ſymptoms.

The cure.

The bites of Bear-wormes.

Chap. XXVII.

Of the bite of a Spider.

SPiders weave webs with various art, yet in theſe they alwaies make a lurking hole, ſo to lye in waite to catch the intrapped flyes, and ſo to prey upon them. There are many ſorts of Spiders, one is termed *Rhagium*, round and like a blacke berry, whence it taketh the name; it hath a very ſmall mouth under the midſt of the belly, and moſt ſhort feet, as if they were imperfect, her bite is as painefull as the ſting of a Scorpion. Another is called *Lupus* or the Wolfe-ſpider, becauſe ſhee doth not onely lye in waite to catch flyes, but alſo bees and waſpes, and all ſuch things as may flee into her webbe. The third is named *Myrmecion*, it is larger than an Ant, but headed like one, the bodie thereof is blacke, and hath white ſpots or ſtreakes running towards the backe. The fourth kind may bee called *Veſparium*, in other things reſembling a Waſpe, but that it wants the wings; of a rediſh colour, and living onely on herbes. The Ancients have thought their bitings to bee venemous. Now their poyſon is therefore thought to bee cold, becauſe the ſymptomes thence ariſing are winde in the belly, refrigerations of the extreme parts of the body, numneſſe in the bitten part, with ſenſe of cold and ſhaking. The wound muſt forthwith be waſhed with very hot vinegar; then muſt you lay thereto onions, and

Differences of Spiders.

and such like things beaten, then procure sweat by art, as by bathes and stoves, yet nothing is more effectuall than treacle and mithridate.

CHAP. XXVIII.

of Cantharides *and* Bupreſtes.

Cantharides shine as it were with a golden colour, acceptable to the eye, by reason of the commixture of a blewish or greenish colour therewith, yet their smell is ungratefull. They are hot and dry in the fourth degree, and so causticke, corrosive and venemous, not onely by reason of their causticke quality, but because of a secret antipathy which they naturally have against the urenary parts; which effects they produce not onely if they bee taken by the mouth into the body, but even applyed outwardly to raise blisters. Such as have taken them inwardly, have the tast of pitch or some thing like *cedria*, or the rosen of Cedars, in their mouthes, it is likely that this tast proceeds from the humours dissolved by the putredinous heat in the stomack, guts & liver, and the vapours that therehence arise; for taken inwardly, they gnaw, exulcerate and burne all parts from the mouth even to the belly, whence ensueth a bloudy fluxe, excrements flowing out, which resemble the washings of new killed flesh. Then followes a burning feaver, *vertigo*, madnesse, restlesnesse, the braine being disturbed by the plenty of vapours lifted up from the corroded and burnt parts and humours, which therefore when as they appeare, you may know the affect is uncurable. In the parts appointed for the receiving and conveyance of the urine they cause a burning inflammation, excoriation, strong and continuall erection of the yard, whence ensues a bloudy and painefull strangury, in stead of which there oft-times happens or succeeds an Ischary 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 Cowes mike to correct the heat and drynesse, good also to mitigate the ulcers and stay the dysentery; it is good also to inject it into the guts by glyster. In stead thereof sallade oile, or oile of sweet almonds is convenient to retunde the acrimonie of the poyson fastned to the sides of the stomack. The rest and whole cure of this poyson you may learne by the following history. A certain whore, the better to enjoy the company 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 venery. The next day, when as the Abbot cast forth pure bloud at his fundament and yard which stood very stiffe, hee called some Physicians, who presently by the forementioned symptomes, which were all very apparent in him, understood that he had *Cantharides* given him: wherefore they purged him upwards with vomits, and downewards by glysters made with French barly, Rice, a decoction of mallowes, seeds of line and fœnugreek, oyle of lillies, goats suet: then presently after they gave him a little treacle with a good quantity of conserve of violets, which might draw the poyson outwards, they gave him milke to drinke, and caused him to use injections into the urenary passage and guts made of refrigerating things, as the juice of lettuce, purslaine, cucumbers, gourds, melons; of tough and viscide things, that so they might sticke the more easily and long to the ulcerated parts, as the mucilages of *psilium*, mallowes, quince-seeds, syrupe of water-lillies, popies and violets, fresh butter, and oile of sweet almonds, and they made him drinke onely barly water, or the common ptisan; they let him feede on veale, kid, and porke boyled with lettuce, purslaine, barly and violet leaves, the which by their humidity might relaxe the belly, and by their toughnesse lenifie the roughnesse or asperitie; they applyed also refrigerating things to the loines, share and *perinæum* to asswage the heate of the urine. At length they put him into a warme bath, and to conclude, they left nothing unattempted to draw forth or weaken the poyson. But all their endeavours were in vaine, for the Abbot dyed, not being destitute of remedies conveniently prescribed, but overcome by the contumacious

The description of Cantharides.

Enemies to the Bladder.

Symptomes.

A History.

The cure.

A hiſtory. ous malignity of the poyſon. The Phyſicians pains had far better ſucceſſe in a certain Gentlewoman againſt this kinde of affect; her whole face was deformed with red, fierie and filthy puſtles, ſo that all ſhunned her company as if ſhee had beene troubled with a Leproſie, and were ready to forbid her the ſociety of men; ſhee came to Paris, and calling *Hollerius* and *Grealmus* Phyſicians, mee and *Caballus* being Surgeons, ſhee made a grievous complaint, and beſought us earneſtly for ſome remedy againſt ſo great a deformity of her face; having diligently conſidered her caſe, we pronounced her free from a Leproſie; but we judged it fit to apply to her whole face a veſicatorie of *Cantharides*, three or foure houres after the application whereof, the medicine being come to worke its effect, her bladder began to burne exceedingly, and the necke of her wombe to ſwell, with gripings, continuall vomiting, making of water and ſcowring, a troubleſome agitation of the body and members, a burning and abſolutely fiery feaver. I forthwith called the Phyſicians, it was decreed that ſhe ſhould drink wine plentifully, and that it ſhould bee injected by the fundament into the guts, and by the urenary paſſage into the bladder and the neck of the womb, and that ſhe ſhould keep her ſelfe, untill the paine were mitigated, in a warme bath made of the decoction of Line-ſeeds, the roots and leaves of mallowes, marſh-mallowes, violets, henbane, purſlaine and lettuce; and her loynes and genitals ſhould be anointed with *unguentum roſatum & populeon* ſtirred and incorporated with oxycrate. By theſe meanes, all the ſymptomes were mitigated. Her face in the interim roſe all in a bliſter, and much purulent matter came out thereof, and ſo the deformity, wherewith ſhee was formerly troubled, vaniſhed away for ever, ſo that within a while after ſhee was married, and had many children, and is yet living in perfect health.

Cantharides applyed to the head, ulcerate the bladder.

A remedy againſt Leprous puſtles.

The reaſon of the name. *Bupreſtes* alſo are of the kinde of *Cantharides*, being like unto them in ſhape and faculty. If an Oxe or Sheepe or any other creature ſhall in feeding devoure one of them, hee will preſently ſwell up like a Tunne; whence alſo they take their name: if a man take them inwardly, hee ſhall endure the like ſymptomes as in taking *Cantharides*, and over and beſides both his ſtomacke and his whole belly ſhall be wonderfully puffed up, as if he had a Dropſie. It is probable that this inflation like a tympany happenneth by humours diffuſed and reſolved into vapours by the fiery acrimony of the venome: They are to bee cured after the ſame manner as ſuch as have drunke *Cantharides*. Laſtly, as in all other poyſons which are taken into the body, ſo alſo here, if the poyſon taken by the mouth bee thought as yet to bee in the ſtomacke, you muſt then procure vomit. If it bee gotten into the guts, then muſt it be drawn away by glyſters; if diffuſed over all the body, then muſt you make uſe of ſuch things as may drive the poyſon forth from the center to the circumference, ſuch as are bathes and ſtoves.

Chap. XXIX.

Of Horſe-Leaches.

What horſe-leaches moſt virulent. HOrſe-Leaches are alſo venemous, eſpecially ſuch as live in muddy ſtinking ditches, for theſe are leſſe hurtfull which reſide in clear & pure waters. Wherefore, before they are to bee uſed in caſes of Phyſick, they muſt be kept for ſome dayes ſpace in cleane water, that ſo they may purge themſelves; otherwiſe they may chance to leave ulcers hard to cure in the places whereto they ſhall be applyed, and the rather, if they bee violently plucked off, becauſe they by that meanes leave their teeth faſtned in the part.

Diverſe remedies according to the diverſity of the parts. Now hee which by chance hath ſwallowed a Horſe-leach, muſt bee asked in what part hee feeleth her, that is, the ſenſe of her ſucking. For if ſhee ſticke in the top of the Throate or Gullet, or in the middeſt thereof, the part ſhall bee often waſhed with muſtard diſſolved in vinegar. If ſhee bee neare the orifice of the ventricle, it is fit that the patient by little and little ſwallow downe oyle with a little vinegar. But if ſhee faſten to the ſtomacke, or the bottome of the ventricle, the patient by the plucking of the part ſhall perceive a certaine ſenſe of ſucking, the patient

ent will spit bloud, and will for feare become melancholicke. To force her thence, hee shall drinke warme water with oyle; but if shee cannot so bee loosed, then shall you mixe Aloes therewith, or some thing endued with the like bitternesse, for shee will by that meanes leave her hold, and so bee cast forth by vomit. You may perceive this by such as are applyed to the skinne, on the externall parts, for by the aspersion of bitter things, whether they bee full or empty, they will forsake their hold. Then shall the patient take astringent things, which may stoppe the bloud flowing forth of the bitten part, such is conserve of Roses, with *terra sigillata*, bole armenicke, and other more astringent things, if need so require. For if they shall adhere to some greater branch of some veine or artery, it will bee more difficult to stop the flowing bloud.

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 done of the other, beginning with the Lampron.

Chap. XXX.

Of the Lampron.

THE Lampron, called in Latine *Murana*, is a sea fish something in shape resembling a Lamprey, but shee is bigger and thicker, and hath a larger mouth, with teeth long, sharpe and bending inwards, she is of a duskie colour, distinguished with whitish spots, and of some two cubits length; the Ancients had them in great esteem, because they yeeld good nourishment, and may be kept long alive, in pooles or ponds, and so taken as the owners please to serve their table, as it is sufficiently knowne by the historie of the Roman *Crassus*. Shee by her biting induceth the same symptomes as the viper, and it may bee helped by the same meanes. Verily the Lampron hath such familiarity with the Viper, that leaving her naturall element, the sea, she leapeth a shoare, and seeketh out the Viper in her den to joyne with her in copulation, as it is written by *AElian* and *Nicander*.

The description of the Lampron

The naturall 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 vivacity (and by the English a Viver, or as some say a Qua viver) because being taken in fishing and drawne out of the sea, shee is said long to survive. Her pricks are poysonous, but chiefly those that are at the edges of her gils. Which is the reason that Cookes cut off their heads before they serve them up to the table; and at Roven the fishermen lay them not upon their stalles to sell before they have cut off their heads. The wounded part of such as are hurt, paines them much, with inflammation, a feaver, sowning, gangrene and deadly mortification, unlesse it bequickly withstood. Not very long agoe the wife of *Monsieur Fromaget*, Secretary of the requests, was wounded with a prick of this fish in her middle finger, there followed a swelling and rednesse of the part, without much paine; but perceiving the swelling to encrease, being made more wary by the mischance of her neighbour the wife of *Monsieur Bargelonne* Lievtenant particulier in the Chastelet of Paris, who died not long before by the like accident being neglected, sent for mee; I understanding the cause of her disease, laid to her pained finger and her whole hand, besides a pultis made of a great Onion roasted under the coales, leaven and a little treacle. The next day I wished her to dip her whole hand into warme water, so to draw forth the poyson, then I divided the skin about it with much scarification, but onely superficiarily; to the gashes I applyed Leaches, which by sucking drawing a sufficiSymptomes.

A history.

Cure. sufficient quantity of bloud, I put thereto treacle dissolved in *aqua vitæ*. The next day the swelling was asswaged, and the paine eased, and within a few daies shee was perfectly well. *Dioscorides* writes that this fish divided in the midst and applyed to the wound, will cure it.

Chap. XXXII.

Of the Pastinaca marina, *or Sting-Ray, which some call the Fierce-claw.*

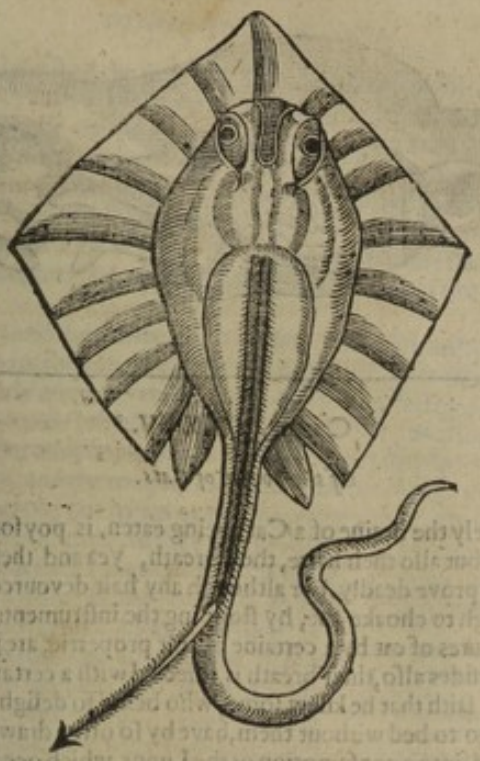
The symptoms. Such as are stung by a Sting-Ray (as *Aëtius* hath written) the place of the wound doth manifestly appeare; there ensues thereon lasting paine and the numnesse of the whole body. And seeing that it hath a sharpe and firme sting, whereby the nerves by the deepnesse of the stroake may be wounded, it so happens that some die forthwith, their whole bodies suffering convulsions. Moreover it wil kil even the very trees into whose roots it is fastned. Yet *Pliny* affirmes that it is good against the paine of the teeth, if the gums bee scarified therewith, yea, and it being made into powder with white hellebore, or of it selfe, will cause teeth to fall out without any pain, or any violence offered to them. This fish is good meat, the head and taile excepted; some of them have two stings, othersome but one; these stings are sharpe like a Saw with the teeth turned towards their heads. *Oppianus* writes, that their stings are more poysonous than the Persians arrowes, for the force of the poyson remaineth, the fish being dead, which will kill not onely living creatures, but plants also. Fishermen, when they catch this fish, presently spoile him of his sting, lest they should bee hurt therewith. But if by chance they bee 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 lives in muddy places neare the shoare, 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.

Lib. 9 cap. 48.

The virulency of her sting.

The

The figure of a Sting-Ray.



CHAP. XXXIII.

Of the Lepus marinus, *or Sea-hare.*

PLINY cals the Sea-hare, a maſſe or deformed peece of fleſh. *Galen* ſaith that it is like a Snaile taken forth of the ſhell. It is exceeding poyſonous in the judgement of the Antients; wherefore it is not amiſſe to ſet downe the deſcription of it, leſt wee might eate it at unawares, too earneſtly view it, or ſmell thereto, as alſo that we may uſe it againſt the poyſon thereof; it is an inhabitant not only of the Sea, but alſo of Lakes of Sea-water, eſpecially ſuch as are muddy; it is of the ſame colour as the hair of the land-hare is, it hath a hole in the head, out of which hee putteth a certaine peece of fleſh, and pluckes it backe againe when as he is ſeene. *Paulus*, *Aëtius*, *Pliny*, *Galen* and *Nicander*, are of one opinion, and agree in this, that if a woman big with child do too earneſtly look upon one, ſhe will vomit & preſently after abort. They which have drunk this poyſon, ſaith *Dioſcorides*, are troubled with paine in the belly, and their urine is ſtopped. If they doe make water, then is it bloody; they run downe with ſtinking ſweat, which ſmels of fiſh; a cholericke vomiting ſometimes mixed with blood enſues thereon.

The deſcription of the Sea-hare.

The earneſt beholding of a Sea-hare will cauſe abortion.

Aëtius writes that all their bodies turne yellow, their faces ſwell, and their feete, but chiefly their genitall member, which is the cauſe they cannot make water freely. *Galen* writes that it is the property of the Sea-hare to exulcerate the Lungs. Their Antidote is Aſſes milke, Muskedine, or honyed Wine continually drunken, or a decoction of the roots and leaves of Mallowes. It is good for the falling away of the haire. I have here given you the figure thereof out of *Rondeletius* his book of fiſhes.

The ſympcoms.

The Antidote.

The

The figure of a Sea-Hare.



Chap. XXXIV.

Of the Poyson of Cats.

A Cats haire most subject to choake.

NOt onely the braine of a Cat, being eaten, is poysonous and deadly to man, but also their haire, their breath, yea and their very presence to some prove deadly. For although any hair devoured unawares, may be enough to choake one, by stopping the instruments of respiration, yet the haires of cat by a certaine occult propertie, are judged most dangerous in this case: besides also, their breath is infected with a certain hurtfull malignitie. For *Mathiolus* saith that he knew some, who being so delighted with Cats, that they could never go to bed without them, have by so often drawing in the aire with their breath, fallen into a consumption of the Lungs, which occasioned their death. Moreover, it is manifest that the very sight of their eies is hurtfull, which appeares by this, that some but seeing or hearing them, presently fall downe in a sowne; yet I would not judge that to happen by the malicious virulency of the Cat, but also by the peculiar nature of the party, and a quality generated with him, and sent from heaven. When as, saith *Mathiolus*, a certaine Germaine in winter time, came with us into a stove to supper, where as were divers of our acquaintance; a certaine woman, knowing this mans nature, lest that hee should see her kitling which shee kept, and so should goe away in a chafe, she shut her up in a cupboard in the same chamber. But for all that hee did not see her, neither heard her cry, yet within a little space, when hee had drawne in the aire, infected with the breath of the Cat, that quality of temperament, contrary, or enemy to Cats, being provoked, he began to sweat, to looke pale, and to cry out (all of us admiring it) *Here lies a Cat in some corner or other*; neither could he be quiet untill the Cat was taken away. But such as have eaten the braines of a Cat are taken with often Vertigoes, and now and then become fooliſh and mad: they are helped by procuring vomit, and taking the Antidote against this poyson, that is, halfe a Scruple of Muske, dissolved and drunke in wine. There bee some who prescribe the confection *Diamoschum* to beetaken every morning, foure houres before meat. By this you may gather that it is not so fabulous that the common sort report, that Cats will kill or harme children; for lying to their mouthes with the weight of their whole bodies, they hinder the passage forth of the suliginous vapours, and the motion of the Chest, and infect and stifle the spirits of tender infants, by the pestiferous aire and exhalation which they send forth.

The breath of a Cat most hurtfull to the lungs.

A history.

A wonderfull antipathy betweene a man and a Cat.

The Antidote against the brains of a Cat.

Cats dangerous for children.

CHAP. XXXV.

Of certaine poysonous Plants.

HAving described the poysons that come from living creatures, I come to speake of such as are from Plants, beginning with the Sardonian herb, which is also called *Apium risus*: this is a kinde of *Ranunculus* or Crow-foote: (and, as it is thought, the round leaved water Crow-foote, Marsh-crow-foote or speare-wort) it taketh away the understanding of such as eate thereof, and by a certaine distention of the nerves, contracts the cheekes, so that it makes them looke as if they laughed; from this affect came that proverbiall speech of the Sardonian laughter, taken in evill part. His Bezoar, as one may terme it, is the juice of Balme. *Apium risus.* His Antidote.

The juice, fruit, and substance of *Napellus*, taken inwardly, killeth a man the same day, or at the furthest in three dayes: yea and such as escape the deadly force thereof by the speedy and convenient use of Antidotes, fall into a hecticke feaver, or consumption, or become subject to the falling sickneſſe, as *Avicen* affirmeth. And hence it is that barbarous people poyson their arrowes therewith. For the lippes are forthwith inflamed, and the tongue so swells, that by reason thereof it cannot bee conteined in the mouth, but hangs out with great horrour; their eyes are enflamed, and stand forth of their head, and they are troubled with a *Vertigo* and sowning, they become so weake that they cannot stirre their legges, they are swollen and puffed in their bodies, the violence of the poyson is so great. The Antidote thereof is a certaine little creature like a * Mouse, which is bred, and lives on the root of *Napellus*, being dryed and drunke in pouder, to the weight of two drammes. In want hereof, you may use the seed of Raddish or Turneps to drinke, and anoint the body also with the oile of Scorpions. *Napellus*, or Monks-hood.

* Our Author is deceived by the *Arabians*, who (it may bee) mistooke the greeke word, μυῖαι, and instead thereof reade, μῦν; for a Flye, a Mouse; for there is no Mouse to bee found, but whole swarmes of Flies, which feede thereon: you may finde the description of an Antidote made with them in *Lobels Stirp. Adverſ. pag.* 302.

Dorycnium and *Solanum Manicum*, or deadly night-shade, are not much different in their mortall symptomes or effects. *Dorycnium* being drunke, resembleth milk in taſt, it causeth continuall hicketting, it troubleth the tongue with the weight of the humour, it causeth blood to bee cast forth of the mouth, and certaine mucous matter out of the belly, like that which commeth away in the bloody fluxe. A remedy hereto are all shell Fishes, as well crude as roasted, also sea-lobsters and crabbes, and the broth or liquor wherein they are boyled, being drunke. Now the root of *Solanum manicum* drunke in the weight of one dram in wine, causeth vaine and not unpleasing imaginations, but double this quantity causeth a distraction or alienation of the minde for three dayes; but foure times so much, kills. The remedies are the same as these prescribed against *Dorycnium*. *Dorycnium* and *Solanum manicum*, or deadly Night-shade. The symptoms.

Henbane drunken, or otherwise taken inwardly by the mouth, causeth an alienation of the minde like drunkennesſ; this also is accompanied with an agitation of the body, and exolution of the spirits like sowning. But amongst others, this is a notable symptome, that the patients so dote, that they thinke themselves to be whipped: whence their voice becomes so various, that somtimes they bray like an asse or mule, neigh like a horse, as *Avicen* writes. The Antidote is pistick nuts eaten in great plenty, treacle also and mithridate dissolved in sacke, also wormewood, rue and milke. Henbane. The Antidote.

Of Mushromes, some are deadly and hurtfull of their owne kinde and nature, as those, which broken, presently become of divers colours, and forthwith putrefie: (such as *Avicen* saith those are which be found of a grayish or blewish colour) others though not hurtfull in qualitie, yet eaten in greater measure than is fitting, become deadly; for seeing by nature they are very cold and moist, and consequently abound with no small viscosity, as the excrementitious phlegme of the earth or trees whereon they grow, they suffocate and extinguish the heat of the body, as overcome by their quantity, and strangle as if one were hanged, and lastly kill. Verily I cannot chuse, but pittying Gourmondizers, who though they know that Mushromes are Mushromes.

the ſeminary and gate of death, yet doe they with a great deale of doo, moſt greedily devoure 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 therfore that Muſhromes may be eaten without danger, if that they be firſt boyled with wild peares: but if you have no wilde peares, you may ſupply that defect with others which are the moſt harſh, either newly gathered, or dryed in the ſun. The leaves, as alſo the bark of the ſame Tree, are good, eſpecially of the wild; for peares are their Antidote: yet *Conciliator* gives another, to wit, Garlick eaten crude, whereto in like ſort vineger may bee fitly added, ſo to cut and attenuate the tough, viſcous and groſſe humors, heaped up, and in danger to ſtrangle one by the too plentifull eating of Muſhromes, as it is delivered by *Galen*.

Their Antidote

In 5. epidemi.

Colchicum or meadow-saffron

Ephemerum, which ſome call *Colchicum* or *Bulbus ſylveſtris*, that is, medow ſaffron, being taken inwardly, cauſeth an itching over all the bodie, no otherwiſe than thoſe that are netled, or rubbed with the juice of a Squill. Inwardly they feele gnawings, their ſtomacke is troubled with a great heavineſſe, and the diſeaſe encreaſing, there are ſtreakes of blood mixed with the excrements. The Antidote thereof is womans milke, Aſſes or Cowes milk drunken warme, and in a large quantity.

The Antidote

Mandrage.

Mandrage taken in great quantity, either the root or fruit cauſeth great ſleepineſſe, ſadneſſe, reſolution and languiſhing of the body, ſo that after many ſcritches and gripings, the patient falls aſleep in the ſame poſture as hee was in, juſt as if hee were in a Lethargie. Wherefore in times paſt they gave Mandrage to ſuch as were to bee diſmembred. The apples, when as they are ripe, and their ſeeds taken forth, may be ſafely eaten, for being green and with their ſeeds in them, are deadly. For there ariſeth an intolerable heate, which burnes the whole ſurface of the bodie, the tongue and mouth waxe dry, by reaſon whereof they gape continually, ſo to take in the cold aire; in which caſe unleſſe they be preſently helped, they die with convulſions. But they may be eaſily helped, if they ſhall preſently drinke ſuch things as are convenient therefore. Amongſt which, in *Conciliators* opinion, excell radiſh ſeeds eaten with ſalt and bread for the ſpace of three dayes. Sneeſing ſhall be procured, if the former remedy do not quickly refreſh them, and a decoction of Coriander or Penny-royall in faire water ſhall be given them to drinke warme.

The cure.

Opium.

Why not uſed in poyſonings.

The ungratefull taſte of the juice of blacke poppy, which is termed *Opium*, as alſo of Mandrage, eaſily hinders them from being put into meate or drinke, but that they may be diſcerned, and chiefly for that neither of them can kill, unleſſe they be taken in a good quantity. But becauſe there is danger, leſt they bee given in greater quantity than is fitting by the ignorance of Phyſitians, or Apothecaries, you may by theſe ſignes finde the errour.

The ſymptoms.

There enſues heavie ſleepe, with a vehement itching, ſo that the patient oft-times is forced thereby to caſt off his dull ſleepe wherein hee lay, yet keepes his eye-lids ſhut, being unable to open them. But by this agitation there flowes out ſwear, which ſmels of *Opium*, the bodie waxeth pale, the lippes burne, the Jaw-bone is relaxed, they breath little and ſeldome. When as their eyes waxe livid, unleſſe they bee drawne aſide, and that they are depreſſed in their orbe, we muſt know that death is at hand. The remedy againſt this is two drammes of the pouder of *Caſtoreum* given in wine.

Hemlocke.

The ſymptoms.

Hemlocke drunken, cauſeth *Vertigo's*, troubleth the minde, ſo that the patients may bee taken for mad men; it darkeneth the ſight, cauſeth hicketting, and benums the extreme parts, & laſtly ſtrangles with convulſions, by ſupreſſing or ſtopping the breath of the Arterie. Wherefore at the firſt, as in other poyſons, you muſt endevour to expell it by vomit; then inject glyſters, to expell that is got into the guts; then uſe wine without mixture, which is very powerfull in this caſe. *Peter Aponenſis* thinks the Bezoar or Antidote thereof to bee a potion of two drams of Treacle, with a decoction of *Dictamnus* or Gentian in wine. He which further deſires to enform himſelfe of the effects of Hemlock, let him read *Mathiolus* his commentary upon *Dioſcorides*, where as he treats of the ſame ſubject.

The Antidote.

In lib. 6. dioſc.

Aconitum.

Aconitum called ſo of *Aconis* a towne of the *Periendines*, where as it plentifully growes. According to *Mathiolus*, it kils Wolves, Foxes, Dogges, Cats, Swine, Panthers,

thers, Leopards, and all wilde beasts, mixed with flesh, and so devoured by them, but it kills mice by onely smelling thereto. Scorpions, if touched by the roote of Aconite, grow numme and torpid, and so die thereof; arrowes or darts dipped therein, make uncurable wounds. Those who have drunke Aconite, their tongue forthwith waxeth sweet with a certaine astriction, which within a while after turneth to bitternesse; it causeth a *Vertigo*, and shedding of teares, and a heavinesse or straitnesse of the chest and parts about the heart; it makes them breake wind downewards, and makes all the body to tremble. *Pliny* attributes so great celerity and violence to this poyson, that if the genitalls of female creatures bee touched therewith, it will kill them the same day; there is no presenter remedy than speedy vomiting after the poison is taken. But *Conciliator* thinks *Aristolochia* to be the Antidote thereof. Yet some have made it usefull for man by experimenting it against the stinging of Scorpions, being given warme in wine. For it is of such a nature, that it killeth the party unlesse it finde something in him to kill; for then it strives therewith as if it had found an adversary. But this fight is onely when as it finds poyson in the body; and this is marvellous, that both the poisons being of their own nature deadly, should dye together, that man may by that meanes live. There are divers sorts thereof, one whereof hath a flower like an helmet, as if it were armed to mans destruction; but the other here delineated hath leaves like to sowes-bread, or a cucumber, and a root like the taile of a scorpion.

Lib. 27. cap. 2.

Aconite good against the poyson of Scorpions.

The differences

The figure of a certaine kind of Aconite.



Trees also are not without poyson, as the Yew and Walnut tree may witnesse: Cattell, if they feede on the leaves of Yew, are killed therewith. * But men, if they sleepe under it or sit under the shadow thereof, are hurt therewith, and oft-times dye thereof. But if they eat it, they are taken with a bloudy fluxe, and a coldnesse over all their bodyes, and a kinde of strangling or stoppage of their breath. All which things the Yew causeth not so much by an elementary and cold quality, as by a certaine occult malignity, whereby it corrupteth the humours, and shaveth the

The Yew.

* This is true in some countries, as in Provence, Italy, Greece, &c. but it is not so here with us in England, as both Lobell & daily experience can testifie.

The Antidote. the guts. The same things are good against this, as we have set downe against Hemlock; *Nicander* affirmes, that good wine being drunken is a remedy thereto. There is

The Wall nut tree. also malignity in a Wall-nut-tree, which *Grevinus* affirmes that he found by experience, whilest hee unawares sate under one & slept there in the midst of Summer. For waking, he had a sense of cold over all his body, a heavinesse of his head, and paine that lasted sixe dayes. The remedies are the same as against the Yew.

Chap. XXXVI.

Of Bezoar, and Bezoartick medicines.

What is poison. FOR that we have made mention of Bezoar, in treating of the remedies of poysons, I judge I shall not doe amisse, if I shall explaine, what the word meanes, and the reason thereof. Poyson absolutely taken is that which kils by a certaine specifick antipathy contrary to our nature. So an Antidote or Counter-poyson is by the Arabians in their mother tongue termed Bedezahar, as the preservers of life. This word is unknowne to the Greekes and Latines, and in use onely with the Arabians and Persians, because the thing it selfe first came from them, as it is plainely shewed by *Garcias ab horto*, Physician to the Vice-Roy of the Indies, in his history of the Spices and Simples of the East-Indies. In Persia (saith hee) and a certaine part of India is a certaine kinde of Goate called Pazain (wherefore in proper speaking, the stone should bee termed Pazar, of the word Pazain, that signifies a Goate; but wee corruptly terme it Bezar or Bezoar) the colour of this beast is commonly reddish, the height thereof indifferent, in whose stomack concretes the stone called Bezoar; it growes by little and little about a straw or some such like substance in scailes like to the scailes of an onion, so that when as the first scaile is taken off, the next appeares more smooth and shining as you still take them away, the which amongst others is the signe of good Bezoar and not adulterate. This stone is found in sundry shapes, but commonly it resembles an Acorne or Date-stone; it is sometimes of a sanguine colour, and otherwhiles of a hony-like or yellowish colour, but most frequently of a blackish or dark greene, resembling the colour of mad Apples, or else of a Civet Cat. This stone hath no heart nor kernell in the midst, but powder in the cavity thereof, which is also of the same faculty. Now this stone is light, & not very hard, but so that it may easily be scraped, or rasped like alabaster, so that it will dissolve, being long macerated in water; at first it was common amongst us, and of no very great price, because our people who trafficked in Persia, bought it at an easie rate. But after that the faculties thereof were found out, it began to bee more rare and deare, and it was prohibited by an Edict from the King of the country, that no body should sell a Goate to the stranger Merchants, unlesse he first killed him, and tooke forth the stone, & brought it to the King. Of the notes by which this stone is tryed, (for there are many counterfeits brought hither) the first is already declared; the other is, it may bee blowne up by the breath, like an oxes hide; for if the wind breake through, and doe not stay in the density thereof, it is accounted counterfeit. They use it, induced thereto by our example, not onely against poysons, but also against the bites of venemous beasts. The richer sort of the Countrey purge twice a yeare, 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 graines at a time: for by this remedy they thinke their youth is preserved, as also the strength of their members. There be some who take the weight of thirty graines; yet the more wary exceed not twelve grains. The same author addeth that he useth it with very good successe in inveterate melancholy diseases as the itch, scab, tetters & leprosie; therefore by the same reason it may well be given against a quartaine feaver. Besides, hee affirmeth for certaine that the powder conteined in the midst of the stone, put upon the bites of venemous beasts, presently freeth the patient from the danger of the poyson, as also applied to pestilent Carbuncles when they are opened, it drawes forth the venome. But because the small

A signe of true Bezoar.

The use of Bezoar.

pocks and meazles are familiar in the Indies, and oft-times dangerous, it is there given with good ſucceſſe, two graines each day in Roſe-water. *Mathiolus* ſubſcribeth to this opinion of *Garcias*, witneſſing that hee hath found it by frequent experience, that this ſtone by much exceeds not only other ſimple medicines of this kind, but alſo ſuch as are termed *theriacalia*, and what other Antidotes ſoever. Hereto alſo conſents *Abdalanarach*; Wee (ſaith he) have ſeene the ſtone which they call Bezahar, with the ſonnes of *Almirama* the obſerver of the Law of God; with which ſtone hee bought a ſtately and almoſt princely houſe at Corduba. *Lib. 5. in Diſc. cap. 73.*

Some yeares agoe a certaine Gentleman, who had one of theſe ſtones which hee brought out of Spaine, bragged before King *Charles* then being at Clermont in Auverne, of the moſt certaine efficacie of this ſtone againſt all manner of poyſons. Then the King asked of mee, whether there were any Antidote which was equally and in like maner prevalent againſt all poiſons? I anſwered, that nature could not admit it, for neither have all poyſons the like effects, neither doe they ariſe from one cauſe; for ſome worke from an occult and ſpecifick property of their whole nature, others from ſome elementary quality which is predominant. Wherefore each muſt be withſtood with its proper and contrary Antidote, as to the hot, that which is cold, and to that which aſſailes by an occult proprietie of forme, another which by the ſame force may oppugne it, and that it was an eaſie matter to make triall hereof on ſuch as were condemned to bee hanged. The motion pleaſed the King; there was a Cooke brought by the Jailor who was to have been hanged within a while after for ſtealing two ſilver diſhes out of his maſters houſe. Yet the King deſired firſt to know of him, whether 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 he ſhould have his life ſaved. The Cooke anſwered chearfully, that he was willing to undergo the hazzard, yea, and greater matters, not only for to ſave his life, but to ſhun the infamy of the death he was like to be adjudged to. Therefore he then had poyſon given him by the Apothecarie that then waited, and preſently after the poyſon, ſome of the Bezahar brought from Spain, which being taken down, within a while after hee began to vomit, and to avoid much by ſtoole with grievous torments, and to cry out that his inward parts were burnt with fire. Wherefore, being thirſty, and deſiring water, they gave it him; an houre after, with the good leave of the Jaylor, I was admitted to him; I find him on the ground going like a beaſt upon hands and feet, with his tongue thruſt forth of his mouth, his eyes fierie, vomiting, with ſtore of cold ſweats, and laſtly, the bloud flowing forth by his eares, noſe, mouth, fundament and yard. I gave him eight ounces of oile to drinke, but it did him no good, for it came too late. Wherefore at length hee died with great torment and exclamation, the ſeventh houre from the time that hee tooke the poiſon being ſcarcely paſſed. I opened his body in the preſence of the Jailor and foure others, and I found the botome of his ſtomacke blacke and dry, as if it had beene burnt with a Cautery; whereby I underſtood he had ſublimate given him; whoſe force the Spaniſh Bezahar could not repreſſe, wherefore the King commanded to burne it.

A hiſtory.

No one thing can be an Antidote againſt all poyſon.

The cauſtick force of ſublimate.

CHAP. XXXVII.

Of Minerall Poyſons.

MInerals or mettals are either ſo taken forth of the bowels of the earth, or elſe from fornaces. Of theſe many are poiſonous, as arſenicke, ſublimate, plaiſter, ceruſſe, lytharge, verdegreace, orpiment, filings of Iron, braſſe, the load-ſtone, lime, and the like. Such as have taken ſublimate, the tongue and jawes become ſtraightned and rough, as if they drunke the juice of unripe ſervices: you cannot amend this aſperity with lenitive gargariſmes but with much labour and time; for as ſoone as it deſcends into the ſtomack, it ſticketh to it. Therefore preſently after it frets and exulcerates; it cauſeth unquench-

The ſymptomes of ſuch as have taken ſublimate.

able thirſt, and unexplicable torments; the tongue is ſwolne, the heart faints, the urine is ſuppreſt, the cheſt can ſcarce performe the office of breathing, the belly is griped, and ſo great paines happen to the other extreme parts, that unleſſe they bee helped, the patient will die; for preſently will grow upon them, unleſſe it be ſpeedily hindred, the devouring and fierie furie of the poyſon, rending or eating into the guts and ſtomacke, as if they were ſeared with an hot iron, and bloud ſloweth forth of the ears, noſe, mouth, urenarie paſſage and fundament, and then their caſe is deſperate. Theſe and who elſe ſoever ſhall take any corroding poyſon, ſhall be cured with the ſame remedies, as thoſe that have taken *Cantharides*.

Verdegreaſe. Verdegreace ſo ſtops the inſtruments of reſpiration, that it ſtrangles ſuch as have taken it. The cure is performed by the ſame remedies as helpe thoſe that have taken Arſenick.

Litharge. Litharge cauſeth a heavineſſe in the ſtomack, ſuppreſſeth the urine, makes the body ſwelled and livide. Wee remedy this, by giving a vomit preſently, then after it pidgeons dung mixed in ſtrong wine, and ſo drunken. *Peter Aponenſis* wiſheth to give oile of ſweet almonds and figs. Alſo it is good to give relaxing and humecting glyſters, and to anoint the belly with freſh butter, or oile of lillies.

The ſcailes of braſſe. The ſcailes of braſſe drunke by troubling the ſtomacke, cauſe a caſting and ſcouring. The remedie is, if the patient forthwith vomit, if he enter into a bath made of the decoction of ſnailes, if he annoint his belly and breaſt with butter and oile of lillies, and inject laxative and humecting glyſters.

The Loadſtone. The Load-ſtone makes them mad that take it inwardly. The Antidote thereof is the powder of gold and an emerald drunk in ſtrong wine, and glyſters of milke and oile of ſweet almonds.

Filings of Lead & ſcail. of Iron. The filings of lead, and the ſcailes or refuſe of iron, cauſe great torment to ſuch as take them downe. The which we helpe with much milke and freſh butter diſſolved therein, or with oile of ſweet almonds drawne without fire, with relaxing and humecting glyſters uſed untill the paine be perfectly aſſwaged.

Arſnick, Roſeaker or Ratſbane. *Riſagallum*, Roſeaker or Ratſ-bane, becauſe it is of a moſt hot and dry nature, induces thirſt and heat over all the body, and ſo great colliquation of all the humours, that although the patients by medicines ſpeedily given eſcape death, yet can they not during the reſidue of their lives, uſe their members as they formerly did, being deſtitute of their ſtrength, by reaſon of the great dryneſſe and contraction of the joynts. The Antidote thereof is oyle of pine kernels ſpeedily given, and that to the quantity of halfe a pint; then procure vomit, then give much milke to drink, and glyſters of the ſame, and let them ſup up fat broths.

Unquenched Lime and Orpiment. Unquencht Lime and *Auripigmentum*, or Orpiment drunke, gnaw the ſtomacke and guts with great tormenting paine, and cauſe unquenchable thirſt, an aſperity of the jawes and throat, difficulty of breathing, ſtoppage of the urine, and a bloudy 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 belly; as alſo by creames, and the mucilages of ſome ſeeds, as with a decoction of the ſeeds of Line, mallowes, marſh-mallowes and other ſuch things ſet downe at large in the cure of *Cantharides*.

Aqua fortis. Theſe exceeding acride and ſtrong waters wherewith Gold-ſmithes and Chymiſts ſeparate gold from ſilver, being taken into the body, are hard to cure, becauſe they are forthwith diffuſed over all the body, firſt burning the throat and ſtomacke. Yet it may be helped by the meanes preſcribed againſt unquenched Lime and Orpiment.

Ceruſſe. Ceruſſe cauſeth hicketting and a cough, makes the tongue dry, & the extreme parts of the body numbe with cold, the eyes heavie to ſleepe. The patients very often in the midſt of the day ſee ſome vain phantaſie or apparition, which in deed is nothing; they make a blacke and oft-times bloudy water, they die ſtrangled unleſſe they bee helped. The Antidote, in the opinion of *Aëtius* and *Avicen*, is ſcammonie drunk in new wine, or hony and wine, and other diuretick things, and ſuch things as procure vomit, and purge by ſtoole.

Plaiſter. Plaiſter, becauſe it concreteth and becommeth ſtony in the ſtomacke, cauſeth ſtrangula-

strangulation by straitening and stopping the instruments that serve for breathing. The patients receive cure by the same remedies, as those who have eaten mushroms, or drunke Ceruſſe: you must adde Goose-grease in the glysters, and anoint the belly with oyle of lillies and butter.

CHAP. XXXVIII.

Of Quick-silver.

QUick-silver is so called because it resembleth silver in the colour, and is in perpetuall motion, as if it had a spirit or living soule. There is a great controversie amongst authors concerning it. For most of them affirme it hot, amongst whom is *Galen*, *Halyabas*, *Rhases*, *Aristotle*, *Constantine*, *Isack*, *Platearius*, *Nicholas Massa*: they maintain their opinion by an argument drawn from things helping and hurting; besides from this, that it is of such subtle parts, that it penetrates, dissolves, and performeth all the actions of heate upon dense and hard mettals; to wit, it attenuateth, incideth, dryeth, causeth salivation by the mouth, purgeth by the stoole, moveth urine and sweat over all the body, neither doth it stirre up the thinner humours onely, but in like sort the grosse, tough and viscous, as those which have the *Lues Venerea* find by experience, using it either in ointments or plasters. The reason why it is so called. *Lib. 4. simplic. 2. practic. cap. 148. 3. ad Almans. 4. Metaur.*

Others affirme it very cold and moyst; for that put into emplasters and so applyed, it asswageth paine by stupefaction, hindring the acrimony of pustles and cholerick inflammations. But by its humidity it softeneth scirrhous tumours, dissolveth and dissipateth knots and *tophous* knobs; besides, it causeth the breath of such as are anointed therewith to stinke, by no other reason, than that it putrefies the obvious humours by its great humidity. *Avicens* experiment confirmes this opinion, who affirmeth, that the bloud of an Ape that drunke Quicksilver, was found concrete about the heart, the carcasse being opened. *Mathiolus*, moved by these reasons, writes that Quicksilver killeth men by the excessive cold and humide quality, if taken in any large quantity, because it congeales the bloud and vitall spirits, and at length the very substance of the heart, as may bee understood by the history of a certaine Apothecary, set downe by *Conciliator*; who, for to quench his feaverish heat, in stead of water, drunke off a glasse of Quicksilver, for that came first to his hands; hee dyed within a few houres after, but first hee evacuated a good quantity of the Quicksilver by stoole, the residue was found in his stomack being opened, and that to the weight of one pound; besides, the bloud was found concrete about his heart. Others use another argument to prove it cold, and that is drawne from the composition thereof, because it consists of lead and other cold mettals. But this argument is very weak. For unquencht Lime is made of flints and stony matter, which is cold, yet nevertheless it exceeds in heat. *Paracelsus* affirmeth that quicksilver is hot in the interior substance, but cold in the exterior, that is, cold as it comes forth of the mine. But that coldnesse to bee lost as it is prepared by art, and heat onely to appeare and bee left therein, so that it may serve in stead of a tincture in the transmutation of mettals. And verily it is taken for a rule amongst Chymists, that all metals are outwardly cold, by reason of the watery substance that is predominant in them, but that inwardly they are very hot, which then appeares when as the coldnesse together with the moysture is segregated, for by calcination they become caustick. Moreover many account quicksilver poyson, yet experience denyes it. For *Marianus Sanctus Baralitanus* tels that hee saw a woman, who for certaine causes and affects, would at severall times drink one pound and an halfe of quicksilver, which came from her againe by stoole without any harme. Moreover he affirmeth that hee hath knowne sundry who in a desperate Cholick (which they commonly call *miserere mei*) have beene freed from imminent death, by drinking three pounds of quicksilver with water only. For by the weight it opens and unfolds the twined or bound up gut, and thrusts forth the hard and stopping excrements; he addeth that others have found this medicine *In l. 6. Dioſc. c. 28.* A historie. *Lib. 4. de nat. rerum.* *Tract. de cauſ. & effect.*

dicine effectuall against the cholick, drunke in the quantity of three ounces. *Antonius Musa* writes, that hee usually giveth quicksilver to children ready to dye of the wormes. *Avicen* confirmeth this, averring that many have drunke quicksilver without any harme, wherefore hee mixeth it in his ointments against scaules and scabs in children; whence came that common medicine amongst the countrey people to kill lice by anointing the head with quicksilver mixed with butter or *axungia*. *Mathiolus* affirmeth that many think it the last and chiefest remedy to give to women in travaile that cannot bee delivered. I protest, to satisfie my selfe concerning this matter, I gave to a whelpe a pound of quicksilver, which being drunke downe, it voyded without any harme by the belly. Whereby you may understand that it is wholly without any venemous quality. Verily it is the onely and true Antidote of the *Lues Venerea*, and also a very fit medicine for maligne ulcers, as that which more powerfully impugnes their malignity than any other medicines that worke onely by their first qualities. Besides, against that contumacious scabbe, which is vulgarly called *Malum sancti manis*, there is not any more speedy or certaine remedy. Moreover *Guido* writes, that if a plate of lead bee besmeared or rubbed therewith, and then for some space laid upon an ulcer, and conveniently fastned, that it will soften the callous hardnesse of the lips thereof, and bring it to cicatrization, which thing I my selfe have oftimes found true by experience.

Quicksilver good for women in travaile.

For the disease called *Malum sancti manis*.

Certainely before *Guido*, *Galen* much commended quicksilver against maligne ulcers & cancers. Neither doth *Galen* affirm that lead is poysonous (which many affirm poysonous, because it consists of much quicksilver) but hee onely saith thus much, that water too long kept in leaden pipes & cisternes, by reason of the drossinesse that it useth to gather in lead, causeth bloudy fluxes, which also is familiar to brasse and copper. Otherwise many could not without danger beare in their bodies leaden bullets during the space of so many yeares, as usually they doe. It is declared by *Theodoricke Herey* in the following histories, how powerfull quicksilver is to resolve and asswage paines and inflammations. Not long since, (saith hee) a certaine Doctor of Physick his boy was troubled with *parotides*, with great swelling, heat, pain & beating; to him, by the common consent of the Physicians there present, I applyed an anodine medicine, whose force was so great, that the tumor manifestly subsided at the first dressing, and the paine was much asswaged. At the second dressing all the symptomes were more mitigated. At the third dressing, I wondring at the so great effects of an Anodine Cataplasme, observed that there was quicksilver 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 he had mixed an oyntment whereinto quicksilver entred, whose reliques, and some part thereof yet remained therein. This which once by chance succeeded well, I afterwards wittingly and willingly used to a certaine Gentlewoman troubled with the like disease, possessing all the region behind the eares, much of the throate, and a great part of the cheeke, when as nature helped by common remedies, could not evacuate neither by resolution nor suppuration, the conteined matter greatly vexing her with paine and pulsation. I to the medicine formerly used, by the consent of the Physicians, put some quicksilver, so within a few dayes, the tumour was digested and resolved. But some will say, it resolves the strength of the nerves and limbs, as you may see by such as have beene anoynted therewith for the *Lues venerea*, who tremble in all their limbs during 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 remedy; for thus we see that Gilders, Plumbers and such as digge in mines, by the continuall ascent of the vapours of quicksilver to the braine, the fountaine of the nerves, by resolving the spirits, and dissipating the radicall and substantificke moysture, maketh them subject to the trembling of their joints. Verily if it bee killed and incorporate with hogs greace, and a list besmeared therewith, which may encompasse the body like a girdle, it will drive away lice, fleas and *cimices*; and anoynted about the navell, it kils the wormes in the guts. There are two sorts of quicksilver, the one naturall, the other artificiall. The naturall is found running or flowing in the veins and bowels of the earth, and amongst metals, and in the fornaces of silver mines. The Artificiall

Lib. 7. de comp. me. secund loc. Against malign ulcers.

Against the *Parotides*.

Against lice & fleas &c. The kinds thereof.

ficiall is made of *minium* (as it is in *Vitruvius*) and of the powder of Ivory. Also it is probable that by art it may bee extracted out of all metals, but chiefly out of Lead and *Cinnabaris*. You may easily distinguish these kindes by the dull and blackish colour, tough and grosse substance, which as it runs, leaves an impression like melted greace, being as it were the excrement of lead. The best quicksilver of all is pure, cleare, thin and very white: it may bee cleansed with the drosse of Lead, and becomes more thin, being boyled in sharpe vinegar, with sage, rosemary, time, lavander. Or else give it by a pound at a time to a whelpe, to drinke downe, and being cast forth by it, boyle it againe in vinegar, for thus it hath wondrous faculties, and fitly given produceth marvellous effects; nothing is more contrary thereto than fire. For quicksilver, though of its owne nature ponderous, flyeth upwards by the force of the fire, and forsaketh gold by that meanes, than which nothing is more friendly to it. How to purifie it.

CHAP. XXXIX.

Of the Unicornes Horne.

THere are very many at this day who thinke themselves excellently well armed against poyson and all contagion, if they be provided with some powder of Unicornes horne, or some 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 performe this taske, I will propound three heads, whereto I will direct my whole discourse. The first shall be of the signification of this word Unicorn. The second, whether there be any such thing really and truely so called, or whether it bee not rather imaginary; like as the *Chymera* and *Tragelaphus*? The third, whether that which is sayd to be the horne of such a beast, hath any force or faculty against poysons? For the first, that is, the name, it is somewhat more obscure what the word (*being Licorne*) in French may signifie, than what the Latine 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 thinke that beast that is vulgarly called & taken for an Unicorn, is rather a thing imaginary than really in the world. I am chiefly enduced to beleeve thus, by these conjectures. Because of those who have travelled over the world, there is not one that professeth that ever he did see that creature. Certainly the Romans conquering the world, & being most diligent searchers after all things which were rare and so excellent, if any where in any corner of the world, this beast could have been found, they would have found it out, and engraven it upon their coynes, or Armes, as they did Crocodiles, Elephants, Eagles, Panthers, Lyons, Tygers, and other creatures unknowne to these countryes. For these that have written of the Unicorn, either that they have heard, or that hath been delivered by tradition, or what they in their owne mindes and fancies have conceived, you shall scarce finde two that agree together, either in the description of the body, or in the nature and condition of her. *Pliny* writes, that Unicornes are for the fashion of their bodies like to an horse; that is, as *Cardane* interprets it, of the bignesse of a horse, with the head of an Hart, the feet of an Elephant, the taile of a Boare, with one black horne in the midst of his forehead, of the length of two cubits. *Munster*, who (as *Mathiolus* jests) never saw Unicornes besides painted ones, doth on the contrary affirme them not to be of the bignesse of an horse, but of an hind calfe of three moneths old, not with feet like an Elephant, but cleft like those of goats, with an horne not only of two, but oft times of three cubits long, of a weazell colour, with a necke not very long, nor very hairy, but having few and short haires hanging to the one side of the necke, the legs are leane and small, the buttocks high, but very hairy. *Cardane* dissenting from both these, writes, that hee hath an horne in the midst of his forehead, but that it is onely the length of three fingers, What the name imports. That there is no such beast as an Unicorne. *Lib. 8. cap. 15.* *Munsters* opinion concerning Unicornes.

fingers. *Andrew Thevet* mentions an Unicorne seene by a certaine Turkish Sangjach, which was of the bignesse of a Bull of five or sixe moneths old, and had one horne, but that not in the midst of the forehead, but upon the top of the crowne of the head; he was legg'd and footed like an Asse, but longer haired, and had eares not much unlike the Rangifer, a beast not unknowne in the subpolare or northern countries.

Tom. 1. lib. 5. Cap. 5. cosmogr.

Thus various therefore is the report concerning the shape of this Beast. Neither is there lesse difference concerning her nature and conditions. For *Pliny* writes that the Unicorne is a most fierce beast, and hath a great bellowing voice, and that shee cannot therefore be taken alive. *Cardane* renders a reason of this fiercenesse, Because (saith he) it inhabits the desarts of *Aethiopia*, a region squalide, and filthy, abounding with toads and such like venemous creatures. Others on the contrary affirme her to bee of a most milde, amiable, and gentle nature of all others, unlesse one purposely offend her, or use her too harshly; for seeing shee feeds not by stooping her head to the ground, because shee is hindered therefrom by the length of her horne, she must necessarily feed upon the fruit that hangeth upon trees; out of cratches or mans hand she fearlesly and harmelesly takes all manner of fruits, herbs, sheaves of corn, apples, peares, oranges and pulse. And herein they have proceeded so farre, that they feign they will love Virgins, entised by their beauty, so that stayed in the contemplation of them, and allured by their entisements, they by this meanes are often taken by hunters. In this opinion is *Lewes Vartoman*, who denies that Unicornes are wild or fierce; for he saith that he saw two, which were sent out of *Aethiopia* to the Sultan, who kept them shut up in Pennes, in *Mecha*, a city of *Arabia fælix*, renowned by the Sepulcher of *Mahomet*. *Thevet* travailing thither, tels that he diligently enquired of the inhabitants, what their opinion was of such a beast, yet could he never heare any tidings thereof. Whence it is easie to discerne, that such beasts have neither beene in our, nor in *Vartomans* times. The so great variety of dissenting opinions, easily induceth me to beleeve that this word, Unicorne, is not the proper name of any beast in the world, and that it is a thing onely feigned by Painters, and Writers of naturall things, to delight the readers and beholders. For as there is but one right way, but many by-waies and windings, so the speech of truth is but one, and that alwaies simple and like it selfe; but that of a lye is divers, and which may easily refell it selfe, by the repugnancie and incongruity of opinions, if one should say nothing. What therefore (will some say) of what creatures are these hornes, which we see wholly different from others, if they be not of Unicorns? *Thevet* thinks them nothing else than Elephants bones turned and made into the fashion that wee see them; for thus in the Eastern countreies, some crafty merchants and cunning companions turne, hollow, and being softened, draw to what length they please the teeth of the fish Roharde, which lives in the Red and Æthiopian Sea, and being so handled, they sell them for Unicornes horne. Verily that which is termed Unicornes horne being burnt, sends forth a smell like to Ivory. Now *Cardanus* affirmes that the teeth and bones of Elephants made soft by art, may bee drawne forth, and brought into what forme you please, like as Oxe 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 we come to the third scope. Grant there be Unicornes, must it therefore follow that their hornes must be of such efficacy against poysons? If we judge by events, and the experience of things, I can protest thus much, that I have often made tryall thereof, yet could I never find any good successe in the use thereof against poisons, in such as I have had in cure. If the matter must bee tryed by witnesses and authorities, a great part of the Physitians 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 done, moved thereto by many just, but two especiall reasons. The first is of *Rondeletius*, who in this case affirmes that horns are endued with no taste nor smell; and therefore have no effect in physicke, unlesse it bee to dry. Neither (saith hee) am I ignorant that such as have them, much predicate their worth, so to make the greater benefit and gaine by them, as of the shavings or scrapings of Unicornes horne, which they sell for the weight in gold, as that which is singular

Vartomans opinion of the nature of the Unicorne.

What the ordinary Unicorns hornes are.

The Unicornes horne is not effectuall against poyson.

Lib. de pondere. cap. 19. Hornes and bones not effectuall unlesse to dry.

singular good against poysons and wormes, which things I thinke Harts-horne and Ivory doe no lesse effectually performe; which is the cause why for the same disease, and with the like successe, I prescribe Ivory to such as are poor, and Unicornes horn to the rich, as that they so much desire. This is the opinion of *Rondelettus*, who without any difference was wont for Unicornes horne to prescribe not onely Hartshorn or Ivory, but also the bones of Horses and Dogges, and the stones of Myrabalanes. Another reason is, that whatsoever resists poyson is cordiall, that is, fit to strengthen the heart, which is chiefly assailed by poysons; but nothing is convenient to strengthen the heart, unlesse it bee by laudible blood or spirit, which two are onely familiar to the heart, as being the work-house of the arterious blood and vitall 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 Unicornes horne, as it conteines no smell, so neither hath it any aëry parts, but is wholly earthy and dry; neither can it bee converted into blood by the digestive faculty, 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 become *Chymus* (that is) juice or blood. Therefore it is joyned to the heart by no similitude nor familiarity. Furthermore, there is not a word in *Hippocrates* and *Galen* concerning the Unicornes horne, who notwithstanding have in so many places commended Harts-horne. Therefore D. *Chapelaine*, the chiefe Physitian of King *Charles* the ninth, often used to say, that hee would very willingly take away that custome of dipping a piece of Unicorns horn in the Kings cup, but that he knew that opinion to be so deeply ingrafted in the minds of men, that he feared, that it would scarce be impugned by reason. Besides (he said) if such a superstitious medicine do no good, so certainely it doth no harme, unlesse it be to their estates that buy it with gold, or else by accident, because Princes, whilst they rely more than is fitting upon the magnified vertues of this horne, neglect to arme themselves against poysons by other more convenient meanes, so that Death oft-times takes them at unawares. When as upon a time I enquired of *Lewes Duret* the Kings Physitian and Professor (by reason of the great opinion that all learned men justly had of his learning and judgement) what he thought of this horne. He answered, that he attributed no faculties thereto: for the confirmation whereof he rendred the second reason I have formerly given, but more largely and elegantly; neither feared he to affirme it aloud, & in plain words to his auditory of learned men, comming from all parts to hear him. But if at any time (orecome by the fault of the times & place) he prescrib'd this horn, that he did it for no other entent, than to help faintings or sownings that happen by the abundance of serous humors, floating in the orifice of the ventricle, which makes men ill disposed, because this mixed with other things endued with the like faculty, hath power to drinke up the wateriſh humidity by its earthy drinesse. But some will reply, that neither the Lemnian, nor Armenian earth, have any juice in them, neither any smell, nor aëry spirit. It is granted, neither truely are such things truely and properly called cordiall, but onely by event and accident, for that by the excellent astrictive faculty they have, and stopping the passages of the vessels, they hinder the poyson from entring into the heart. This is my opinion of Unicornes horne, which if any doe not approve of, hee shall doe mee a favour, if for the publike good, hee shall freely oppose his; but in the interim take this in good part which I have done.

In what cases good.

The End of the One and Twentieth Booke.

OF THE PLAGUE.

The Twentie Second Booke.

Chap. I.

The description of the Plague.

THE Plague is a cruell and contagious diſeaſe, which every where, like a common diſeaſe, invading Man and Beaſt, kils very many; being attended, and as it were aſſociated with a continuall Feaver, Botches, Carbuncles, Spots, Nauſeouſneſſe, Vomitings, and other ſuch maligne accidents. This diſeaſe is not ſo pernitious or hurtfull, by any elementary qualitie, as from a certain poyſonous & venenate malignity, the force wherof exceeds the condition of common putrefaction. Yet I will not deny but that it is more hurtfull in certain bodies, times and regions, as alſo many other diſeaſes, of which *Hippocrates* makes mention. But from hence we can only collect, that the force and malignity of the plague, may be encreaſed, or diminiſhed, according to the condition of the Elementary qualities concurring with it, but not the whole nature and eſſence thereof to depend thereon. What the plague is. *Sect. 3. aphor.*

This peſtiferous poyſon principally aſſailes the Vitall ſpirit, the Store-houſe and originall whereof is the Heart, ſo that if the Vitall Spirit prove ſtronger, it drives it far from the Heart; but if weaker, it being overcome and weakened by the hoſtile aſſault, flies backe into the fortreſſe of the Heart, by the like contagion infecting the heart, and ſo the whole Body, being ſpred into it by the paſſages of the Arteries. How it comes to kill.

Hence it is, peſtilent Feavers are ſometime ſimple and ſolitary, other-whiles aſſociated with a troope of other affects, as Botches, Carbuncles, Blaines, and Spots, of one or more colours.

It is probable ſuch affects have their originall from the expulſive Faculty, whether ſtrong or weake, provoked by the malignity of the raging matter: yet aſſuredly divers ſymptomes and changes ariſe, according to the conſtitution of the body of the Patient, and condition of the humor in which the virulency of the plague is chiefly inherent, and laſtly, in the nature of the efficient cauſe. The originall Bubo's, Carbuncles, &c. in the plague.

I thought good, by this deſcription, to expreſſe the nature of the plague, at this my firſt entrance into this matter, for we can ſcarce comprehend it in a proper definition. For although the force thereof be definite and certaine in nature, yet it is not altogether certaine and manifeſt in mens minds, becauſe it never happens after one ſort: ſo that in ſo great variety, it is very difficult to ſet down any thing generall and certaine.

Chap. II.

Of the Divine causes of an extraordinary Plague.

IT is a confirmed, constant, and received opinion in all Ages amongst Christians, that the plague and other diseases, which violently assaile 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 evill in a City, and the Lord hath not done it?* On which truely we ought daily to meditate, and that for two causes: The first is, that wee alwaies beare this in minde, that wee enjoy health, live, move, and have our beings from God, and that it descends from that Father of Light: and for this cause we are alwaies bound to give him great and exceeding thanks. The other is, that knowing the calamities, by sending whereof the Divine anger proceeds to revenge, wee may at length repent, and leaving the way of wickednesse, walke in the pathes of godlinesse. For thus we shall learne to see in God, our selves, the Heaven and Earth, the true knowledge of the causes of the plague, and by a certaine Divine Philosophy teach, God to bee the beginning and cause of the second causes, which cannot well without the first cause goe about nor attempt, much lesse performe any thing. For from hence they borrow their force, order, and constancy of order; so that they serve as Instruments for God, who rules and governes us, and the whole World, to performe all his workes, by that constant course of order, which hee hath appointed unchangeable from the beginning. Wherefore all the cause of a plague is not to bee attributed to these neere and inferiour causes or beginnings, as the Epicures and Lucianists commonly doe, who attributing too much, yea all things to nature, have left nothing to Gods providence. On the contrary, wee ought to thinke, and beleeve in all our things, That even as God by his omnipotent Power hath created all things of nothing, so he by his eternall Wisedome preserves and governes the same, leads and enclines them as he pleaseth, yea verily at his pleasure changeth their order, and the whole course of Nature.

Amos 3. *Alli* 17

The second causes have their power from God as the first cause.

This cause of an extraordinary Plague, as wee confesse and acknowledge, so here we will not prosecute it any further, but thinke fit to leave it to Divines, because it exceeds the bounds of Nature, in which I will now contain my selfe. Wherefore let us come to the naturall causes of the plague.

Chap. III.

Of the Naturall Causes of the Plague, and chiefly of the Seminary of the Plague by the corruption of the Aire.

THE generall and naturall causes of the Plague are absolutely two, that is, the infection of corrupt Aire, and a preparation and fitnesse of corrupt humours to take that infection; for it is noted before out of the doctrine of *Galen*, that our humours may bee corrupted, and degenerate into such an alienation which may equall the malignity of Poyson.

The generall causes of the plague.

Lib. 6. de loc. affectis.

The Aire is corrupted, when the foure seasons of the yeere have not their seasonableneste, or degenerate from themselves, either by alteration, or by alienation: as if the constitution of the whole yeere bee moist and rainy by reason of grosse and blacke Cloudes; if the Winter bee gentle and warme without any Northerly wind, which is cold and dry, and by that meanes contrary to putrefaction; if the spring which should be temperate, shall be faulty in any excesse of distemper; if the Autumn shall be ominous by Fires in the Aire, with stars shooting, and as it were falling down, or terrible comets, never seen without some disaster; if the summer be hot, cloudy and moist, and without winds, and the clouds flie from the South into

How the seasons of the yeere may be said to want their seasonablenesse.

into the North. The ſe and ſuch like unnaturall conſtitutions of the ſeaſons of the yeere, were never better, or more excellently handled by any, than by *Hippocrates* in his bookes *Epidemion*. Therefore the Aire from hence drawes the ſeeds of corruption and the Peſtilence, which at the length, the like exceſſe of qualities being brought in, it ſends into the humours of our bodies, chiefly ſuch as are thinne and ſerous. Although the peſtilence doth not alwaies neceſſarily ariſe from hence, but ſome whiles ſome other kinde of cruell and infectious diſeaſe.

But neither is the aire onely corrupted by theſe ſuperiour cauſes, but alſo by putride and filthy ſtinking vapours ſpred abroad through the Aire encompaſſing us, from the Bodies and Carkaſſes of things not buried, gapings and hollowneſſes of the earth, or finkes and ſuch like places being opened: for the ſea often overflowing the land in ſome places, & leaving in the mud or hollowneſſes of the earth (cauſed by earth-quakes) the huge bodies of monſtrous Fiſhes, which it hides 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 country. How the aire may be corrupted.

But as fiſhes infect and breed a plague in the aire, ſo the aire being 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 vapours of the Earth lying under them, & riſing into the aire through the body of the water, the latter whereof *Ariſtotle* ſaith, hapneth but ſeldome. But it often chanceth, that the plague raging in any countrey, many fiſhes are caſt upon all the coaſt, and may bee ſeene lying on great heaps. But ſulphureous vapours, or ſuch as partake of any other maligne quality, ſent forth from places under the ground, by gapings and gulfs opened by earthquakes, not only corrupt the aire, but alſo infect and taint the Seeds, Plants, and all the fruits which we eat, and ſo transferre the peſtilent corruption into us, and thoſe beaſts on which we feed, together with our nouriſhment. The truth whereof *Empedocles* made manifeſt, who by ſhutting up a great Gulf of the earth, opened in a valley between two mountaines, freed all Sicily from a plague cauſed from thence. *Lib. 8. hiſt. anim.*

If winds 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 be thus, ſome will ſay, it ſhould ſeeme that whereſoever ſtinking and putride exhalations ariſe, as about ſtanding Pooles, Sinkes and Shambles, there ſhould the Plague reigne, and ſtraight ſuffocate with its noyſome poyſon the people which worke in ſuch places: but experience findes this falſe.

We doe anſwer, that the putrefaction of the plague is farre different, and of another kinde than this common, as that which partakes of a certaine ſecret malignity, and wholly contrary to our lives, and of which wee cannot eaſily give a plaine and manifeſt reaſon. Yet that vulgar putrefaction whereſoever it bee, doth eaſily and quickly entertaine and welcome the peſtiferous contagion, as often as, and whenſoever it comes, as joyned to it by a certaine familiarity, and at length, it ſelfe degenerating into a peſtiferous malignity, certainly no otherwiſe than thoſe diſeaſes which ariſe in the plague time, the putride diſeaſes in our bodies, which at the firſt wanted virulency and contagion, as Ulcers, putride Feavers, and other ſuch diſeaſes, raiſed by the peculiar default of the humours, 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 ſhunne ſuch exceeding ſtinking places, as they would the plague it ſelfe: that there may be no preparation in our bodies, or humours to catch that infection (without which, as *Galen* teacheth, the Agent hath no power over the Subject, for otherwiſe in a plague time, the ſickneſſe would equally ſeaze upon all) ſo that the impreſſion of the peſtiferous quality may preſently follow that diſpoſition. Peſtiferous putrefaction is far different from ordinary putrefaction. In a peſtilent conſtitution of the aire, all diſeaſes become peſtilent. *Lib. 1. de diffe. ſeb.*

But when we ſay the aire is peſtilent, we do not underſtand that ſincere, elementary, and ſimple as it is of its own nature, for ſuch is not ſubject to putrefaction, but that which is polluted with ill vapoures riſing from the earth, ſtanding waters, vaults, or ſea, and degenerates, and is changed from its native purity & ſimplicity. But certainly amongſt all the conſtitutions of the Aire, fit to receive a peſtilent corruption, there How the aire may be ſaid to putrifie.

A Southerly constitution of the aire is the fuell of the Plague.

is none more fit than a hot, moyſt and ſtill ſeaſon: For the exceſſe of ſuch qualities eaſily cauſeth putrefaction. Wherefore the South wind reigning, which is hot and moyſt, and principally in places neare the Sea, there fleſh cannot long be kept, but it preſently is tainted and corrupted.

Further, wee muſt know, that the peſtilent malignity which riſeth from the carcaſſes or bodies of men, is more eaſily communicated to men; that which riſeth from oxen, to oxen; and that which comes from ſheepe, to ſheep, by a certaine ſympathy and familiarity of Nature: no otherwiſe than the Plague which ſhall ſeaze upon ſome one in a Family, doth preſently ſpread more quickly amongſt the reſt of that Family, by reaſon of the ſimilitude of temper, than amongſt others of another Family, diſagreeing in their whole temper. Therefore the Aire thus altered and eſtranged from its goodneſſe of nature, neceſſarily drawn in by inſpiration and tranſpiration, brings in the ſeeds of the Plague, and ſo conſequently the Plague it ſelfe, into bodyes prepared and made ready to receive it.

Chap. IIII.

Of the preparation of humours to putrefaction, and admiſsion of peſtiferous impreſsions.

HAving ſhewed the cauſes from which the Aire doth putrefie, become corrupt, and is made partaker of a peſtilent and poyſonous conſtitution, wee muſt now declare what things may cauſe the humours to putrefie, and make them ſo apt to receiye and retaine the peſtilent Aire and venenate quality.

Three cauſes of the putrefaction of humours.

Humours putrefie either from fulneſſe, which breeds obſtruction, or by diſtemperate exceſſe, or laſtly, by admixture of corrupt matter & evill juice, which ill feeding doth ſpecially cauſe to abound in the body: For the Plague often followes the drinking of dead and muſtie Wines, muddy and ſtanding waters, which receive the ſinks and filth of a City; and fruits and pulſe eaten without diſcretion in ſcarcity of other Corn, as Peaſe, Beans, Lentils, Vetches, Acorns, the roots of Fern, & Graſs made into Bread. For ſuch meats obſtruct, heap up ill humours in the body, & weaken the ſtrength of the faculties, from whence proceeds a putrefaction of humours, and in that putrefaction a preparation and diſpoſition to receive, conceive and bring forth the Seeds of the Plague: which the filthy ſcabs, maligne ſores, rebellious ulcers, and putrid feavers, being all forerunners of greater putrefaction and corruption, doe teſtifie. Vehement paſſions of the minde, as anger, ſorrow, griefe, vexation and feare,

Paſſions of the mind helpe forward the putrefaction of the humours.

helpe forward this corruption of humours, all which hinder natures diligence and care of concoction: For as in the dog-dayes, the Lees of wine ſubſiding to the bottome, are by the ſtrength and efficacy of heat drawne up to the top, and mixed with the whole ſubſtance of the wine, as it were by a certaine ebullition, or working: So melancholy humours, being the Dregs or Lees of the bloud, ſtirred up by the paſſions of the mind, defile or taint all the bloud with their feculent impurity.

We found that ſome years agone by experience, at the battell of St. *Dennis*. For all wounds, by what weapon ſoever they were made, degenerated into great and filthy putrefactions & corruptions, with feavers of the like nature, & were commonly determined by death, what medicines, & how diligently ſoever they were applyed; which cauſed many to have a falſe ſuſpicion that the weapons on both ſides were poiſoned. But there were manifeſt ſignes of corruption and putrefaction in the bloud let the ſame day that any were hurt, and in the principall parts diſſected afterwards, that it was from no other cauſe, than an evill conſtitution of the Aire, and the minds of the Souldiers perverted by hate, anger and feare.

CHAP. V.

What signes in the Aire and Earth prognosticate a Plague.

WEE may know a Plague to bee at hand and hang over us, if at any time the Aire, and seasons of the yeare swarve from their naturall constitution, after those wayes I have mentioned before; if frequent and long continuing Meteors or sulphureous Thunders infect the Aire; if fruits, seeds and pulse be worme-eaten; If Birds forsake their nests, egges or Young, without any manifest cause; if we perceive women commonly to abort, by continuall breathing in the vaporous Aire, being corrupted and hurtfull both to the Embrion and originall of life, and by which it being suffocated, is presently cast forth and expelled. Yet notwithstanding, those airy impressions doe not solely corrupt the Aire, but there may be also others raysed by the Sunne from the filthy exhalations, and poysonous vapours of the earth and waters, or of dead carcasses, which by their unnaturall mixture, easily corrupt the Aire, subject to alteration, as which is thin and moyst, from whence divers Epidemiall diseases, and such as every-where seaze upon the common sort, according to the severall kinds of corruptions, such as that famous Catarrhe with difficulty of breathing, which in the yeare 1510. went almost over the World, and raged over all the Cities and Townes of France, with great heavinesse of the head (whereupon the French named it *Cuculla*) with a straitnesse of the heart and lungs, and a Cough, a continuall Feaver, and sometimes raving.

Why Abortions are frequent in a pestilent season.

A Catarrhe with difficulty of breathing killing many.

This, although it seazed upon many more than it killed, yet because they commonly dyed who were either let bloud, or purged, it shewed it selfe pestilent by that violent and peculiar and unheard of kinde of malignity.

Such also was the English Sweating-sickenesse, or Sweating-feaver, which unusuall, with a great deale of terrour invaded all the lower parts of Germany, and the Low Countryes from the yeare 1525. unto the yeare 1530. and that chiefly in Autumne.

The english sweating sickenesse.

As soone as this pestilent disease entred into any City, suddenly two or three hundred fell sick on one day, then it departing thence to some other place. The people strucken with it languishing, fell down in a swoune, and lying in their beds, sweat continually, having a feaver, a frequent, quick, and unequall pulse; neither did they leave sweating till the disease left them, which was in one or two dayes at the most: yet freed of it, they languished long after, they all had a beating, or palpitation of the heart, which held some for two or three yeeres, and others all their life after.

At the first beginning it killed many, before the force of it was knowne: but afterwards very few, when it was found out by practice and use, that those who furthered and continued their sweats, and strengthened themselves with Cordials, were all restored. But at certaine times many other popular diseases sprung up, as putrid feavers, fluxes, bloudy-fluxes, catarrhes, coughes, phrenzies, squinances, pleurisies, inflammations of the lungs, inflammations of the eyes, apoplexies, lithargies, small pocks and meazels, scabs, carbuncles, and maligne pustles. Wherefore the plague is not alwayes, nor every-where of one and the same kind, but of divers; which is the cause that divers names are imposed upon it, according to the variety of the effects it brings, and symptomes which accompany it, and kinds of putrefaction, and hidden qualities of the Aire.

The Plague is not the definite name of one disease.

They affirme, when the Plague is at hand, that Mushromes grow in greater abundance out of the earth, and upon the surface thereof many kindes of poysonous *insecta* creepe in great numbers, as Spiders, Caterpillers, Butter-flyes, Grasse-hoppers, Beetles, Hornets, Waspes, Flyes, Scorpions, Snailes, Locusts, Toads, Wormes, and such things as are the off-spring of putrefaction. And also wilde beasts tyred with the vaporous malignity of their Dennes and Caves in the earth, forsake them; and Moles, Toads, Vipers, Snakes, Lizzards, Aspes and Crocodiles are seene to flee away,

What signes in the earth foretell a Plague.

away, and remove their habitations in great troopes. For theſe, as alſo ſome other creatures, have a manifeſt power by the gift of God, and the inſtinct of Nature, to preſage changes of weather, as raines, ſhowers, and faire weather; and ſeaſons of the yeare, as the Spring, Summer, Autumne, Winter, which they teſtifie by their ſinging, chirping, crying, flying, playing, and beating their wings, and ſuch like ſignes: ſo alſo they have a perception of a Plague at hand. And moreover, the carcaſſes of ſome of them which tooke leſſe heed of themſelves, ſuffocated by the peſtiferous poyſon of the ill Aire contained in the earth, may bee every where found, not onely in their dens, but alſo in the plaine fields.

How peſtilent vapours may kill plants and trees.

Theſe vapours corrupted not by a ſimple putrefaction, but an occult malignity, are drawne out of the bowels of the earth into the Aire, by the force of the Sun and Starres, and thence condenſed into clouds, which by their falling upon corne, trees and graſſe, infect and corrupt all things which the earth produceth, and alſo kils thoſe creatures which feed upon them; yet brute beaſts ſooner than men, as which ſtoope and hold their heads downe towards the ground (the maintainer and breeder of this poyſon) that they may get their food from thence. Therefore at ſuch times, skilfull husbandmen, taught by long experience, never drive their Cattell or Sheep to paſture, before that the Sun, by the force of his beames, hath waſted and diſſipated into Aire this peſtiferous dew hanging and abiding upon boughes and leaves of trees, herbs, corne and fruits.

But on the contrary, that peſtilence which proceeds from ſome maligne quality from above, by reaſon of evill and certaine conjunction of the Stars, is more hurtfull to men and birds, as thoſe who are neerer to heaven.

CHAP. VI.

By uſing what cautions in Aire and Diet, one may prevent the Plague.

Change of places the ſureſt prevention of the Plague.

HAving declared the ſignes fore-ſhewing a Peſtilence: now wee muſt ſhew by what meanes we may ſhun the imminent danger thereof, and defend our ſelves from it. No prevention ſeemed more certaine to the Ancients, than moſt ſpeedily to remove into places farre diſtant from the infected place, and to be moſt ſlow in their returne thither againe. But thoſe, who by reaſon of their buſineſſe or employments, cannot change their habitation, muſt principally have care of two things: The firſt is, that they ſtrengthen their bodies, and the principall parts thereof againſt the daily imminent invaſions of the poyſon, or the peſtiferous and venenate Aire. The other, that they abate the force of it, that it may not imprint its virulency in the body; which may be done by correcting the exceſſe of the quality inclining towards it, by the oppoſition of its contrary. For if it bee hotter than 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 & purge the corruptions of the venenate malignity diffuſed through it, by ſmels and perfumes reſiſting the poyſon thereof. The body will be ſtrengthened and more powerfully reſiſt the infected Aire, if it want excrementitious humours, which may be procured by purging and bleeding, and for the reſt a convenient diet appointed, as ſhunning much variety of meats, and hot and moyſt things, and all ſuch which are eaſily corrupted in the ſtomacke, and cauſe obſtructions, ſuch as thoſe things which be made by Comfit-makers; we muſt ſhun ſatiety and drunkenneſſe, for both of them weaken the powers, which are preſerved by the moderate uſe of meats of good juice.

Two things of chiefe account for prevention.

Diet for prevention of the Plague.

Let moderate exerciſes in a cleare Aire, and free from any venemous tainture, precede your meales.

Let the belly have due evacuation either by Nature or Art.

Let the heart, the ſeat of life, and the reſt of the bowels be ſtrengthened with Cordials and Antidotes applyed and taken (as wee ſhall hereafter ſhew) in the forme of epithemes, ointments, emplaſters, waters, pills, powders, tablets, opiates, fumigations, and ſuch like.

Make

Make choice of a pure Aire & free from all pollution,& far remote from ſtinking places, for ſuch is moſt fit to preſerve life,to recreate and repaire the ſpirits; where as on the contrary, a cloudy or miſtie Aire, and ſuch as is infected with groſſe and ſtinking vapours, duls the ſpirits, dejects the appetite, makes the body faint and ill coloured,oppreſſeth the heart,and is the breeder of many diſeaſes. Diſcommodities of a cloudy or foggy aire.

The Northern wind is healthfull,becauſe it is cold and dry. But on the contrary, the Southerne wind, becauſe it is hot and moyſt, weakens the body by ſloth or dulneſſe, opens the pores, and makes them pervious to the peſtiferous malignity. The Weſterne winde is alſo unwholeſome, becauſe it comes neere to the nature of the Southerne: wherefore the windowes muſt bee ſhut up on that ſide of the houſe on which they blow,but opened on the North and Eaſt ſide,unleſs it happen the Plague come from thence. Why the South wind is peſtilent.

Kindle a cleare fire in all the lodging Chambers of the houſe, and perfume the whole houſe with Aromatick things, as Frankinſence, Myrrhe, Benzoine, *Ladanum*, *Styrax*, Roſes, Myrtle-leaves, Lavender, Roſemary, Sage, Savory, wilde Time, Marjerome, Broome, Pine-apples, pieces of Firre, Juniper berries, Cloves, Perfumes: and let your cloathes be aired in the ſame. The efficacy of fire againſt the Plague.

There be ſome, who think it a great preſervative againſt the peſtilent Aire, to keep a Goat in their houſes, becauſe the capacity of the houſes, filled with the ſtrong ſent which the Goat ſends forth, prohibits the entrance of the venemous Aire: which ſame reaſon hath place alſo in ſweet ſmels; and beſides, it argues, that ſuch as are hungry are apter to take the Plague, than thoſe who have eaten moderately: for the body is not onely ſtrengthened with meat, but all the paſſages thereof are filled by the vapours diffuſed from thence, by which otherwiſe the infected Aire 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 drives away another, as one wedge drives forth another; which calleth to my mind that which is recorded by *Alexander Benedictus*, that there was a Scythian Phyſician, which cauſed a Plague, ariſing from the infection of the Aire, to ceaſe, by cauſing all the dogs, cats, & ſuch like beaſts which were in the City, to be killed, and caſt their carcaſſes up & down the ſtreets, that ſo by the comming of this new putride vapour as a ſtranger, the former peſtiferous infection, as an old gueſt, was put out of its Lodging, & ſo the Plague ceaſed. For poyſons have not onely an antipathy with their Antidotes, but alſo with ſome other poyſons. A ſtrange art to drive away the Plague. The antipathy of poyſons with poyſons.

Whileſt the Plague is hot, it is not good to ſtirre out of doore before the riſing of the Sunne: wherefore wee muſt have patience, untill hee have cleanſed the Aire with the comfortable light of his Beames, and diſperſed all the foggy and nocturnall pollutions, which commonly hang in the Aire in dirty, and eſpecially in low places and Vallies.

All publike and great meetings and aſſemblies muſt be ſhunned.

If the Plague begin in Summer, and ſeeme principally to rage, being helped forward by the ſummers heat, it is the beſt to performe a journey begun, or undertaken for performance of neceſſary affaires, rather upon the night time, than on the day, becauſe the infection takes force, ſtrength and ſubtlety of ſubſtance, by which it may more eaſily permeate and enter in, by the heat of the Sun; but by night mens bodies are more ſtrong, and all things are more groſſe and denſe. But you muſt obſerve a cleane contrary courſe if the malignity ſeeme to borrow ſtrength, and celerity from coldneſſe. But you muſt alwayes eſchew the beames of the Moone, but eſpecially at the full: For then our bodies are more languid and weake, and fuller of excrementitious humours. Even as trees which for that cauſe muſt be cut down in their ſeaſon of the Moone, that is, in the decreaſe thereof. Whether in the plague time one muſt travell by night or by day. Why the Moon is to be ſhunned.

After a little gentle walking in your Chamber, you muſt preſently uſe ſome means that the principall parts may be ſtrengthened by ſuſcitating the heat & ſpirits, & that the paſſages to them may be filled, that ſo the way 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 Countrey people, and ſuch as are uſed to it, to ſuch there can can bee no more certaine preſervative and antidote againſt the peſtiferous Garlick good as gainſt the Plague.

stiferous fogs or mists, and the nocturnall obscurity, than to take it in the morning with a draught of good wine; for it being abundantly diffused presently over all the body, fils up the passages thereof, and strengtheneth 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 Aire, wee must wholly shun and avoyd raine-water, because it cannot but bee infected by the contagion of the Aire. Wherefore the water of Springs, and of the deepest Wells are thought best. But if the malignity proceed from the vapours contained in the earth, you must make choice of Raine-water. Yet it is more safe to digest every sort of water by boiling it, and to preferre that water before other, which is pure and cleare to the sight, and without either tast or smell, and which besides suddenly takes the extremest mutation of heat and cold.

Chap. VII.

Of the Cordiall Remedies by which we may preserve our bodies in feare of the Plague, and cure those already infected therewith.

Such as cannot eat without much labour, exercise and hunger, and who are no lovers of Break-fasts, having evacuated their excrements, before they goe from home must strengthen the heart with some Antidote against the virulency of the infection. Amongst which *Aqua Theriacalis*, or Treacle-water, two ounces, with the like quantity of Sacke, is much commended being drunke, and rubbing the nostrils, mouth and eares with the same; for the Treacle-water strengthens the heart, expels poyson, and is not onely good for a preservative, but also to cure the disease it selfe: For by sweat it drives forth the poyson contained within. It should be made in *June*, at which time all simple medicines, by the vitall heat of the Sun, are in their greatest efficacie.

Aqua theriacalis good against the Plague both inwardly taken & outwardly applyed.

The composition thereof.

The composition whereof is thus: Take the roots of Gentian, *Cyperus*, Tormentill, Diptam, or *Fraxinella*, Elecampaine, of each one ounce; the leaves of Mullet, *Cardnus Benedictus*, Divels-bit, Burnet, Scabious, Sheepes Sorrell, of each halfe a handfull; of the tops of Rue a little quantity; Mirtle Berries one ounce; of red Rose leaves, the flowers of Bugloss, Borage, and St. Johns wurt, of each one ounce: let them be all cleansed, dryed and macerated for the space of twenty foure hours in one pound of white wine or Malmesey, and of Rose-water or Sorrell water; then let them bee put in a vessell of glasse, and adde thereto of Treacle and Mithridate, of each foure ounces: then distill them in *Balneo Mariæ*, and let the distilled water bee received in a glasse Viall, and let there be added thereto of Saffron two drams, of bole Armenick, *Terra Sigillata*, yellow Sanders, shavings of Ivory and Harts-horne, of each halfe an ounce, then let the glasse be well stopped, and set in the Sun for the space of eight or ten daies. Let the prescribed quantity be taken every morning so oft as shall be needfull. It may bee given without hurt to sucking children, and to women great with child. But that it may be the more pleasant, it must bee strained through an Hippocras bag, adding thereto some suger and cinamon.

Some thinke themselves sufficiently defended with a root of Elecampaine, Zedoarie, or Angelica, rowled in their mouth, or chawed betweene their teeth.

Others drinke every morning one dram of the root of Gentian brused, being macerated for the space of one night in two ounces of white-wine.

Others take Worme-wood wine.

Others sup up in a rere egge one dram of *Terra Sigillata*, or of Hartshorne, with a little Saffron, and drinke two ounces of wine after it.

There be some that doe infuse bole Armenicke, the roots of Gentian, Tormentill, Diptam, the Berries of Juniper, Cloves, Mace, Cinamon, Saffron, and such like, in *aqua vitæ* and strong white wine, and so distill it in *Balneo Mariæ*.

A Cordiall water.

This Cordiall water that followeth is of great vertue. Take of the roots of the long and round *Aristolochia*, Tormentill, Diptam, of each three drams, of Zedoarie two drams, *Lignum Aloes*, yellow Saunders, of each one dram, of the leaves of Scordium,

dium, St. Johns wurt, Sorrell, Rue, Sage, of each halfe an ounce, of Bay and Juniper berries, of each three drams, Citron seeds one dram, Cloves, Mace, Nutmegs, of each two drams, of Mastick, *Olibanum*, bole Armenick, *Terra Sigillata*, shavings of Hartshorne and Ivory, of each one ounce, of Saffron on scruple, of the conserves of Roses, Bugloss flowers, water-lillies, and old Treacle, of each one ounce, of Camphire halfe a dram, of *aqua vitæ* halfe a pint, of white wine two pints and a half, make thereof a distillation in *Balneo Mariæ*. The use of this distilled water is even as Treacle water is.

The Electuary following is very effectuall. Take of the best Treacle three ounces, Juniper berries and Carduus seeds of each one dram and a halfe, of bole Armenicke prepared halfe an ounce, of the powder of the Electuarie *de Gemmis* and *Diamargariton frigidum*, the powder of Hartshorne, and red Corall, of each one dram: mixe them with the syrupe of the rindes and juice of Pome-citrons as much as shall suffice, and make thereof a liquid Electuary in the forme of an Opiate, let them take every morning the quantity of a Filberd, drinking after it two drams of the water of Scabious, Cherryes, *Carduus Benedictus*, and of some such like cordiall things, or of strong wine. A Cordiall electuary.

The following Opiate is also very profitable, which also may be made into Tablets. Take of the roots of Angelica, Gentian, Zedoarie, Elecampaine, of each two drams; of Cytron and Sorrell seeds, of each halfe a dramme; of the dryed rindes of Cytrons, Cinnamon, Bay and Juniper berries, and Saffron, of each one scruple; of conserve of Roses and Bugloss, of each one ounce; and fine hard Sugar as much as is sufficient: make thereof Tablets of the weight of halfe a dram, let him take one of them two houres before meate: or make thereof an Opiate with equall parts of conserves of Bugloss and *Mel Anthosatum*, and so adding all the rest dry and in powder. An Opiate. Another.

Or take of the roots of Valerian, Tormentill, Diptam, of the leaves of Rue, of each halfe an ounce; of Saffron, Mace, Nutmegs, of each halfe a dram; of bole Armenick prepared halfe an ounce; of conserve of Roses and syrupe of Lemons as much as will bee sufficient to make thereof an Opiate liquid enough. Another.

Or take of the roots of both the *Aristolochia's*, of Gentian, Tormentill, Diptam, of each one dram and an halfe; of Ginger three drams; of the leaves of Rue, Sage, Mints and Penny-royall, of each two drams; of Bay and Juniper berries, Cytron seeds, of each foure scruples; of Mace, Nutmegs, Cloves, Cinnamon, of each two drams; of *Lignum aloes*, and yellow Saunders, of each one dram; of Male Frankincense, *i. Olibanum*, Mastick, shavings of Hartshorne and Ivory, of each two scruples; of Saffron halfe a dram; of bole Armenicke, *Terra Sigillata*, red Corall, Pearle, of each one dram; of conserves of Roses, Bugloss flowers, water-lillyes and old Treacle, of each one ounce; of loafe sugar one pound and a quarter: a little before the end of the making it up, adde 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 halfe a dram to halfe a scruple.

Treacle and Mithridate faithfully compounded, excell all Cordiall medicines, adding for every halfe ounce of each of them, one ounce and a halfe of conserves of Roses, or of Bugloss, or of Violets, and three drams of bole Armenicke prepared: Of these being mixed with stirring, and incorporated together, make a conserve: It must be taken in the morning the quantity of a Filberd: You must choose that Treacle that is not lesse than foure years old, nor above twelve: that which is some-what new, is judged to be 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 enters into the composition thereof, remaines in its full vertue for a yeare: but afterwards the more years old it waxeth, the strength thereof is more abolished, so that at length the whole composition becommeth very hot.

The confection of *Alkermes* is very effectuall both for a preservative against this disease, and also for the cure.

The quantity of a Filberd of Rubarbe, with one Clove chawed or rowled in the mouth, is supposed to repell the comming of the pestilent Aire: as also this composition following.

Take

A confection to be taken in the morning against the peſtilent Aire.

Take of preſerved Citron and Orange pils, of each one dram; of conſerve of Roſes, and of the roots of Bugloſſe, of each three drammes; of Citron ſeeds halfe an ounce; of Anniſe ſeeds and Fennell ſeeds, of each one dram; of Angelica roots four ſcruples; ſugar of Roſes as much as ſufficeth: Make a Confection, and cover it with leaves of Gold, and take a little of it out of a ſpoone before you goe abroad every morning.

A March-pane.

Or take of Pine-Apple kernels, and Fiſtick nuts, infuſed for the ſpace of ſixe hours in the water of Scabious and Roſes, of each two ounces; of Almonds blanched in the fore-named waters halfe a pound: of preſerved Citron and Orange pils, of each one dram and a halfe: of Angelica roots foure ſcruples: make them according to art, unto the forme of March-pane, or of any other ſuch like confection: and hold a little piece thereof often in your mouth.

The Tablets following are moſt effectuall in ſuch a caſe. Take of the roots of Diptam, Tormentill, Valerian, Elecampaine, Eringoes, of each halfe a dram; of bole Armenick, *Terra Sigillata*, of each one ſcruple; of Camphire, Cinnamon, Sorrell ſeeds, and Zedoarie, of each one ſcruple; of the *Species* of the Electuarie *Diamargariton Frigidum*, two ſcruples; of conſerve of Roſes, Bugloſſe, preſerved Citron pils, 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.

Pils of *Ruffus*.

The pils of *Ruffus* are accounted moſt effectuall preſervatives, ſo that *Ruffus* himſelfe ſaith, that he never knew any to be infected that uſed them: the compoſition of them is thus.

Take of the beſt Aloes halfe a dram; of Gumme *Ammoniacum* two drammes; of Myrrhe two drams and an halfe; of Maſticke two drams; of Saffron ſeven graines: Put them all together, and incorporate them with the juice of Citrons, or the ſyrupe of Lemons, and make thereof a maſſe, and let it bee kept in leather: Let the patient take the weight of half a dram every morning two or three hours before meat, & let him drinke the water of Sorrell after it, which through its tartneſſe, and the thinneſſe of its parts, doth infringe the force and power of the malignity or putrefaction: For experience hath taught us, that Sorrell being eaten or chawed in the mouth, doth make the pricking of Scorpions unhurtfull. And for thoſe ingredients which do enter into the compoſition of thoſe pils, Aloes doth cleanſe and purge, Myrrhe reſiſts putrefaction, Maſtick ſtrengthens, Saffron exhilerates and makes lively the ſpirits that governe the body, eſpecially the vitall and animall.

Other pils.

Thoſe pils that follow are alſo much approved. Take of Aloes one ounce; of Myrrhe halfe an ounce, of Saffron one ſcruple, of Agarick in Trochiſces, two drams, of Rubarbe in powder one dram, of Cinnamon two ſcruples, of Maſticke one dram and a half, of Citron ſeeds twelve grains: Powder them all as is requiſite; and make thereof a maſſe with the ſyrupe of Maiden-haire: Let it be uſed as afore-ſaid.

If the maſſe begin to waxe hard, the pils that muſt preſently be taken, muſt be mollified with the ſyrupe of Lemons.

Other pils.

Take of waſhed Aloes two ounces, of Saffron one dram, of Myrrhe half an ounce, of *Ammoniacum* diſſolved in white wine, one ounce, of hony of Roſes, Zedoarie, red Saunders, of each one dram, of bole Armenick prepared two drams, of red Coral half an ounce, of Camphire halfe a ſcruple: make thereof pils according to Art. But thoſe that are ſubject or apt to the hæmorrhoids ought not at all, or very ſeldome to uſe thoſe kindes of pils that doe receive much Aloes.

They ſay that King *Mithridates* affirmed by his own writing, that whoſoever took the quantity of an haſell Nut of the preſervative following, and dranke a little wine after it, ſhould be free from poyſon that day. Take two Wall-nuts, thoſe that be very dry, two figs, twenty leaves of Rue, and three grains of ſalt: beat them, and incorporate them together, and let them be uſed as is aforeſaid.

This remedy is alſo ſaid to be profitable for thoſe that are bitten or ſtung by ſome venemous beaſt, and for this onely, becauſe it hath Rue, in the compoſition thereof. But you muſt forbid women that are with child the uſe of this medicine, for Rue is hot and dry in the third degree, and therefore it is ſaid to purge the womb, and pro-

voke

voke the flowers, whereby the nouriſhment is drawne away from the child. Of ſuch variety of medicines, every one may make choice of that that is moſt agreeable to his taſte, and as much thereof as ſhall be ſufficient.

CHAP. VIII.

Of locall medicines to be applied outwardly.

THoſe medicines that have proper and excellent vertues againſt the peſtilence, are not to bee neglected to bee applied outwardly, or carried in the hand. And ſuch are all aromaticall, aſtringent, or ſpirituous things, which therfore are endued with vertue to repell the venemous and peſtiferous aire from comming and entring into the body, and to ſtrengthen the heart and the braine. Of this kind are Rue, Balm, Roſemary, *Scordium*, Sage, Worme-wood, Cloves, Nutmegs, Saffron, the roots of Angelica, and Lovage, and ſuch like, which muſt bee macerated one night in ſharpe Vinegar and *Aqua vitæ*, and then tyed in a knot as bigge as an egge: or rather let it be carried in a ſponge, made wet or ſoaked in the ſaid infuſion. For there is nothing that doth ſooner and better hold the ſpirituous vertue and ſtrength of aromaticke things, than a ſponge. Wherefore it is of principall uſe either to keep or hold ſweet things to the noſe, or to apply Epithemes and Fomentations to the heart. Of what nature the medicines outwardly uſed ought to be.

Thoſe ſweet things ought to be hot or cold, as the ſeaſon of the yeere, and kinde of the peſtilence is. As for example, in the Summer you ought to infuſe and macerate Cinamon and Cloves beaten together, with a little Saffron in equall parts, of Vinegar of Roſes, and Roſe water, into which you muſt dippe a ſponge, which rowled in a faire linnen cloath, you may carry in your hand, and often ſmell to.

Take of Wormewood halfe a handfull, ten Cloves, of the roots of Gentian and Angelica, of each two drammes, of Vinegar and Roſe water, of each two ounces, of Treacle and Mithridate, of each one dramme, beat and mixe them all well together, and let a ſponge be dipped therein, and uſed as above-ſaid. They may alſo bee encloſed in boxes made of ſweet wood, as of Juniper, Cedar, or Cypreſſe, and ſo carried for the ſame purpoſe.

But there is nothing more eaſie to be carried than Pomanders: the form of which is thus. Take of yellow Saunders, Mace, Citron pills, Roſe and Mirtle leaves, of each two drammes, of Benzoin, Ladanum, Storax, of each halfe a dramme, of Cinamon, and Saffron, of each two Scruples, of Camphire and Amber Greece, of each one ſcruple, of Muske, three graines. Make thereof a Pomander, with Roſe water, with the infuſion of Tragacanth. Or take red Roſe leaves, the flowers of Water-lillies, and Violets, of each one ounce, of the three Saunders, Coriander ſeeds, Citron pills, of each halfe an ounce, of Camphire, one dramme, let them all bee made into pouder, and with Water of Roſes and Tragacanth make a pomander. Pomanders.

In the winter it is to be 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.* Flower-de-Luce, and *Calamus aromaticus*, of each two drams and a half; of Amber Greece, three drams; of gum Tragacanth diſſolved in Roſe water & *Aqua vitæ*, as much as ſhall ſuffice: make thereof a Pomander.

Sweet pouders.

And for the ſame purpoſe you may alſo uſe to carry about with you ſweet pouders, made of Amber Greece, Storax, Orris, Nutmegs, Cinamon, Mace, Cloves, Saffron, Benzoine, Muske, Camphire, Roſes, Violets, *Juncus odoratus*, Marjoram, & ſuch like, of which being mixed together, Pouders may be compounded & made.

Take of the rootes of Orris two drams, of *Cyperus*, *Calamus Aromaticus*, red Roſes, of each halfe an ounce, of Cloves halfe a dramme, of Storax one dramme, of Muske eight graines: mixe them, and make a pouder for a bagge: or take the rootes of Orris two ounces, red Roſe leaves, white Saunders, Storax, of each one ounce, of *Cyperus* one dram, of *Calamus Aromaticus*, one ounce, of Marjoram, halfe an ounce, of Cloves, three drammes, of Lavander, halfe a dramme, of Coriander ſeedes two drammes, of good Muske, halfe a ſcruple, of Ladanum and Benzoin, of each a dram, of Nutmegs and Cinamon, of each two drammes: Make thereof a fine pouder, and ſew it in a bag.

It

Bagges. It will be very convenient alſo to apply to the region of the heart, a bagge filled with yellow Saunders, Mace, Cloves, Cinnamon, Saffron, and Treacle ſhaken together, and incorporated, and ſprinckled over with ſtrong vinegar and Roſe water in Summer, and with ſtrong wine and Muskedine in the Winter.

Theſe ſweet Aromaticke things that are ſo full of ſpirits, ſmelling ſweetly and ſtrongly, have admirable vertues to ſtrengthen the principall parts of the body, and to ſtirre up the expulſive faculty to expell the poyſon.

Unſavory things to bee eſchewed. Contrarie-wiſe, thoſe that are ſtinking and unſavory, procure a deſire to vomit, and diſſolution of the powers, by which it is manifeſt how fooliſh and abſurd their perſwaſion is, that counſaile ſuch as are in a peſtilent conſtitution of the aire, to receive and take in the ſtinking and unſavoury vapours of ſinkes and privies, and that eſpecially in the morning.

But it will not ſuffice to carry thoſe preſervatives alone, without the uſe of any other thing, but it will be alſo very profitable to waſh all the whole body in Vinegar of the decoction of Juniper & Bay berries, the roots of Gentian, Marigolds, S. Johns Wort, and ſuch like, with Treacle or Mithridate alſo diſſolved in it. For vinegar is an enemy to all poyſons in general, whether they be hot or cold: for it reſiſteth & hindereth putrefaction, becauſe it is cold & dry: therfore in this, inanimate bodies, as fleſh, Herbes, fruits, and many other ſuch like things, may be kept a long time without putrefaction. Neither is it to be feared, that it ſhould obſtruct the pores, by reaſon of its coldneſſe, if the body be bathed in it: for it is of ſubtle parts, and the ſpices boyled in it, have vertue to open.

Whoſoever accounteth it hurtfull to waſh his whole body therewith, let him waſh onely his arme-holes, the region of his heart, his temples, groines, parts of generation, as having great and marvellous ſympathy with the principall and noble parts.

An unguent. If any miſlike bathing, let him annoint himſelf with the following unguent. Take oyle of Roſes, four ounces; oyle of Spike, two ounces; of the pouder of Cinamon and Cloves, of each one ounce and a halfe; of Benzoin, halfe an ounce; of Muske, ſixe graines; of Treacle, halfe a dramme; of Venice Turpentine, one dramme and a halfe; of Waxe, as much as ſhall ſuffice: make thereof a ſoft unguent.

You may alſo drop a few drops of oile of Maſtick, of Sage, or of Cloves, and ſuch like, into the eares, with a little Civet or Muske.

CHAP. IX.

Of other things to be obſerved for prevention, in feare of the Plague.

Why venery is to be ſhunned. VENERY is chiefly to be eſchewed, for by it the powers are debilitated, the ſpirits diſſipated, and the breathing places of the body diminiſhed, and laſtly, all the ſtrength of nature weakened. A ſedentary life is to be ſhunned, as alſo exceſſe in diet, for hence proceeds obſtruction, the corruption of the juices, and preparation of the body to putrefaction and the peſtilence.

Running ulcers good in time of peſtilence. Women muſt be very carefull that they have their courſes duely, for ſtopping beſides the cuſtome, they eaſily acquire corruption, and draw by contagion the reſt of the humours into their ſociety. Such as have fiſtulous, or otherwiſe old ulcers, muſt not heale 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 ſinke of the humors of the body may be emptied.

The Hæmorrhoids, bleedings, & other the like accuſtomed evacuations, muſt not be ſtopped, unleſſe they exceed meaſure. Moreover, they muſt at ſuch times take heed that they touch or handle not any of theſe things wherein the ſeedes or fuell of the peſtilence may lye hid, ſuch as are, hempe, flaxe, quilts and coverings wherein ſuch as have had the plague, have laid; skins and all leathern things, hangings and cloaths.

Places to be ſhunned in time of plague. You muſt dwell farre from church-yards, eſpecially from thoſe wherein the corps of ſuch as have died of the plague, are not buried deep in the ground, as in the church

of

of the *Innocents* in *Paris*, in which place by the ſame reaſon it ſundry times happens that the buried bodies are plucked up, rent and torne by dogs. Alſo let them dwell farre from places of execution, ſhambles of fleſh and fiſh, from tanne-houſes, diers, 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 muddy waters, and laſtly all things of the like evill ſmell, muſt be farre remote from your habitation; the belly muſt not bee emptied into thoſe places, into which the excrements of ſuch as have the plague are caſt. The company of ſuch as uſually viſite thoſe ſicke of the plague, muſt be eſchewed, as of Phyſitians, Apothecaries, Surgeons, Nurſe-Keepers, Grave-makers and Bearers. For though they have not the plague, yet comming forth of a peſtilent place, they may carry with them lying hid in their garments, the ſeedes thereof. You may gather this by ſuch as have for a little while ſtayed in a perfumers ſhoppe, for the perfume diffuſed in the aire, beſtowes the ſmel upon the garments of ſuch perſons, ſo that gone from thence, ſuch as meet them, will judge them to carry perfumes with them. They ſhall alſo ſhunne long watchings, ſound ſleeping, all paſſions of the minde, eſpecially anger, hunger, thirſt, journying in the ſun, for that hath oft-times occaſioned a diary feaver, which hath not ſeldome beene ſeene to turne into a peſtilent one, for by dilating the pores of the skinne, they have given entrance to the peſtilent aire, which by that meanes hath eaſily taken hold of the humour diſpoſed to putrefaction.

What company to be avoided.

You muſt doe nothing in a peſtilent ſeaſon wherby you may grow too hot.

Chap. X.

Of the office of Magiſtrates in the time of the Plague.

Magiſtrates ought to have a ſpeciall care that no filth be heaped up, either in private or publike places: let all things bee kept neat in every houſe, and let all the ſtreets be kept cleane, the dung and filth bee carried forth of the city, as alſo the dead carcaſſes of killed dogs and cats, for becauſe they oft-times licke and devoure the excrements of ſuch as have the Sickneſſe, therefore they may by their familiar entry into ſound houſes, there propagate the plague. Wherfore they muſt either be driven forth of the city, or killed, and ſo be carryed forth and buried deepe in the ground. Wells, ſprings, and rivers themſelves, muſt bee freed and cleanſed from all impurity. Care muſt bee had that muſty corne, tainted fleſh, nor ſtinking fiſh be not ſet to ſale. Publike bathes and hot-houſes muſt bee prohibited, for that in theſe, mens bodies are weakened, and made more yeelding and pervious to the peſtiferous aire. They ſhall commit the cure of ſuch as have the plague, to learned, skilfull and honeſt Phyſitians, Apothecaries, and Surgeons.

Why dogs and cats muſt be killed in a plague time.

Why Bathes and hot-houſes are not then to be allowed.

Such as are knowne to have the plague, ſhall bee ſeparated from ſuch as are free therefrom, and bee ſent to ſuch fit places as ſhall bee provided for them; for this is better and more humanely done, than to ſhut up every man in his owne houſe. They ſhall provide and foreſee that the houſhold-ſtuffe of ſuch as have the plague bee not ſet to ſale. They ſhall ſet ſignes and noted markes upon the houſes ſeazed upon by this diſeaſe, leſt they ſhould unawares run into danger. Wherefore to the ſame purpoſe they ſhall procure that the Surgeons & others that viſite the ſicke of the plague may be known by ſome conſpicuous marke, that ſuch as paſſe by them may be admoniſhed of the danger; they ſhall alſo take care that the bodies of the dead be buried as ſpeedily as may be. For they ſooner & more grievouſly putrefie in a ſhort time, than the bodies of others of what death ſoever they die. Wherfore, neither birds nor ravenous beaſts dare once touch their bodies, though unburied, for by taſting them they ſhould quickly come to their deaths. The keepers of the gates of the city ſhall be admoniſhed, that they take ſpeciall care that ſuch as are infected, or come from a viſited place, doe not enter into the city, for from one, the evill may come to ſpread it ſelfe further, for one ſparke may ſet a whole city on fire, and one ſcabby theepe infect a whole flock. And becauſe there is nothing which may more perfectly purge

Such as dye of the plague doe quickly putrefie

the aire, and cleanse it from all manner of noysomnesse and infection, than fire, they shall command that there be kindled, and perpetually kept burning fires, made with odoriferous and strong smelling things, as Juniper, Turpentine, Broome, and the like.

Lib. 2. de occult. nat. mirac. In stead hereof *Levinus* tells that the souldiers of the Garrison of *Torney* used in a Plague time to discharge their Cannons laded onely with Powder, turning their mouths upon the citty, and that morning and evening, that by the vehemency of the moved aire, the pestiferous fogges might bee chased away, and by the heate of the burned powder, the venenate and noysome quality of the aire might bee amended. Lastly, I judge it fit to admonish Magistrates that they have their eies and mindes attentive upon a murderous and impious kinde of bearers and nurse-keepers, which allured with a desire of gain (which whilest the plague reignes, they get abundantly) anoint the walls, doores, thresholds, knockers of gates and lockes with the filth and ointments taken from such as have the plague, that the plague within a while after seazing upon these also, the masters of them flying away, and the family dispersed, they may there reigne alone, and freely and without punishment carry thence what they please, oft-times strangling such as lye ready to dy, lest recovering, they might be their accusers. This I remember happened at *Lyons*, *Anno Dom.* 1565.

The villany of some base people.

CHAP. XI.

What caution must bee used in chusing Physitians, 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 necessity of the afflicted common-wealth, to appoint learned, skilfull, and honest Physitians, Surgeons, and Apothecaries, and such as have more regard to the law of God than to gaine, to have the care & cure of such as are visited. But principally let them not take Surgeons and Apothecaries called by proclamation with found of trumpet, that if they will take this charge, they shall become free without examination or reward. But let them rather be allured by gifts and honest rewards, not only then when as necessity urgeth, but also after the plague is over. For such servant Surgeons and Apothecaries as are called by proclamation, so to gaine freedome, are most commonly unskilfull and unexperienced Dunces, who, conscious of their owne ignorance, and fearing to undergoe the examination of the Masters of their Companies, refuse no hazzard, however dangerous, with desire to obtaine their freedome.

It is farre worse and more dangerous to fall into the hands of such, than into the hands of theeves and murderers, for theie, by providence or strength, wee may chance to escape; but wee seeke for and embrace the other, and having found them, lay our throats bare unto them, so by their unskilfulnesse to be butchered. Certainly by the fault of the times, and the neglect of Magistrates, it is almost come to this passe, that if any honest and learned Physitians and Surgeons shall undertake this cure, they are commonly forced thereto by the Magistrate for feare of banishment or fining. Therefore because they doe it against their wills, they shew themselves lesse vigilant, cheerefull and painefull about the sicke. They come unwillingly and compelled hereto, because by the memory of the forepast time, they sufficiently know, how sordide and basely Magistrates, when the plague hath beene overpast, have bin in paying the promised reward to men of their condition, who have stoutly run into danger; for thence it happens that during 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 agone they visited such as had the plague. Therefore I would have Magistrates prudent, faithfull, and free in choosing honest, learned and skilfull men, who may undergoe this so difficult and dangerous a charge.

CHAP.

CHAP. XII.

How such as undertake the cure of the Plague ought to arme themselves.

FIrst they must thinke and hold for certaine, that they are not called to this office by men, but by God, so directing the counsels and actions of men as he thinketh fit. Therefore they shall confidently enter into the cure thereof, for that our lot, life and death 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 many good and excellent benefits. Therefore first let them by purging and bleeding evacuate the humours subject to putrefaction, and to conceive the seeds of the pestilence. Let them make two fontanella's by application of Cauteries to bee as rivelets to evacuate the excrementitious humours which are daily by little and little heaped up in us; let one of them bee in the right arme a little below the muscle *Epomis*, the other the space of three fingers under the knee on the inside of the left legge. This is found by experience a very certaine meanes of prevention. Let them wash their whole bodies with the following lotion. R. *aquæ ros. aceti rosati, aut sambucini, vini albi aut malvatici, an.* ℔. vi. *rad. enulæ camp. angelicæ, gentian. bistortæ, zedoar. an.* ℥ iii. *baccar. juniperi, & hederæ, an.* ℥ ii. *salviæ, rorismar. absinth. rutæ, an.* m.i. *corticis citri,* ℥ß. *theriacæ & mithridat. an* ℥i. *conquassanda conquassent. bulliant lento igni, & ferventur ad usum ante commemoratum.* The Epithemes, unguents and bags formerly described shall be applyed to the region of the heart. I have read it noted by *John Baptist Theodosius*, that amongst other things, Arsenick may be profitably applyed to the region of the heart, that so it may by little and little accustome it selfe to poysons, that afterwards it may bee lesse harmed by their incursion, first making their assault upon it.

Our lots are in the hands of the Lord.

Where to make issues in the time of the plague.

Cap 8.

Epist. 2.

Let their garments be made of Chamelet, Dutch sarge, Satin, Taffaty, or the like. Or else if they cannot of these, let them be of some other handsome stuffe, but not of cloth, frieze or the like, that may take the venenate Aire, and carry it with them to the infection of the sound. They shall oft-times change their clothes, shirts and other linnen, and perfume them with aromaticke things; let them warily approach to the sicke, more warily speake unto him, with their faces looking away from him, rather than towards him, so that thy may not receive the breath of his mouth, neither the vapour nor smell of any of his excrements.

What to weare.

How to visite your patients.

When as I upon a time being called to visit one that lay sicke of the plague, came too neare and heedlesly to him, and presently by sudden casting off the cloathes, laid him bare, that so I might the better view a *Bubo* that hee had in his right groine, and two Carbuncles that were on his belly, then presently a thick, filthy and putride vapour arising from the broken abscesse of the Carbuncle, as out of a raked puddle, ascended by my nostrils to my braine, whereupon I fainted and fell down senseleese upon the ground; raised up a little after, all things seemed to me to run round; and I was ready to fall againe, but that I stayed my selfe by taking hold of the bed poste. But one thing comforted mee, that there appeared no signes that my heart was affected, either by paine or panting, or the strong and contumacious failing of my powers. An argument that the animall spirits were only dissipated by a venenate vapour, and that the substance of the heart was no way wronged, was a sneesing which tooke me so violently, that I sneesed ten times, and then fell a bleeding at the nose; which excretion, I beleeve freed me from all the impression of the malignity. Let others warned by this mine example, learne to be wiser and more wary in this case, lest they come to a worse mishap than befell mee.

A history.

CHAP. XIII.

Of the signes of such as are infected with the Plague.

Whence certain signes of the Plague may be taken.

WEE must not stay so long before wee pronounce one to have the Plague, untill there be paine and a tumour under his arme-holes, or in his groine, or spots (vulgarly called Tokens) appeare over all the body, or carbuncles arise: for many dye through the venenate malignity, before these signes appeare. Wherefore the chiefest and truest signes of this disease are to be taken from the heart, being the mansion of life, which chiefly and first of all is wont to be assailed by the force of the poison. Therfore they that are infected with the Pestilence, are vexed with often swounings and fainting; their pulse is feebler and slower than others, but sometimes more frequent, but that is specially in the night season; they feele prickings over all their body, as if it were the pricking of needles; but their nostrils doe itch especially by occasion of the maligne vapours rising upwards from the lower and inner, into the upper parts, their breast burneth, their heart beateth with paine under the left dug, difficulty of taking breath, Ptisicke, Cough, paine of the heart, and such an elation or puffing up of the *Hypocondria* or sides of the Belly, distended with the abundance of vapours raised by the force of the feaverish heat, that the Patient will in a manner seeme to have the Timpany. They are molested with a desire to vomit, and oftentimes with much and painfull vomiting, wherein green and black matter is seen, & alwaies of divers colours, answering in proportion to the excrements of the lower parts, the stomack being drawn into a consent with the heart, by reason of the vicinity and communion of the vessels; oftentimes bloud alone, & that pure, is excluded & cast up in vomiting; and it is not only cast up by vomiting out of the stomack, but also very often out of the nostrils, fundament, and in women out of the wombe; the inward parts are often burned, and the outward parts are stiffe with cold, the whole heat of the Patient being drawn violently inward, after the manner of a Cupping glasse, by the strong burning of the inner parts; then the eye-lids waxe blew, as it were through some contusion, all the whole face hath a horrid aspect, and as it were the colour of lead, the eies are burning red, & as it were, swoln or puffed up with Bloud, or any other humour, shed teares; and to conclude, the whole habit of the body is somewhat changed and turned yellow.

The cause of vomiting in such as have the Plague.

Their looks are suddenly changed.

Many have a burning feaver, which doth shew it selfe by the Patients ulcerated jawes, unquenchable thirst, dryness and blackness of the tongue, and it causeth such a phrensie by inflaming the braine, that the patients running naked out of their beds, seeke to throw themselves out of windowes into the pits and rivers that are at hand. In some the joynts of the body are so weakned, that they cannot goe nor stand, from the beginning they are as it were buried in a long swoune and deepe sleep, by reason that the feaver sendeth up to the braine the grosse vapours from the crude and cold humours, as it were from greene Wood newly kindled to make a fire.

Why some that are taken with the plague are sleepy.

Such sleeping doth hold him especially while the matter of the sore or Carbuncle is drawne together, and beginneth to come to suppuration. Oftentimes when they are awaked out of sleepe, there doe spots and markes appeare dispersed over the skin, with a stinking sweat. But if those vapours be sharpe that are stirred up unto the head, in stead of sleepe they cause great waking, and alwayes 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 colour: For sometimes they are like unto the urine of those that are sound and in health, that is to say, laudable in colour and substance, because that when the heart is affected by the venemous Aire, that entreth in unto it, the spirits are more greatly grieved and molested than the humours: but those, *i.* 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 humours or parts in which they are made, collected together, and through which they passe.

This reason seemeth truer to me than theirs which say, that nature terrefied with the malignity of the poyson avoyds contention, and doth not resist or labour to digest the matter that causeth the disease.

Many have their appetites so overthrowne, that they can abstaine from meat for the space of three dayes together.

And to conclude, the variety of accidents is almost infinite, which appear & spring up in this kinde of disease, by reason of the diversity of the poyson, and condition of the bodies and grieved parts: but they doe not all appeare in each man, but some in one, and some in another.

CHAP. XIIII.

What signes in the Plague are mortall.

IT is a most deadly signe in the Pestilence, to have a continuall and burning Feaver, to have the tongue dry, rough, and black, to breathe with difficulty, and to draw in a great quantity of breath, but breathe out little; to talke idely; to have phrensie and madnesse together, with unquenchable thirst and great watching; to have Covulsions, the Hicket, heart-beating, and to swoune very often and vehemently; further, tossing and turning in the bed, with a loathing of meats, and daily vomits of a greene, blacke and bloudy colour; and the face pale, blacke, of a horrid and cruell aspect, bedewed with a cold sweat, are very mortall signes.

There are some which at the very beginning have ulcerous and painefull weari- An ulcerous & painefull wearinesse from the beginning sheweth the Plague to be deadly.
nesse, pricking under the skin, with great torment of paine; the eyes looke cruelly and staringly, the voyce waxeth hoarse, the tongue rough and stutting, and the understanding decaying, the Patient uttereth and talketh of frivolous things. Truely those are very dangerously sicke, no otherwise than those whose urine is pale, black, and troubled like unto the urine of carriage beasts, or Lye, with divers coloured clouds or contents, as blew, greene, black, fatty and oylie, as also resembling in shew a Spiders Web, with a round body swimming on the top.

If the flesh of the carbuncle be dry and blacke, as it were seared with a hot iron, if the flesh about it be blacke and blew, if the matter doe flow back, and turne in, if they have a laske with greatly stinking, liquid, thin, clammy, blacke, greene or blewish ordure; if they avoyd wormes by reason of the great corruption of the humours, and yet for all this the patient is never the better; if the eies waxe often dim, if the nostrils bee contracted or drawne together, if they have a grievous crampe, the mouth bee drawne aside, the muscles of the face being drawn or contracted equally or unequally; if the nailes be blacke; if they be often troubled with the Hicket, or have a Convulsion and resolution over all the body, then you may certainly prognosticate that death is at hand, and you may use Cordiall medicines onely, but it is too late to purge or let bloud.

CHAP. XV.

Signes of the Plague comming by contagion of the Aire without any fault of the humours.

YOU shall understand that the Pestilence proceeds from the corruption of the aire, if it be very contagious, and disperse it selfe into sundry places in a moment. If it kill quickly and many, so that whilest sundry persons goe about their usuall businesse, walke in the places of common resort and through the streets, they suddenly fall downe and dye, no signe of the disease or harme appearing, nor any paine oppressing them; for the malignity of the corrupt Aire is quick and very speedy in infecting our spirits, overthrowing

the ſtrength of the heart and killing the patient. The patients are not troubled with great agitation, becauſe the ſpirits diſſipated by the rapid malignity of the poyſon, cannot endure that labour; beſides they are taken with frequent ſwouning, few of them have Bubo's, few have Blains come forth; and by the ſame reaſon their urines are like to thoſe of ſound men.

Why they have no ſores.

Chap. XVI.

Signes of the Plague drawne into the body by the fault and putrefaction of humours.

Formerly we have reckoned up the cauſes of the corruption of humours from plenitude, obſtruction, diſtemper, and the ill juice of meats. Now muſt wee deliver the ſignes of each corrupt humour which reignes in us, that it may be reduced to ſoundneſſe and perfection of nature by the oppoſition of its contrary, or elſe bee evacuated by phyſick. Therefore if the body be more yellow than uſuall, it is a ſigne of choler offending in quantity and quality. If more black, then of melancholy; if more pale, then of phlegme; if more red, with the veines ſwolne up and full, then of bloud. Alſo the colour of the riſing blaines, tumours and ſpots, expreſſe the colour of the predominant humour, as alſo the excrements caſt forth by vomit, ſtoole and otherwiſe; the heavineſſe and cheerfulneſſe of the affected body; the manner of the preſent feaver; the time of the year, age, region, diet. Such things as have a cutting, penetrating, attenuating, and cleanſing faculty, take away obſtruction. By meanes of obſtruction feavers oft-times accompany the Plague, and theſe not onely continuall, but alſo intermitting, like tertians or quartaines. Therefore that Plague that is fixed in the infection or corruption of a cholericke humour, ſhewes it ſelfe by the forementioned ſignes of predominating choler, to wit, the heate of the skin, blaines and excrements, as alſo in the quickneſſe of killing, and vehemency of the ſymptomes, bitterneſſe of the mouth, a painefull and continuall endeavour of going to ſtool, by reaſon of the acrimony of choler ſtimulating and raking the guts in the paſſage forth. That which reſides in the corrupt ſubſtance of groſſe humours, as of bloud, ſheweth it ſelfe by many and plentifull ſweats, by a ſcowring, by which are avoyded many and various humours; and oft-times alſo bloudy matter that proceeds from corrupt phlegme, it invades with more ſound ſleep, & a cauſeleſs wearineſs of all the members; when they are awakened out of their ſleepe, they are not ſeldome troubled with a trembling over all their joints, the entrance and way of the ſpirits into the members being obſtructed by the groſſeneſſe of the humours. That which is ſeated in the corruption of a melancholy humour, is accompanied with heavineſſe and paine of the head, much penſiveneſſe, a deep and ſmall pulſe. But the moſt certaine ſigne of the Plague reſiding in the corruption of the humours, is to bee taken from the urine. For the ſignes of the vitiated humours cannot but ſhew themſelves in the urines: therefore troubled urines, and ſuch as are like thoſe of carriage beaſts, as alſo blacke and greene, give certaine notice thereof. But ſome are much troubled with thirſt, others not at all, becauſe choler or Phlegme ſometimes onely putrefie in the ſtomacke or orifice of the ventricle, ſometimes beſides they will weaken the governement of the naturall faculties of the part, as of the appetite. But if the feaver happen by the default and infection both of the Aire and Humours, then will there bee a great confuſion of the forementioned ſignes and ſymptomes.

Signes of choler.

When the urine is to be looked upon.

Why ſome are much troubled with thirſt, others not at all.

Chap.

Chap. XVII.

Of the Prognostication that is to be instituted in the Plague.

YOU may well fore-tell the future motions and events of diseases, when you throughly know the nature of the disease, and accidents thereof, and the condition, function, and excellency of the body and grieved parts: Although that this may bee spoken in generall, That there is no certaine prediction in pistilent diseases, either to health or death, for they have very unconstant motions, sometimes swift and quick, sometimes slow, and sometimes choaking or suffocating in a moment, while one breathes in the venemous Aire, as hee is going about any of his necessary affaires, having pustles rising in the skin with sharpe pain, and as though the whole body were pricked all over with needles, or the stings of Bees. Which I have seene with mine eyes in the Plague that was at Lyons when *Charles* the French King lay there. It many times commeth to pass that the accidents that were very vehement and raging a little before, are suddenly asswaged, and the patients doe thinke themselves better, or almost perfectly sound. Which happened to *Mary* one of the Queene-Mother her Mayds, in that notable pestilent constitution of the Aire, that yeare when *Charles* the French King lay at the Castle of Rossilion: For when she was infected, a great tumour or *Bubo* arose in her groine, and suddenly it went in againe, so that the third day of her sickenesse, she said she was without any griefe or disease at all, but that shee was somewhat troubled with a difficulty of making water; and I think it was becausse the bladder was enflamed by the refluxe of the matter; but shee was sound in mind and body, and walked up and downe the Chamber on the same day that she died. The strangenesse of which thing made the King so fearfull, that he hasted to depart thence.

No certain prediction in the Plague.

A history.

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 dry, in whom the moysture that is the nourisher of putrefaction by reason of their age is consumed, and the wayes, passages and pores of the skin, whereby the venemous Aire should enter and pierce in, are more strait and narrow. And moreover, becausse old men doe alwayes stay at home, but young men for their necessary businesse, and also for their delight and pleasure, are alwayes abroad in the day time, in the Aire, where-hence the pollution of the pestilence commeth more often.

Why young men sooner take the Plague than old.

That pestilence that comes by the corruption of the humours, is not so contagious as that which commeth by the default of the Aire. But those that are phlegmatick and melancholy, are most commonly grieved with that kinde of pestilence, becausse in them the humours are more clammy and grosse, and their bodies more cold and lesse perspirable, for which causes the humours 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 naughty quality of the juice there is a great preparation of the humours unto putrefaction: You may know it by this, that when the pestilence raigneth, there are no other diseases among the common people, which have their original of any ill juice, but they all degenerate into the Plague. Therefore when they begin to appeare and wander up and downe, 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 evill juice which is contrary to nature, may be evacuated and purged. And I have noted and observed, that those are lesse 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, tumours and rotten ulcers, or have the Kings evill running upon them, the Leprosie or the Scab: and to conclude, all those that have fistulous and running ulcers in their bodies.

Who least subject to take the Plague.

I think

I thinke thoſe that have quartaine Feavers are the better priviledged for the ſame, becauſe that by the Fit cauſing ſweat, that commeth every fourth day, they avoyd much of the evill juice that was engendered.

This is more like to bee true, than to thinke that the poyſon that commeth from without, may be driven away by that which lurketh within.

Who ſubject thereto.

Contrariwiſe, women that are great with child, as I have noted, becauſe they have much ill juice, being prohibited from their accuſtomed evacuations, are very apt to take this diſeaſe, and do ſeldome recover after they are infected.

Signes that the diſeaſe is incurable.

Blacke or blew impoſtumes, and ſpots and puſtles of the ſame colour, diſperſed over the skin, argue that the diſeaſe is altogether incurable and mortall.

A good ſigne.

When the ſwelling or ſore goeth or commeth before the feaver, it is a good ſigne, for it declareth that the malignity is very weak and feeble, and that nature hath overcome it, which of it ſelfe is able to drive ſo great portion thereof from the inner pars.

A deadly ſigne.

But if the ſore or tumour come after the feaver, it is a mortall and deadly ſigne, for it is certaine that it commeth of the venemous matter not tranſlated, but diſperſed, not by the victory of nature, but through the multitude of the matter, with the weight whereof nature is overcome.

When the Moone decreaſeth, thoſe that are infected with the Peſtilence are in great doubt and danger of death, becauſe then the humours that were collected and gathered together before the full of the Moone, through delay and abundance, do ſwell the more, and the faculties by which the body is governed, become more weake and feeble, becauſe of the imbecility of the native heate, 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 Moone are more cold and weak: and thence it is that women have their menſtruall fluxes chiefly or moſt commonly at that time.

In what aire moſt contagious.

In a groſſe and cloudy Aire the peſtilent infection is leſs vehement and contagious than in a thin and ſubtle Aire; whether that thinneſſe of the Aire proceed from the heat of the Sun, or from the North wind & cold. Therfore at *Paris*, where naturally, and alſo through the abundance of filth that is about the Citie, the Aire is darke and groſſe, the peſtilent infection is leſſe fierce and contagious than it is in *Province*, for the ſubtlety of the Aire ſtimulates or helps forward the Plague.

But this diſeaſe is mortall and pernicious whereſoever it bee, becauſe it ſuddenly aſſaulteth the heart, which is the Manſion, or as it were the fortreſſe or caſtle of life: but commonly not before the ſignes and tokens of it appeare on the body: and yet you ſhall ſcarce find any man that thinketh of calling the Phyſitian to helpe to preſerve him from ſo great danger before the ſignes thereof be evident to bee ſeene and felt: but then the heart is aſſaulted. And when the heart is ſo aſſaulted, what hope of life is there, or health to be looked for? Therefore becauſe medicines come oft-

What effects feare and confidence produce in the Plague.

times too late, and this malady is as it were a ſudden and winged meſſenger of our death, it commeth to paſſe that ſo many dye thereof. And moreover, becauſe at the firſt ſuſpicion of this ſo dire and cruell a diſeaſe, the imagination and minde (whoſe force in the diverſly ſtirring up of the humours is great and almoſt incredible) is ſo troubled with feare of imminent death, and diſpaire of health, that together with the perturbed humours, all the ſtrength and power of nature falleth and ſinketh downe.

This you may perceive and know, by reaſon that the keepers of ſuch as are ſicke, and the bearers which are not fearefull, but very confident, although they doe all the baſeſt offices which may be for the ſick, are commonly not infected, and ſeldome dye thereof if infected.

Chap.

CHAP. XVIII.

How a peſtilent feaver comes to be bred in us.

THe Plague oft-times findeth fuel in our bodies, and oft-times allurements, to wit, the putrefaction of humours, or aptneſſe to putrefie: but it never thence hath its firſt originall, for that comes alwaies from the defiled aire; therefore a peſtilent feaver is thus bred in us: The peſtilent Aire drawne by inſpiration into the lungs, and by tranſpiration into the utmoſt mouthes of the veines and arteries ſpread over the skin, the bloud or elſe the humours already putrefying or apt to putrefie therein, are infected and turned into a certaine kind of malignity reſembling the nature of the agent. Theſe humours, like unquencht lime when it is firſt ſprinkled with water, ſend forth a putride vapour, which carryed to the principall parts and heart eſpecially, infecteth the ſpirituous bloud boyling in the ventricles thereof, and therewith alſo the vitall ſpirits; and hence proceeds a certaine feaveriſh heat. This heat diffuſed over the body by the arteries, together with a maligne quality, taints all, even the ſolid parts of the bones with the peſtiferous venome, and beſides, cauſeth divers ſymptomes, according to the nature thereof, and the condition of the body and humours wherein it is. Then is the conflict of the malignity aſſailing, & nature defending, manifeſt, in which if nature prevaile, it, uſing the help of the expulſive faculty, will ſend & drive it far from the noble parts, either by ſweats, vomits, bleeding, evacuation by ſtoole or urine, buboes, carbuncles, puſtles, ſpots, and other ſuch kinds of breakings out over the skin. But on the contrary, if the malignity prevaile, and nature be too weake, and yeeld, and that firſt he be troubled with often panting or palpitation of the heart, then preſently after with frequent faintings, the patient then at length will dye. For this is a great ſigne of the Plague or a peſtilent Feaver, if preſently at the firſt, with no labour, nor any evacuation worth the ſpeaking of, their ſtrength faile them, and they become exceeding faint. You may find the other ſignes mentioned in our preceding diſcourſe.

The originall of the Plague alwaies from the Aire.

Signes that nature is overcome.

CHAP. XIX.

Into what place the Patient ought to betake himſelfe ſo ſoone as he finds himſelfe infected.

WEE have ſaid that the perpetuall and firſt originall of the peſtilence commeth of the Aire, therefore ſo ſoone as one is blaſted with the peſtiferous Aire, after he hath taken ſome preſervative againſt the malignity thereof, hee muſt withdraw himſelfe into ſome wholeſome Aire, that is, cleane and pure from any venemous iufection or contagion, for there is great hope of health by the alteration of the Aire; for we doe moſt frequently and abundantly draw in the Aire of all things, ſo that we cannot want it for a minute of time: therefore of the Aire that is drawne in, dependeth the correction, amendment, or increaſe of the Poyſon or malignity that is received, as the Aire is pure, ſincere or corrupted.

Change of the Aire conduceth to the cure of the Plague.

There bee ſome that doe think it good to ſhut the patient in a cloſe Chamber, ſhutting the windowes to prohibite the entrance of the Aire as much as they are able: But I thinke it more convenient that thoſe windowes ſhould bee open from whence that wind bloweth that is directly contrary unto that which brought in the venemous Aire: For although there be no other cauſe, yet if the Aire bee not moved, or agitated, but ſhut up in a cloſe place, it will ſoone bee corrupted. Therefore in a cloſe and quiet place that is not ſubject to the entrance of the Aire, I would wiſh the patient to make wind, or to procure Aire with a thick and great cloth dipped or macerated in water and vinegar mixed together, and tyed to a long Staffe, that by toſſing it up and downe the cloſe chamber, the wind or aire thereof may coole and re-

Aire pent up is apt to putrefie.

create

create the patient. The patient must every day bee carried into a fresh chamber, and the beds and the linnen cloaths must be changed: there must alwaies be a cleare and bright fire in the patients chamber, and especially in the night, whereby the aire may be made more pure, cleane, and voyd of nightly vapours, and of the filthy and pestilent breath proceeding from the patient, or his excrements. In the meane time, lest (if it be in hot weather) the patient should be weakened or made more faint by reason that the heat of the fire doth disperse and wast his spirits, the Floor or ground of the chamber must bee sprinkled or watered with vinegar and water, or strowed with the branches of vines made moist in cold water, with the leaves and flowers of Water-lillyes, or Poplar, or such like. In the fervent heat of summer hee must abstaine from Fumigations that doe smell too strongly, because that by assaulting the head, they encrease the paine.

If the patient could goe to that cost, it were good to hang all the chamber where he lyeth, and also the Bed, with thicke or course linnen cloaths moistened in vinegar and water of Roses. Those linnen cloaths ought not to be very white, but somewhat browne, because much and great whitenesse doth disperse the sight, and by wasting the spirits, doth encrease the paine of the head: for which cause also the Chamber ought not to bee very lightsome.

Contrariwise, on the night season there ought to bee fires and perfumes made, which by their moderate light, may moderately call forth the spirits.

The materials for sweet fires.

Sweet fires may be made of little pieces of the wood of Juniper, Broom, Ash, Tamarisk, of the rinde of Oranges, Lemmons, Cloves, Benzoin, gum Arabick, Orris roots, Mirrhe, grossely beaten together, and layd on the burning coals put into a chafing dish. Truely the breath or smoake of the wood or berries of Juniper, is thought to drive serpents a great way from the place where it is burnt. The vertue of the Ash-tree against venome is so great, as *Pliny* testifieth, that a serpent will not come under the shadow thereof, no not in the morning nor evening, when the shaddow of any thing is most great and long, but she will runne from it. I my selfe have proved that if a circle or compasse bee made with the boughes of an Ash-tree, and a fire made in the midst thereof, and a serpent put within the compasse of the boughs, that the serpent will rather runne into the fire than through the Ash boughes.

Lib. 16. cap 13.

There is also another meanes to correct the Aire. You may sprinkle vinegar of the decoction of Rue, Sage, Rosemary, Bay berries, Juniper berries, *Cyperus* nuts, & such like, on stones or bricks made red hot, and put in a pot or pan, that all the whole chamber where the patient lyeth may be perfumed with the vapour thereof.

Perfumes.

Also fumigations may bee made of some matter that is more grosse and clammy, that by the force of the fire the fume may continue the longer, as of *Ladanum*, Myrrhe, Masticke, Rosine, Turpentine, Storax, *Olibanum*, Benzoin, Bay berries, Juniper berries, Cloves, Sage, Rosemary, and Marjoram, stamped together, and such like.

Sweet candles.

Those that are rich and wealthy may have Candles and Fumes made of waxe, or Tallow mixed with some sweet things.

A sponge macerated in Vinegar of Roses, and Water of the same, and a little of the decoction of Cloves, and of Camphire added thereto, ought alwaies to be ready at the patients hand, that by often smelling unto it, the animall spirits may be recreated and strengthened.

A sweet water to smell to.

The water following is very effectuall for this matter. Take of Orris, foure ounces; of Zedoarie, Spikenard, of each fixe drammes; of Storax, Benzoin, Cinamon, Nutmegs, Cloves, of each one ounce and a halfe; of old Treacle, halfe an ounce: bruise them into a grosse pouder, and macerate them for the space of twelve houres in foure pound of white and strong wine, then distill them in a Limbeck of glasse on hot ashes, and in the distilled liquor wet a sponge, and then let it be tyed in a linnen cloath, or closed in a boxe, and so often put unto the nostrills. Or take of the vinegar and water of roses, of each foure ounces; of Camphire, fixe graines; of Treacle, half a dram: let them be dissolved together, and put into a viall of glasse, which the patient may often put unto his nose.

A *Nodule* to smell to.

This *Nodule* following is more meet for this matter. Take of Rose leaves, two pugils

pugils; of Orris halfe an ounce; of *Calamus Aromaticus*, Cynamon, Cloves, of each two drammes; of Storax and Benzoin, of each one dramme and a halfe; of *Cyperus*, halfe a dramme: beat them into a groſſe pouder, make thereof a *Nodula* betweene two pieces of Cambricke or Lawne of the bigneſſe of an hand-ball, then let it bee moiſtened in eight ounces of Roſe water, and two ounces of Roſe vinegar, and let the patient ſmell unto it often. Theſe things muſt be varied according to the time: For in the Summer you muſt uſe neither Muske nor Civet, nor ſuch like hot things: and moreover women that are ſubject to fits of the Mother, and thoſe that have Feavers or the head-ach, ought not to uſe thoſe things that are ſo ſtrong ſmelling & 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 & vinegar of Roſes, ſhall be ſufficient.

CHAP. XX.

What Diet ought to be obſerved, and firſt of the choice of Meat.

THe order of diet in a peſtilent diſeaſe ought to bee cooling and drying; not ſlender, but ſomewhat full. Becauſe by this kinde of diſeaſe there commeth waſting of the ſpirits, and exolution of the faculties, which inferreth often ſwouning, therefore that loſſe muſt be repaired as ſoone as may be with more quantity of meates that are of eaſie concoction and digeſtion. Therfore I never ſaw any being infected with the peſtilence that kept a ſlender diet, that recovered his health, but died; and few that had a good ſtomacke, and fed well, dyed. Why ſuch as have the plague may feed more fully.

Sweet, groſſe, moiſt and clammy meates, and thoſe which are altogether, and exquiſitely of ſubtle parts, are to be avoyded; for the ſweet do eaſily take fire, and are ſoone enflamed; the moiſt will putrefie; the groſſe and clammy obſtruct, and therefore engender putrefaction; thoſe meats that are of ſubtle parts, over-much attenuate the humours, and enflame them, and doe ſtirre up hot and ſharp vapours into the braine, whereof commeth a Feaver. Therefore wee muſt eſchew Garlike, Onions, Muſtard, ſalted and ſpiced Meats, and all kind of Pulſe muſt alſo be avoided, becauſe they engender groſſe winds, which are the authors of obſtruction: but the decoction of them is not alwayes to be refuſed, becauſe it is a provoker of urine. Therefore let this bee their order of diet: let their bread bee of Wheat or Barly, well wrought, well leavened and ſalted, neither too new nor too ſtale: let them bee fed with ſuch meat as may be eaſily concocted and digeſted, & may engender much laudable juice, and very little excrementall, as are the fleſh of Wether-lambs, Kids, Leverets, Pullers, Partridges, Pigeons, Thruſhes, Larkes, Quailes, Blacke-Birds, Turtle-Doves, Moor-Hennes, Pheaſants, and ſuch like, avoyding water-Fowles. Let the Fleſh be moiſtened in Ver-juice of unripe Grapes, Vinegar, or the juice of Lemmons, Oranges, Cytrons, tart Pomegranates, Barberries, Gooſe-berries, or red Currance, or of garden, & wild ſorrell: for all theſe ſowre things are very wholeſome in this kinde of diſeaſe, for they doe ſtirre up the appetite, reſiſt the venemous quality and putrefaction of the humours, reſtraine the heat of the Feaver, and prohibit the corruption of the meates in the ſtomacke. Although that thoſe that have a more weake ſtomacke, and are endued with a more exact ſenſe, and are ſubject to the Cough and diſeaſes of the Lungs, muſt not uſe theſe, unleſſe they be mixed with Sugar and Cynamon. Pulſe muſt be ſhunned. The manner of diet.

If the patient at any time be fed with ſodden meats, let the brothes be made with Lettuce, Purſlaine, Succory, Borage, Sorrell, Hops, Bugloſſe, Creſſes, Burnet, Marigolds, Chervill, the cooling Seeds, french Barly and Oatmeale, with a little Saffron, for Saffron doth engender many ſpirits, and reſiſteth poyſon. To theſe opening roots may be added for to avoid obſtruction: yet much broath muſt be refuſed by reaſon of moiſture. The fruit of Capers eaten in the beginning of the Meale provoke the appetite, and prohibit obſtructions, but they ought not to bee ſeaſoned with

with over-much Oyle and Salt, they may also with good successe bee put into Broaths.

Fishes are altogether to be avoyded, because they soon corrupt in the Stomack: but if the patient be delighted with them, those that live in stony places must be chosen, that is to say, those that live in pure and sandy water, & about rocks and stones, as are Trowts, Pikes, Pearches, Gudgions, and Cravises boyled in milk, Wilks, and such like. And concerning Sea-fish, he may be fed with Giltheads, Gurnarts, with all the kinds of Cod-fish, Whitings not seasoned with salt, and Turbuts.

Egges potched and eaten with the juice of Sorrell, are very good. Likewise Barly water seasoned with the graines of a tart Pomegranate, and if the Feaver be vehement, with the seeds of white Poppy. Such Barly water is easie to be concocted and digested, it cleanseth greatly, and moistens and mollifieth the belly. But in some it procures an appetite to vomit, and paine of the head, and those must abstaine from it. But instead of barly water they may use pap, and bread crummed in the decoction of a Capon.

For the second course. For the second course, let him have raisons of the Sunne newly sodden in Rose water with Sugar, foure Damaske Prunes, tart Cherries, Pippins, and Katharine Peares.

In the end of the meale. And in the latter end of the Meale, Quinces roasted in the Embers, Marmelate of Quinces, and conserves of Bugloss or of Roses, and such like, may be taken: or else this pouder following.

Take of Coriander seeds prepared, two drams; of Pearle, Rose leaves, shavings of Hart-horne and Ivory, of each halfe a dram; of Amber two scruples; of Cinamon one scruple; of Unicornes horne, and the bone in a Stagges heart, of each half a scruple; of Sugar of Roses, foure ounces: Make thereof a pouder, and use it after meats.

If the patient be somewhat weake, he must be fed with Gelly made of the flesh of a Capon, and Veale sodden together in the water of Sorrell, *Carduus benedictus*, with a little quantity of Rose vinegar, Cynamon, Sugar, and other such like, as the present necessity shall seeme to require.

In the night season for all events and mischances, the patient must have ready prepared broath of meats of good digestion, with a little of the juice of Citrons or Pomegranates.

A restaurative drinke. This restaurative that followeth may serve for all. Take of the conserve of Bugloss, Borage, Violets, Water-lillies, and Succory, of each two ounces; of the pouder of the Electuary *Diamargaritum Frigidum*, of the Trochisces of Camphire, of each three drams: of Citron seeds, *Carduus* seeds, Sorrell seeds, the rootes of *Diptamnus*, Tormentill, of each two drammes; of the broath of a young Capon, made with Lettuce, Purslaine, Bugloss and Borage boiled in it, fixe pints,; put them in a Lembecke of glasse with the flesh of two Pullets, of so many Partridges, and with fifteene leaves of pure gold: make thereof a destillation over a soft fire. Then take of the distilled liquor, half a pint, straine it through a woollen bagge, with two ounces of white Sugar, and halfe a dram of Cynamon: let the patient use this when he is thirstie. Or else put the flesh of one old Capon, and of a legge of Veale, two minced Partridges, and two drammes of whole Cinamon without any liquor, in a lembecke of glasse, well luted and covered, and so let them boile in *Balneo Mariæ* unto the perfect concoction. For so the fleshes will bee boiled in their owne juice, without any hurt of the fire; then let the juice bee pressed out therehence with a presse: give the patient for every dose, one ounce of the juice with some cordiall waters, some *Trisantalum*, and *Diamargaritum frigidum*.

The preserves of sweet fruits are to bee avoided, because that sweet things turne into choler; but the confection of tart prunes, Cherries, and such like may bee fitly used. But because there is no kinde of sickenesse that so weakens the strength, as the plague; it is alwaies necessary, but yet sparingly and often, to feed the patient, still having respect unto his custome, age, the region, and the time: for through emptinesse there is great danger, lest that the venemous matter that is driven out to the superficiall parts of the body, should be called backe into the inward parts, by an hun-

gry

grie ſtomacke, an d the ſtomacke it ſelfe ſhould beefilled with cholericke, hot, thin, and ſharp excrementall humours, whereof commeth biting of the ſtomack, and gripings in the guts.

CHAP. XXI.

What drinke the Patient infected ought to uſe.

IF the feaver be great and burning, the patient muſt abſtain from wine, unleſſe that he be ſubject to ſwouning: and he may drinke the *Oxymel* following in ſtead thereof.

Take of faire water, three quarts, wherein boyle foure ounces of hony untill the third part bee conſumed, ſcumming it continually; then ſtrain it, and put it into a cleane veſſell, and adde thereto four ounces of vinegar, and as much cinamon as will ſuffice to give it a taſt. Or elſe a ſugred water, as followeth. Take two quarts of faire water, of hard ſugar, ſixe ounces, of cinamon, two ounces, ſtrain it through a woollen bagge or cloth without any boiling; and when the patient will uſe it, put thereto a little of the juice of Citrons. The ſyrupe of the juice of Citrons excelleth amongſt all others that are uſed againſt the peſtilence. An *Oxymel*.

The uſe of the Julep following is alſo very wholſome. Take of the juice of Sorrell well clarified, halfe a pint, of the juice of Lettuce ſo clarified, foure ounces, of the beſt hard ſugar, one pound, boile them together to a perfection, let them bee ſtrained and clarified, adding a little before the end a little vinegar, let it be uſed betweene meales with boyled water, or with equall portions of the water of Sorrell, Lettuce, Scabious and Bugloſſe: or take of this former deſcribed Julep ſtrained and clarified foure ounces, let it be mixed with one pound of the forenamed cordiall waters, and boile them together a little. And when they are taken from the fire, put thereto of yellow Sanders one dram, of beaten Cinamon halfe a dram, ſtrain it through a cloth: when it is cold let it be given the patient to drink with the juice of Citrons. A Julep.

Thoſe that have accuſtomed to drink Sider, Perry, Beer or Ale, ought to uſe that drink ſtill, ſo that it be clear, tranſparent, and thin, and made of thoſe fruits that are ſomwhat tart; for troubled & dreggiſh drink doth not only engender groſſe humors, but alſo crudities, windineſs, and obſtructions of the firſt region of the body, whereof comes a feaver.

Oxycrate being given in manner following, doth aſſwage the heat of the feaver, and repreſſe the putrefaction of the humours, and the fierceneſſe of the venome, and alſo expelleth the water through the veines, if ſo bee that the patients are not troubled with ſpitting of blood, cough, yexing, and altogether weake of ſtomacke: for ſuch muſt avoyd all tart things. The commodities of oxycrate. To whom hurtfull.

Take of faire water, one quart; of white or red vinegar three ounces; of fine Sugar, foure ounces; of ſyrup of Roſes, two ounces: boile them a little, and then give the patient thereof to drinke. Or take of the juice of Lemmons & Citrons, of each halfe an ounce; of juice of foure Pomegranates, two ounces; of the water of Sorrell and Roſes, of each one ounce; of faire water boyled, as much as ſhall ſuffice: make thereof a Julep, and uſe it betweene meales. Or take of Sirupe of Lemmons and of red Currance, of each one ounce; of the water of lillies, foure ounces; of faire water boyled, halfe a pinte; make thereof a Julep. Or take of the ſyrups of water Lillies, and vinegar, of each half an ounce, diſſolve it in five ounces of the water of Sorrell; of faire water one pinte: make thereof a Julep.

But if the patient be young, and have a ſtrong and good ſtomacke, and cholericke by nature, I thinke it not unmeet for him to drinke a full and large draught of fountaine water cold; for that is effectuall to reſtraine and quench the heat of the Feaver, and contrariwiſe, they that drinke cold water often, and a very ſmall quantity at a time, as the Smith doth ſprinkle water on the fire at his Forge, doe encreaſe the heat The drinking of cold water, to whom & when profitable.

and burning, and thereby make it endure the longer. Therfore by the judgment of *Celsus*, when the diſeaſe is in the chiefe encreaſe, and the patient hath endured thirſt for the ſpace of three or four daies, cold water muſt be given unto him in great quantity, ſo that he may drink paſt his ſatiety, that when his belly and ſtomacke are filled beyond meaſure, and ſufficiently cooled, he may vomit.

Lib. 3. cap. 7.

Some doe not drinke ſo much thereof as may cauſe them to vomit, but do drinke even unto ſatiety, and ſo uſe it for a cooling medicine; but when either of theſe is done, the patient muſt bee covered with many cloaths, and ſo placed that hee may ſleepe; and for the moſt part, after long thirſt and watching, and after long fulneſſe, and long and great heat, ſound ſleep commeth, by which great ſweat is ſent out, and that is a preſent helpe.

But thirſt muſt ſometimes be quenched with little pieces of Melons, Gourds, Cucumbers, with the leaves of Lettuce, Sorrell, and Purſlaine, made moiſt or ſoked in cold water, or with a little ſquare piece of a Citron, Lemmon, or Orange macerated in Roſe water, & ſprinkled with Sugar, and ſo held in the mouth, and then changed.

But if the patient be aged, his ſtrength weak, flegmatick by nature, & given to wine, when the ſtate of the Feaver is ſomewhat paſt, and the chiefe heat beginning to aſſwage, he may drink wine very much allayed at his meat, for to reſtore his ſtrength, and to ſupply the want of the waſted ſpirits. The patient ought not by any meanes to ſuffer great thirſt, but muſt mitigate it by drinking, or elſe allay it by waſhing his mouth with oxycrate and ſuch like, and he may therein alſo waſh his hands and his face, for that doth recreate the ſtrength. If the fluxe or lask trouble him, he may very well uſe to drinke ſteeled water, and alſo boyled milke, wherein many ſtones comming red hot out of the fire have beene many times quenched. For the dryneſſe and roughneſſe of the mouth, it is very good to have a cooling, moiſtening and lenifying lotion of the mucilaginous water of the infuſion of the ſeeds of Quinces, *pſilium, ideſt*, Flea-wort, adding thereto a little Camphire, with the Water of Plantain and Roſes; then cleanſe and wipe out the filth, and then moiſten the mouth, by holding therein a little oile of ſweete Almonds mixed with a little ſyrupe of Violets. If the roughneſſe breed or degenerate into Ulcers, they muſt be touched with the water of the infuſion of ſublimate, or *Aqua fortis*.

For dryneſſe or roughneſſe of the mouth.

For the Ulcers thereof.

But becauſe wee have formerly made frequent mention of drinking of water, I have here thought good to ſpeake ſomewhat of the choice and goodneſſe of waters. The choice of waters is not to be neglected, becauſe a great part of our diet depends thereon, for beſides that we uſe it either alone, or mixed with wine for drink, we alſo knead bread, boile meat, and make broaths therewith. Many thinke that rain water which falls in ſummer, and is kept in a ciſterne well placed and made, is the wholeſomeſt of all. Then next thereto they judge that ſpring water which runnes out of the tops of mountaines, through rocks, cliffes and ſtones: in the third place they put Well water, or that which riſeth from the foots of hils. Alſo the river water is good that is taken out of the midſt or ſtreame. Lake or pond water is the worſt, eſpecially if it ſtand ſtill; for ſuch is fruitfull of and ſtored with many venemous creatures, as Snakes, Toads, and the like. That which comes by the melting of Snow and Ice is very ill, by reaſon of the too refrigerating faculty and earthy nature. But of ſpring and well waters theſe are to be judged the beſt, which are inſipide, without ſmell, & colour; ſuch as are cleare, warmiſh in winter, and cold in ſummer, which are quickly hot and quickly cold, that is, which are moſt light, in which all manner pulſe, turneps, and the like, are eaſily and quickly boyled. Laſtly, when as ſuch as uſually drink thereof, have cleer voices and ſhrill, their cheſts ſound, and a lively and freſh colour in their faces.

The choice of waters.

Hip. ſect. 5. aphor. 26.

CHAP.

CHAP. XXII.

Of Antidotes to bee used in the Plague.

NOw we must treate of the proper cure of this disease, which must bee used as soone as may be possible, because this kinde of poyson in swiftnesse exceedeth the celerity of the medicine. Therefore it is better to erre in this, that you should think every disease to bee pestilent in a pestilent season, and to cure it as the Pestilence: because that so long as the Ayre is polluted with the seeds of the Pestilence, the humours in the body are soone infected with the vicinity of such an ayre, so that then there happeneth no disease voyd of the Pestilence, that is to say, which is not pestilent from the beginning by his owne nature, or which is not made pestilent.

The beginning of the cure must be by antidotes.

Many begin the cure with bloud-letting, some with purging, and some with Antidotes. We, 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 property, it defends the heart from poyson, as much as it is offended therewith. Although there are also other Antidotes which preserve & keep the heart & the patient from the danger of Poyson and the Pestilence, not onely because they doe infringe the power of the poyson in their whole substance, but also because they drive and expell it out of all the body by swear, vomiting, scowring, and such other kinds of evacuations.

In what quantity they must be taken.

The Antidote must be given in such a quantity as may bee sufficient to overcome the poyson; but because it is not good to use it in greater quantitie than needeth, lest it should overthow our nature, for whose preservation onely it is used, therefore that which cannot bee taken together and at once, must bee taken at severall times, that some portion thereof may daily bee used so long, untill all the accidents, effects and impressions of the poyson be past, and that there be nothing to be feared. Some of those Antidotes consist of portions of venemous things, being tempered together, and mixed in an apt proportion with other medicines, whose power is contrary to the venome: as Treacle, which hath for an ingredient the flesh of Vipers, that it being therto mixed may serve as a guide to bring all the antidote unto the place where the venenate malignity hath made the chiefe impression; because by the similitude of nature and sympathy, one poyson is suddenly snatched and carryed unto another.

Why poisonous things are put into Antidotes.

There are other absolute poisonous, which nevertheless are Antidotes one unto another: as a Scorpion himselfe cureth the prick of a Scorpion. But Treacle and Mithridate excell all other Antidotes: for by strengthening the noblest part, and the mansion of life, they repaire and recreate the wasted Spirits, and overcome the poyson, not onely being taken inwardly, but also applyed outwardly to the region of the heart, Botches and Carbuncles: for by an hidden property they draw the poysons unto them, as Amber doth Chaffe, and digest it when it is drawne, and spoile and robbe it of all its deadly force; as it is declared at large by *Galen*, in his booke *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 Feaver. But thereto I answer, there is not so great danger in the Feaver as in the Pestilence, although in the giving of Treacle, I would not altogether seeme to neglect the Feaver, but think it good to minister or apply it mixed with cordiall cooling medicines, as with the Trochisces of Camphire, syrupe of Lemons, of water Lillies, the water of Sorrell, and such like. And for the same cause wee ought not to choose old Treacle, but that which is of a middle age, as of one or two yeares old: to those that are stong, you may give halfe a dramme, and to those that are more weake, a dram.

Some poysons Antidotes to other some.

The patient ought to walke presently after that hee hath taken Treacle, Mithridate, or any other Antidote; but yet as moderately as hee can: not like unto many, which when they perceive themselves to bee infected, doe not cease to course and run up and downe, untill they have no strength to sustaine their bodies, for so they dissolve nature, so that it cannot suffice to overcome the contagion. After moderate

How to walke after the taking of an Antidote.

rate walking, the patient must be put warm to bed, and covered with many clothes, & warm brick-bats or tiles applyed to the soles of his feet; or in stead thereof you may use swines bladders filled with hot water, and apply them to the groines and armeholes, to provoke sweate: for sweating in this disease is a most excellent remedy, both for to evacuate the humours in the Feaver, and also to drive forth the malignity in the Pestilence, although every sweate brings not forth the fruit of health. For *George Agricola* saith, that hee saw a woman at *Misnia* in Germanie, that did sweat so for the space of three dayes, that the bloud came forth at her head and breast, & yet nevertheless shee died.

A sudo ifick potion. This potion following will provoke sweate. Take the roots of China shaved in thinne pieces one ounce and halfe; of *Guajacum* two ounces; of the barke of Tamariske one ounce; of Angelica roots two drams; of the shaving of Hart-horne one ounce; of Juniper berries three drams; put them into a viall of glasse that wil contain sixe quarts, put thereto foure quarts of running or river water that is pure and cleare, macerate them for the space of one whole night on the hot ashes: and in the morning boile them all in *Balneo Mariæ*, untill the halfe bee consumed, which will bee done in the space of sixe houres; then let them be strained through a bagge, and then strained againe, but let that be with sixe ounces of sugar of Roses, and a little Treacle: let the patient take eight ounces or fewer of that liquor, and it will provoke

A sudorifick powder. sweat. The powder following is also very profitable. Take of the leaves of *Dictamnus*, the roots of Tormentill, Betony, of each halfe an ounce, of bole Armenicke prepared one ounce, of *Terra Sigillata* three drams, of Aloes and Myrrhe, of each halfe a dram, of Saffron one dram, of Masticke two drams: powder them all according to art, and give one dram thereof dissolved in Rose-water, or the water of wild sorrell, and let the patient walke so soone as he hath taken that powder; then let him be laid in his bed to sweat as I have shewed before.

A distilled water against the Plague. The water following is greatly commended against poyson. Take the roots of Gentian & Cyperus, of each three drams; of *Carduus benedictus*, Burnet, of each one handfull; of Sorrell seeds and Divels-bit, of each two pugils; of Ivie and Juniper berries, of each halfe an ounce; of the flowers of Bugloss, Violets and red Roses, of each two pugils: powder them somewhat grossely, then soake or steepe them for a night in white wine and Rose water: then adde thereto of bole Armenick one ounce, of Treacle halfe an ounce, distill them all in *Balneo Mariæ*, and keepe the distilled liquor in a vial of glasse wel covered or close stopped for your use: let the patient take sixe ounces thereof with Sugar and a little Cinamon & Saffron: then let him walk, and then sweat as is aforesaid: the Treacle and cordiall water formerly prescribed are very profitable for this purpose. Also the water following is greatly commended. Take of Sorrell sixe handfuls, of Rue one handfull: dry them & macerate them

Another. in vinegar for the space of foure and twenty houres, adding thereto foure ounces of Treacle: make thereof a distillation in *Balneo Mariæ*, and let the distilled water bee kept for your use; and so soone as the patient doth thinke himselfe to be infected, let him take foure ounces of that liquor, then let him walke and sweate. He must leave

What meane to be used in sweating. sweating when he beginneth to waxe faint and weake, or when the humour that runs downe his body begins to waxe cold, then his body must be wiped with warme clothes, and dryed. The patient ought not to sweat with a full stomacke, for so the heat is called away from performing the office of concoction: also he must not sleep when he is in his sweat, lest the malignity goe inwardly with the heat and spirits unto the principall parts; but if the patient bee much inclined to sleep, hee must bee kept from it with hard rubbing, and bands tyed about the extreme parts of his body, and with much noise of those that are about him, and let his friends comfort him with the good hope that they have of his recovery; but if all this will not keepe him from sleepe, dissolve *Castoreum* in tart Vinegar, and *Aqua vitæ*, and let it bee injected into his nostrils: and let him bee kept continually waking the first day, and on the second and third, even unto the fourth; that is to say, unto the perfect expulsion of the venome; and let him not sleep above three or foure houres on a day and night. In the meane time let the Physician that shall bee present consider all things by his strength: for it is to be feared, that great watchings will dissolve the

strength

ſtrength, and make the patient weake: you muſt not let him eate within three houres after his ſweating; in the meane ſeaſon, as his ſtrength ſhall require, let him take the rinde of a preſerved Citron, conſerve of Roſes, bread toaſted and ſteeped in wine, the meat of a preſerved Myrabolane, or ſome ſuch like thing.

CHAP. XXIII.

Of Epithemes to be uſed for the ſtrengthening of the principall parts.

THere are alſo ſome topick medicines to bee reckoned amongſt Antidotes, which muſt be outwardly applyed as ſpeedily as may be, as cordiall and hepaticke Epithemes for the ſafety of the noble parts, and ſtrengthening of the faculties, as thoſe that drive the venenate aire farre from the bowels: they may be made of cordiall things not onely hot, but alſo cold, that they may temper the hear, and more powerfully repercuſſe. They muſt be applyed warme with a ſcarlet, or a double linnen cloth, or a ſoft ſponge dipped in them, if ſo be that a Carbuncle doe not poſſeſſe the regions of the noble parts, for it is not fit to uſe repercuſſives to a Carbuncle. You may make Epithemes after the following formes; R. *aquar. roſ. plantag. & ſolan. an* ℥iv. *aquæ acetoſ. vini granat. & aceti, an.* ℥iii. *ſantal. rub. & coral. rub. pulveriſ. an.* ℥iii. *theriac. vet.* ℥ß. *camph.* ℈ii. *croci* ℈i. *carioph.* ʒß. *miſce, fiat epithema.* Or elſe, R. *aqu. roſ. & plantag. an.* ℥x. *aceti roſ.* ℥iv. *carioph. ſant. rub. coral. rub. pulveriſ. pul. diamargarit. frigid. an.* ℥iß. *caphuræ & moſchi an.* ℈i. *fiat epithema.* Or, R. *aquar. roſar. & meliſſæ, an.* ℥iv. *aceti roſ.* ℥iii. *ſant. rub.* ʒi. *caryophyl.* ʒß. *croci.* ℈ii. *caphuræ* ℈i. *bolt arm. terræ ſigil. & Zedoar. an.* ʒi. *fiat epithema.* Or elſe, R. *aceti roſat. & aquæ roſat. an* ℔ß. *caphuræ* ʒß. *theriac. & mithridat. an.* ʒi. *fiat epithema.* Or elſe, *aqu. roſar. nenuph. bugloſ. acetoſæ, aceti roſar. an.* ℔ß. *ſant. rub. roſ. rub. an.* ℥iii. *flor. nenuph. violar. caphur. an.* ʒß. *mithrid. & theriac. an.* ℥ii. *terantur & miſceantur ſimul omnia.* When you intend to uſe them, take ſome portion of them in a veſſell by its ſelfe, wherewith let the affected bowell be fomented warme.

Where of they muſt be made.

Repercuſsives not fit to be applyed to Carbuncles.

CHAP. XXIIII.

Whether purging and bloud-letting bee neceſſary in the beginning of peſtilent diſeaſes.

SO ſoon as the heart is ſtrengthened & corroberated with cordials & antidotes, we muſt come to phlebotomy & purging. As concerning bloud-letting in this caſe, there is a great controverſie among Phyſicians. Thoſe that wiſh it to be uſed, ſay or affirme that the peſtilent Feaver doth infixe it ſelfe in the bloud, and therein alſo the peſtilent malignity taketh its ſeate; and therefore it will ſoone infect the other humours, unleſſe that the bloud be evacuated, & the infection that remaineth in the bloud be thereby taken away. Contrariwiſe, thoſe that do not allow phlebotomy in this caſe, alledge, that it often commeth to paſſe that the bloud is voyd of malignity when the other humours are infected with the venemous contagion. If any man require my judgement in this doubtfull queſtion, I ſay, that the peſtilence ſometimes doth depend on the default of the aire: This default being drawne through the paſſages of the body, doth at length pierce unto the entrals, as we may underſtand by the abſceſſes which breake out one while behind the eares, ſometimes in the arme-holes, and ſometimes in the groines, as the braine, heart or liver are infected. And hereof alſo come Carbuncles, and other collections of matter, and eruptions, which are ſeene in all parts of the body, by reaſon that nature uſing the ſtrength of the expulſive faculty, doth drive forth whatſoever is noyſome or hurtfull. Therefore if the Phyſician will follow this motion of nature, he muſt neither purge nor let bloud, leſt that by a contrary motion, that is, by drawing in from without, the motion of nature which proceeds outward-

Reaſons for and againſt bloud-letting in the Plague.

The compoſing of this controverſie.

ly from within, ſhould be troubled. So wee often ſee in thoſe who are purged or let bloud for ſuch Buboes as come through unlawfull copulation, that the matter is thereby made contumacious, and by drawing it inwardly, it ſpeedily cauſeth the French Pocks.

Wherefore, when Buboes, Carbuncles and other peſtilent eruptions appeare, which come through the default of the Aire, we ought to abſtain from purging and phlebotomie; but it is ſufficient to forc-arme the heart inwardly and outwardly with Antidotes that are endued with a proper vertue of reſiſting the poyſon. For it is not to bee doubted, but that when nature is debilitated with both kindes of evacuation, aud when the ſpirits together with the bloud are exhauſted, the venemous Aire will ſoone pierce, and be received into the empty body, where it exerciſeth its tyranny to the utter deſtruction thereof.

A hiſtory. In the yeare of our Lord God 1565. in which yeare there was great mortality throughout all France, by reaſon of the peſtilence and peſtilent diſeaſes, I earneſtly & diligently enquired of all the Phyſicians & Chirurgians of all the Cities (through which King *Charles* the ninth paſſed in his progreſſe unto Bayon) what ſucceſſe their patients had after they were letten bloud and purged, whereunto they all anſwered alike, that they had diligently obſerved, that all that were infected with the Peſtilence, and were letten bleed ſome good quantity of bloud, or had their bodies ſomewhat ſtrongly purged, thenceforwards waxed weaker and weaker, and ſo at length dyed; but others which were not let bloud nor purged, but took cordiall Antidotes inwardly, and applyed them outwardly, for the moſt part eſcaped and recovered their health: for that kind of Peſtilence tooke its originall of the primitive and ſolitary default of the Aire, and not of the corruption of the humours.

When purging and bloding may be uſed. The like event was noted in the hoarſeneſſe that we ſpake of before: that is to ſay, that the patients waxed worſe and worſe by purging and phlebotomie; but yet I doe not diſallow either of thoſe remedies, if there be great fulneſſe in the body, eſpecially in the beginning, and if the matter have a cruell violence, whereof may bee feared the breaking in unto ſome noble part. For wee know that it is confirmed by *Hy-*

Aph.21.ſect.1. *pocrates*, that what diſeaſe ſoever is cauſed by repletion, muſt be cured by evacuation:

Aph.10.ſect.4. and that in diſeaſes that are very ſharpe, if the matter do ſwell, it ought to be remedied the ſame day, for delay in ſuch diſeaſes is dangerous; but ſuch diſeaſes are not cauſed or inflicted upon mans body by reaſon or occaſion of the peſtilence, but of the diſeaſed bodies, and diſeaſes themſelves commixed together with the Peſtilence; therefore then peradventure it is lawfull to purge ſtrongly, and to let a good quantity of bloud, leſt that the peſtilent venome ſhould take hold of the matter that is prepared, and ſo infect it with a contagion, whereby the Peſtilence taketh new and

Cap.7.lib 3. farre greater ſtrength; eſpecially as *Celſus* admoniſheth us, where he ſaith; that, By how much the ſooner thoſe ſudden invaſions doe happen, by ſo much the ſooner remedies muſt be uſed, yea or rather raſhly applyed; therefore if the veines ſwell, the face waxe fiery red, if the arteries of the temples beat ſtrongly, if the patient can very hardly breathe by reaſon of a weight in his ſtomacke, if his ſpittle be bloudy, then ought he to bee let bloud without delay, for the cauſes before mentioned. It ſeems

Why bloud muſt be let on the left arme in the Plague. beſt to open the liver veine on the left arme, whereby the heart and the ſpleene may be better diſcharged of their abundant matter; yet bloud-letting is not good at all times, for it is not expedient when the body beginneth to waxe ſtiffe by reaſon of the comming of a Feaver; for then by drawing backe the heat and ſpirits inwardly, the outward parts being deſtitute of bloud, waxe ſtiffe and cold; therefore bloud cannot bee letten then without great loſſe of the ſtrength, and perturbation of the humours. And it is to be noted, that when thoſe plethoricke cauſes are preſent, there is one Indication of bloud-letting in a ſimple peſtilent Feaver, and another in that which hath a *Bubo, id eſt*, a Botch or a Carbuncle joined therwith. For in one or both of theſe, being joyned with a vehement & ſtrong burning Feaver, bloud muſt be letten by opening the veine that is neareſt unto the tumour or ſwelling againſt nature, keeping the ſtraightneſs of the fibres, that this being open, the bloud might be drawn more directly from the part affected; for all and every retraction of putrefied bloud unto the noble parts, is to be avoyded, becauſe it is noyſome and hurtful to nature, and

to

to the patient. Therefore, for example ſake, admit the patient be plethoricke by repletion, which is called *Ad vaſa, id eſt*, unto the veſſels, and *Ad vires, id eſt*, unto the ſtrength: and therewithall he hath a tumour that is peſtilent in the parts belonging unto his head or necke, the bloud muſt bee let out of the cephalick or median veine, or out of one of their branches diſperſed in the arme on the grieved ſide. But if through occaſion of fatte, or any other ſuch like cauſe, thoſe veines doe not appeare in the arme, there bee ſome that give counſell in ſuch a caſe to open the veine that is betweene the fore-finger and the thumbe, the hand being put into warme water, whereby that veine may ſwell and be filled with bloud, gathered thither by meanes of the heate.

If the tumour be under the arme-hole, or about thoſe places, the liver veine, or the median muſt be opened which runneth alongſt the hand: if it be in the groine, the veine of the hamme, or *Saphena*, or any other veine above the foote that appeareth well, but alwaies on the grieved ſide. And phlebotomie muſt bee performed before the third day: for this diſeaſe is of the kind or nature of ſharpe diſeaſes; becauſe that within foure and twenty houres it runneth paſt helpe. In letting of bloud you muſt have conſideration of the ſtrength. You may perceive that the patient is ready to ſwoune, when that his forehead waxeth moyſt, with a ſmall ſweate ſuddenly ariſing, by the aking or paine at the ſtomacke, with an appetite to vomit, and deſire to goe to ſtoole, gaping, blackneſſe of the lippes, and ſudden alteration of the face unto paleneſſe: and laſtly moſt certainely by a ſmall and ſlow pulſe: and then you muſt lay your finger on the veine, and ſtop it untill the patient come to himſelfe againe, either by nature, or elſe reſtored by art; that is to ſay, by giving unto him bread dipped in wine, or any other ſuch like thing: then, if you have not taken bloud enough, you muſt let it goe againe, and bleed ſo much as the greatneſſe of the diſeaſe, or the ſtrength of the patient will permit or require: which being done, ſome one of the Antidotes that are preſcribed before will be very profitable to be drunk, which may repaire the ſtrength, and infringe the force of the malignity.

CHAP. XXV.

Of purging medicines in a peſtilent diſeaſe.

IF you call to minde the proper indications, purging ſhall ſeeme neceſſary in this kinde of diſeaſe, and that muſt bee preſcribed as the preſent caſe and neceſſity requireth; rightly conſidering that the diſeaſe is ſudden, and doth require medicines that may with all ſpeede drive out of the body the hurtfull humour wherein the noyſome quality doth lurke and is hidden; which medicines are diverſe by reaſon of the diverſity of the kinde of the humour, and the condition or temperature of the patient. For this purpoſe ſixe graines of Scammonie beaten into powder, or elſe tenne graines are commonly miniſtred to the patient with one dram of Treacle. Alſo pils may be made in this forme: Take of Treacle and Mithridate, of each one dram; of *Sulphur vivum* finely powdred halfe a dram; of *Diagridium* foure graines: make thereof Pils. Or, Take three drams of Aloes; of Myrrhe and Saffron, of each one dram; of white Hellebore and Aſarabacca, of each foure ſcruples: make thereof a maſſe with old Treacle, and let the patient take foure ſcruples thereof for a doſe, three houres before meate. *Raffius* his pils may be profitably given to thoſe that are weake. The ancient Phyſicians have greatly commended Agarick for this diſeaſe, becauſe it doth draw the noyſome humours out of all the members: and the vertues thereof are like unto thoſe of Treacle; for it is thought to ſtrengthen the heart, and to draw out the malignity by purging. To thoſe that are ſtrong the weight of two drams may be given, and to thoſe that are more weake, halfe a dram. It is better to give the infuſion in a decoction, than in ſubſtance; for being elected and prepared truly into Trochiſes, it may be called a moſt divine kinde of medicine.

What purges fit in the I. figure.

Pils.

Antimonium is highly prayſed by the experience of many; but becauſe I know the uſe

uſe thereof is condemned by the councell and decree of the School of Phyſicians at Paris, I will here ceaſe to ſpeake of it.

Thoſe medicines that cauſe ſweats are thought to excell all others, when the Peſtilence commeth of the venemous Ayre: among whom the efficacy of that which followeth hath beene proved, to the great good of many in that Peſtilence which was lately throughout all Germany, as *Matthias Rodler* Chancellor to Duke *George* the Count Palatine ſignified unto me by letters.

An effectuall ſudorifick and alſo purging medicine.

They doe take a bundle of Mugwort, and of the aſhes thereof after it is burnt, they make a lye with foure pints of water; then they doe ſet it over the fire, and boyle it in a veſſell of earth well leaded, untill the liquor be conſumed, the earthy dregges falling unto the bottome like unto ſalt, whereof they make Trochiſces of the weight of a crowne of gold: then they diſſolve one or two of thoſe Trochiſces, according to the ſtrength of the patient, in good Muskadine, and give it the patient to drinke, and let him walke after that hee hath drunke it for the ſpace of halfe an houre; then lay him in his bed, and there ſweat him two or three houres, and then he will vomit, and his belly will bee looſed as if hee had taken Antimony; and ſo they were all for the moſt part cured, eſpecially all thoſe that tooke that remedy betimes, and before the diſeaſe went unto their heart, as I my ſelfe have proved in ſome that were ſicke at Paris, with moſt happy ſucceſſe: Truely Mugwort is highly commended by the ancient Phyſicians, being taken and applyed inwardly or outwardly againſt the bitings of venemous creatures, ſo that it is not to be doubted but that it hath great vertue againſt the Peſtilence.

The vertues of Mugwort.

Vide Rondelet. Lib. 7. de piſc. c. 3.

I have heard it moſt certainly reported by *Gilbertus Heroaldus* Phyſician of *Mompilier*, that eight ounces of the pickle of Anchoves, drunke at one draught, is a moſt certaine and approved remedie againſt the Peſtilence, as he and many other have often found by experience. For the plague is no other thing but a very great putrefaction; for the correction and amendment whereof, there is nothing more apt or fit than this pickle or ſubſtance of the Anchoves, being melted by the ſun and force of the ſalt that is ſtrawed thereon. There be ſome which infuſe one dramme of Walewort ſeede in white wine, and affirme that it drunken will performe the like effect as Antimony. Others diſſolve a little weight of the ſeed of Rue being bruiſed in Muſkadine, with the quantity of a Beane of Treacle, and ſo drinke it. Others beate or bruiſe an handfull of the leaves or tops of Broome in halfe a pint of white wine, and ſo give it to the patient to drinke, to cauſe him to vomit, looſe his belly, and make him to ſweat. Truly thoſe that are wounded or bitte with venemous beaſts, if they bind broome above the wound, it will prohibit or hinder the venome from diſperſing it ſelfe, or going any further: therefore a drink made thereof will prohibit the venome from going any nearer the heart. Some take of the roote of Elecampaine, Gentian, Tormentill, Kermes berries and broom; of the powder of Ivory and Hartſhorne, of each halfe a dram: they doe bruiſe and beate all theſe, and infuſe them for the ſpace of foure and twenty houres in white wine and *Aqua vitæ* on the warm embers, and then ſtraine it, and give the patient three or foure ounces thereof to drinke; this provokes ſweat, and infringeth the power of the poyſon: and the potion following hath the ſame vertue.

A Potion.

Take good Muſtard halfe an ounce, of Treacle or Mithridate the weight of a Bean, diſſolve them in white wine, and a little *Aqua vitæ*, and let the patient drinke it, and ſweat thereon with walking. You may alſo roaſt a great Onion made hollow, and filled with halfe a dram of Treacle and Vinegar under the embers; and then ſtraine it, and mixe the juice that is preſſed out of it with the water of Sorrell, *Carduus Benedictus*, or any other cordiall thing, and with ſtrong wine, and give the patient to drinke thereof to provoke ſweat, and to repell the malignity. Or elſe take as much Garlick as the quantity of a big Nut; of Rue and Celandine, of each twenty leaves, bruiſe them all in white wine and a little *Aqua vitæ*; then ſtraine it, and give the patient thereof to drink. There be ſome that doe drink the juice that is preſſed out of Celandine and Mallowes, with three ounces of Vinegar, and halfe an ounce of the oyle of Wall-nuts, and then by much walking doe unburthen their ſtomack and belly upwards and downewards, and ſo are helped. When the venemous ayre hath

already crept into and infected the humors, one dram of the dryed leaves of the Bay tree macerated for the space of two dayes in Vinegar and drunke, is thought to bee a most soveraigne medicine to provoke sweat, loosenesse of the belly, and vomiting.

Mathiolus in his Treatise *de Morbo Gallico* writeth, that the powder of Mercury ministred unto the patient with the juice of *Carduus Benedictus*, or with the electuary *de Gemmis*, will drive away the Pestilence before it be confirmed in the body, by provoking vomit, loosenes of the belly & sweat: one dram of Calchanthum or white Copperose dissolved in Rose-water, performeth the like effect in the same disease. Some do give the patient a little quantity of the oyle of Scorpions with white wine to expel the poyson by vomit, & therewithall they anoint the region of the heart, the breast and the wrests of the hands. I think these very meet to be used often in bodies that are strong and wel exercised, because weaker medicines do evacuate little or nothing at all, but onely move the humours, whereby commeth a Feaver. When a sufficient quantity of the malignity is evacuated, then you must minister things that may strengthen the belly and stomack, and withhold the agitation or working of the humours: and such is the confection of Alkermes.

The effects of mercury & copperose against the Plague.

CHAP. XXVI.

Of many Symptomes which happen together with the Plague: and first of the paine of the head.

IF the malignity be carryed into the braine, and nature be not able to expell it, it inflames not onely it, but also the membranes that cover it: which inflammation doth one while hurt, trouble, or abolish the imagination, another while the judgement, and sometimes the memory, according to the situation of the inflammation, whether it bee in the former, hinder or middle part of the head; but hereof commeth alwayes a Phrensie, with fiery rednesse of the eyes and face, and heavinesse and burning of the whole head. If this will not be amended with Clisters, and with opening the Cephalicke veine in the arme, the arteries of the temples must be opened, taking so much bloud out of them, as the greatnesse of the Symptomes and the strength of the patient shall require and permit. Truly the incision that is made in opening of an arterie will close and joyne together as readily, and with as little difficulty, as the incision of a veine. And of such an incision of an artery, commeth present helpe, by reason that the tensive and sharpe vapours do plentifully breath out together with the arterious bloud. It were also very good to provoke a fluxe of bloud at the nose, if nature be apt to exonerate herselfe that way. For, as *Hippocrates* saith, when the head is grieved, or generally aketh, if matter, water, or bloud flow out at the nostrils, mouth or eares, it presently cures the disease. Such bleeding is to be provoked by strong blowing, or striving to cleanse the nose, by scratching or picking of the inner sides of the nostrils, by pricking with an horse haire, and long holding downe of the head.

The cause of phrensie in the Plague.

The benefit of opening an artery.

Aph. 10. sect. 6.

The Lord of Fontains, a Knight of the Order, when we were at Bayon, had a bleeding at the nose, which came naturally for the space of two dayes, and thereby hee was freed of a pestilent Feaver which he had before, a great sweat rising therewithall, and shortly after his Carbuncles came to suppuration, and by Gods grace he recovered his health being under my cure. If the bloud doe flow out and cannot be stopped when it ought, the hands, armes, and legges must be tyed with bands, and sponges wet in Oxycrate must be put under the arme-holes, cupping-glasses must be applyed unto the dugges, the region of the liver and spleen; and you must put into the nostrils, the doune of the willow tree, or any other astringent medicine, incorporated with the haires pluckt from the flanke, belly or throat of a Hare, bole Armenicke, *Terra Sigillata*, the juice of Plantain and Knot-grasse mixed together; and furthermore the patient must be placed or laied in a coole place. But if the pain bee nothing mitigated notwithstanding all these fluxes of bloud, we must come to medicines that procure sleep, whose formes are these.

A history.

To stay bleeding.

Take

Medicines to procure sleep.

Take of green Lettuce one handfull, flowers of water Lillies and Violets, of each two pugils, one head of white Poppy bruised, of the foure cold seeds, of each two drams, of Liquorice and Raisons, of each one dram: make thereof a decoction, and in the straining dissolve one ounce and an halfe of *Diacodion*: make thereof a large potion to be given when they goe to rest. Also a Barly-creame may be prepared in the water of water-Lillies and of Sorrell, of each two ounces, adding thereto sixe or eight graines of *Opium*: of the foure cold seeds, and of white Poppy seeds, of each halfe an ounce, and let the same be boyled in broths with Lettuce and Purslaine; also the Pils *de Cynoglosso, id est*, Hounds tongue may be given. Clisters that provoke sleep must be used, which may be thus prepared:

Take of Barly-water, halfe a pinte; oyle of Violets and water-Lillies, of each two ounces; of the water of Plantaine and Purslaine, or rather of their juices, three ounces; of Camphire seven graines, and the whites of three egges: make thereof a Clister. The head must be fomented with Rose-vinegar, the haire being first shaven away, leaving a double cloth wet therein on the same, and often renewed. Sheepes lungs taken warme out of the bodies, may be applyed to the head, as long as they are warme. Cupping-glasses with and without scarification, may be applyed to the neck and shoulder-blades. The armes and legs must be strongly bound, being first wel rubbed to divert the sharpe vapours and humours from the head. Frontals may also bee made on this manner. Take of the oyle of Roses and water-Lillies, of each two ounces, of the oyle of Poppy halfe an ounce, of *Opium* one dram, of Rose-vinegar one ounce, of Camphire halfe a dram, mixe them together. Also Nodules may bee made of the flowers of Poppies, Henbane, water-Lillies, Mandrakes beaten in Rose-water with a little Vinegar, and a little Camphire, and let them be often applyed to the nostrils: for this purpose Cataplasmes also may be laid to the forehead. As, Take of the mucilage of the seeds of *Psilium, id est*, Flea-wort, and Quince seeds extracted in Rose-water, three ounces; of Barly-meale foure ounces; of the powder of Rose-leaves, the flowers of water-Lillies and Violets, of each halfe an ounce; of the seeds of Poppies and Purslaine of each two ounces; of the water and vinegar of Roses, of each three ounces: make thereof a Cataplasme, and apply it warme unto the head.

A Cataplasme.

Or take of the juice of Lettuce, water-Lillies, Henbane, Purslaine, of each half a pint; of Rose-leaves in powder, the seeds of Poppy, of each halfe an ounce; oyle of Roses three ounces; of Vinegar two ounces; of Barly-meale as much as shall suffice: make thereof a Cataplasme in the forme of a liquid Pultis. When the heate of the head is mitigated by these medicines, and the inflammation of the braine asswaged, wee must come unto digesting and resolving fomentations, which may disperse the matter of the vapours. But commonly in paine of the head, they doe use to bind the forehead and hinder part of the head very strongly, which in this case must bee avoyded.

Chap. XXVII.

Of the heat of the Kidnies.

An ointment for the reines.

THe heat of the kidnies is tempered by anointing with *unguent. refrigerans Galen.* newly made, adding therto the whites of egs wel beaten, that so the ointment may keep moyst the longer; let this liniment bee renewed every quarter of an houre, wiping away the reliques of the old. Or, ℞. *aq. ros.* ℔. ß. *succi plant.* ℥iv. *alb. ovorum* iv. *olei rosacei, & nenuph. an.* ℥ii. *aceti ros.* ℥iii. *misce ad usum.* When you have anointed the part, lay thereon the leaves of water-Lillies or the like cold herbs, & then presently thereupon a double linnen cloth dipped in oxycrate & wrung out againe, and often changed; the patient shall not lye upon a feather bed, but on a quilt stuffed with the chaffe of oates, or upon a matte with many doubled clothes or Chamelet spread thereon. To the region of the heart may in the meane time bee applyed a refrigerating and alexiteriall medicine, as this which followeth.

℞.

℞. *ung. rosat.* ℥ iii. *olei nenupharini,* ℥ ii. *aceti ros. & aquæ rosar. an.* ℥ i. *theriacæ,* ℥ i. *croci,* ℥ ß. Of these melted and mixed together make a soft ointment, which spred upon a scarlet cloth may be applyed to the region of the heart. Or, ℞. *theriacæ opt.* ℥ i ß. *succi citri acidi, & limonis, an.* ℥ ß. *coral. rub. & sem. rosar. rub. an.* ℥ ß. *caphuræ, & croci, an.* gra. iiii. let them bee all mixed together, and make an ointment or liniment. An ointment for the heart.

At the head of the patient as he lies in his bed, shall be set an Ewre or cocke with a bason under it to receive the water, which by dropping may resemble raine. Let the soles of the feet and palmes of the hands be gently scratched, and the patient lye far from noise, and so at length he may fall to some rest. The noise of dropping water drawes on sleep.

CHAP. XXVIII.

Of the Eruptions and Spots, which commonly are called by the name of Purples and Tokens.

THE skinne, in pestilent feavers, is marked and variegated in divers places with spots, like unto the bitings of Fleas or Gnats, which are not alwaies simple, but many times arise in forme like unto a graine of millet. The more spots appeare, the better it is for the patient: they are of divers colours according to the virulency of the malignity, and condition of the matter, as red, yellow, browne, violet, or purple, blew and blacke. And because for the most part they are of a purple colour, therefore wee call them Purples. Others call them *Lenticulæ*, because they have the colour and forme of Lentiles. They are also called *Papiliones* (*i*) Butterflies, because they doe suddenly seaze or fall upon divers regions of the body, like unto winged Butterflyes, sometimes the face, sometimes the armes and legges, and sometimes all the whole body; often times they doe not onely affect the upper part of the skin, but goe deeper into the flesh, specially when they proceed of matter that is grosse and adust. They doe sometimes appeare great and broad, affecting the whole arme, legge or face, like unto an *Erysipelas*: to conclude, they are divers according to the variety of the humour that offends in quality or quantity. The differences of the spots in the plague. Their severall names, and the reasons of them.

If they are of a purple or black colour, with often swouning, and sinke in suddenly without any manifest cause, they foreshew death. When signes of death.

The cause of the breaking out of those spots, is the working or heat of the blood, by reason of the cruelty of the venome received, or admitted. They often arise at the beginning of a pestilent feaver: many times before the breaking out of the Sore, or Botch, or Carbuncle, and many times after: but then they shew so great a corruption of the humours in the body, that neither the Sores, nor Carbuncles will suffice to receive them, and therefore they appear as forerunners of death. Sometimes they breake out alone, without a Botch or Carbuncle; which if they bee red, and have no evill symptomes joyned with them, they are not wont to prove deadly: they appeare, for the most part, on the third or fourth day of the disease, and sometimes later, and sometimes they appeare not before the patient be dead, because the working or heat of the humours being the off-spring of putrefaction, is not as yet restrained and ceased.

Wherefore then principally the putride heat, which is greatest a little before the death of the patient, drives the excremental humors, which are the matter of the spots unto the skin; or else because nature in the last conflict hath contended with some greater endeavour than before (which is common to all things that are ready to dye) a little before the instant time of death, the pestilent humour being presently driven unto the skinne; and nature thus weakened by this extreme conflict, falleth downe prostrate, and is quite overthrowne by the remnant of the matter. Why they sometimes appeare after the death of the patient.

CHAP.

Chap. XXIX.

Of the Cure of Eruptions and Spots.

They are to be cured by driving forth.

YOU muſt firſt of all take heed leſt you drive in the humour that is comming outwards with repercuſſives: therfore beware of cold, all purging things, Phlebotomy, and drowſie or ſound ſleeping. For all ſuch things doe draw the humours inwardly, and work contrary 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 & ſtopping the matter of the eruptions, there will bee great danger leſt the heart be oppreſſed with the abundance of the venome flowing back; or elſe by turning into the belly, it inferres a mortall bloody fluxe: which diſcommodities that they may bee avoided, I have thought good to ſet downe this remedy, whoſe efficacy I have knowne and proved many times, and on divers perſons, when by reaſon of the weakneſſe of the expulſive faculty, and the thickneſſe of the skinne, the matter of the ſpots cannot breake forth, but is conſtrained to lurke under the skin, lifting it up into bunches and knobs.

The indication of curing taken from the like.

I was brought unto the invention of this remedy, by compariſon of the like. For when I underſtood that the eſſence of the French pockes (and likewiſe of the peſtilence) conſiſted in a certain hidden virulency, and venemous quality, I ſoon deſcended unto that opinion, that even as by the anointing of the body with the unguent compounded of Quick-ſilver, the groſſe and clammy humors which are fixed in the bones, and unmoveable, are diſſolved, relaxed, and drawne from the center into the ſuperficiall parts of the body, by ſtrengthening and ſtirring up the expulſive faculty, and evacuated by ſweating and fluxing at the mouth; that ſo it ſhould come to paſſe in peſtilent Feavers, that nature being ſtrengthened with the ſame kinde of unction, might unloade her ſelfe of ſome portion of the venemous and peſtilent humour, by opening the pores and paſſages, and letting it breake forth into ſpots and puſtles, and into all kind of eruptions. Therefore I have anointed many in whom nature ſeemed to make paſſage for the venemous matter very ſlowly, firſt looſing their belly with a Cliſter, and then giving them Treacle water to drinke, which might defend the vitall faculty of the heart, but yet not diſtend the ſtomack, as though they had had the French pockes, and I obtained my expected purpoſe: inſtead of the Treacle water you may uſe the decoction of *Guajacum*, which doth heat, dry, provoke ſweat, and repell putrefaction, adding thereto alſo vinegar, that by the ſubtlety thereof, it may pierce the better, and withſtand the putrefaction. This is the deſcription of the unguent.

An oinctment to draw them forth when as they appear too ſlowly.

Take of Hogs-greace, one pound, boyle it a little with the leaves of Sage, Time, Roſemary, of each halfe an handfull, ſtraine it, and in the ſtraining extinguiſh five ounces of Quick-ſilver, which hath bin firſt boyled in vinegar with the forementioned herbs; of *Sal Nitrum*, three drammes; the yelks of three egges boyled untill they be hard; of Treacle and Mithridate, of each halfe an ounce; of Venice Turpentine, oyle of Scorpions and Bayes, of each three ounces; incorporate them altogether in a morter, and make thereof an unguent, wherewith annoint the patients arme-holes and groines, avoyding the parts that belong to the head, breaſt and backbone: then let him bee laid in his bed and covered warme, and let him ſweat there for the ſpace of two houres, and then let his body bee wiped and cleanſed, and if it may be let him be laid in another bed, and there let him be refreſhed with the broth of the decoction of a Capon, rear egges, and with ſuch like meats of good juice that are eaſie to be concocted and digeſted; let him be anointed the ſecond and third day, unleſſe the ſpots appeare before.

If the patient fluxe at the mouth, it muſt not bee ſtopped: when the ſpots and puſtles doe all appeare, and the patient hath made an end of ſweating, it ſhall be convenient to uſe diureticke medicines, for by theſe the remnant of the matter of the ſpots, which happely could not all breath forth, may eaſily be purged and avoyded by urine.

If any noble or gentlemen refuſe to be anointed with this unguent, let them be encloſed in the body of a Mule or Horſe that is newly killed, and when that is cold, let them bee layed in another, untill the puſtles and eruptions doe breake forth, being drawne by that naturall heat. For ſo *Mathiolus* writeth that *Valentinus*, the ſonne of Pope *Alexander* the ſixt, was delivered from the danger of moſt deadly poyſon which he had drunke. *In proem. lib. 6. Dioſc.*

Chap. XXX.

Of a peſtilent Bubo, *or Plague-ſore.*

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 deepely in the glandules, or kernells; by which the braine exonerates it ſelfe of the venemous and peſtiferous matter into the kernells that are behind the eares, and in the neck: the heart, into thoſe that are in the arm-holes; and the liver, into thoſe that are in the groine; that is, when all the matter is groſſe and clammy, ſo that it cannot be drawn out by ſpots and puſtles breaking out on the skinne; and ſo the matter of a Carbuncle is ſharpe, 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 feele, as it were, a cord or rope ſtretched in the place, or a hardened nerve with pricking pain: & ſhortly after the matter is raiſed up as it were into a knob, and by little and little it groweth bigger, and is enflamed, theſe accidents before mentioned accompanying it. If the tumour be red, and encreaſe by little and little, it is a good and ſalutary ſigne: but if it be livid or black, and come very ſlowly unto his juſt bigneſſe, it is a deadly ſigne: It is alſo a deadly ſigne if it encreaſe ſodainely, and come unto his juſt bigneſſe as it were with a ſwift violence, and as in a moment, have all the ſymptomes in the higheſt exceſſe, as paine, ſwelling and burning. Buboes or Sores appeare ſometimes of a naturall colour, like unto the skinne, and in all other things like unto an œdematous tumour, which notwithſtanding will ſodainely bring the patient to deſtruction, like thoſe that are livide and black, wherefore it is not good to truſt too much to thoſe kindes of tumours.

What a peſtilent *Bubo* is.

The ſignes of *Bubo*'s ſalutary and deadly.

Chap. XXXI.

Of the cure of Buboes, *or Plague-ſores.*

SO ſoon as the Bubo appeares, apply a Cupping-glaſſe with a great flame unto it, unleſſe it be that kinde of Bubo which will ſuddenly have all the accidents of burning and ſwelling in the higheſt nature; but firſt the skinne muſt be anointed with the oyle of lillies, that ſo it being made more looſe, the Cupping-glaſſe may draw the ſtronger and more powerfully; it ought to ſticke to the part for the ſpace of a quarter of an houre, & be renewed and applyed again every three quarters of an houre, for ſo at length the venom ſhall be the better drawn forth from any noble part that is weak, and the work of ſuppuration or reſolution, whichſoever nature hath aſſaied, will the better and ſooner bee abſolved and perfected: which may bee alſo done by the application of the following ointment.

The uſe of cupping glaſſes in curing a *Bubo*.

Take of *Unguentum Dialthæa* one ounce and a halfe; oile of Scorpions halfe an ounce; of Mithridate diſſolved in *Aqua vitæ*, halfe a dramme; this liniment will very well relaxe and looſen the skin, open the pores thereof, & ſpend forth portion of that matter which the Cupping-glaſſe hath drawne thither: in ſtead thereof mollifying fomentations may bee made, and other drawing and ſuppurating medicines, which ſhall be deſcribed hereafter. A liniment.

A Veſicatory applied in a meet place below the Bubo profits them very much

but not above; as for example. If the Bubo be in the throat, the Vesicatory must be applied unto the shoulder-blade on the same side; if it be in the arme-holes, it must be applied in the midst of the arme, or of the shoulder-bone, on the inner side: if in the groin, in the midst 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 venome is gathered together, may be the better exonerated.

Spurge, Crow-foot, Arsemart, Beare-foot, Briony, the middle barke of Travellers-joy, the rindes of Mullet, *Flammula* or upright Virgins-bower, are fit for raising blisters. If you cannot come by those simple medicines, you may apply this which followeth, which may be prepared at all times.

A compound vesicatory.

Take *Cantharides*, Pepper, *Euphorbium*, Pellitory of Spain, of each halfe a dram; of soure leaven, two drammes; of Mustard one dramme, and a little Vinegar; the vinegar is added thereto to withhold or restraine the vehemency of the *Cantharides*; but in want of this medicine it shall suffice to drop scalding oyle or water, or a burning candle, or to lay a burning coale 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 leaves of red coleworts, Beetes, or Ivie dipped in warme water, and anointed with oyle or fresh butter. Some apply Cauteries, but Vesicatories work with more speed: for before the Eschar of the Cauteries will fall away, the patient may dye: therefore the ulcers that are made with Vesicatories will suffice to evacuate the pestilent venome, because that doth worke rather by its quality than its quantity. Let the abscesse bee fomented as is shewed before: and then let the medicine following, which hath vertue to draw, be applied.

Why vesicatories are better than cauteries in a pestilent *Bubo*.

Strong drawing cataplasmes.

Fill a great onion, being hollowed, with Treacle and the leaves of Rue, then roast it under the hot Embers, beat it with a little Leaven, and a little Swines grease, and so apply it warme unto the abscesse or sore; let it be changed every sixe houres. Or Take the roots of Marsh-mallowes and Lillies, of each halfe a pound; of Line, Fœnugreek, and Mustard seeds, of each halfe an ounce; of Treacle one dramme; ten Figges, and as much Hogges grease as shall suffice: make thereof a cataplasme according to Art. Or, take of Onions and Garlicke roasted in the embers, of each three ounces: bruise them with one ounce of sower leaven, adding thereto *Unguentum Basilicon*, one ounce; Treacle one dramme; Mithridate halfe a dramme; of old Hogs greace one ounce; of *Cantharides* in pouder one scruple; of Pigeons dung two drams: beat them and mixe them together into the forme of a cataplasme. Hereunto old Rennet is very profitable, for it is hot, and therfore attractive, being mixed with old Leaven and *Basilicon*: you ought to use these untill the abscesse be growne unto its full ripenesse and bignesse; but if presently after the beginning there bee great inflammation, with sharpe paine, as it often happeneth, especially when the abscesses be of the kinde of Carbuncles, wee must abstaine from those remedies that are hot and attractive, and also from those that are very emplasticke and clammy; because they doe altogether close the pores of the skin, or because they resolve the thinner part of the collected matter, which if it might remain, would bring the other sooner to suppuration: or else because they may perchance draw more quantity of the hot matter than the part can beare, whereof commeth rather corruption than maturation: and last of all because they encrease the feaver and pain, which inferreth danger of a convulsion or mortall Gangrene. Therefore in such a case it is best to use cold and temperate locall medicines, as the leaves of Henbane and Sorrell roasted under the coales, *Galens* pultis, and such like.

Against such as cut away plague sores.

There are many that for feare of death, have with their owne hands pulled away the *Bubo* with a paire of Smithes Pincers: others have digged the flesh round about it, and so gotten it wholly out. And to conclude others have become so mad, that they have thrust an hot iron into it with their owne hand, that the venome might have a passage forth: of all which I doe not allow one; for such abscesses doe not come from without, as the bitings of virulent beasts, but from within, and moreover because pain is by these means encreased, and the humour is made more maligne and fierce. Therefore I think it sufficient to use medicines that relaxe, open the pores of the skinne, and digest portion of the venome by transpiration, as are these that follow.

follow. Take the roots of Marſh-mallowes and Lillies, of each ſixe ounces; of Chamomill and Melilote flowers, of each halfe a handfull; of Linſeeds halfe an ounce; of the leaves of Rue halfe a handfull: boyle them and ſtraine them, dip ſponges in the ſtraining, and therewith let the tumour bee fomented a long time. Or, Take the crum of hot bread, and ſprinkle it with Treacle-water, or with *aqua vitæ*, and Cowes milk or Goates milke, and the yolks of three egges, put them all one ſtupes or flaxe, and apply them warme unto the place. Or, Take of foure Rie leaven foure ounces; of *Baſilicon* two ounces; three yolkes of egges; oyle of Lillies two ounces; Treacle one dram: let it be received on ſtupes, and applyed in like manner. Or, Take of *Diachylon* and *Baſilicon*, of each two ounces; oyle of Lillies one ounce and an halfe: let them be melted and mixed together, and let it be applyed as is aboveſaid. When you ſee, feele and know, according to reaſon, that the *Bubo* is come to perfect ſuppuration, it muſt be opened with an inciſion knife, or an actuall or potentiall Cautery, but it is beſt to be done with a potentiall Cautery, unleſſe that happely there be great inflammation, becauſe it doth draw the venome from beneath unto the ſuperficiall 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 ſelfe, for then it were danger that leſt while nature doth worke ſlowly, a venemous vapour ſhould bee ſtirred up, which ſtriking the heart by the arteries, the braine by the nerves, and the liver by the veines, ſhould cauſe a new increaſe of the venemous infection. For feare whereof there be ſome that will not expect the perfect maturation and ſuppuration, but as it were in the midſt of the crudity and maturity will make an orifice for it to paſſe forth at: yet if it be done before the tumour be at his perfect maturity, paine, a Feaver, and all accidents are ſtirred up and enraged, whereof commeth a maligne ulcer that often degenerats into a Gangrene. For the moſt part about the tenth or eleventh day the work of ſuppuration ſeemeth perfected and finiſhed; but it may be ſooner or later by reaſon of the application of medicines, the conditoin of the matter, and ſtate of the part: when the matter commeth forth, you muſt yet uſe ſuppurative and mollifying medicines, to maturate the remains thereof; in the mean while cleanſing the ulcer by putting mundificatives into it, as we ſhall declare in the cure of Carbuncles. But if the tumour ſeeme to ſinke in or hide it ſelfe again, it muſt be revoked and procured to come forth againe, by applying of Cupping-glaſſes with ſcarification, and with ſharpe medicines, yea, and with Cauteries both actuall and potentiall.

A digeſtive fomentation.

An anodine Cataplaſme.

Why it is beſt to open a Plague-ſore with a potentiall cautery.

How to draw forth a ſore that ſeems to goe in againe.

When repercuſſives may be applyed.

When the Cauteries are applyed, it ſhall be very good to apply a veſicatory a little below it, that there may be ſome paſſage open for the venome 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 voyd of any paine that is worth the ſpeaking of; which ulcers being cloſed and cicatrized, they doe preſently complain of great paine. If you ſuſpect that the *Bubo* is more maligne by reaſon that it is of a greene, or blacke and inflamed colour, as are thoſe that come of a melancholy humour, by aduſtion, turned into a groſſe and rebellious melancholy humour, ſo that by the more copious influxe thereof into the part, there is danger of a gangrene and mortification; then the places about the abſceſſe muſt bee armed with repercuſſives, but not the abſceſſe it ſelfe: and this may be the forme of the repercuſſives: Take of the juice of houſe-leeke, Purſlaine, Sorrell, Night-ſhade, of each two ounces, of Vinegar one ounce, the whites of three egges, of oyle of Roſes and water-Lillies, of each two ounces and a halfe: ſtirre them together, and apply it about the *Bubo*, and renew it often: or boyle a Pomgranate in vinegar, beat it with *Unguentum Roſatum*, or *Populeon* newly made, and apply it as is aforeſaid. If theſe things doe not ſtop the influxe of other humours, the abſceſſe it ſelfe and the places about it muſt bee ſcarified round about, if the part will permit it; that the part exonerated of portion of the venome may not ſtand in danger of the extinction of the proper and naturall heat, by the greater quantity and malignity of the humours that flow unto it. In ſcarrifying you muſt have care of the great veſſels, for feare of an irrepugnable fluxe of bloud, which in this caſe is very hard to bee ſtayed or reſiſted; both becauſe the part it ſelfe is greatly inflamed, and the humour very fierce; for the expulſion whereof, nature, carefull for the preſervation of the part and all the body beſides;

Why too much bleeding is to be feared.

beſides, ſeemeth to labour and worke. But yet you muſt ſuffer ſo much of the bloud & humour to flow out as the patient is able to abide without the loſſe of his ſtrength. Moreover, you may ſpend forth the ſuperfluous portion of the malignity, with relaxing, mollifying and reſolving fomentations: as, Take the roots of Marſh-Mallowes, Lillies and Elicampaine, of each one pound, of Linſeeds and Fænugreek, of each one ounce, of Fennell-ſeeds and Aniſe-ſeeds, of each halfe an ounce, of the leaves of Rue, Sage, Roſemary, of each one handfull, of Chamomill and Melilote flowers, of each three handfuls; boyle them all together, and make thereof a decoction for a fomentation; uſe it with a ſpunge according to Art. Alſo after the aforeſaid ſcarification, wee may put Hens, or Turkies that lay egs (which therefore have their fundaments more wide and open, and for the ſame purpoſe put a little ſalt into their fundaments) upon the ſharpe top of the *Bubo*, that by ſhutting their bils at ſeverall times they may draw and ſuck the venome into their bodies, farre more ſtrongly and better than cupping-glaſſes, becauſe they are endued with a naturall property againſt poyſon, for they eat and concoct Toads, Efts, and ſuch like virulent beaſts: when one hen is killed with the poyſon that ſhe hath drawne into her body, you muſt apply another, and then the third, fourth, fift and ſixt within the ſpace of half an houre. There be ſome that will rather cut them, or elſe uſe whelps cut aſunder in the midſt, and applyed warme unto the place, that by the heate of the creature that is yet ſcarce dead, portion of the venome may be diſſipated and exhaled. But if nevertheleſſe there be any feare of a Gangrene at hand, you muſt cut the fleſh with a deeper ſcarification, not onely avoyding the greater veſſels, but alſo the nerves, for feare of convulſion: and after the ſcarification and a ſufficient flux of bloud, you muſt waſh it with *Ægyptiacum*, Treacle and Mithridate diſſolved in ſea-water, *Aqua vitæ* and Vinegar. For ſuch a lotion hath vertue to ſtay putrefaction, repell the venome, and prohibite the bloud from concretion: but if the Gangrene cannot be avoyded ſo, cauteries may be applied to the part: eſpecially actual, becauſe they do more effectually repel the force of the poiſon, & ſtrengthen the part. Preſently after the impreſſion of the hot iron, the eſchar muſt bee cut away even unto the quicke fleſh, that the venemous vapours and the humours may have a free paſſage forth, for it is not to bee looked for that they will come forth of themſelves. With theſe inunctions they are wont to haſten the falling away of the Eſchar. Take of the mucilage of Marſh-mallowes and Linſeeds, of each two ounces, freſh butter or Hogs-greaſe one ounce, the yolks of three egges, incorporate them together, and make thereof an ointment: butter, Swines greaſe, oyle of Roſes, with the yolks of egges, performe the ſelfe ſame thing. When the Eſchar is fallen away, we muſt uſe digeſtives. As take of the juice of Plantaine, water-Bettony, and Smallage, of each three ounces, hony of Roſes foure ounces, Venice Turpentine five ounces, Barly-flower three drams, Aloes two drams, oyle of Roſes foure ounces, Treacle halfe a dram, make a mundificative according to Art. Or, Take Venice Turpentine foure ounces, Syrupe of dryed Roſes and Wormewood, of each one ounce, of the powder of Aloes, Maſtick, Myrrhe, Barly-flower, of each one dram, of Mithridate halfe an ounce, incorporate them together. This unguent that followeth is very meet for putrefied and corroding ulcers: Take red Orpiment one ounce, of unquenched Lime, burnt Alome, Pomgranate pills, of each ſixe drams, of *Olibanum*, Galls, of each two drams, of Waxe and Oile as much as ſhall ſuffice, make thereof an unguent. This doth mundifie ſtrongly, conſume putrefied fleſh, and dry up virulent humidities that engender Gangrenes. But there is not a more excellent unguent than *Ægyptiacum* encreaſed in ſtrength, for beſides many other vertues that it hath, it doth conſume and waſte the proud fleſh, for there is neither oyle nor waxe that goeth into the compoſition thereof, with which things the vertue of ſharpe 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 bin many that being diſeaſed with this diſeaſe, have had much matter & venemous filth come out at their abſceſſes, ſo that it ſeemed ſufficient, and they have bin thought wel recovered, yet have they dyed 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 certaine ſeaſons, that nature may be every way unloaded of the burthen of the venenate humors.

Liniments to haſten the falling away of the Eſchar.

Againſt eating ulcers.

The praiſe of *Ægyptiacum*.

Chap.

CHAP. XXXII.

Of the Nature, Cauſes and Signes of a peſtilent Carbuncle.

A Peſtilent Carbuncle is a ſmall tumour, or rather a maligne puſtle, hot and raging, conſiſting of bloud vitiated by the corruption of the proper ſubſtance. It often commeth to paſſe through the occaſion of this untameable malignity, that the Carbuncle cannot be governed or contained within the dominion of nature. In the beginning it is ſcarce ſo big as a ſeed or grain of Millet or a Peaſe, ſticking firmly unto the part and immoveable, ſo that the skinne cannot be pulled from the fleſh; but ſhortly after it encreaſeth like unto a *Bubo* unto a round and ſharpe head, with great heat, pricking paine, as if it were with needles, burning and intolerable, eſpecially a little before night, and while the meate is in concocting, more than when it is perfectly concocted. In the midſt 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 blacke, as if there had bin a burning cole layed there, whereby it ſeemeth that it took the name of Carbuncle; but the fleſh that is about the place is like a Rainebow, of divers colours, as red, darke, green, purple, livid, and black; but yet alwaies with a ſhining blackneſſe, like unto ſtone pitch, or like unto the true precious ſtone which they call a Carbuncle, whereof ſome alſo ſay it tooke the name. Some call it a Naile, becauſe it inferreth like paine as a naile driven into the fleſh. There are many Carbuncles which take their beginning with a cruſty ulcer without a puſtle, like to the burning of a hot iron: and theſe are of a blacke colour, they encreaſe quickly, according to the condition of the matter whereof they are made. All peſtilent Carbuncles have a Feaver joyned with them, and the grieved part ſeemeth to be ſo heavie, as if it were covered or preſſed with lead tyed hard with a ligature: there commeth mortall ſwounings, faintings, toſſing, turning, idle-talking, raging, gangrenes and mortifications, not onely to the part, but alſo to the whole bodie, by reaſon (as I thinke) of the oppreſſion of the ſpirits of the part, & the ſuffocation of the naturall heat, as we ſee alſo in many that have a peſtilent *Bubo*. For a *Bubo* and Carbuncle are tumours of a near affinity, ſo that the one doth ſcarce come without the other, conſiſting of one kinde of matter, unleſſe that which maketh the *Bubo* is more groſſe and clammy, and that which cauſeth the Carbuncle more ſharpe, burning and raging, by reaſon of its greater ſubtlety, ſo that it maketh an Eſchar on the place where it is, as we noted before.

What a Carbuncle is.

The ſignes of a Carbuncle.

When ſo called.

Symptomes of Carbuncles.

How the matter of a *Bubo* & Carbuncle differ.

CHAP. XXXIII.

What Prognoſticks may bee made in peſtilent Buboes and Carbuncles.

SOme having the Peſtilence have but one Carbuncle, and ſome more in divers parts of their body, and in many it happeneth that they have the *Bubo* and Carbuncle before they have any Feaver; which giveth better hope of health, if there be no other maligne accident therewith: for it is a ſigne that nature is the victor, and hath gotten the upper hand, which excluded the peſtilent venome before it could come to aſſault the heart. But if a Carbuncle and *Bubo* come after the Feaver, it is mortall; for it is a token that the heart is affected, moved and incenſed with the furious rage of the venome; whereof preſently commeth a feveriſh heat or burning, and corruption of the humours, ſent as it were from the center unto the ſuperficies of the body. It is a good ſigne when the patients minde is not troubled from the beginning untill the ſeventh day; but when the *Bubo* or Carbuncle ſinketh downe againe ſhortly after that it is riſen, it is a mortall ſigne, eſpecially if ill accidents follow it. If after they are brought to ſuppuration they preſently waxe dry without any reaſon thereof, it is an ill ſigne: Thoſe Carbuncles that are generated of bloud have a greater Eſchar than thoſe that are made

Why it is deadly to have a ſore come after the Feaver.

made of choler, becauſe that bloud is of a more groſſe conſiſtence, and therefore occupieth a greater roome in the fleſh: contrariwiſe, a cholerick humour is more ſmall in quantity and thinne, and it taketh little roome in the upper part of the fleſh onely, as you may ſee in an *Eryſipelas*. And I have ſeene Carbuncles whoſe Eſchars were as broad and as large as halfe the backe: alſo I have ſeene others, which going up by the ſhoulders to the throat, did ſo eate away the fleſh that was under them, that the rough artery or wind-pipe might be ſeen bare, when the Eſchar was fallen away: I had once a Carbuncle which was in the midſt of my belly, ſo that when the Eſchar was fallen away, I might very plainly ſee the *Piritonæum* or Rim: & the cicatrice that remaineth is as broad as my hand: but they doe not ſpread themſelves ſo far without the great danger or death of the patient. There are alſo ſome Carbuncles which beginning at the parts under the chin, diſperſe themſelves by little & little unto the pattell bones, and ſo ſtrangle the patient. So in many, the *Buboes* in the groin ariſe above a great part of the muſcles of the *Epigaſtrium*. Truly of thoſe abſceſſes that are ſo large & great in quantity, & ſo terrible to be ſeen, there is great danger of death to the patient, or at leaſt to the grieved part. For after the conſolidation, the part remaineth as if it were leprous, which aboliſheth the action of the part, as I have ſeene in many. Oftentimes alſo the corruption of the matter is ſo great, that the fleſh leaveth the bones bare: but Carbuncles often leave the joints and ligaments quite reſolved through the occaſion of the moiſture that is ſoaked & ſunk in unto them; for they often caſt out putrefied & virulent ſanious matter: whereby eating and creeping ulcers are bred, many bliſters & puſtles ariſing up in the parts round about it; which ſhortly breaking into one, make a great ulcer. Theſe come very ſeldome and ſlowly unto ſuppuration, or at leaſt to caſt out laudible matter, eſpecially if thy have their original of choler, becauſe the matter is ſooner burned with heat, than ſuppurated. Therefore then, if they can bee brought to ſuppuration by no medicines, if the tumour ſtill remaine blacke, if when they are opened nothing at all, or elſe a very little ſharpe moiſture doth come forth, they are altogether mortall: and there is ſcarce one of a thouſand who hath theſe accidents that recovereth health: diſperſed ſmall bliſters, comming of vapours ſtirred up by the matter that is under the skinne, and are there ſtayed and kept from paſſage forth, doe not neceſſarily fore-ſhew death in Carbuncles. But if the part be ſwolne or puffed up, if it be of a green or black colour, and if it feele neither pricking nor burning, it is a ſigne of a mortall Gangrene. *Buboes* or Carbuncles ſeldome or never come without a Feaver: but the Feaver is more vehement when they are in the emunctories, or nervous parts, than when they are in the fleſhy parts, yet it is leſſe, and all Symptomes are leſſe, 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 be vexed in ſuch ſort with a Carbuncle that nothing thereof appeareth forth on the ſuperficiall parts, all hope of life is paſt, and thoſe dye ſuddenly, eating, drinking or walking, and not thinking any thing of death. If the Carbuncle be in the middriffe or lungs, they are ſoon ſuffocated: If it be in the braine, the patient becommeth frantick, and ſo dyeth. If it be in the parts appointed for the paſſage of the urine, they dye of the ſuppreſſion of their water, as it happened in the Queene mothers waiting maide at the Caſtle of *Roſſilion*, of whom I ſpake before. If it be in the ſtomacke, it inferreth the accidents that are ſhewed in this hiſtory following.

Huge peſtilent Abſceſſes commonly deadly.

Deadly Carbuncles.

A hiſtory.

While I was Surgeon in the Hoſpitall of Paris, a young and ſtrong Monke of the order of St. *Victor*, being overſeer of the women that kept the ſicke people of that place, fell into a continuall Feaver very ſuddenly with his tongue blacke, dry, rough, (by reaſon of the putrefied and corrupted humours, and the vapours riſing from the whole body unto that place) and hanging out like unto an hounds, with unquenchable thirſt, often ſwouning and deſire to vomit. He had convulſions over all his body through the vehemency and malignity of the diſeaſe, and ſo hee dyed the third day: wherefore thoſe that kept the ſicke people in the Hoſpitall, thought that he had been poyſoned, for the certaine knowledge whereof the Governours of the Hoſpitall commanded his body to be opened.

I therefore calling to mee a Phyſician and Surgeon, wee found in the bottome of his

his ſtomack a print or impreſſion, as if it had been made with an hot Iron or potentiall Cauterie, with an Eſchar or cruſt as broad as ones naile, all the reſt of his ſtomack was greatly contracted and ſhrunke up together, and as it were horny; which wee conſidering, and eſpecially the Eſchar which was deepe in the ſubſtance of the ſtomacke, we all ſaid with one voice that he was poyſoned with Sublimate or Arſenick. But behold while I was ſowing up his belly, I perceived many blacke ſpots diſperſed diverſly throughout the skin: then I asked my company what they thought of thoſe ſpots; truely (ſaid I) it ſeemeth unto me that they are like unto the purple ſpots or markes that are in the peſtilence. The Phyſician and the Chirurgion denied it, and ſaid that they were the bitings of fleas. But I perſwaded them to conſider the number of them over all the whole body, and alſo their great depth and depreſſion into the fleſh; for when we had thruſt needles deep into the fleſh in the middeſt of them, and ſo cut away the fleſh about the needle, we found the fleſh about the needle to be blacke: moreover his noſtrils, nailes and eares were livid, and all the conſtitution of his body was contrary, 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 he died, that his familiar friends could hardly know him. Wee perſwaded by theſe prooſes, revoked our former opinion and ſentence, and made a certificate to bee ſent unto the Governours and Maſters of the Hoſpitall, ſetting our hands and ſeales unto it, to certifie them that hee died of a peſtilent Carbuncle.

How to diſtinguiſh purple ſpots from fleas-bitings.

CHAP. XXXIIII.

Of the cure of a peſtilent Carbuncle.

BY the forenamed ſignes of a peſtilent Carbuncle, and eſpecially by the bitterneſſe of the paine, malignity of the venemous matter, and by the burning Feaver that is therewithall annexed, I think it manifeſt, that very hot, emplaſtick, and drawing medicines ſhould not bee applyed to this kind of tumour; becauſe they prohibite or hinder the exhalation, or waſting forth of the venenate malignity; becauſe that by ſtopping the pores of the skinne, they increaſe and cauſe a greater heat in the part than there was before. Therefore it is better to uſe reſolving medicines, which may aſſwage heate, and reſolve the pores of the skinne. Therefore firſt the place muſt be fomented with water and oyle mixed together, wherein a little Treacle hath beene diſſolved, leaving thereon ſtupes wet therein: you may alſo uſe the decoction of Mallowes, the roots of Lillies, Linſeeds, Figges, with oile of *Hypericon*, for to make the skinne thin, and to draw forth the matter; and the day following you muſt apply the Cataplaſme following.

Why Emplaſtick, very hot, and great drawers are not good for a carbuncle.

Take the leaves of Sorrell and Henbane, roſt them under the hot aſhes; afterwards beate them with foure yolks of egges, two drams of Treacle, oyle of Lillies, three ounces, Barly-meale 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-mallowes and Lillies, of each foure ounces, Linſeeds halfe an ounce, boyle them, beat them, and then ſtraine them through a ſearſe, adding thereto of freſh butter one ounce and an halfe, of Mithridate one dramme, of Barly-meale as much as ſhall ſuffice: make thereof a Cataplaſme according to Art: thoſe Cataplaſmes that follow are moſt effectuall to draw the venemous matter forth, and to make a perfect ſuppuration, eſpecially when the fluxe of the matter is not ſo great, but that the part may beare it. Take the roots of white Lillies, Onions, Leaven, of each halfe an ounce; Muſtard-ſeeds, Pidgeons dung, Sope, of each one dram; ſixe ſnailes in their ſhels; of fine Sugar, Treacle and Mithridate, of each half a dram; beate them all together, and incorporate them with the yolks of egs, make therof a Cataplaſme, & apply it warm. Or, Take the yolkes of ſixe egs; of ſalt poudered one ounce; of oyle of Lillies and Treacle, of each halfe a dramme; Barly-meale as much as ſhall ſuffice: make there-

A Cataplaſme for a peſtilent Carbuncle.

Another.

Other Cataplaſmes.

of

of a Cataplasme. Take of ordinary *Diachylon* foure ounces; of *Unguentum Basilicon* two ounces; oyle of Violets halfe an ounce: make thereof a medicine. Many ancient Professors greatly commend Scabious ground or brayed betweene two stones, and mixed with old hogs grease, the yolkes of egs, and a little salt; for it will cause suppuration in Carbuncles: also an egge mixed with Barly-meale, and oyle of Violets doth mitigate paine and suppurate. A Radish root cut in slices, and so the slices laid one after one unto a Carbuncle or pestilent tumour, doth mightily draw out the poyson. The juice of Colts foote doth extinguish the heat of Carbuncles: the herbe called Divels-bit being bruised, worketh the like effect: I have often used the medicine following unto the heat of Carbuncles, with very good successe; it doth also asswage paine and cause suppuration. Take of the soot scraped from a chimny foure ounces, of common salt two ounces, beate them into small powder, adding thereto the yolkes of two egges, and stirre them well together untill it come to have the consistence of a pultis, and let it bee applyed warme unto the Carbuncle. In the beginning the point or head of the Carbuncle must bee burned, if it bee blacke, by dropping thereinto scalding hot oyle, or *Aqua fortis:* for by such a burning the venome is suffocated as touched by lightening, and the paine is much lessened, as I have proved oftentimes: neither is it to bee feared lest that this burning should bee too painfull, for it toucheth nothing but the point of the Carbuncle, which by reason of the Eschar that is there, is voyd of sense. After this burning, you must goe forward with the former described medicines, untill the Eschar seemeth to separate it selfe from the flesh round about it, which is a token of the patients recovery, for it signifieth that nature is strong and able to resist the poyson. After the fall of the Eschar you must use gentle mundificatives, as those which we have prescribed in a pestilent *Bubo*, not omitting sometimes the use of suppurative and mollifying medicines, that while the grosse 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 remaines as yet crude and raw in the part, and the other to cleanse that which remaines concocted and perfectly digested in the ulcer.

The effect of Scabious against a pestilent Carbuncle.

A Radish root drawes out the venome powerfully.

The top of a Carbuncle when, why and with what to be burned.

The falling of the Eschar promiseth health.

A twofold indication.

Chap. XXXV.

Of the itching and inflammation happening in pestilent ulcers, and how to cicatrize them.

THE parts adjoyning to a pestilent ulcer oft-times are superficiarily excoriated by reason of ulcerous pustles, which here and there with burning and great itching pricke and vellicate the part. The cause may happen either externally or internally; internally by a thin and biting *sanies*, which sweating from the ulcer, moystens the neighbouring parts. But externally by the constipation of the pores of the skinne induced by the continuall application of medicines. To remedy this, the place must bee fomented with discussing and relaxing things, as *aqua fortis*, which the Gold-smithes have used for separating of metalls, alome water, the water of Lime, Brine and the like. But ulcers left by Carbuncles and pestilent *Buboes*, are difficultly cicatrized by reason of the corroding *sanies*, proceeding from the cholericke, or phlegmaticke and salt bloud, which being in fault by the corruption of the whole substance causeth the abscesse. Besides, such ulcers are commonly round, and therefore more hard to be cicatrized, for that the quitture hath no free passage forth; so the *sanies*, of its owne nature acride and corroding, doth by delay acquire greater acrimony and intrositie, so that by its burning touch dissolving the adjacent flesh, it hinders the conjunction and unition of the lips of the ulcer; but in the interim the lips of the ulcer become callous, which, unlesse they be helped by cutting, or eating medicines, the ulcer cannot be healed, for that by their density they hinder the sweating out of a sufficient quantity of the dewy glew to heale up the ulcer. Now the ulcer being plained and brought equall to the other flesh, we must use Epuloticks, that is, such things as have a faculty to cicatrize ulcers by

Why the adjacent parts are troubled with itching.

A fomentation for this itch.

Why these ulcers are hard to be cicatrized.

Two sorts of Epuloticks.

by condenſing and hardening the ſurface of the fleſh, of theſe there are two kinds; for ſome without much biting bind and dry, ſuch are pomgranate pils, oake barke, *Tutia*, litharge, burnt bones, ſcailes of braſſe, galls, cypreſſe nuts, *Minium*, antimony, bole armenicke, the burnt and waſhed ſhels of oiſters, Lime nine times waſhed, and many metalline things. Others are next to theſe, by which proud fleſh is conſumed, but ſuch muſt be ſparingly uſed: of this kind is waſhed Vitrioll, burnt Alome, which excelleth other Epuloticks, by reaſon of the excellent drying and aſtringent faculty conſolidating the fleſh, which by being moiſtened by an excrementitious humour, growes lanke. For that the ſcarre which is made, is commonly unſightly in this kind of ulcers, as red, livide, blacke, ſwolne, rough, by reaſon of the great aduſtion imprinted in the part, as by a burning coale, therefore I have thought good here to ſet down ſome means by which this deformity may be corrected or amended. If the ſcarre be too big or high, it ſhall be plained by making convenient ligation and ſtrait binding to the part a plate of lead rubbed over with quickſilver; but you may whiten it by anointing it with Lime nine times waſhed (that ſo it may bee more gentle and loſe the acrimony) and incorporated with oile of Roſes. Some take two pound of Tartar or Argole, burne it, and then powder it, put it in a cloth, and ſo let it hang in a moyſt vault or cellar, and ſet a veſſell under it to receive the dropping liquor, which is good to be rubbed for a good ſpace, upon the ſcarre. The ſame faculty is thought to be in that moyſture of egs which ſweats through the ſhel, whileſt they are roaſted at the coals; as alſo *unguent. citrinum*, and *Emplaſt. de ceruſſa* newly made: The three following compoſitions are much approved. ℞. *Axungiæ ſuillæ nouies 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 be incorporated together, and make an ointment; it attenuates the skin and cleanſeth ſpots. ℞. *olei hyoſ. olei ſemin. cucurb. an.* ℥i. *olei tartar.* ℥ß. *ceræ alb.* ℥iii. *liquefiant ſimul lento igne, deinde adde ſpermat. ceti* ℥vi. *removeantur predicta ab igne donec infrigid. poſtea adde troch. alb. Rhaſis pul.* ℥iii. *caph.* ℥i. *tandem cum mali cirei ſucco omnia diligenter commiſce, fiat linmentum.* Or elſe, ℞. *rad. ſerpent.* ℥i. *bulliat in aq. com.* ℔i. *ad dimid. deinde adde ſulph. vivi ignem non experti, & alum. crudi, pulv. triſ. an.* ℥iß. *colent. predict. & addatur caph.* ℥i. *ſucci hyoſcyami* ℥iß. Let this medicine be kept in a lead or glaſſe veſſel, and when you would uſe it, dip linnen clothes therein, and lay them to the part. You may alſo uſe theſe medicines againſt the redneſſe of the face, and you may fetch them off in the morning by waſhing the face with warme water and bran.

Remedies againſt the deformity of ſcarres.

Ointments to attenuate and take away ſcarr.

CHAP. XXXVI.

Of ſundry kinds of Evacuations, and firſt of ſweating and vomiting.

THe peſtilent malignity is not onely evacuated and ſent forth by the eruption of puſtles and ſpots, but alſo by ſweat, vomit, bleeding at noſe, at the hæmorrhoids, by the courſes, a fluxe of the belly, and other wayes, ſo that nature by every kind of excretion may be freed from the deadly poyſon, eſpecially that which is not as yet arrived at the heart. But chiefe regard muſt be had to the inclination of nature, and wee muſt attend what way it chiefly aimes at, and what kind of excretion it affects. Yet ſuch evacuations are not alwayes criticall, but uſually ſymptomaticall, 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 any meanes to ſend it away crude as it is. Wherefore if nature may ſeeme by the moyſtneſſe of the skin, the ſuppreſſion of urine, & other ſignes to affect a criſis and excretion by ſweat, you then ſhall procure it by the formerly mentioned meanes. It is delivered by the Ancients that all ſweats in acute diſeaſes are ſalutary, which happen upon a Criticall day, which are univerſall and hot, and ſignified before the critical day. But in this rapid and deadly diſeaſe of the Plague, wee muſt not expect a *Criſis*, but as ſoone as wee can, and by what meanes wee may to free nature from ſo dire and potent an enemy.

Why the peſtilent malignity is not carried away by one way, but by many.

We muſt have chiefe regard to the motion of nature.

Signes of future ſweat.

A *Criſis* muſt not be expected in the Plague.

But

But oft times the tough and groſſe excrementitious humours may bee purged by vomit, which could not be evacuated by ſtrong purges. Therefore alſo by this manner of excretion may we hope for the excluſion of the peſtilent venome, if there bee nothing which may hinder; and nature by frequent nauſeouſneſſe may ſeem to affect this way: the endeavour thereof ſhall be helped by giving ſome halfe a pint of warm water to be drunke with foure ounces of common oyle, an ounce of vinegar, and a little juice of raddiſh, after the taking of the potion it is fit to thruſt into the throate a gooſe quill dipped in the ſame oile, or elſe a branch of Roſemary, or elſe by thruſting in the fingers ſo to procure vomit; alſo a potion of eight ounces of the mucilaginous water of the decoction of Line ſeeds will procure vomit. Or elſe, ℞. *rad. raph. in talcol. ſect. vel ſem. ejus, & ſem. antriplicis, an.* ℥ iii. *bulliant in aquæ com. quod ſufficit pro doſi, in colatura diſſolve oxym. & ſyr. acet. an.* ℥ß. *exhibeatur potio larga & tepida*. Or elſe, ℞. *oxym. Gal.* ℥ vi. *ol. com.* ℥ ii. *paretur potio tepid.* But nature muſt not be forc't, unleſſe of its own accord it undertake this motion; for forced and violent vomiting, diſtends the nervous fibers of the ventricle, dejects the ſtrength, breaks the veſſels of the Lungs, whence proceeds a deadly ſpitting of blood. Wherefore if the ſtomack ſhall trouble it ſelfe with a vain and hurtfull deſire to vomit, it ſhall rather be ſtrengthened with bagges of roſes, worm-wood and Saunders, uſing inwardly the juice of Quinces and Berberies, and brothes made for the ſame purpoſe.

How to procure vomit.

Why vomit muſt not be forced.

CHAP. XXXVII.

Of ſpitting, Salivation, Sneeſing, Belching, Hicketting, and making of Water.

The effect of ſpitting in peſtilent diſeaſes.

THat long evacuations may be made by ſpitting and ſalivation, you may learne by the example of ſuch as have a plurifie, for the matter of the plurifie being turned into *pus*, the purulent matter ſuckt up by the rare and ſpongeous 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 Maſticatories of the roots of *Ireos*, Pellitory of Spaine, Maſtick, and the like; the mucilage of Line ſeeds held in the mouth will worke the ſame effect.

The force of ſneeſing.

That ſuch as have a moiſt braine may expell their ſuperfluous humours by ſneeſing and blowing their noſes, the braine by the ſtrength of the expulſive faculty, being ſtirred up to the excluſion of that which is harmefull, may be knowne by the example of old people and children which are daily purged by their noſes; the braine is ſtirred up to both kindes of excretion from cauſes either internall or externall: from the internall, as by a phlegmaticke and vaporous matter, which conteined in the braine, offends it; externally, as by receiving the beames of the ſunne in the noſtri's, 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 braine is ſtraitened by its owne expulſive faculty, to the excretion of that which is troublous unto it. Sneeſing breaketh forth with noiſe, for that the matter paſſeth through ſtraits, to wit, by the ſtraining paſſages of the *Os cribroſum*, which is ſeated at the roots of the noſtrills. It is not fit to cauſe ſneeſing in a body very plethorick, unleſſe you have firſt premiſed generall medicines, leſt the humours ſhould bee more powerfully drawne into the braine, and ſo cauſe an Apoplexie, *Vertigo*, or the like ſymptomes.

The commodities of belching.

By belching the flatulencies conteined in the ventricle, being the off-ſpring of crudity, or flatulent meats, are expelled, theſe by their taſte and ſmell, pleaſing, ſtinking, ſweet, bitter or tart, ſhew the condition and kinde of crudity of the humours from whence they are raiſed: now vomiting freeth the ſtomack of crudities, but the diſtemper muſt be corrected by contraries, as altering things to be preſcribed by the Phyſitian.

Hicke-

Hicketting is a contraction and extenſion of the nervous fibers of the ſtomack, to caſt forth ſuch things as are too contumacioufly impact in the coates thereof; yet repletion only is not the cauſe thereof, but ſometimes inanition alſo; ſo oft times a putride vapour, from ſome other place, breaking into the ſtomacke, as from a peſtilent *Bubo*, or Carbuncle; alſo all acide and acride things, becauſe they pricke, vellicate & provoke the tunicles of the ventricle, as vinegar, ſpiced things, and the like; often & contumacious hicketting after purging, a wound or vomiting, is ill; but if a convulſion preſently happen thereon, it is deadly.

Severall remedies muſt be uſed according to the variety of the cauſes: for repletion helps that hicketing that proceeds from inanition, & evacuation that which happens by repletion: that which proceeds from a putrid and venemous vapour, is helped by Treacle and Antidotes; that which is occaſioned by acide and acrid things, is cured by the uſe of groſſe, fatty, and cold things.

The whole body purged by urine.

Now the whole body is oft times purged by urine, and by this way the feavouriſh matter is chiefly and properly accuſtomed to bee evacuated: not a few, being troubled with the *Lues venerea*, when as they could not be brought to ſalivation by unction, have bin cured by the large evacuation of urine cauſed by diuretick medicines. Diureticks wherewithall you may move urine, are formerly deſcribed in treating of the ſtone. But we muſt abſtaine from more acride diureticks, eſpecially when as inflammation is in the bladder; for otherwiſe the noxious humours are ſent to the affected part, whence there is danger of a deadly Gangrene. Therefore then it is better to uſe diverſion by ſweat.

When we ought to abſtaine from diureticks.

CHAP. XXXVIII.

Of the Menſtruall and Hæmorrhoidall purgation.

NOt onely reaſon, but alſo manifold experience induceth us to beleeve that women, by the benefit of their menſtruall purgation, eſcape and are freed from great, peſtilent, and abſolutely deadly diſeaſes; wherefore it muſt bee procured by remedies, both inwardly taken, and outwardly applied: theſe may be taken inwardly with good ſucceſſe, *Caſsia lignea*, Cinamon, the barke of the root of a Mulberry, Saffron, Agricke, Nutmeg, Savine, *Diagridium*, and divers others. But if the affect require more vehement medicines, the rootes of Tithymel, Antimony, *Cantharides* (taken in ſmall quantity) move the courſes moſt powerfully; frictions and ligatures made upon the thighes and legges conduce hereto, as alſo cupping in the inner and middle part of the thighs, the opening of the vein *Saphena*, leaches applyed to the orifice of the neck of the womb, peſſaries, nodula's, glyſters, baths, fomentations made of oderiferous things, which by the fragrancy of their odor, or rather by their heat, may attenuate & cut groſſe humors, open the obſtructed orifices of the veines, ſuch are the roots of Marſh-mallowes, Orris, Parſly, Fennell, Kneholne, the leaves and floures of St. Johns Wort, *Aſparagus*, Rocket, Balme, Chervile, Mugwort, Mints, Penny-royall, Savory, Roſemary, Rue, Time, Sage, Bay berries, Broome, Ginger, Cloves, Pepper, Nutmegs, and the like; the vapour of the boyling whereof, let the woman, ſitting upon a perforated ſeat, receive by a funnell into the necke of her wombe, covering herſelfe warme on all ſides, that ſo nothing may otherwiſe breath forth. Of the ſame things may bee made bathes, as well generall as particular. Alſo peſſaries are good made after this manner. ℞. *theriac. mithrid. an.* ʒ ß. *caſtor. gum. ammoniac. an.* ʒ i. *miſce cum bombace in ſucco mercurialis tincto, fiat peſſarium.* Or elſe, ℞. *rad. petroſelin. & fœnug. ſub cineribus coctas, deinde contuſas cum pul. ſtaphyſag. pyreth. croco & oleo liliorum*, ſo make a peſſary in the forme of a ſuppoſitory or nodula. Or, ℞. *pulv. myrrh. & aloes, an.* ʒ i. *ſol. ſabin. nigel. arthemiſ. an.* ʒ ii. *rad. Helleb. nigr.* ʒ i. *croci*, ϑ i. *cum ſucco mercur. & melle conmuni*: make a peſſary in Cotton. This which followes is more effectuall. ℞. *ſuccirut. abſinth. an.* ʒ ii. *myrrh. euphorb. caſtor. ſabin. diacrid. terebinth. galban. theriac. an.* ʒ ſ, make

How to provoke the courſes.

How aromatick things provoke the courſes.

Peſſaries to provoke the terms.

make a peſſary 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 pleaſe.

How to ſtop the courſes flowing too immoderately.

But if this menſtruous flux once provoked, flow too immoderately, it muſt be ſtopped by uſing meats of groſſer and more viſcide juice, by opening a veine in the arm, application of cupping glaſſes under the dugs, frictions and ligations of the upper parts, as the armes, putting up of peſſaries, application of refrigerating and aſtringent plaſters, to the lower belly, ſhare and loines, laying the woman in a convenient place, and not upon a feather-bed.

This following injection ſtoppeth the blood flowing out of the wombe, ℞. *aquæ plant. & fabror. an.* ℔ i. *nucum cupreſ. gallar. immatur. an.* ʒ ii. *berber. ſumach. balauſt. vitriol. rom. alum. roch. an.* ʒ ii. *bulliant omnia ſimul, & fiat decoctio:* of this make injection into the wombe. In the performance of all theſe things, I would have the Surgeon depend upon the advice of a Phyſitian, as the occaſion and place ſhall permit.

How to provoke the hæmorrhoides.

But if nature endeavour to free it ſelfe of the peſtilent matter by the hœmorrhoides, you may provoke them by frictions and ſtrong ligatures in the lower parts, as if the thighes or legs were broken, by ventoſes applyed 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 roſted under the embers, and incorporated with Treacle, and a little oile of Rue: after the hœmorrhoid veines, by theſe meanes, come to ſhew themſelves, they ſhal be rubbed with rough linnen cloths, or fig leaves, or a raw onion, or an oxe gall mixt with ſome pouder of *Coloquintida:* laſtly you may apply horſe-leaches, or you may open them with a Lancet, if they hang much forth of the fundament, and be ſwolne with much blood. But if they flow too immoderately, they may be ſtayed by the ſame meanes as the courſes.

CHAP. XXXIX.

Of procuring evacuation by ſtoole, or a fluxe of the belly.

NAture often times, both by it ſelfe, of its owne accord, as alſo helped by laxative and purging medicines, caſts into the belly and guts, as into the ſinke of the body, the whole matter of a peſtilent diſeaſe, whence are cauſed Diarrhæa's, Lienteries, and Dyſenteries you may diſtinguiſh theſe kindes of fluxes of the belly, by the evacuated excrements. For if they be thinne and ſincere, that is, reteine the nature of one, and that a ſimple humour, as of choler, melancholy or phlegme, and if they be caſt forth in a great quantity, without the ulceration or excoriation of the guts, vehement or fretting paine, then it is a *Diarrhæa*, which ſome alſo call *fluxus humoralis*. It is called a *Lienteria*, when as by the reſolved retentive faculty of the ſtomacke and guts cauſed by ill humours, either there collected, or flowing from ſome other place, or by a cold & moiſt diſtemper, the meat is caſt forth crude, & almoſt as it was taken. A *Dyſenteria* is when as many and different things, and oft times mixt with blood, are caſt forth with pain, gripings, and an ulcer of the guts, cauſed by acride choler, fretting inſunder the coats of the veſſels.

What a Diarrhea is.

What a Dyſenteria is.

But if in any kinde of diſeaſe, certainely in a peſtilent one, fluxes of the belly happen immoderate in quantity, and horrible in the quality of their contents, as liquid, viſcous, frothy as from melted greace, yellow, red, purple, greene, aſh-coloured, blacke, and exceeding ſtinking. The cauſe is various, and many ſorts of ill humours, which taken hold of by the peſtilent malignity, turne into divers ſpecies, differing in their whole kinde both from their particular, as alſo from nature in generall, by reaſon of the corruption of their proper ſubſtance, whoſe inſeparable ſigne is ſtinch, which is oft times accompanied by wormes.

The cauſe of various, and ſtinking excrements in the plague.

In the campe at *Amiens* a peſtilent Dyſentery was over all the Campe, in this the ſtrongeſt Souldiers purged forth meere blood: I diſſecting ſome of their dead bo-

A hiſtory.

dies

dies, obſerved the mouths of the Meſaraike Veines and Arteries, opened and much ſwollen, and whereas they entered into the guts, were juſt like little Caty'edones, out of which, as I preſſed them, there flowed blood. For both by the exceſſive heat of the ſummers ſunne, and the mindes of the enraged ſouldiers, great quantity of acride and cholericke humour was generated, and ſo flowed into the belly: but you ſhall know whether the greater or the leſſer guts be ulcerated, better by the mixture of the blood with the excrements, than by the ſite of the paine, therefore in the one you muſt rather worke by Glyſters, but in the other, by Medicines taken by the mouth.

Therefore if by gripings, a *tenеſmus*, the murmuring and working of the guts, you ſuſpect in a peſtilent diſeaſe, that nature endeavours to disburden it ſelf by the lower parts, neither in the meane while doe it ſucceed to your deſire, then muſt it be helped forward by art, as by taking a potion of ℥ ß. of *hiera ſimplex*, and a dramme of *Diaphœnicon* diſſolved in worme-wood water. A potion.

Alſo Glyſters are good in this caſe, not onely for that they aſſwage the gripings and paines, and draw by continuation or ſucceſſion from the whole body, but alſo becauſe they free the meſaraike veines 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 ſelfe from the noxious humours. In ſuch glyſters they alſo ſometimes mixe two or three drammes of Treacle, that by one and the ſame labour they may retunde the venenate malignity of the matter.

There may alſo be made for the ſame purpoſe ſuppoſitories of boyled hony ℥ i. of *hiera picra* and common ſalt, of each ℥ ß. or that they may bee the ſtronger, of hony ℥ iii. of oxe gall ℥ i. of Scammony, *euphorbium* and *coloquintida* poudred, of each ℥ ß. The want of theſe may be ſupplied by nodula's made in this forme. ℞. *vitell. ovor.* nu. iii. *fellis bubuli, & mellis, an.* ℥ ß. *ſalis com.* ℥ ß. let them be ſtirred together, and well incorporated, and ſo parted into linnen ragges, and then bound up into nodula's, of the bigneſſe of a filberd, and ſo put up into the fundament; you may make them more acride by adding ſome powder of *Euphorbium* or *Coloquintida*. Suppoſitories.

Chap. XL.

Of ſtopping the fluxe of the belly.

VIolent and immoderate ſcourings, for that they reſolve the faculty, and lead the patient into a conſumption and death, therefore if they ſhall appear to be ſuch, they muſt be ſtayed in time by things taken and injected by the mouth and fundament. To this purpoſe may a pudding be made of wheat flower boyled in the water of the decoction of one pomegranate, berberies, bole armenick, *terra ſigillata*, and white poppie ſeeds, of each ℥ i. The following Almond milke ſtrengthens the ſtomacke, and mitigates the acrimony of the cholericke humour, provoking the guts to excretion. Take ſweet Almonds boiled in the water of barly, wherein ſteele or Iron hath been quenched, beat them in a marble morter, and ſo with ſome of the ſame water make them into an Almond milk, wherto adding ℥ i. of *Diarhodon Abbatis* you may give it to the patient to drink. A haſty pudding to ſtay the laske.

This following medicine I learnt of Dr. *Chappelaine* the Kings chiefe phyſitian, who received it of his father, and held it as a great ſecret, & was wont to preſcribe it with happy ſucceſſe to his patients: It is thus, ℞. *boli armen. terra ſigil. lapid. hæmat. an.* ℥ i. *picis navalis,* ℥ i ß. *coral rub. marg. elect. corn. cervi uſt. & loti in aq. plant. an.* ℈ i. *ſacchar. roſ.* ℥ ii. *fiat pulviſ.* of this let the patient take a ſpooneſull before meat, or with the yolke of an egge. D. *Chappelaines* medicine to ſtay a ſcouring.

Chriſtopher Andrew in his *æconätria* much commendeth dogges dung, when as the dogge hath for three dayes before bin fed onely with bones.

Quinces roſted in embers, or boyled in a pot, the conſerve of cornelian cherries, preſerved berberies and myrabalans, roſted nutmeg taken before meat, ſtrengthen the ſtomack and ſtay the laske; the patient muſt feed upon good meats, and theſe ra-

Drinke. ther roasted than boiled. His drinke shall be chalibeate water of the decoction of a soure pomegranate beaten, or of the decoction of a quince, medlars, cervices, mulberies, bramble berries, and the like things, endued with a faculty to binde and waste the excrementitious humidities of the body: these waters shall be mixed with syrupe of red currance, Julep of roses, and the like.

Ointments. Let the region of the stomacke and belly be anointed with oile of mastick, *Moschatelinum*, myrtles and quinces. Also a crust of bread newly drawn forth of the oven and steeped in vinegar and rose water, may be profitably applyed; or else a cataplasme of red roses, sumach, berberies, myrtles, the pulpe of quinces, mastick, bean flower, and hony of roses made up with calibeate water.

Glysters to stay a fluxe. Anodyne, abstergent, astringent, consolidating and nourishing glysters shall bee injected. These following retund the acrimony of humours, and asswage paine. R. *fol. lactuc. hyosc. acetos. portul. an.* m. i. *flor. violar. & nenuph. an.* p i. *fiat decoctio ad* ℔ j. *in colatura dissolve cassiæ fistul.* ℥ vi. *olei rosat. & nenuph. an.* ℥ i ß. *fiat clyster.* Or else, R. *ros. rub. hord. mund. sem. plant. an.* p i. *fiat decoctio, in colatura adde olei ros.* ℥ ii. *vitel. ovor.* ii. *fiat clyster.* Or, R. *decoctionis Capi, crur. vitellin. & capit. vervicin. una cum pelle,* ℔ ii. *in qua coquantur fol. violar. malv. mercur. plantag. an.* m i. *hord. mund.* ℥ i. *quatuor sem. frigid. major. an.* ℥ ß. *in colaturæ* ℔ ß. *dissolve cass. recenter extract.* ℥i. *ol. viol.* ℥ iv. *vitellor. ovor.* ii. *sach. rub.* ℥ i. *fiat clyster.* Or, R. *flor. chamæm. melil. aneth. an.* p i. *rad. bismal.* ℥i. *fiat decoctio in lacte; colaturæ adde mucag. sem. lin. fænugr. extract. in aqua malv.* ℥ ii. *sacchar. rub.* ℥ i. *olei cham. & aneth. an.* ℥ i ß. *vitellor. ovor.* ii. *fiat clyster.*

Such glysters must be long kept that they may more readily mitigate paine. When shavings of the guts appeare in the stooles, it is an argument that there is an ulcer in the guts; therefore then wee must use detergent and consolidating glysters, as this which followes.

A glyster for ulcerated guts. R. *hordei integr.* p ii. *ros. rub. flor. chamæm. plantag. apii, an.* p i. *fiat decoctio, in colatura dissolve mellis rosat. & syr. de absinth. an.* ℥ i ß. *vitel. ovor.* ii. This following glyster consolidateth. R. *succi plantag. centinod. & portulac.* nu ℥ ii. *bol. armen. sang. dracon. amyl. an.* ℥ i. *sebi hircini dissoluti,* ℥ iii. *fiat clyster.* Also cowes milke boyled with plantaine and mixed with syrupe of roses is an excellent medicine for the ulcerated guts.

A very astringent glystar. This following glyster bindes. R. *caud. equin. plant. polygon. an.* m i. *fiat decoctio in lacte ustulato ad* quart. iii. *& in colatura adde boli arm. terræ sigil. sang. dracon. an.* ℥ ii. *albumina duor. ovor. fiat clyster.* Or else, R. *suc. plant. arnoglos. centinod. portulac. residentia facta depuratorum quantum sufficit pro clystere, addendo pul. boli armeni, terræ sigil. sang. dracon. an.* ℥ i. *ol. myrthin. & rosat. an.* ℥ ii. *fiat clyster.*

If pure blood flow forth of the guts, I could wish you to use stronger astrictives. To which purpose I much commend a decoction of pomegranate pills, of cypresse nuts, red rose leaves, sumach, alome, and vitrioll made with smithes water, and so made into glysters, without any oyle. It will bee good with the same decoction to foment the fundament, *perinæum*, and the whole belly.

Astringent glysters ought not to bee used before that the noxious humours bee drawne away and purged by purging medicines, otherwise by the stoppage hereof, the body may chance to be oppressed.

A nourishing glyster. If the patient bee so weake that hee cannot take or swallow any thing by mouth, nutritive glysters shall be given him. R. *decoctionis capi pinguis, & cruris vitulini, coct. cum acetosa, buglosso, borragine, pimpinella, lactuca,* ℥ x. *vel* xii. *in quibus dissolve vitellos ovorum,* num iii. *sacchari rosati, & aquæ vitæ, an.* ℥ i. *butyri recentis non saliti,* ℥ ii. *fiat clyster.*

CHAP.

CHAP. XLI.

Of evacuation by insensible transpiration.

THe pestilent malignity as it is oft times drawne by the pores, by transpiration into the body, so oft times it is sent forth invisibly the same way againe. For our native heat that is never idle in us, disperseth the noxious humours attenuated into vapours and aire through the unperceivable breathing places of the skin. An argument hereof is, we see that the tumours and abscesses against nature, even when they are come to suppuration, are oft times resolved and discussed by the onely efficacy of nature, and heate, without any helpe of art. Therefore there is no doubt, but that nature being prevalent, may free it self from the pestilent malignity by Transpiration, some Abscesse, *Bubo* or Carbuncle being come forth, and some matter collected in some certaine part of the body. For when as nature and the native heat are powerfull and strong, nothing is impossible to it, especially when as the passages are also in like manner free and open.

Tumours are oft-times discussed by the force of nature after they are suppurated.

CHAP. XLII.

How to cure Infants and Children taken with the Plague.

IF that it happen that sucking or weaned children be infected with the pestilence, they must bee cured after another order than is yet described. The Nurse of the sucking childe must governe her selfe so in dyet and the use of medicines, as if she were infected with the pestilence her self: Her dyet consisteth in the use of the six things not naturall. Therefore let it be moderate, for the fruit or profit of that moderation in dyet cannot chuse but come unto the Nurses milke, and so unto the infant who liveth onely by the milke. And the infant it selfe must keep the same diet as neere as he can in sleep, waking, and expulsion, or avoyding of superfluous humours and excrements of the body. Let the Nurse bee fed with those things that mitigate the violence of the feaverish heat: as cooling brothes, cooling herbs, and meats of a moderate temperature: shee must wholy abstaine from wine, and anoint her nipples, as often as shee giveth the infant sucke, with water, or juice of sorrell tempered with sugar of roses. But the infants heart must bee fortified against the violence of the encreasing venome, by giving it one scruple of treacle in the Nurses milke, the broth of a pullet, or some other cordiall water. It is also very necessary to anoint the region of the heart, the emunctories, and both the wrests with the same medicine: neither were it unprofitable to smell often unto Treacle dissolved in rose water, vinegar of roses and a little *aqua vitæ*, that so nature may bee strengthened against the malignity of the venome. When the children are weaned, and somewhat well growne, they may take medicines by the mouth, for when they are able to concoct and turne into bloud meats that are more grosse and firm than milk, they may easily actuate a gentle medicine. Therefore a potion must be prepared for them of twelve graines of treacle, dissolved with a little of the syrupe of succory in some cordiall water, or the broth of a capon: unlesse that any had rather give it with conserve of roses, in forme of a bole: but treacle must bee given to children in very small quantity, for if it be taken in any large quantity, there is great danger lest that by inflaming the humours, it inferre a feaver. Furthermore, broth may be prepared to be taken often, made of a capon seasoned with sorrell, lettuce, purslaine and cooling seeds, adding thereto bole armenick and *terra sigillata*, of each one ounce, being tyed in a rag, and sometimes pressed out from the decoction. For bole armenicke, whether it be by its marvellous faculty of drying, or by some hidden property, hath this vertue, that being drunken (according as *Galen* witnesseth) it cureth those that are infected with the pestilence, if so be that they may bee cured by physick: so that those that cannot be cured with bole armenick, cannot bee preserved

The nurse must be dieted when as the child is sick.

Medicines may be given to such as are weaned.

Lib. 9. simp. ca. 7.

The benefit of sweate.

served by any other medicines. But because the bodies of children are warme, moist and vaporous, they are easily delivered of some portion of the venenate matter through the pores of the skin by provoking sweat, with a decoction of parsly seeds, prunes, figs, and the roots of sorrell, with a little of the powder of Harts horne, or Ivory. But that the sweat may be more abundant and copious, apply spunges dipped & pressed out in the hot decoction of sage, rosemary, lavender, bayes, chamomil, melilote and mallowes, or else swines bladders halfe filled with the same decoction, to the arme-holes, and to the groines. In the time that they sweat, let their faces be fanned to coole them. Also let a nodule of Treacle, dissolved in vinegar and water of Roses, bee applied to the nostrils; but alwaies use a moderation in sweating, because that children are of a substance that is easie to be dissipated and resolved: so that oftentimes although they do not sweat, yet they feel the commodities of sweating, the matter of the venome being dissipated by the force of the heat through the pores of the skin. But in the sweating while the face is fanned, and sweet & cordiall things applyed to the nostrils, nature must bee recreated and strengthened, which otherwise would be debilitated through sweating, that it may bee better able to expell the venome. After that the sweat is wiped away, it is very profitable to take a potion of conserve of Roses, with the powder of Harts horne or of Ivorie dissolved in the waters of Bugloss and Sorrel, the better to coole and defend the heart. If there appeare any tumour under the arme-holes or in the groine, let it bee brought to maturation with a mollifying, relaxing, drawing, and then with a suppurative fomentation, or Cataplasme; alwaies using and handling it as gently as you may, considering the tender age of the infant. If you have need to purge the patient, the purgation following may be prescribed with great profit. Take of Rubarbe in powder one dram, infuse it in the water of *Carduus Benedictus*, with one scruple of Cinamon, in the straining dissolve two drams of *Diacatholicon*, of syrupe of Roses laxative three drams; make thereof a small potion. This is the cure of the Pestilence and of the pestilent Feaver, as far as I could learn from the most learned Physicians, and have observed my selfe by manifold experience by the grace and permission of God: of whom alone, as the Author of all good things that mortall men injoy, the true and certaine preservatives against the pestilence are to be desired and hoped for.

The forme of a purge to be given to a child.

The End of the Twentie second Booke.

OF THE MEANES AND MANNER TO REPAIRE OR SUPPLY THE NATURALL or accidentall defects or wants *in mans body.*

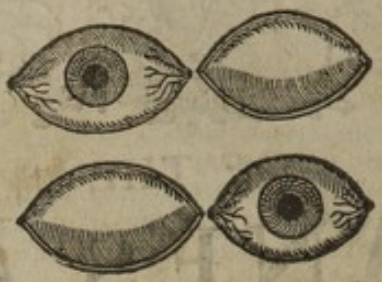
The Twentie Third Booke.

Chap. I.

How the losse of the naturall or true eye may bee covered, hidden or shadowed.

HAving at large treated in the former Bookes of tumours, wounds, ulcers, fractures and luxations, by what meanes things dissolved and dislocated might bee united, things united separated, and superfluities consumed or abated: Now it remaines that we speak of the fourth office or duty of the Chirurgian, which is to supply or repaire those things that are wanting by nature, through the default of the first conformation, or afterwards by some mischance. Therefore, if that through any mischance, as by an inflammation, any mans eye happen to be broken or put out, & the humors spilt or wasted, or if it be strucken out of his place or cavity wherein it was naturally placed, by any violent stroak, or if it waste or consumè by reason of a consumption of the proper substance, then there is no hope to restore the sight or function of the eye, yet you may cover the deformity of the eye so lost (which is all you can doe in such a case) by this meanes: If that when you have perfectly cured and healed the ulcer, you may put another eye artificially made of gold or silver, counterfeited and enamelled, so that it may seem to have the brightnesse, or gemmie decencie of the naturall eye, into the place of the eye that is so lost. The fourth duty of a Surgeon.

The formes of eyes artificially made of gold or ſilver, poliſhed and enamuled, ſhewing both the inner and outer ſide.



But if the patient be unwilling, or by reaſon of ſome other meanes cannot weare this eye ſo prepared, in his head, you may make another on this wiſe. You muſt have a ſtring or wiar, of iron bowed or crooked, like unto womens eare-wiars, made to bind the head harder or looſer as it pleaſeth the patient, from the lower part of the head behinde above the eare, unto the greater corner of the eye, this rod or wiar muſt be covered with ſilke, and it muſt alſo be ſomewhat broad at both the ends, leſt that the ſharpeneſſe thereof ſhould pierce or pricke any part that it commeth unto. But that end wherewith the empty hollowneſſe muſt be covered, ought to bee broader than the other, and covered with a thin piece of leather, that thereon the colours of the eye that is loſt may be ſhadowed or counterfeited. Here followeth the figure or portraiture of ſuch a ſtring or wiar.

The forme of an iron wiar wherewith the deformity of an eye that is loſt may bee ſhadowed or covered.



CHAP. II.

By what meanes a part of the nose that is cut off, may be restored; or how in stead of the nose that is cut off, another counterfeit nose may be 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 joyned againe: for it is not in men as it is in plants. For plants have a weake and feeble heate, and furthermore it is equally disperſed into all the substance of the plant or tree, neither is it easie to be consumed or wasted, for when the boughes or branches of trees are broken, torne, or cut away, they live nevertheleſſe, and will grow againe when they are set or grafted; neither is there any seate for the heart rightly prepared in them from whence the heat must necessarily run, and disperse it selfe 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, sense, and whole sustentation not of themselves, by faculties flowing or comming unto them from some other parts, neither are they governed by their own heat as plants, but by a borrowed heat, so that above or beside the naturall faculty of the liver, another vitall faculty commeth unto it from the heart. Why the parts of plants being cut off, may grow againe, but those of man cannot.

Wherefore in stead of the nose cut away or consumed, it is requisite to substitute another made by Art, because that nature cannot supply that defect: this nose so artificially made, must be of gold, silver, paper or linnen clothes glewed together, it must bee so coloured, counterfeited and made both of fashion, figure and bigneſſe, that it may as aptly as is possible, resemble the natural nose: it must be bound or stayed with little threeds or laces unto the hinder part of the head or the hatte. Also if there be any portion of the upper lip cut off with the nose, you may shadow it with annexing some such thing that is wanting unto the nose, and cover it with the haire on his upper lippe, that he may not want any thing that may adorne or beautifie the face. Therefore I have thought it necessary to set downe the figure or forme of both these kindes.

The forme of a nose artificially made, both alone by it selfe, and also with the upper lip, covered as it were with the haire of the beard.



There was a Surgeon of Italy of late yeares which would restore or repaire 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 done in the cure of harelips A strange cure for a cut off nose

lips: then he made a gaſh or cavity in the muſcle of the arme, which is called *Biceps*, as large as the greatneſſe of the portion of the noſe which was cut away did require: And into that gaſh or cavity ſo made, he would put that part of the noſe ſo wounded, & bind the patients head to his arm as if it were to a poaſt, ſo faſt that it might remain firme, ſtable and immoveable, and not leane or bow any way, and about forty dayes after, or at that time when he judged the fleſh of the noſe was perfectly agglutinated with the fleſh of the arm, he cut out as much of the fleſh of the arme, cleaving faſt unto the noſe, as was ſufficient to ſupply the defect of that which was loſt, & then he would make it even, & bring it, as by licking, to the faſhion & forme of a noſe, as near as art would permit, & in the mean while he did feed his patient with ponadoes, gellies, & all ſuch things as were eaſie to be ſwallowed & digeſted. And he did this work of curing the place where the fleſh was ſo cut out, only with certain balmes & agglutinative liquors. A younger brother of the family of St. *Thoan*, being weary of a ſilver noſe, which being artificially made, he had worn in the place of his noſe that was cut off, went to this Chirurgian into Italy, & by the means of the fore-named practice he recovered a noſe of fleſh againe, to the great admiration of all thoſe that knew him before. This thing truly is poſſible to be done, but it is very difficult both to the patient ſuffering, and alſo to the Chirurgian working. For that the fleſh that is taken out of the arme, is not of the like temperature as the fleſh of the noſe is, alſo the holes of the reſtored noſe cannot be made as they were before.

A hiſtory.

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 moved, broken or ſtricken out of their places by ſome violent blow, which cauſeth deformity of the mouth, and hinders plain pronunciation. Therfore when the jaw is reſtored (if it were luxated or fractured) and the gums brought unto their former hardneſſe, other teeth artificially made of bone or Ivory may bee put in the place of thoſe that are wanting, and they muſt bee joyned one faſt unto another, and alſo ſo faſtened unto the naturall teeth adjoyning, that are whole; and this muſt chiefly bee done with a thread of gold or ſilver, or for want of either, with a common thread of ſilke or flaxe, as it is declared at large by *Hippocrates*, and alſo deſcribed in this figure following.

Sect. 2. lib. de art. ſect. 25.

The figure of teeth bound or faſtned together.



Chap.

Chap. IIII.

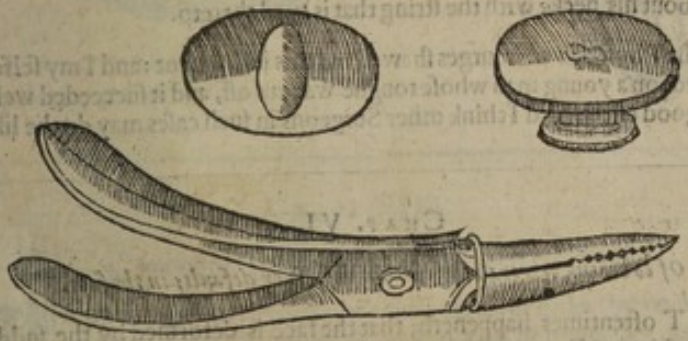
Of filling the hollowneſſe of the Pallat.

MAny times it happeneth that a portion or part of the bone of the pallat, being broken with the ſhot of a gun, or corroded by the virulency of the *Lues venerea*, falls away, which makes the patients to whom this happeneth, that they cannot pronounce their words diſtinctly, but obſcurely and ſnuffling: therefore I have thought it a thing worthy the labour to ſhew the meanes how it may be helped by art. It muſt be done by filling the cavity of the pallat with a plate of gold or ſilver a little bigger than the cavity its ſelfe is. But it muſt bee as thick as a French Crowne, and made like unto a diſh in figure, and on the upper ſide, which ſhall be towards the braine, a little ſpunge muſt bee faſtened, which, when it is moiſtened with the moyſture diſtilling from the brain, will become more ſwolne and puffed up, ſo that it will fill the concavity of the pallat, that the artificiall pallat cannot fall down, but ſtand faſt and firme, as if it ſtood of it ſelfe. This is the true figure of thoſe inſtruments, whoſe certain uſe I have obſerved not by once or twice, but by manifold triall in the battels fought beyond the Alpes. The cauſes and hurt that enſues of the loſt pallat.

The figure of plates to fill or ſupply the defects of the Pallat.



The figure of another plate for the Pallat, on whoſe upper ſide there is a button which may be turned when it is put into the place, with a ſmall Ravens bill, like this whoſe figure is here expreſſed.



Chap. V.

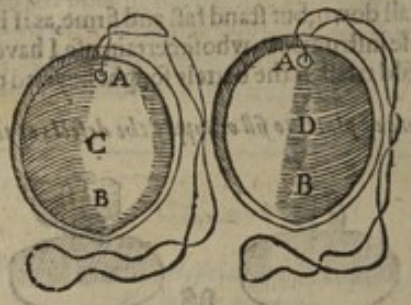
How to helpe ſuch as cannot ſpeake by reaſon of the loſſe of ſome part of the tongue.

CHance gave place and authority to this remedy, as to many other in our art. A certaine man dwelling in a village named *Tvoy le Chaſteau*, being ſome twenty foure miles from *Bourges*, had a great piece of his tongue cut off, by which occaſion hee remained dumbe ſome three yeares. It happened A remedy found out by accident. A hiſtory.

on

on a time that as hee was in the fields with reapers, hee drinking in a woodden diſh, was tickled by ſome of the ſtanders by, not enduring the tickling, hee ſuddenly broke out into articulate and intelligible words. He himſelfe wondring therear, and delighted with the novelty of the thing, as a miracle, put the ſame diſh to his mouth juſt in the ſame manner as before, and then he ſpake ſo plainly and articulately, that he might be underſtood by them all. Wherefore a long time following he alwaies carried this diſh in his boſome, to utter his mind, untill at length neceſſity, the miſtris of arts and giver of wit, inducing him, hee cauſed a woodden inſtrument to be neatly cut and made for him, like this which is here delineated, which hee alwaies carryed hanging at his neck, as the onely interpreter of his mind, and the key of his ſpeech.

An inſtrument made to ſupply 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 thickneſſe of a nine-pence, which he did ſo hold betweene his cutting teeth, that it could not come out of his mouth, nor bee ſeene. B. ſheweth the lower part, as thick as a ſixe-pence, which he 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 ſomewhat 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 necke with the ſtring that is tyed thereto.

Textor the Phyſician of Bourges ſhewed me this inſtrument: and I my ſelfe made tryall thereof on a young man whoſe tongne was cut off, and it ſucceeded well, and took very 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.

IT oftentimes happeneth, that the face is deformed by the ſudden flaſhing of Gunpowder, or by a peſtilent Carbuncle, ſo that one cannot behold it without great horrour. Such perſons muſt be ſo trimmed and ordered, that they may come in ſeemely manner into the company of others. The lips if they bee 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 ſeene to lye bare with great deformity. If the loſſe or conſumption of the lip bee not very great, it may be repaired by that way which we 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 colour to the naturall lip, and it muſt be faſtened and tyed to the hat or cap that the patient weareth on his head, that ſo it may remaine ſtable and firme.

CHAP. VII.

Of the defects of the eares.

SUch as want their eares, either naturally or by misfortune, as through a wound, carbuncle, cancer, or the biting of wild beaſts: if ſo be that the eare be not wholly wanting, waſted, conſumed, or torne away, but that ſome portion thereof doth yet remaine, then muſt it not bee neglected, but muſt have many holes made therein with a bodkin, and after that the holes are cicatrized, let ſome convenient thing, made like unto the piece of the eare that is loſt, bee tyed or faſtned unto it by theſe holes.

But if the eare bee wholly wanting, another muſt bee made of paper artificially glewed together, or elſe of leather, and ſo faſtened with laces, from the toppe or hinder part of the head, that it may ſtand in the appointed place, and ſo the haire muſt be permitted to grow long, or elſe ſome cap worne under the hat which may hide or cover the deformity, unleſſe you had rather have it to bee ſhadowed and counterfeited by ſome Painter, that thereby it may reſemble the colour of a naturall eare, and ſo retein it in the place where it ought to ſtand, with a rod or wiar comming from the toppe or hinder part of the head, as wee have ſpoken before in the loſſe of the eye; and the forme thereof is this.



CHAP. VIII.

Of amending the deformity of ſuch as are crooke-backt.

THe bodies of many, eſpecially young maids or girles (by reaſon that they are more moiſt and tender than the bodies of boyes) are made crooked in proceſſe of time, eſpecially by the wrenching aſide and crookedneſſe of the backe-bone. It hath many cauſes, that is to ſay, in the firſt conformation in the wombe, and afterwards by misfortune, as a fall, bruiſe, or any ſuch like accident, but eſpecially by the unhandſome 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 goe too ſoone) ſaluting, ſewing, writing, or in doing any ſuch like thing. Cauſes of crookedneſſe.

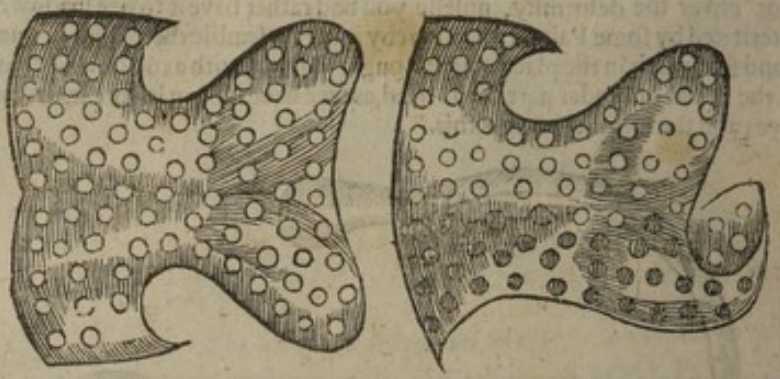
In the meane while, that I may not omit the occaſion of crookedneſſe, that happens ſeldome to the country people, but is much incident to the inhabitants of great townes and cities, which is by reaſon of the ſtraitneſſe and narrowneſſe of the gar-

ments

ments that are worne by them, which is occasioned by the folly of mothers, who while they covet to have their young daughters bodies so small in the middle as may be possible, plucke and draw their bones awry, and make them crooked. For the ligaments of the back-bone being very tender, soft and moist at that age, cannot stay it strait, and strongly, but being pliant, easily permits the spondels to slippe awry inwards, outwards, or sidewise, as they are thrust or forced.

The remedy for this deformity is to have breast-plates of iron, full of holes all over them, wherby they may be lighter to wear; and they must be so lined with bombast, that they may hurt no place of the body. Every three moneths new plates must be made for those that are not yet arrived at their full growth, for otherwise by the daily afflux of more matter, they would become worse. But these plates will do them small good that are already at their full growth.

The forme of an iron Breast-plate, to amend the crookednesse of the Body.



Chap. IX.

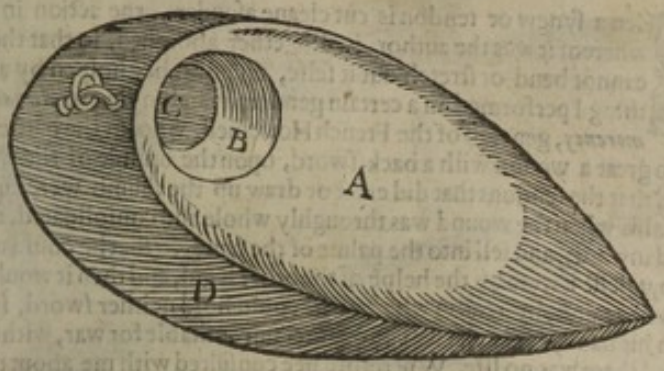
How to relieve such as have their urine flow from them against their wills, and such as want their yards.

IN those that have the strangury, of what cause soever that malady commeth, the urine passeth from them by drops, against their wils and consent. This accident is very grievous and troublesome, especially to men that travaile: 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 be of latin, & to contein some four ounces; it must be put into the patients hose, between his thighs, unto which it must be 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, & into this concavity or hollownesse goeth a stay somewhat deep, it is marked with the letter B. and made or placed there, both to hold or beare the end of the yard, and also by his close joint that it must have unto the vessell, to stay the urine from going backe againe, when it is once in. But the letters A. and D. doe signifie all the instrument; that the former part, and this the hinder part thereof. Now this is the shape thereof.

An instrument for such as cannot hold their water.

The

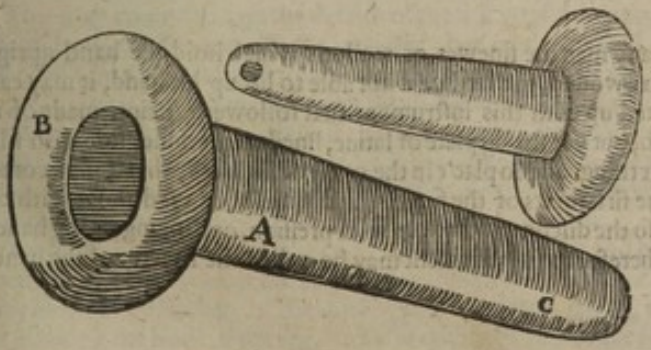
The figure of an instrument, which you may call A Bason, or receptacle for the Urine.



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 downe like women, for their ease. I have devised this pipe or conduit, having an hole through it as big as ones finger, which may be made of wood, or rather of latin.

A. and C. doe shew the bigneſſe and length of the pipe. B. sheweth the brink on the broader end. D. sheweth the outside of the brinke. This instrument must be applied to the 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 receive the urine the better, and carry it from the patient, as he standeth upright.

The description of a pipe, or conduit, serving instead of the yard in making of water, which therefore wee may call an artificiall Yard.



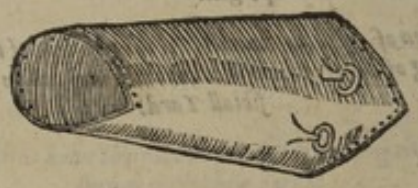
CHAP. X.

By what meanes the periſhed function or action of a thumbe or finger may be corrected and amended.

A hiſtory.

WHen a ſynew or tendon is cut cleane aſunder, the action in that part, whereof it was the author, is altogether aboliſhed, ſo that the member cannot bend or ſtretch out it ſelfe, unleſſe it bee holpen by art: which thing I performed in a certain gentleman belonging to *Annas* of *Montmorency*, generall of the French Horſemen, who in the battle of *Dreux* received ſo great a wound with a back-ſword, upon the outſide of the wreſt of the right hand, that the tendons that did erect or draw up the thumb were cut clean in-ſunder, & alſo when the wound was throughly whole and conſolidated, the thumb was bowed inwards, and fell into the palme of the hand, ſo that he could not extend or lift it up, unleſſe it were by the helpe of the other hand, and then it would preſently fall downe againe; by reaſon whereof he could hold neither ſword, ſpeare, nor Javeline in his hand, ſo that he was altogether unprofitable for war, without which he ſuppoſed there was no life. Wherefore hee conſulted with me about the cutting away of his thumbe, which did hinder his griping, which I refuſed to doe, and told him that I conceived a meanes how it might bee remedied without cutting away. Therefore I cauſed a caſe to bee made for it of Latine, whereinto I put the thumbe: 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 thumbe ſtood upright, and ſtraight out, by reaſon whereof he was able afterwards to handle any kinde of weapon.

The forme of a thumbe or finger-ſtall of iron or latine, to lift up or erect the thumbe, or any other finger that cannot be erected of it ſelfe.



If that in any man the ſinewes or tendons which hold the hand upright, be 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, being made of an equall, ſtreight, thin, but yet ſtrong plate of latine, lined on the inner ſide with ſilke, or any ſuch like ſoft thing, and ſo plac't in the wreſt of the hand, that it may come unto the palme, or the firſt joints of the fingers, and it muſt bee tyed above with convenient ſtayes, and ſo the diſcommodity of the depreſſion, or hanging of the hand, may bee avoyded; therefore this inſtrument may be called the Erector of the hand.

The

The Erector of the Hand.



Chap. XI.

Of helping those that are Vari *or* Valgi, *that is, crooke-legged or crooke-footed, inwards or outwards.*

What *varus* is.

THose are said to bee Varous, whose feet or legs are bowed or crooked inwards. This default is either from the first conformation in the wombe, through the default in the mother, who hath her legs in like manner crooked; or because that in the time when she is great with child, she commonly sits with her legs a crosse: or else after the child is born, & that, either because his legs be not well swathed, when he is laid into the cradle, or else because they bee not well placed in carrying the infant, or if he be not wel looked unto by the nurse when he learneth to goe, for the bones of infants are very tender, and almost as flexible as Waxe.

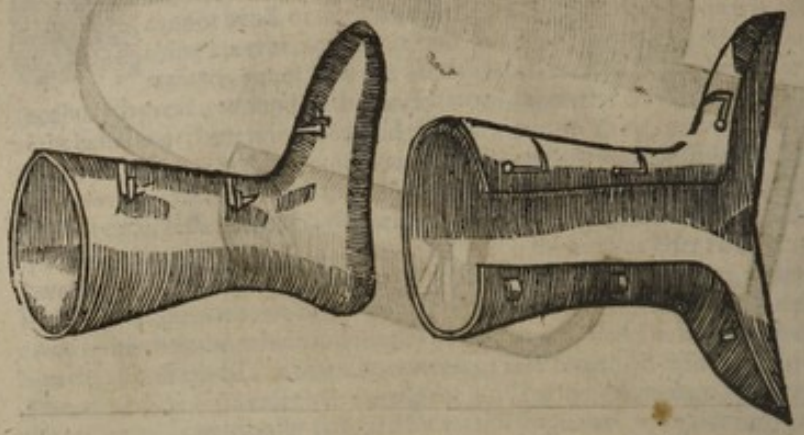
What *valgus* is.

But contrariwise, those are called *valgi*, whose legs are crooked or bowed outwards. This may come through the default of the first conformation, aswell as the other, for by both, the feet and also the knees may bee made crooked; which thing, whosoever will amend, must restore the bones into their proper and naturall place, so that in those that are varous hee must thrust the bones outwards, as though hee would make them valgous, and in those that are valgous, hee must thrust the bones inwards, as though hee would make them varous: neither is it sufficient to thrust them so, but they ought also to be retained there in their places after they are so thrust, for otherwise they being not well established, would slip back againe.

They must bee stayed in their places by applying of collers and bolsters on that side whereunto the bones doe leane and incline themselves; for the same purpose boots may be made of leather, of the thickneſse 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 drawne together on both sides, they may be the better fitted, and sit the closer to the leg. And let this medicine following be applyed all about the leg. R. *thuris, mastich.* A plaster to hold fast restored bones. *aloës, bdoli armeni, an.* ℥i. *aluminis roch. resinæ pini siccæ, subtilissimè pulveris. an.* ℥iii. *farinæ volat.* ℥iß. *album. ovor. q. s.* make thereof a medicine. You may also adde a little turpentine, lest it should dry sooner, or more vehemently than is necessary. But you must beware, and take great heed lest that such as were of late varous or valgous should attempt or straine themselves to goe before that their joynts be confirmed, for so the bones that were lately set in their places, may slip aside againe. And moreover

over, untill they are able to goe without danger, let them weare high ſhooes tyed cloſe to their feet, that the bones may be ſtayed the better and more firmely in their places, but let that ſide of the ſoale of the ſhooe be underlayed whither the foote did incline before it was reſtored.

The forme of little bootes, whereof the one is open and the other ſhut.



CHAP. XII.

By what meanes armes, legs, and hands may be made by art, and placed inſtead of the naturall armes, legs, or hands that are cut off and loſt.

NEceſſity oftentimes conſtraines us to find out the meanes whereby we may help and imitate nature, and ſupply the defect of members that are periſhed and loſt. And hereof it commeth that we may performe the functions of going, ſtanding and handling with armes and hands made by art, and undergoe our neceſſary flexions and extenſions with both of them. I have gotten the formes of all thoſe members made ſo by art, and the proper names of all the engines and inſtruments wherby thoſe artificially made are called, to my great coſt and charges, of a moſt ingenious & excellent Smith dwelling at Paris, who is called of thoſe that know him, and alſo of ſtrangers, by no other name than the little *Loraine*, and here I have cauſed them to bee portrayed or ſet downe, that thoſe that ſtand in neede of ſuch things, after the example of them, may cauſe ſome Smith, or ſuch like workman to ſerve them in the like caſe. They are not onely profitable for the neceſſity of the body, but alſo for the decency and comelineſſe thereof. And here followeth their formes.

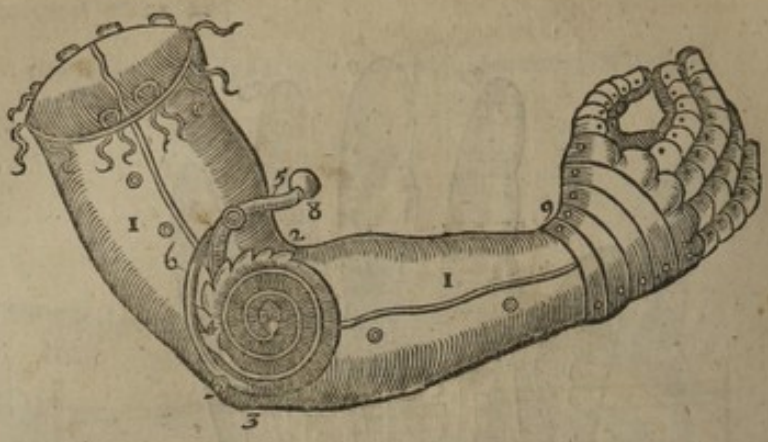
The forme of an hand made artificially of iron.



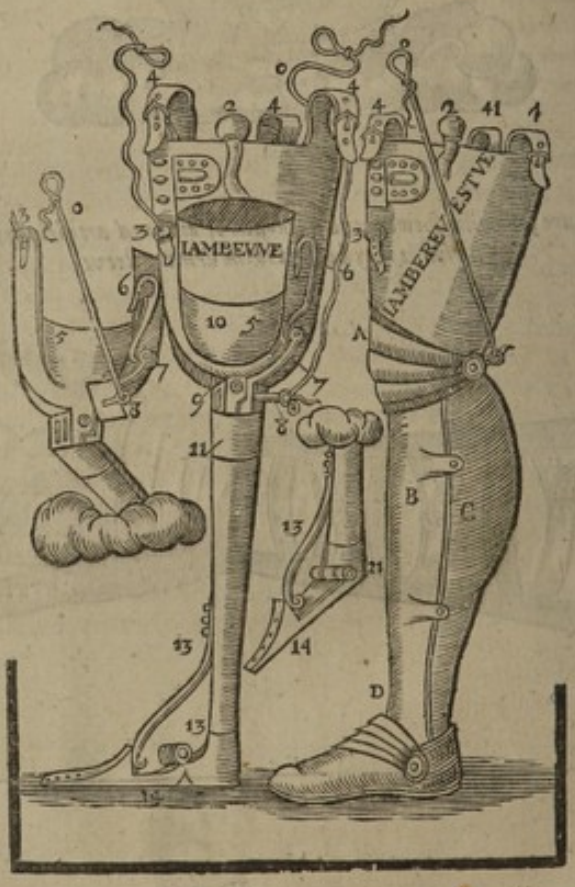
This figure following sheweth the back-side of an hand artificially made, and so that it may be tyed to the arme or sleeve.



The forme of an arme made of iron very artificially.

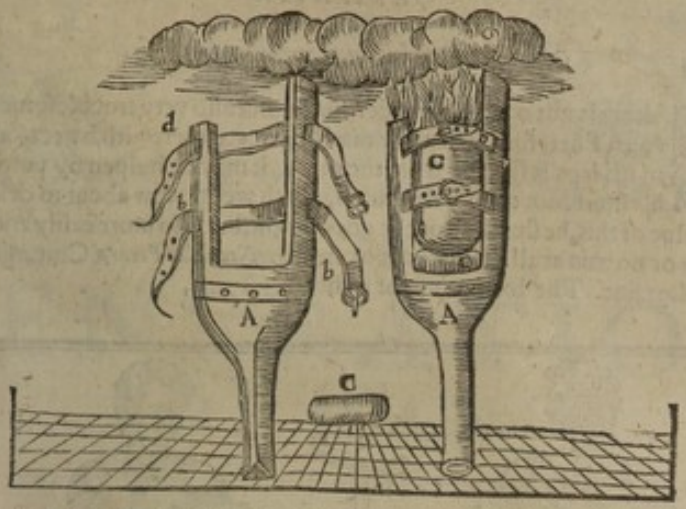


The description of legs made artificially of iron.



The

The forme of a woodden Leg made for poore men.



A. *Sheweth the ſtump or ſtock of the woodden leg.* BB. *Sheweth the two ſtayes 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 bottome between the two ſtayes, that ſo it may reſt the ſofter.* DD. *Sheweth the thongs or girths with their round buckles, put through the two ſtayes on either ſide to ſtay the knee in his place firm and immoveable, that it ſlip not aſide.* E. *Sheweth the thigh it ſelfe, that you may know after what faſhion it muſt ſtand.*

It happens alſo many times, that the patient, that hath had the nerves or tendons of his leg wounded, long after the wound is whole and conſolidated, cannot goe but with very great paine and torment, by reaſon that the foot cannot follow the muſcle, that ſhould draw it up. That this maladie, may be remedied you ought to faſten a linnen band made very ſtrong, unto the ſhooe that the patient weareth on that his pained foot, and at the knee it muſt have a ſlit where the knee may come forth in bowing of the leg, & it muſt be truſſed up faſt unto the patients 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 A A.



CHAP.

Chap. XIII.

Of amending or helping lameneſſe or halting.

HAlting is not onely a great deformity, but alſo very troubleſome and grievous. Therefore if that any man be grieved therewith by reaſon that one of his legs is ſhorter than the other, it may be holpen by putting under his ſhort foot this ſitting crutch, which we are now about to deſcribe. For by the helpe of this, he ſhall not onely goe upright, but alſo more eaſily and with little labour or no pain at all. It was taught mee by *Nicholas Picard* Chirurgian to the Duke of Loraine. The forme thereof is this.



A. *Sheweth the ſtaffe or ſtilt of this crutch, which muſt bee made of wood.* B. *Sheweth the ſeat of iron whereon the thigh reſteth, juſt under the buttocke.* C. *Sheweth a prop which ſtayeth up the ſeat whereon all the weight of the patients body reſteth.* D. *Sheweth the ſtirrop, being 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 ſtayeth or holdeth up the ſtirrop to ſtrengthen it.* F. *Sheweth the foote of the ſtilt or crutch made of iron with many pikes, and compaſſed with a ring or ferule, ſo to keepe it from ſlipping.* G. *The croſſe or head of the crutch which the patient muſt put under his arme-hole to leane upon, as it is to be ſeene in the figure.*

The End of the Twentie third Booke.

OF THE GENERATION OF MAN.

THE TWENTY FOURTH BOOK.

THE PREFACE.

GOD, the Creator and maker of all things, immediately after the Creation of the World, of his unspeakable counsell and inestimable wisedome not onely distinguished mankinde, but all other living 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 every living creature against the most certaine & fatall necessity of death: that for as much as each particular living 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 Matrimony, the male and female yeeld forth their seeds, which presently mixed and conjoyned, are received and kept in the females Wombe. For, the seed is a certaine spumous or foamie humour replenished with vitall spirit, by the benefit whereof, as it were by a certain ebullition or fermentation, it is puffed up and swolne bigger, and both the seedes being separated from the more pure bloud of both the parents, are the materiall and formall beginning of the issue, for the seede of the male being cast and received into the Wombe, is accounted the principall and efficient cause, but the seede of the female is reputed the subjacent matter, or the matter whereon it worketh. Good and laudable seede ought to bee white, shining, clammy, knotty, smelling like unto the elder or palme, delectable to bees, and sinking downe to the bottome of water being put into it, for that which swimmeth on the water is esteemed unfruitfull; for a great portion commeth from the brain, yet some thereof fulles from the whole body, & from all the parts both firme and soft thereof. For unlesse it come from the whole body, & every part therof, all & every part of the issue cannot be formed thereby: because like

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 body.

like things are engendered of their like: and therefore it commeth that the child resembleth the parents, not onely in ſtature and favour, but alſo in the conformation and proportion of his limbs and members, and complexion and temperature of his inward parts, ſo that diſeaſes are oft times hereditary, the weakeneſs of this or that entrall being tranſlated from the parent to the childe. There are ſome which ſuppoſe this falling of the ſeed from the whole body not to be underſtood according to the weight and matter, as if it were a certaine portion of all the blood ſeparated from the reſt; but according to the power and forme, that is to ſay the animall, naturall, and vitall ſpirits, being the framers of formation and life, and alſo the formative faculty to fall down from all the parts into the ſeed, that is wrought or perfected by the Teſticles, for proofe and confirmation whereof, they alledge that many perfect, ſound, abſolute, and well proportioned children, are borne of lame and decrepit parents.

Wherefore many diſeaſes are hereditary.

How ſeed is to be underſtood to fall from the whole body.

Chap. I.

Why the generative parts are endued with great pleaſure.

A Certaine great pleaſure accompanieth the function of the parts appointed for generation, and before it, in living creatures that are of a luſty age, when matter aboundeth in thoſe parts, there goeth a certaine fervent or furious deſire: the cauſes thereof are many, of which the chiefeſt is, That the kind may be preſerved and kept for ever, by the propagation and ſubſtitution of other living creatures of the ſame kinde. For brute beaſts which want reaſon, and therefore cannot bee ſolicitous for the preſervation of their kinde, never come to carnall copulation, unleſſe they be moved thereunto by a certaine vehement provocation of unbridled luſt, and as it were by the ſtimulation of venery. 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 filthy as is carnall copulation, but that the venereous ticklings, raiſed in thoſe parts, relaxe the ſeverity of his mind, or reaſon admoniſh him that the memory of his name ought not to end with his life, but to be preſerved unto all generations, as farre as may be poſſible, by the propagation of his ſeed or iſſue. Therefore by reaſon of this profit or commodity, nature hath endued the genitall parts with a far more exact or exquiſite ſenſe than the other parts, by ſending the great ſinewes unto them, and moreover ſhe hath cauſed them to be bedewed or moiſtened with a certain whayiſh humour, not much unlike the ſeed ſent from the glandules or kernells called *proſtatæ*, ſituated in men at the beginning of the necke of the bladder, but in women at the bottome of the wombe: this moiſture hath a certaine ſharpeneſſe or biting, for that kinde of humour of all others can chiefly provoke thoſe parts to their function or office, and yeeld them a delectable pleaſure, while they are in the execution of the ſame. For even ſo whayiſh and ſharpe humours, when they are gathered together under the skinne, if they waxe warme, tickle with a certaine pleaſant itching, and by their motion inferre delight: but the nature of the genitall parts or members is not ſtirred up or provoked to the expulſion of the ſeed with theſe provocations of the humours, abounding either in quantity or quality onely, but a certaine great and hot ſpirit or breath conteined in thoſe parts, doth begin to dilate it ſelfe more and more, which cauſeth a certaine incredible exceſſe of pleaſure or voluptuouſneſſe, wherewith the genitalls being replete, are ſpread forth or diſtended every way unto their full greatneſſe. The

What moveth a man to copulation.

Why the genitalls are endued with a whayiſh moiſture.

yard

yard is given to men whereby they may caſt out their ſeed directly or ſtraightly into the womans wombe, and the necke of the wombe to women, whereby they may receive that ſeed ſo caſt forth, by the open or wide mouth of the ſame necke, and alſo that they may caſt forth their owne ſeed, ſent through the ſpermaticke veſſels unto their teſticles; theſe ſpermaticke veſſels, that is to ſay, the veine lying above, and the artery lying below, do make many flexions or windings, yet one as many as the other, like unto the tendrills of vines diverſly platted or folded together, and in theſe folds or bendings the blood and ſpirit which are carryed unto the teſticles, are concocted a longer time, and ſo converted into a white ſeminall ſubſtance. The lower of theſe flexions or bowings doe end in the ſtones or teſticles. But the teſticles, for as much as they are looſe, thin, and ſpongeous or hollow, receiving the humour which was begun to be concocted in the forenamed veſſels, concoct it again themſelves: but the teſticles of men concoct the more perfectly for the procreation of the iſſue; & the teſticles of women more imperfectly, becauſe they are more cold, leſſe, weake and feeble, but the ſeed becommeth white by the contact or touch of the teſticles, becauſe the ſubſtance of them is white. The male is ſuch as engendereth in another, and the female in her ſelfe, by the ſpermaticke veſſels which are implanted in the inner capacity of the womb. But out of all doubt unleſſe nature had prepared ſo many allurements, baits, and provocations of pleaſure, there is ſcarce any man ſo hot or delighted in venereous acts, which conſidering and marking the place appointed for humane conception, the loathſomneſſe of the filth which daily falleth downe unto it, and wherewithall it is humected and moiſtened, and the vicinity and neereneſſe of the great gut under it, and of the bladder above it, but would ſhun the embraces of women. Nor would any woman deſire the company of man, which once premeditates or forethinkes with her ſelfe on the labour that ſhee ſhall ſuſtaine in bearing the burthen of her childe nine moneths, and of the almoſt deadly paines that ſhe ſhall ſuffer in her delivery.

The cauſe of the foldings of the ſpermaticke veſſels.

Womens teſticles are imperfect.

Why many men and women abhorre venereous copulation.

Men that uſe too frequent copulation, oftentimes in ſtead of ſeed caſt forth a crude and bloody humor, and ſometimes alſo meere blood it ſelfe; and oft times they can hardly make water but with great pain, by reaſon that the clammy and oily moiſture, which nature hath placed in the glandules called *proſtatæ*, to make the paſſage of the urine ſlippery, & to defend it againſt the ſharpeneſſe of the urine that paſſeth through it, is waſted, ſo that afterward they ſhal ſtand in need of the help of a Surgion to cauſe them to make water with eaſe & without pain, by injecting a little oile out of a ſiringe into the conduit of the yard. For generation it is fit the man caſt forth his ſeed into the wombe with a certaine impetuoſity, his yard being ſtiffe and diſtended, and the woman to receive the ſame without delay into her wombe, being wide open, leſt that through delay the ſeed waxe cold, and ſo become unfruitfull by reaſon that the ſpirits are diſſipated and conſumed. The yard is diſtended or made ſtiffe, when the nervous, ſpongeous, and hollow ſubſtance thereof is replete and puffed up with a flatulent ſpirit. The womb allures or drawes the maſculine ſeed into it ſelfe by the mouth thereof, and it receives the womans ſeed by the hornes from the ſpermatick veſſels, which come from the womans teſticles into the hollowneſſe or concavity of the womb, that ſo it may be tempered by conjunction, commiſtion & confuſion with the mans ſeed, and ſo reduced or brought unto a certaine equality: for generation or conception cannot follow without the concourſe of two ſeeds, well and perfectly wrought in the very ſame moment of time, nor without a laudible diſpoſition of the wombe both in temperature and complexion: if in this mixture of ſeeds the mans ſeed in quality and quantity exceed the womans, it will be a man child, if not, a woman childe, although that in either of the kindes there is both the mans and womans ſeed, as you may ſee by the daily experience of thoſe men who by their firſt wives have had boyes onely, and by their ſecond wives had girles onely: the like you may ſee in certaine 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 ſometimes yeeld forth ſeed endued with a maſculine vertue, and ſometimes with a feminine or weake vertue, ſo that it is no marvaile if men get ſometimes men, and ſometimes women children.

Why the ſtrangury enſueth immoderate copulation.

What things neceſſary unto generation.

Why a male, & why a female is engendered.

CHAP.

Chap. II.

Of what quality the seed is, whereof the male, and whereof the female is engendered.

Why men children are sooner formed in the wombe than women.

The seed is that in power from whence each thing commeth or floweth.

Why the children are most commonly like unto their fathers.

When children should be begotten.

Why often times the child resembleth the Grand-father.

Why sometime those that are diseased do get sound children.

MAle children are engendered of a more hot and dry seed, and women of a more cold and moist: for there is much lesse strength in cold than in heat, and likewise in moisture than in dryneſſe; and that is the cause why it will be longer before a girle is formed in the womb than a boy. In the seed lyeth both the procreative and the formative power: as for example; In the power of the Melon seed are situate the stalkes, branches, leaves, flowers, fruite, the forme, colour, smell, taste, seed and all. The like reason is of other seeds; so Apple grafts engrafted in the stock of a Peare tree, beare Apples; and we doe alwaies finde and see by experience, that the tree (by vertue of grafting) that is grafted, doth convert it selfe into the nature of the Sions wherewith it is grafted. But although the childe that is borne doth resemble or is very 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 than the mother, becauſe that in the time of copulation, the minde of the woman is more fixed on her husband, than the minde of the husband on, or towards his wife: for in the time of copulation or conception, the formes, or the likenesses of those things that are conceived or kept in minde, are transported and impressed in the childe or issue; for so they affirme that there was a certain Queene of the Æthiopians who brought forth a white child, the reason was (as she confessed) that at the time of copulation with her King, she thought on a marvellous white thing, with a very strong imagination. Therefore *Hesiod* advertiseth all married people not to give themselves to carnall copulation when they return from burialls, but when they come 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 joyfulnesse of his life, with sad, pensive and passionate thoughts. Sometimes it happeneth, although very seldome, the childe is neither like the father nor the mother, but in favour resembleth his Grandfather, or any 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 any effect, at length breakes forth by means of some hidden occasion: wherein nature resembleth the Painter, making by means of some hidden occasion: wherein nature resembleth the Painter, making the lively portraiture of a thing, which as far as the subject matter will permit, doth forme the issue like unto the parents in every habit; so that often times the diseases of the parents are transferred or participated unto the children, as it were by a certaine hereditary title: for those that are crooke-backt get crooke-backt children, those that are lame, lame; those that are leprous, leprous; those that have the stone, children having the stone; those that have the ptisicke, children having the ptisick; and those that have the gout, children having the gout: for the seed followes the power, nature, temperature, and complexion of him that engendereth it. Therefore of those that are in health and sound, healthy and sound; and of those that are weake and diseased, weake and diseased children are begotten, unlesse happely the seed of one of the parents that is sound doth correct or amend the diseased impression of the other that is diseased, or else the temperate and sound wombe as it were by the gentle and pleasant breath thereof.

Chap.

CHAP. III.

What is the cause why the Females of all brute beasts, being great with young, doe neither desire, nor admit the males, untill they have brought forth their Young.

THe cause hereof is, that, forasmuch as they are moved by sense only, they apply themselves unto the thing that is present, very little, or nothing at all perceiving things that are past, and to come. Therfore after they have conceived, they are unmindfull of the pleasure that is past, and doe abhor copulation: for the sense or feeling of lust is given unto them by nature, onely for the preservation of their kinde, and not for voluptuousnesse, or delectation. But the males raging, swelling, and as it were stimulated by the provocations of the heat, or fervency of their lust, do then runne unto them, follow and desire copulation, because a certaine strong odour or smell commeth into the aire from their secret or genitall parts, which pierceth into their nostrills, and unto their braine, and so inferreth an imagination, desire, and heat. Contrariwise, the sense 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 asswage the miseries of mans 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 this purpose, which by impulsion of imagination, which ruleth the humours, being driven by the proper passages, downe from the heart and entralls into the genitall parts, doth stirre up in them a new lust.

Why the sense 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 she is with childe, desireth copulation.

The males of brute beasts, being provoked or moved by the stimulations of lust, rage, and are almost burst with a *Tentigo* or extension of the genitall parts, and sometimes waxe mad, but after that they have satisfied their lust with the female of their kinde, they presently become gentle, and leave off such fiercenesse.

CHAP. IIII.

What things are to be observed, as necessary unto generation in the time of copulation.

WHen the husband commeth into his wives chamber hee must entertaine her with all kinde of dalliance, wanton behaviour, and allurements to venery: but if he perceive her to be slow, and more cold, he must cherish, embrace, and tickle her, and shall not abruptly, the nerves being suddenly distended, breake into the field of nature, but rather shall creepe in by little and little, intermixing more wanton kisses with wanton words and speeches, handling her secret parts and dugs, that she may take fire and bee enflamed to venery, for so at length the wombe will strive and waxe fervent with a desire of casting forth its owne seed, and receiving the mans 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 be necessary first to foment her secret parts with the decoction of hot herbes made with Muscadine, or boiled in any other good wine, and to put a little muske or civet into the neck or mouth of the wombe: and when shee shall perceive the efflux of her seed to approach, by reason of the tickling pleasure, shee must advertise her husband thereof, that at the very instant time or moment, hee may also yeeld forth his seed, that by the concourse or meeting of the seeds, conception may be made, and so at length a child formed and borne. And that it may have the better successe, the husband must not presently separate himselfe from his wives embraces, lest the aire strike into the open wombe,

How women may be moved to venery and conception.

The meeting of the seeds most necessary for generation.

and ſo corrupt the ſeeds before they are perfectly mixed together. When the man departs, let the woman lye ſtill in quiet, laying her legges or her thighes acroſſe, one upon another, and raiſing them up a little, leſt that by motion or downeward ſituation, the ſeed ſhould be ſhed or ſpilt: which is the cauſe why ſhe ought at that time not to talk, eſpecially chiding, nor to cough, nor ſneeſe, but give herſelfe to reſt and quietneſſe, if it be poſſible.

Chap. V.

By what ſignes it may bee knowne whether the woman have conceived or not.

IF the ſeed in the time of copulation, or preſently after be not ſpilt, if in the meeting of the ſeedes the whole body doe ſomewhat ſhake, that is to ſay, the wombe drawing it ſelfe together for the compreſſion & entertainment therof, if a little feeling of pain doth runne up and downe the lower belly and about the navell, if ſhee be ſleepy, if ſhe loath the embracings of a man, and if her face bee pale, it is a token that ſhe hath conceived.

Spots or ſpeckes in the faces of thoſe that are with childe.

In ſome, after conception ſpots or freckles ariſe in their face, their eyes are depreſſed and ſunke in, the white of their eyes waxeth pale, they waxe giddy in the head, by reaſon that the vapours are raiſed up from the menſtruall blood that is ſtopped, ſadneſſe & heavineſſe grieve their mindes, with loathing and waywardneſſe, by reaſon that the ſpirits are covered with the ſmoaky darkeneſſe of the vapoures: paines in the teeth and gummes, and ſwouning often times commeth, the appetite is depraved or overthrown, with aptneſſe to vomit, and longing, whereby it happeneth that they loath meats of good juice, and long for and deſire illaudable meates, and thoſe that are contrary to nature, as coales, dirt, aſhes, ſtinking ſalt-fiſh, ſowre, auſtere and tart fruits, pepper, vinegar, and ſuch like acride things, and other, altogether contrary to nature and uſe, by reaſon of the condition of the ſuppreſſed humour abounding & falling into the orifice of the ſtomack. This appetite ſo depraved or overthrown, endureth in ſome untill the time of childe-birth; in others it commeth in the third moneth after their conception, when haires do grow on the childe, and laſtly it leaveth them a little before the fourth moneth, becauſe that the child, being now greater and ſtronger, conſumes a great part of the excrementall and ſuperfluous humour.

Why many women being great with childe refuſe laudable meates, and deſire thoſe that are illaudable & contrary to nature.

The ſuppreſſed tearmes divided into three parts.

The ſuppreſſed or ſtopped tearms 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 fecundine or after-birth, wherein the infant lieth as in a ſoft bed. Thoſe women are great with childe whoſe urine is more ſharpe, fervent, and ſomewhat bloody, the bladder not only waxing warme by the compreſſion of the wombe, fervent by reaſon of the blood conteined in it, but alſo the thinner portion of the ſame blood being expreſſed, and ſweating out into the bladder. A ſwelling and hardneſſe of the dugs, and veines that are under the dugs in the breaſtes and about them, and milke comming out when they are preſſed, with a certaine ſtirring motion in the belly, are certaine infallible ſignes of greatneſſe with childe. Neither in this greatneſſe of childe bearing, the veines of the dugges onely, but of all the whole body, appeare full and ſwelled up, eſpecially the veines of the thighes and legges, ſo that by their manifold folding and knitting together, they do appeare varicous, whereof commeth ſluggiſhneſſe of the whole body, heavineſſe & impotency or difficulty 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 ſhe goeth to ſleepe, ſome meed or honyed water to drink, and if ſhe have a griping in her guts or belly, ſhe hath conceived, if not, ſhe hath not conceived.

Hip. 1. de morb. mul.

Aph. 41. ſect. 5.

Chap. VI.

That the wombe, ſo ſoone as it hath received the ſeede, is preſently contracted or drawne together.

After that the ſeeds of the male and female have both met, and are mixed together in the capacity of the wombe, then the orifice thereof doth draw it ſelfe cloſe together, leſt the ſeedes ſhould fall out. There the females ſeede goeth and turneth into nutriment and the encreaſe of the males ſeede, becauſe all things are nouriſhed and doe encreaſe by thoſe things that are moſt familiar and like unto them. But the ſimilitude and familiarity of ſeede with ſeede is farre greater than with bloud, ſo that when they are perfectly mixed and coagulated, and ſo waxe warme by the ſtraight and narrow incloſure of the wombe, a certaine thinne skinne doth grow about it, like unto that that will bee over unſcimmed milke. Why the female ſeede is nutriment for the male ſeed.

Moreover, this concretion or congealing of the ſeede, is like unto an egge layed before the time that it ſhould: that is to ſay, whoſe membrane or tunicle that compaſſeth it about, hath not as yet encreaſed or growne into a ſhelly hardneſſe about it; in folding-wiſe are ſeene many ſmall threads dividing themſelves, over-ſpread with a certaine clammy, whitiſh or red ſubſtance, as it were with blacke bloud. In the middeſt under it appeareth the navell, from whence that ſmall skinne is produced. But a man may underſtand many things that appertaine unto the conception of mankinde by the obſervation of twenty egges, ſetting them to bee hatched under an Henne, and taking one every day and breaking it, and diligently conſidering it; for in ſo doing, on the twentieth day you ſhall finde the Chicke perfectly formed with the navell. That little skin that ſo compaſſeth the infant in the wombe is called the ſecundine or *Chorion*, but commonly the after-birth. A compendious way to underſtand humane conception.

This little skinne is perfectly made within ſixe dayes, according to the judgment of *Hippocrates*, as profitable and neceſſary not onely to containe the ſeeds ſo mixed together, but alſo to ſucke nutriment through the orifices of the veſſels ending in the wombe. Thoſe orifices the Greekes doe call *Cotyledones*, and the Latines *Acetabula*, for they are as it were hollowed eminences, like unto thoſe, which may bee ſeene in the feete or ſnout of a Cuttle fiſh many times in a double order, both for the working and holding of their meate. Thoſe eminences called *Acetabula* doe not ſo greatly appeare in women as in many brute beaſts. Therefore by theſe the ſecundine cleaveth on every ſide unto the wombe, for the conſervation, nutrition, and encreaſe of the conceived ſeede. *Lib. de nat. puer.* What the Cotyledones are.

Chap. VII.

Of the generation of the navell.

After the woman hath conceived, to every one of the aforeſaid eminencies groweth preſently another veſſell, that is to ſay, a veine to the veine, and an artery to the artery: 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 veine and artery of the navell, to compaſſe the navell. Theſe new ſmall veſſels of the infant, with their orifices, doe anſwer directly one to one to the cotyledones or eminences of the womb, they are very ſwall and little, as it were the hairy 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 veſſell, until that by continuall connexion, all thoſe veſſels go and degenerate into two other great veſſels, called the umbi-

licall veſſels, or the veſſels of the navell, becauſe they do make the navell, and do enter into the childs body by the hole of the navell. Here *Galen* doth admire the ſingular providence of God and Nature, becauſe that in ſuch a multitude of veſſels, and in ſo long a paſſage or length that they go or are produced, the vein doth never confound it ſelfe nor ſtick to the artery, nor the artery to the veine, but every veſſell joyneth it ſelfe to the veſſell of its owne kinde. But the umbilicall veine or navell veine, entering into the body of the child, doth joyne it ſelf preſently to the hollow part of the liver, but the artery is divided into two, which joine themſelves to the two iliack arteries along the ſides of the bladder, & are preſently covered with the *peritonæum*, & by the benefit thereof are annexed unto the parts which it goes unto. Thoſe ſmall veines and arteries are as it were the rootes of the child, but the veine and artery of the navell are as it were the body of the tree, to bring down the nutriment to nouriſh the child. For firſt we live in the wombe the life of a plant, and then next the life of a ſenſitive creature; and as the firſt tunicle of the child is called *Chorion* or *Allantoides*, ſo the other is called *Amnios* or *Agnina*, which doth compaſſe the ſeed or child about on every ſide. Theſe membranes are moſt thin, yea for their thinneſſe like unto the ſpiders web, woven one upon another, and alſo connexed in many places by the extremities of certaine ſmall and hairy ſubſtances, which at length by the adjunction of their like do get ſtrength; wherby you may underſtand, what is the cauſe why by divers and violent motions of the mother in going and dancing or leaping, and alſo of the infant in the wombe, thoſe membranes are not almoſt broken. For they are ſo conjoyned by the knots of thoſe hairie ſubſtances, that betweene them nothing, neither the urine nor the ſweate can come, as you may plainely and evidently perceive in the diſſection of a womans body that is great with child, not depending on any other mans opinion, be it never ſo old or inveterate: yet the ſtrength of thoſe membranes is not ſo great but that they may bee ſoone broken in the birth by the kicking of the child.

The veine never joyneth it ſelfe with the artery.

Hippocrates calleth all the membranes that compaſſe the infant in the wombe, according to the judgement of *Galen* in his booke *de uſu partium*, by the name of the ſecundines.

Chap. VIII.

Of the umbilicall veſſels, or the veſſels belonging to the navell.

An old opinion confuted.

MAny of the ancient Writers have written that there are five veſſels found in the navell. But yet in many, nay all the bodies I ſought in for them, I could never finde but three, that is to ſay, one veine, which is very large, ſo that in the paſſage thereof it will receive the tagge of a poynt, and two arteries, but not ſo large, but much narrower, becauſe the childe wanteth or ſtandeth in need of much more bloud for his conformation and the nutriment or increaſe of his parts, than of vitall ſpirit.

To what uſe the knots of the childs navell in the wombe ſerveth.

Theſe veſſels making the body of the navell, which, as it is thought, is formed within nine or tenne dayes, by their doubling and folding, make knots like unto the knots of a Franciſcan Friers girdle, that ſtaying the running bloud in thoſe their knotty windings, they might more perfectly concoct the ſame: as may be ſeene in the ejaculatory ſpermatick veſſels, for which uſe alſo the length of the navell is halfe an ell, ſo that in many infants that are ſomewhat growne, is is found three or foure times doubled about their neck or thigh.

The childin the wombe taketh his nutriment by his navell, not by his mouth.

As long as the childe is in his mothers wombe, hee taketh his nutriment onely by the navell, and not by his mouth, neither doth hee enjoy the uſe of eyes, eares, noſtrils or fundament, neither needeth hee the functions of the heart. For ſpirituous bloud goeth unto it by the arteries of the navell, and into the iliack arteries, and from the iliack arteries unto all the other arteries of the whole body, for by the motion of theſe onely the infant doth breathe. Therefore it is not to bee ſuppoſed that aire is carryed or drawne in by the lungs unto the heart, in the body of the childe, but contrariwiſe from the heart to the lungs. For neither the heart doth performe the generation or working of bloud, or of the vitall ſpirits. For the iſſue or infant is con-

How the child breatheth.

tented

tented with them as they are made and wrought by his mother. Which, untill it hath obtained a full, perfect and whole description of his parts and members, cannot be called a child, but rather an embrion, or an imperfect substance.

Chap. IX.

Of the ebullition or swelling of the seed in the wombe, and of the concretion of the bubbles or bladders, or the three principall entralls.



N the sixe first dayes of conception the new vessels are thought to bee made and brought forth of the eminences or cotylidons of the mothers vessels, and dispersed into all the whole seede, as they were fibres or hairy strings. Those as they pierce the wombe, so do they equally and in like manner penetrate the tunicle *Chorion*. And it is carried this way, being a passage not only necessary for the nutriment and conformation of the parts, but also into the veines diversly woven and dispersed into the skin *Chorion*. For thereby it commeth to passe that the seed it selfe boileth, and as it were fermenteth or swelleth, not onely through occasion of the place, but also of the bloud and vitall spirits that flow unto it, and then it riseth into the bubbles or bladders, like unto the bubbles which are occasioned by the raine falling into a river or channell full of water. These three bubbles or bladders, are certain rude or new formes or concretions of the three principall entrals, that is to say, of the liver, heart and braine. All this former time it is called seed, and by no other name; but when those bubbles arise, it is called an embrion, or the rude forme of a body untill the perfect conformation of all the members: on the fourth day after that the veine of the navell is formed, it sucketh grosser bloud, that is, of a more fuller nutriment out of the Cotylidons. And this bloud, because it is more grosse, easily congeales & curdles in that place, where it ought to prepare the liver fully & absolutely made. For then it is of a notable great bignesse above all the other parts, & therfore it is called *parenchyma*, because it is but only a certain congealing or concretion of bloud brought together thither or in that place. From the gibbous part thereof springeth the greater part or trunke of the hollow veine, called commonly *vena cava*, which doth disperse his small branches, which are like unto haires, 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 body.

The three bladders.

When the seede is called an embrion.

Why the liver is called *Parenchyma*.

In the meane season the Arteries of the navell suck spirituous bloud out of the eminences or Cotylidons of the mothers arteries, whereof, that is to say, of the more fervent and spirituous bloud, the heart is formed in the second bladder or bubble, being endued with a more fleshy, sound and thicke substance, as it behooveth that vessell to bee, which is the fountaine from whence the heate floweth, and hath a continuall motion.

In this the vertue formative hath made two hollow places, one on the right side, another on the left. In the right, the root of the hollow veine is infixed or ingrafted, carrying thither necessary nutriment for the heart; in the left is formed the stamp or roote of an artery, which presently doth divide it selfe 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 body life and vitall heat.

CHAP. X.

Of the third bubble or bladder, wherein the head and the braine is formed.

THe farre greater portion of the ſeede goeth into this third bubble, that is to ſay, yeelding matter for the conformation of the braine and all the head. For a greater quantity of ſeede ought to goe unto the conformation of the head and braine, becauſe theſe parts are not ſanguine or bloudy as the heart and liver, but in a manner without bloud; bonie, marrow, cartilaginous, nervous and membranous, whoſe parts, as the veines, arteries, nerves, ligaments, panicles, and skinne, are called ſpermaticke parts, becauſe they obtaine their firſt conformation almoſt of ſeede onely: although that afterwards they are nouriſhed with bloud, as the other fleſhy and muſculous parts are. But yet the bloud when it is come unto thoſe parts, degenerateth and turneth into a thing ſomewhat ſpermatick, by vertue of the aſſimulative faculty of thoſe parts. All the other parts of the head, forme and faſhion themſelves unto the forme of the braine when it is formed, and thoſe parts which are ſituated and placed about it for defence eſpecially, are hardened into bones.

Why the greatest portion of ſeed goeth into generation of the head and braine.

The head as the ſeate of the ſenſes, and manſion of the minde and reaſon, is ſituated in the higheſt place, that from thence, as it were from a lofty tower or turret, it might rule and governe all the other members and their functions and actions, that are under it, for there the ſoule or life which is the rectreſſe or governeſſe is ſituated; and from thence it floweth and is diſperſed into all the whole body. Nature hath framed theſe three principall entrals as proppes and ſuſtentations for the weight of all the reſt of the body: for which matter alſo ſhee hath framed the bones.

Why the head is placed on the top of the body.

The firſt bones that appeare to bee formed, or are ſuppoſed to be conformed, are the bones called *oſſa Ilium*, connexed or united by ſpondils that are betweene them: then all the other members are framed & proportioned by their concavities & hollownеſſes, which generally are ſeaven, that is to ſay, two of the eares, two of the noſe, one of the mouth, and in the parts beneath the head, one of the fundament, and another of the yard or conduit of the bladder; and furthermore in women, one of the necke of the wombe, without the which they can never bee made mothers or beare children.

When all theſe are finiſhed, nature, that ſhee might poliſh her excellent worke in all ſorts, hath covered all the body and every member thereof with skinne. Into this excellent work or *Microcoſmos* ſo perfected, God, the author of nature and all things, infuſeth or ingrafteth a ſoule or life: which St. *Auguſtine* proveth by this ſentence of *Moſes*: If any man ſmite a woman with child, ſo that thereby ſhe be delivered before her naturall time, and the child bee dead, being firſt formed in the wombe, let him die the death: but if the child hath not as yet obtained the full proportion and conformation of his body and members, let him recompence it with mony. Therefore it is not to bee thought that the life is derived, propagated or taken from *Adam* or our parents, as it were an hæreditary thing diſtributed unto all mankinde by their parents; but we muſt believe it to be immediately created of God, even at the very inſtant time when the child is abſolutely perfected in the lineaments of his body, and ſo given unto it by him.

Exod. 20. qu. 52.

The mole in the wombe liveth not as the child.

So therefore the rude lumpes of fleſh called *mole* that engender in womens wombes, and monſters of the like breeding and confuſed bigneſſe, although by reaſon of a certaine quaking and ſhivering motion, they ſeeme to have life, yet they cannot bee ſuppoſed to bee endued with a life or a reaſonable ſoule: but they have their motion, nutriment and increaſe wholly of the naturall and infixed faculty of the wombe, and of the generative or procreative ſpirit that is engraffed naturally in the ſeed.

But even as the infant in the wombe obtaineth not perfect conformation before the thirtieth day, ſo likewiſe it doth not move before the ſixtieth day: at which time

time it is moſt commonly not perceived by women, by reaſon of the ſmallneſſe of the motion. But now let us ſpeake briefly of the life or ſoule, wherein conſiſteth the principall originall of every function in the body, and likewiſe of generation.

CHAP. XI.

Of the life or ſoule.

THE ſoule entreth into the body, ſo ſoone as it hath obtained a perfect and abſolute diſtinction and conformation of the members in the wombe: which in male children, by reaſon of the more ſtrong and forming heate which is engraffed in them, is about the fortieth day, and in females about the forty fifth day, in ſome ſooner, and in ſome later, by reaſon of the efficacy of the matter working, and plyantneſſe or obedience of the matter whereon it worketh. Neither doth the life or ſoule being thus inſpired into the body preſently execute or performe all his functions, becauſe the inſtuments that are placed about it cannot obtaine a firme and hard conſiſtence neceſſary for the lively, but eſpecially for the more divine miniſteries of the life or ſoule, but in a long proceſſe of age or time.

The life goeth not into the maſſe of ſeed that doth engender the child, before the body of the child and each part thereof hath his perfect proportion and forme.

Why the life or ſoule doth not preſently execute all his offices.

Thoſe inſtruments of the ſoule are vitiated either in the firſt conformation, as when the forme or faſhion of the head is ſharpe upwards or piramydall, as was the head of *Therſites*, that lived in the time of the Trojan warre, and of *Tribonlet* and *Tonin*, that lived in later yeares; or alſo by ſome caſualty, as by the violent handling of the mydwife, who by compreſſion, by reaſon that the ſcull is then tender and ſoft hath cauſed the capacity of the ventricles that be under the braine to be too narrow for them: or by a fall, ſtroake, diſorder in diet, as by drunkenneſſe, or a feaver, which inferreth a lithargie, exceſſive ſleepineſſe, or a phrenſie.

Preſently after the ſoule is entred the body, God endueth it with divers and ſundry gifts: hereof it commeth that ſome are endued with wiſedome 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 bounty of God to beſtow upon them, againſt which no man ought to contend or ſpeake. For it is not meet that the thing formed ſhould ſay unto him that formed it, why haſt thou made mee on this faſhion? hath not the Potter power to make of the ſame lumpe of clay one veſſell to honour and another to diſhonour? it is not my purpoſe, neither belongeth it unto mee or any other humane creature to ſearch out the reaſon of thoſe things, but onely to admire them with all humility: But yet I dare affirme this one thing, that a noble and excellent ſoule neglecteth elementary and tranſitory things, and is raviſhed and moved with the contemplation of celeſtiall, which it cannot freely enjoy before it bee ſeparated from this earthly encloſure or priſon of the body, and be reſtored unto its originall. *1 Cor. 12.*

Therefore the ſoule is the inward *Entelechia* or perfection, or the primative cauſe of all motions and functions both naturall and animall, and the true forme of man. The Ancients have endeavoured to expreſſe the obſcure ſenſe thereof by many deſcriptions. For they have called it a celeſtiall ſpirit, and a ſuperiour, incorporeall, inviſible, an immortall eſſence, which is to bee comprehended of its ſelfe alone, that is, of the minde or underſtanding. Others have not doubted but that wee have our ſoules inſpired by the univerſall divine minde, which as they are alive, ſo they doe beſtow life on the bodies unto whom they are annexed or united. And although this life bee diſperſed into all the whole body, and into every portion of the ſame, yet is it voyd of all corporall weight or mixtion, and it is wholly and alone in every ſeverall part, being ſimple and indiviſible, without all compoſition or mixture, yet endued with many vertues and faculties, which it doth utter in divers

What the ſoule or life is.

The life is in all the whole body, and in every portion thereof.

The life or ſoule is ſimple and indiviſible.

parts

parts of the body: For it feeleth, imagineth, judgeth, remembreth, understandeth, and ruleth all our desires, pleasures and animall motions; it seeth, heareth, smelleth, tasteth, toucheth: and it hath divers names of these so many and so great functions which it performeth in divers parts of the body. It is called the soule or life, because it maketh the body live, which of it selfe is dead. It is called the spirit or breath, because it inspireth our bodies. It is called reason, because it discerneth truth from falshood, as it were by a certaine divine rule. It is termed the minde, because it is mindfull of things past, in recalling and remembring them: and it is called the vigour or courage, because it giveth vigour and courage to the sluggish weight or masse of the body. And lastly it is called the sense & understanding, because it comprehendeth things that are sensible and intelligible. Because it is incorporeall it cannot occupie a place by corporeall extension, although notwithstanding it filleth the whole body. It is simple, because it is but one in essence, not encreased nor diminished: for it is no lesse in a Dwarfe than in a Gyant, and it is like perfect and great in an infant as in a man, according to its owne nature.

Divers names, and the reason of divers names that are given to humane formes.

But there are three kindes of bodies informed by a soule 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 vegitative, beasts by a sensitive, and men by an intellective soule. And as the sensitive soule of brute beasts is endued with all the vertues of the vegetative, so the humane intellective comprehendeth the vertues of all the inferior, not separated by any division, but by being indivisibly united with reason and understanding, into one humane forme and soule whereon they depend. But because we have sayd a little before, that divers functions of the life are resident, and appeare in divers parts of the body, here in this place, omitting all others, wee will prosecute those only which are accounted the principall.

Three kinds of living bodies.

The superiour soule containeth in it selfe all the powers of the inferiour.

The principall functions of a humane soule, according to the opinion of many, are foure in number, proceeding from so many faculties, and consequently from one soule; they are these: The common Sense, Imagination, Reasoning, and Memory. And they thinke that the common or interior sense doth receive the formes and images of sensible things, being carryed by the spirit through the passage of the nerves, as an instrument of the externall senses, as it were a messenger to goe between them; and it serves not onely to receive them, but also to know, perceive and discerne them. For the eye, wherein the externall sense of seeing consisteth, doth not know white or blacke. Therefore it cannot discerne the differences of colours, as neither the tongue tastes, nor the nose savours, nor the eares sounds, nor lastly, the hands their touching quality: yea, the eye doth not of it selfe perceive that it seeth, nor the nose that it smelleth, nor the eares that they heare, nor the tongue that it tasteth, nor the hands that they touch. For all these things are the offices and functions of the common sense; for this sense knoweth that the eye hath seene some thing, either white, blacke, red, a man, horse, sheepe, or some such like materiall thing, yea, even when the sight is gone and past; and so likewise the nose to have smelled this or that savour, the eare 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 diverse. For all the externall senses, and all the functions thereof do end and are referred to the common sense, as it were the lines of a circle from the circumference into the centre, as it is expressed in this figure.

What the common sense is.

The function of the common sense is double.



For what cause the internall sense is called the common sense.

For which cause it is called the common or principll sense, for that therein the primitive power of feeling or perceiving is situated, for it useth the ministery or service of the externall senses to know many and divers things, whose differences it doth

doth diſcerne and judge, but ſimple things, that are of themſelves, and without any compoſition and connexion, which may conſtitute any thing true or falſe, or any argumentation, belongeth onely to the minde, underſtanding or reaſon. For this was the counſell of nature, that the externall ſenſes ſhould receive the formes of things ſuperficially, lightly and gently onely, like as a glaſſe, not to any other end but that they ſhould preſently ſend them unto the common ſenſe, as it were unto their center and prince, which he (that is to ſay the common ſenſe) at length delivereth to be collected unto the underſtanding or reaſoning faculty of the ſoule, which *Avicen* and *Averrois* have ſuppoſed to be ſituated in the former part of the braine.

The common ſenſe underſtandeth or knoweth thoſe things that are ſimple onely.

Next unto the common ſenſe followeth the phantaſie or imagination, ſo called, becauſe of it ariſe the formes and Ideas that are conceived in the minde, called of the Geekes *Phantaſmata*. This doth never reſt but in thoſe that ſleepe: neither alwaies in them, for oft-times in them it cauſeth dreames, and cauſeth them to ſuppoſe they ſee and perceive 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 faculty of the minde is ſo great in us, that often it bringeth the whole body in ſubjection unto it.

What Imagination is.

For it is recorded in hiſtory, that *Alexander* the Great ſitting at Table, and hearing *Timotheus* the Muſician ſing a martiall Sonnet unto his Citherne, that hee preſently leaped from the table, and called for armes; but when againe the Muſician mollifyed his tune, hee returned to the Table and ſate downe as before. The power of Imagination cauſed by muſicall harmony, was ſo great, that it ſubjected to it the courage of the Worlds conquerour, by whoſe various motion, it would now as it were cauſe him to runne headlong to armes, and then pacifie and quiet him, and ſo cauſe him to returne to his chaire and banquetting againe. And there was one whoſoever it was, who ſome few yeares agone, ſeeing the Turke dance on a rope on high, with both his feet faſtened in a baſon, turned his eyes from ſo dangerous a ſight or ſpectacle, although hee came to the place of purpoſe to ſee it, and was ſtricken with ſuch feare, that his body ſhooke and heart quaked, for feare leſt that by ſudden falling downe headlong hee ſhould breake his necke. Many looking downe from an high and lofty place, are ſo ſtricken with feare, that ſuddenly they fall downe headlong, being ſo overcome and bound with the imagination of the danger, that their owne ſtrength is not able to ſuſtaine them. Therefore it manifeſtly appeareth that God hath dealt moſt graciouſly and lovingly with us, who unto this power of imagination, hath joyned another, that is, the faculty or power of reaſon and underſtanding; which diſcerning falſe dangers and perils from true, doth ſuſtain and hold up a man that he may not be overthrowne by them.

What Reaſon is.

After this appeareth and approacheth to performe his function, the faculty of Reaſon, being the Prince of all the principall faculties of the ſoule; which bringeth together, compoſeth, joyneth and reduceth all the ſimple and divided formes or images of things into one heape, that by dividing, collecting and reaſoning it might diſcerne and try truth from falſhood.

The function of Reaſon.

This faculty of Underſtanding or Reaſon is ſubject to no faculty or inſtrument of the body, but is free, and penetrateth into every ſecret, intricate and hidden thing, with an incredible celerity: by which a man ſeeth what will follow, perceiveth the originalls and cauſes of things, is not ignorant of the proceedings of things, he compareth things that are paſt with thoſe that are preſent and to come, decreeing what to follow, and what to avoyde. This bridleth and withholdeth the furious motions of the minde, bridleth the overhaſty motions of the tongue, and admoniſheth the ſpeaker that before the words paſſe out of his mouth, hee ought with diligence and diſcretion to ponder and conſider the thing whereof hee is about to ſpeake.

What Memory is.

After Reaſon and Judgement followeth Memory, which keeping and conſerving all formes and images that it receiveth of the ſenſes, and which Reaſon ſhall appoint, and as a faithfull keeper and conſerver, receiveth all things, and imprinteth and ſealeth them as well by their owne vertue and power, as by the impulſion and adherence of thoſe things in the body of the braine, without any impreſſion of the matter;

matter; that when occaſion ſerveth, we may bring them forth therehence as out of a treaſurie or ſtore-houſe. For otherwiſe, to what purpoſe were it to reade, heare and note ſo many things, unleſſe wee were able to keepe and retaine them in minde by the care and cuſtody of the Memory or Braine? Therefore aſſuredly God hath given us this one onely remedy and preſervative againſt the oblivion and ignorance of things, which although of it ſelfe and of its owne nature it bee of greater efficacie, yet by daily and often meditation it is trimmed and made more exquiſite and perfect. And hence it was that the Ancients termed wiſedome the daughter of memory and experience. Many have ſuppoſed that the manſion or ſeate of the Memory, is in the hinder part, or in the ventricle of the *Cerebellum*; by reaſon that it is apt to receive the formes of things, becauſe of the engrafted dryneſſe and hardneſſe thereof.

Wiſdome the daughter of memory and experience.

Chap. XII.

Of the naturall excrements in generall, and eſpecially of thoſe that the childe or infant being in the wombe excludeth.

What an excrement is.

Before I declare what excrements the infant excludeth in the wombe and by what paſſages, I thinke it good toſpeak of the excrements which all men doe naturally voyde. All that is called an excrement which nature is accuſtomed to ſeparate and caſt out from the laudible and nouriſhing juice. There are many kinds of thoſe excrements.

The excrement of the firſt concoction.

The firſt is of the firſt concoction, which is performed in the ſtomacke, which being driven downe into the inteſtines or guts, is voyded by the fundament.

The excrement of the ſecond concoction is triple.

The ſecond commeth from the liver, and it uſually is three-fold, or of three kinds; one cholericke, whereof a great portion is ſent into the bladder of the gall, that by ſweating out there hence, it might ſtirre up the expulſive faculty of the guts to expell and exclude the excrements. The other is like unto whay, which goeth with the bloud into the veines, and is as it were a vehicle thereto to bring it unto all the parts of the body, and into every Capillar veine for to nouriſh the whole body; and after it hath performed that function, it is partly expelled by ſweate, and partly ſent into the bladder, and ſo excluded with the urine. The third is the melancholicke 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 downewards by the hæmorrhoidall veines, and partly ſent to the orifice of the ſtomacke, to inſtimulate and provoke the appetite. The laſt commeth of the laſt concoction, which is abſolved in the habit of the body, and breatheth out, partly by inſenſible

The excrement of the third concoction is triple.

tranſpiration, is partly conſumed by ſweating, and partly floweth out by the evident and manifeſt paſſages that are proper to every part: as it happeneth in the braine before all other parts; for it doth unloade it ſelfe of this kinde of excrement by the paſſages of the noſe, mouth, eares, eyes, pallat bone and ſutures of the ſcull.

Therefore if any of thoſe excrements bee ſtayed altogether, or any longer than it is meete they ſhould, the default is to bee amended by diet and medicine. Furthermore, there are other ſorts of excrements not naturall, of whom wee have entreated at large in our booke of the peſtilence.

The uſe of the navell ſtring.

When the infant is in the mothers wombe, untill hee is fully and abſolutely formed in all the liniments of his body, hee ſends forth his urine by the paſſage of the navell or *urachus*. But a little before the time of childe-birth, the *urachus* is cloſed, and then the man childe voydeth his urine by the conduit of the yard, and the woman childe by the necke of the wombe. This urine is gathered together and contained in the coate *Chorion* or *Allantoides*, together with the other excrements, that is to ſay, ſweat, & ſuch whayiſh ſuperfluities of the menſtruall matter, for the more eaſie bearing up of the floting or ſwimming childe. But in the time of child-birth, when the infant by kicking breaketh the membranes, thoſe humous runne out, which when the mydwifes perceive, they take it as a certaine ſigne that the childe is at hand.

The ſignes of ſpeedy and eaſie deliverance.

For

For if the infant come forth together with those waters, the birth is like to be more easie, and with the better successe; for the necke of the wombe and all the genitalls are so by their moisture relaxed and made slippery, that by the endeavour and stirring of the infant the birth will be the more easie, and with the better successe: contrariwise, if the infant bee not excluded before all these humours bee wholly flowed out and gone, but remaineth as it were in a dry place, presently through drinesse the necke of the wombe and all the genitalls will be contracted and drawne together, so that the birth of the childe will bee very difficult and hard, unlesse the necke of the wombe, to amend that default, be anointed with oile, or some other relaxing liquor. Moreover, when the childe is in the wombe, he voideth no excrements by the fundament, unlesse it be 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 stomacke is idle then, and doth not execute the office of turning the meats into *Chylus*, nor of any other concoction; wherefore nothing can goe downe from it into the guts. Neither have I seldome seene infants borne without any hole in their fundament, so that I have beene constrained with a knife to cut in sunder the membrane or tunicle that grew over and stopped it. And how can such excrements be engendered, when the childe being in the wombe, is nourished with the more laudable portion of the menstruall blood? therefore the issue or child is wont to yeeld or avoyd two kindes or sorts of excrements, so long as he is in the womb, that is to say, sweat and urine, in both which he swimmes; but they are separated by themselves, by a certaine tunicle called *Allantoides*, as it may be seene in kids, dogges, sheepe, and other brute beasts; for as much as in mankinde the tunicle *Chorion* and *Allantoides* or *Farciminalis* be all one membrane. If the woman be great of a man childe, she is more merry, strong, and better coloured, all the time of her child bearing, but if of a woman childe, she is ill coloured because that women are not so hot as men.

Children borne without a passage in their fundament.

Aph. 42. sect. 5.

The males begin to stirre within three moneths and an halfe, but females after: if a woman conceive a male child, she hath all her right parts stronger to every work: wherefore they do begin to set forwards their right foot first in going, & when they arise they leane on the right arme, the right dug will sooner swell and waxe hard; the male children stirre more in the right side than in the left, and the female children rather in the left than in the right side.

Aph. 47. sect. 5.

Chap. XIII.

With what travell the Childe is brought into the world, and of the cause of this labour and travell.

When the naturall prefixed and prescribed time of child-birth is come, the childe being then growne greater, requires a greater quantity of food: which when he cannot receive in sufficient measure by his navell, with great labour and striving hee endeavoureth to get forth: therefore then hee is moved with a stronger violence, and doth breake the membranes wherein he is contained. Then the wombe, because it is not able to endure such violent motions, nor to sustaine or hold up the childe any longer, by reason that the conceptacles of the membranes are broken asunder, is relaxed. And then the childe pursuing the aire which hee feeleth to enter in at the mouth of the wombe, which then is very wide and gaping, is carried with his head downewards, and so commeth into the world, with great pain both unto it selfe, and also unto his mother, by reason of the tenderness of his body, & also by reason of the extension of the nervous necke of his mothers wombe, and separation of the bone called *Os Ilium* from the bone called *Os sacrum*. For unlesse those bones were drawne in sunder, how could not onely twinnes that cleave fast together, but also one childe alone, come forth at so narrow a passage as the necke of the wombe is? Not onely reason, but also experience confirmeth it, for I have opened the bodies of women presently after they have

Why the infant is borne sometimes with his head forwards.

In the time of childe-birth the bones of *Ilium* and *os sacrum* are drawne & extended one from another.

have died of travell in childe-birth, in whom I have found the bones of *Ilium* to bee drawne the breadth of ones finger from *Os ſacrum*: and moreover, in many unto whom I have been called being in great extremity of difficult and hard travell, I have not onely heard, but alſo felt the bones to crackle and make a noiſe, when I laid my hand upon the coccyx or rumpe, by the violence of the diſtention. Alſo honeſt matrons have declared unto me that they themſelves, a few daies before the birth, have felt and heard the noiſe of thoſe bones ſeparating themſelves one from another with great paine. Alſo a long time after the birth, many doe feele great paine and ache about the region of the coccix and *Os ſacrum*, ſo that when nature is not able to repaire the diſſolved continuity of the bones of *Ilium*, they are conſtrained to halt all the dayes of their life after. But the bones of the ſhare called *Oſſa pubis*, I have never ſeene to be ſeparated, as many do alſo affirme. It is reported that in *Italy* they break the coccyx or rumpe in all maidens, that when they come to bee married they may beare children with the leſſer travaile in childe-birth; but this is a forged tale, for that bone being broken, is naturally and of its owne accord repaired, and joyned together again with a *Callus*, whereby the birth of the childe will be more difficult and hard.

An Italian fable.

Chap. XIV.

Of the ſituation of the infant in the wombe.

The ſituation of the infant in the wombe is divers.

REason cannot ſhew the certain ſituation of the infant in the wombe, for I have found it altogether uncertaine, variable and divers both in living and dead women: in the dead by opening their bodies preſently after they were dead, and in the living by helping them by the induſtry of my hand, when they have beene in danger of periſhing by travell of child-birth: for by putting my hand into the womb, I have felt the infant comming forth, ſometimes with his feet forwards, ſometimes with his hands, and ſometimes with his hands and feet turned backwards, and ſometimes forwards, as the figure following plainely deſcribeth.

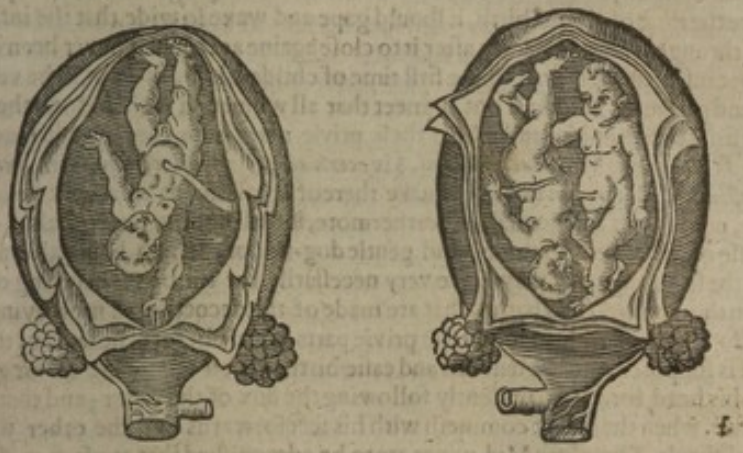


I have often found them comming forth with their knees forwards, and ſometimes with one of the feet, and ſometimes with their belly forwards, their hands and feet being lifted upwards, as the former figure ſheweth at large.

Sometimes

Sometimes I have found the infant comming with his feet downwards striding awide, and sometimes headlong, stretching one of his armes downward out at length, and that was an Hermaphrodite, as the figure following plainly declareth.

One time I observed in the birth of twinnes, 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 travaile of childe I have sometimes found children no bigger than if they had beene but foure moneths in the wombe, situated in a round compasse like a hoope, with their head bowed downe to the knees, with both their hands under the knees, and their heeles close to their buttockes. And moreover, I protest before God that I found a childe being yet alive in the body of his mother (whom I opened so soone as shee was dead) lying all along stretched out, with his face upwards, and the palmes of his hands joyned together, as if he were at prayer.

CHAP. XV.

Which is the legitimate and naturall, and which the illegitimate or unnaturall time of childe birth.

TO all living creatures, except man, the time of conception and bringing forth their young is certaine 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 moneth, sometimes in the tenth moneth, yea sometimes in the beginning of the eleventh moneth. *Massurius* reports that *Lucius Papyrius* the Pretor, the second heire commencing a suit, gave the possession of the goods away from him, seing the mother of the childe affirmed that she went thirteen moneths therewith, being there is no certaine definite time of child-birth. The child that is borne in the sixt moneth cannot be long lived, because that at that time all his body or members are not perfectly finished or absolutely formed. In the seventh moneth it is proved by reason and experience that the infant may be long lived. But in the eight moneth it is seldome or never long lived: the reason thereof is, as the Astronomers suppose, because that at that time Saturne ruleth, whose coldnesse and drynesse is contrary to the originall of life: but yet the phisicall reason is more true; for the physitians say that the childe in the wombe doth often times in the seaventh moneth strive to bee set at liberty from the inclosure of the wombe, and therefore it contendeth and laboureth greatlie, and so with labouring

Mankinde hath no certain time of bringing forth young.

Why the child is scarce alive in the eight moneth.

ring and striving it becommeth weak, that all the time of the eight moneth it cannot recover his strength again, whereby it may renew his accustomed use of striving, and that some by such labouring and striving, hurt themselves, and so dye. Yet some strong and lusty women are thought to bring forth their children, being lively and strong, on the eight moneth, as *Aristotle* testifieth of the *Aegyptians*, the Poets of the inhabitants of the Isle of *Naxus*, and many of the Spaniards. Furthermore, I cannot sufficiently marvaile, that the wombe, which all the time of childe-bearing is so closed together, that one can scarce put a probe into it, unlesse it be happely by reason of superfœtation, or when it is open for a short time to purge it selfe, that presently before the time of childe-birth, it should gape and waxe so wide, that the infant may passe through it, and presently after it to close againe as if it had never been opened. But because that the travell of the first time of childe-birth, is wont to be very difficult and grievous, I thinke it not unmeet that all women, a little before the time of their first travell, anoint and relaxe their privie parts with the unguent here described. R. *sper. ceti*, ℥ ii. *ol. amygd. dul.* ℥ iv. *cerae alb. & medul. cervin.* ℥ iii. *axung. anſ. & gallin. an.* ℥ i. *tereb. venet.* ℥ ii. make thereof an ointment to anoint the thighes, share, privie parts and genitalls. Furthermore, it shall not bee unprofitable, to make a trusse or girdle of most thinne and gentle dog-skinne, which being also anointed with the same unguent, may serve very necessarily for the better carrying of the infant in the wombe. Also bathes that are made of the decoction of mollifying herbs, are also very profitable to relaxe the privie parts a little before the time of the birth.

Lib. 4. de hist. anim. cap. 7.

The naturall & easie child birth

That is supposed to bee a naturall and easie birth, when the infant commeth forth with his head forwards, presently following the flux of the water; and that is more difficult, when the infant commeth with his feet forwards: all the other wayes are most difficult. Therefore Mid-wives are to be admonished that as often as they shall perceive the infant to be comming forth none of those waies, but either with his belly or his backe forwards, as it were double, or else with his hands and feet together, or with his head forwards, and one of his hands stretched out, that they should turne it, and draw it out by the feet; for the doing whereof, if they be not sufficient, let them crave the assistance and helpe of some expert Chirurgian.

Chap. XVI.

Signes of the birth at hand.

THere will bee great paine under the navell, and at the groines, and spreading therehence towards the *Vertebrae* of the loines, and then especially when they are drawne backe from the *Os sacrum*, the bones *Ilia* and the *Coccix* are thrust outward, the genitalls swell with paine, and a certaine feaver-like shaking invades the body, the face waxeth red by reason of the endeavour of nature, armed unto the expulsion of the infant. And when these signes appeare let all things bee prepared ready to the childe-birth. Therefore first of all let the woman that is in travell be placed in her bed conveniently, neither with her face upwards, nor sitting, but with her backe upwards and somewhat high, that she may breath at more liberty, and have the more power or strength to labour. Therefore she ought to have her legs wide one from another, and crooked, or her heeles somewhat bowed up towards her buttocks, so that she may lean on a staffe that must be placed overthwart the bed. There are some that do travell in a stoole or chair made for the purpose: others standing upright on their feet, and leaning on the poast or pillet of the bed. But you must take diligent heed that you doe not exhort or perswade the woman in travell to strive or labour to expell the birth before the forenamed signes thereof doe manifestly shew that it is at hand. For by such labour or pains she might be wearied or so weakened, that when shee should strive or labour, she shall have no power or strength so to doe. If all these things doe fall out well in the childe-birth, the businesse is to be committed to nature and to the Mid-wife. And the woman with child must onely bee admonished that when shee feeleth very strong paine, that shee presently

How the woman that travelleth in child-birth must bee placed in her bed.

preſently therewith ſtrive with moſt ſtrong expreſſion, ſhutting her mouth and noſe if ſhee pleaſe, and at the ſame time let the mydwife with her hands force the infant from above downewards. But if the birth bee more difficult and painefull, by reaſon that the waters wherein the infant lay are flowed out long before, and the womb be dry, this ointment following is to be prepared. ℞. *butyri recentis ſine ſale in aqua artemeſiæ loti* ℥ii. *mucaginis ficuum, ſemin. lini & althæa cum aqua ſabinæ extractæ, an.* ℥ß. *olei liliorum* ℥i. Make thereof an ointment, wherewith let the mydwife often annoynt the ſecret parts. Alſo this powder following may bee prepared. ℞. *Cinamom. cort. caſſiæ fiſtul. dictamni an.* ℥i ß *ſacch. albi ad pondus omnium*: make thereof a moſt ſubtle and fine powder. Let the woman that is in extremity by reaſon of difficult and painefull travell in child-birth, take halfe an ounce thereof at a time, with the decoction of linſeede, or in white wine, for it will cauſe more ſpeedy and eaſie deliverance of the childe.

An unction to ſupply the defect of the waters that are flowed out too long before the birth.

A powder to cauſe ſpeedy deliverance in child-birth.

Moreover, let the mydwife anoynt her hands with this ointment following as often as ſhee putteth them into the necke of the wombe, and therewith alſo anoint the parts about it. ℞. *olei ex ſeminibus lini* ℥i.ß. *olei de caſtoreo* ℥ß. *gallia moſchata* ℥iii. *ladani* ℥i. make thereof a liniment. Moreover, you may provoke ſneeſing, by putting a little pepper or white hellebore in powder into the noſtrils. Linſeed beaten, and given in a potion, with the water of Mugwort and Savine, is ſuppoſed to cauſe ſpeedy deliverance. Alſo the medicine following is commended for the ſame purpoſe. ℞. *corticis caſſiæ fiſtul. conquaſſatæ* ℥ ii. *cicer. rub.* m.ß. *bulliant cum vino albo & aqua ſufficienti, ſub finem addendo ſabinæ,* ℥ii. *in colatura pro doſi adde cinamomi* ℥ß. *croci gr.* vi. make thereof a potion, which being taken, let ſneeſing bee provoked, as it is above-ſaid, and let her ſhut or cloſe her mouth and noſtrils.

Aph. 35. & 45. *ſect.* 5.

A potion cauſing ſpeedy deliverance.

Many times it happeneth that the infant commeth into the world out of the wombe, having his head covered or wrapped about with portion of the ſecundine or tuniele wherein it is encloſed, eſpecially when by the much, ſtrong, and happy ſtriving of the mother, he commeth forth together with the water wherein it lyeth in the wombe, and then the mydwives propheſie or foretell that the childe ſhall be happy, becauſe hee is borne as it were with a hood on his head. But I ſuppoſe that it doth betoken health of body both to the infant and alſo to his mother; for it is a token of eaſie deliverance. For when the birth is difficult and painfull, the child never bringeth that membrane out with him, but it remaineth behinde in the paſſage of the genitals or ſecret parts, becauſe they are narrow. For even ſo the Snake or Adder when ſhee would caſt her skinne thereby to renew her age, creepeth through ſome narrow or ſtraight paſſage. Preſently after the birth, the woman ſo delivered muſt taketwo or three ſpooneſuls of the oyle of ſweet almonds extracted without fire, and tempered with ſugar. Some will rather uſe the yolks of egges with ſugar, ſome the wine called Ipocras, others culliſes or gelly: but alwaies divers things are to bee uſed, according as the patient or the woman in childbed ſhall be grieved, and as the Phyſician ſhall give counſell, both to ceaſe and aſſwage the furious torments and paine of the throwes, to recover her ſtrength and nouriſh her.

What a woman in travell muſt take preſently after her deliverance.

Throwes come preſently after the birth of the child, becauſe that then the veines (nature being wholly converted to expulſion) caſt out the reliques of the menſtruall matter that hath beene ſuppreſſed for the ſpace of nine moneths, into the wombe with great violence, which becauſe they are groſſe, ſlimie and dreggiſh, cannot come forth without great paine both to the veines from whence they come, and alſo unto the wombe whereinto they goe: alſo then by the converſion of that portion thereof that remaineth into winde, and by the undiſcreete admiſſion of the aire in the time of the child-birth, the wombe and all the ſecret parts will ſwell, unleſſe it be prevented with ſome digeſting, repelling or mollifying oile, or by artificiall rowling of the parts about the belly.

The cauſe of the after-throwes.

Chap. XVII.

What is to bee done presently after the child is borne.

Why the secundine or after-birth must bee taken away presently after the birth of the childe.

PResently after the child is borne, the mydwife must draw away the secundine or after birth, as gently as shee can: but if she cannot, let her put her hands into the wombe, and so draw it out, separating it from the other parts; for otherwise if it should continue longer, it would bee more difficult to bee gotten out, because that presently after the birth, the orifice of the wombe is drawn together and closed, and then all the secundine must be taken from the child. Therefore the navell string must bee tyed with a double thread an inch from the belly. Let not the knot be too hard, lest that part of the navell string which is without the knot should fall away sooner than it ought, neither too slacke or loose, lest that an exceeding and mortall fluxe of bloud should follow after it is cut off, and lest that through it (that is to say, the navell string) the cold aire should enter into the childs body. When the knot is so made, the navell-string must be cut in sunder the breadth of two fingers beneath it with a sharpe knife. Upon the section you must apply a double linnen cloth dipped in oyle of Roses, or of sweet almonds, to mitigate the paine; for so within a few dayes after, that which is beneath the knot will fall away, being destitute of life and nourishment, by reason that the veine and artery are tyed so close, that no life nor nourishment can come unto it: commonly all mydwives doe let it lye unto the bare belly of the infant, whereof commeth grievous paine and griping, by reason of the coldnesse thereof, which dyeth by little and little, as destitute of vitall heat. But it were farre better to roule it in soft cotton or lint, untill it be mortified, and so fall away.

The binding of the childs navel-string after the birth.

Those mydwives doe unadvisedly, who so soone as the infant is borne, doe presently tye the navell string and cut it off, not looking first for the voyding of the secundine. When all these things are done, the infant must bee wiped, cleansed and rubbed from all filth and excrement with oyle of Roses or Myrtles. For thereby the pores of the skinne will bee better shut, and the habite of the body the more strengthened.

There bee some that wash infants at that time in warme water and red wine, and afterwards annoynt them with the forenamed oyles. Others wash them not with wine alone, but boyle therein red Roses and the leaves of Myrtles, adding thereto a little salt; and then using this lotion for the space of five or sixe dayes, they not onely wash away the filth, but also resolve and digest, if there bee any hard or contuled place in the infants tender body, by reason of the hard travell and labour in child-birth. Their toes and fingers must bee handled, drawne asunder and bowed, and the joynts of the armes and legges must bee extended and bowed for many dayes and often; that thereby that portion of the excrementall humour that remaineth in the joynts, by motion may bee heated and resolved. If there bee any default in the members, either in conformation, construction or society with those that are adjoyning to them, it must bee corrected or amended with speed. Moreover, you must looke whether any of the naturall passages bee stopped, or covered with a membrane, as it often happeneth. For if any such cover or stop the orifices of the eares, nostrils, mouth, yard or wombe, it must bee cut in sunder by the Chyrurgion, and the passage must bee kept open by putting in of tents, pessaries or dosels, lest otherwise they should joyne together againe after they are cut. If he have one finger more than hee should naturally, if his fingers doe cleave close together, like unto the feete of a Goose or Ducke, if the ligamentall membrane that is under the tongue bee more short and stiffer than it ought, that the infant cannot sucke, nor in time to come, speake, by reason thereof; and if there be any other thing contrary to nature, it must bee all amended by the industry of some expert Chyrurgion.

The defaults that are comonly in children newly borne.

The defaults of conformation must be speedily amended.

Many times in children newly borne, there sticketh on the inner side of their mouth and on their tongue, a certain chalkie substance, both in colour & consistence;

this

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, & will shortly breed & degenerate into ulcers that will creepe into the jawes, and even unto the throate, and unlesse it bee cleansed speedily, will bee their death. For remedy whereof, it must bee cleansed by detersives, as with a linnen cloth bound to a little sticke, and dipped in a medicine of an indifferent consistence made with oyle of sweete almonds, hony and sugar. For by rubbing this gently on it, the filth may bee mollified, and so cleansed or washed away. Remedies for the cancer in a childs mouth.

Moreover it will bee very meete and convenient to give the infant one spoonefull of oyle of almonds, to make his belly loose and slippery, to asswage the roughnesse of the weason and gullet, and to dissolve the tough phlegme, which causeth a cough, and sometimes difficulty of breathing. If the eye lids cleave together, or if they bee joyned together, or agglutinated to the coats *cornea* or *adnata*; if the watery tumour called *hydrocephalos* affect the head, then must they bee cured by the proper remedies formerly prescribed, against each disease.

Many from their birth have spots or markes, which the common people of France call *Signes*, that is, markes or signes. Some of these are plaine and equall with the skinne, others are raised up into little tumours, and like unto warts, some have haires upon them, many times they are smoothe, blacke or pale, yet for the most part red. When they arise in the face, they spread abroad thereon many times with great deformity. Many thinke the cause thereof to bee a certaine portion of the menstruall matter cleaving to the sides of the wombe, comming of a fresh flux, if happely the man doe yet use copulation with the woman, or else distilling out of the veines into the wombe, mixed and concorporated with the seedes at that time when they are congealed, infecting this or that part of the issue, being drawne out of the seminall body, with their owne colour. Women referre the cause thereof unto their longing when they are with childe; which may imprint the image of the thing they long for or desire, in the child or issue that is not as yet formed (as the force or power of imagination in humane bodies is very great:) but when the child is formed, no imagination is able to leave the impression of any thing in it, no more than it could cause hornes to grow on the head of King *Chypus* as hee slept presently after hee was returned from attentively beholding Bulls fighting together. Some of those spots bee curable, others not; as those that are great, and those that are on the lips, nostrils, and eye-lids. But those that are like unto warts, because they are partakers of a certaine maligne quality and melancholicke matter, which may bee irritated by endeavouring to cure them, are not to bee medled with at all, for being troubled and angered, they soone turne into a Cancer (which they call *Noli me tangere*). Those that are curable 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 being lifted up by the ends of the thread, they must bee cut away, and the wound that remaineth must be cured according to the generall method of wounds. An old fable of King *Chypus*. Which uncurable. Which and how they are curable.

There are some that suppose the red spots that are raised up into little knobbes and bunches, may bee washed away and consumed by rubbing and annoynting them often with menstruall bloud, or the bloud of the secundine or after-birth. Those that are hairie and somewhat raised up like unto a Want or Mouse, must bee pierced through the roots in three or foure places, and straightly bound, so that at length being destitute of life and nutriment, they may fall away: after they are fallen away, the ulcer that remaineth must bee cured as other ulcers are. If there bee any superfluous flesh remaining, it must bee taken away by applying *Ægyptiacum*, or the powder of mercury, and such like: but if it be doubted that it commeth from the root of the tumour that may happely remaine, it must bee burned away by the root with oyle of vitriol or *aqua fortis*.

There is also an other kinde or sort of spots, of a livide or violet colour, comming especially in the face about the lips, with a soft, slacke, laxe, thinne, and unpainefull tumour, and the veines as if they were varicous round about it. This kinde of tumour groweth greater when it ariseth on children that are wayward and crying,

and in men of riper yeares that are cholericke and angry, and then it will bee of a diverse colour, like unto a lappet or flap of flesh that hangeth over the Turkie-cocks bill. When they have done crying, or ceased their anger, the tumour will returne to his owne naturall colour againe. But you must not attempt to cure it in people that are of these conditions.

Chap. XVIII.

How to pull away the secundine or after-birth.

Why it is called the secundine.

I Suppose that they are called secundines, because they doe grieve the woman that is with child the second time, as it were a second birth: for if there bee severall children in the wombe at once, and of different sexes, they then have every one their severall secundines, which thing is very necessary to bee knowne by all mydwives. For they doe many times remaine behinde in the wombe when the child is borne, either by reason of the weakenesse of the woman in travell, which by contending and labouring for the birth of her childe, hath spent all her strength: or else by a tumour rising suddenly in the necke of the wombe, by reason of the long and difficult birth, and the cold aire unadvisedly permitted to strike into the orifice of the wombe. For so the liberties of the wayes or passages are stopped and made more narrow, so that nothing can come forth: or else because they are doubled and foulded in the wombe, and the waters gone out from them with the infant, so that they remaine as it were in a dry place: or else because they yet sticke in the wombe by the knots of the veines 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 owne accord: so the secundine before the naturall time of the birth can hardly bee pulled away but by violence; but at the prefixed naturall time of the birth, it may easily be drawne away.

The causes of the staying of the secundines.

Accidents that follow the staying of the secundines.

Many and grievous accidents follow the staying of the secundine; as suffocation of the wombe, often swouning, by reason that grosse vapours arise from the putrefaction unto the mydriffe, heart and braine: therefore they must bee pulled away with speede from the wombe, gently handling the navell, if it may bee so possibly done. But if it cannot bee done so, the woman must bee placed as shee was wont when that the childe will not come forth naturally, but must bee drawne forth by art. Therefore the mydwife having her hand annoynted with oyle, must put it gently into the womb, and finding out the navell string, must follow it untill it come unto the secundine, and if it doe as yet cleave to the wombe by the cotylidons, shee must shake and move it gently up and downe, that so when it is shaked and loosed, shee may draw it out gently; but if it should bee drawne with violence, it were to be feared lest that the wombe should also follow: for by violent attraction some of the vessels, and also some of the nervous ligaments, whereby the wombe is fastened on each side, may bee rent, whereof followeth corruption of bloud shedde out of the vessels, and thence commeth inflammation, an abscesse or a mortall gangrene. Neither is there lesse danger of a convulsion by reason of the breaking of the nervous bodies, neither is there any lesse danger of the falling downe of the wombe. If that there bee any knots or clods of bloud remaining together with the secundine, the mydwife must draw them out one by one, so that not any may bee left behinde.

The manner of drawing out the secundines that remaine after the birth.

The cause of the falling down of the wombe.

Some women have voyded their secundine, when it could not bee drawne forth by any meanes, long after the birth of the child, by the necke of their wombe, piecemeale, rotten and corrupted, with many grievous and painefull accidents. Also it shall bee very requisite to provoke the endeavour of the expulsive faculty by sternutatories, aromaticke fomentations of the necke of the wombe, by mollifying injections: and contrariwise, by applying such things to the nostrils as yeeld a ranke

The accidents that come of the violent pulling of the wombe, together with the secundine.

savour

ſavour or ſmell, with a potion made of mugwurt and bay berries taken in hony and wine mixed together, or with halfe a dramme of the powder of ſavine, or with the haire of a womans head, burnt and beaten to powder, and given to drink; and to conclude, with all things that provoke the tearmes or courſes.

Chap. XIX.

What things muſt bee given to the infant by the mouth, before hee bee permitted to ſuck the Teat or Dugge.

IT will bee very profitable to rub all the inner ſide of the childes mouth and pallat gently with treacle and hony, or the oyle of ſweete almonds extracted without fire, and if you can, to cauſe it to ſwallow ſome of thoſe things: for thereby much flegmatick moyſture will bee drawne from the mouth, and alſo will bee moved or provoked to bee vomited up from the ſtomacke; for if theſe excrementall humours ſhould bee mixed with the milke that is ſucked, they would corrupt it, and then the vapours that ariſe from the corrupted milke unto the brain would inferre moſt pernicious accidents. And you may know that there are many excrementall things in the ſtomacke and guts of children by this, becauſe that ſo ſoon as they come into the world, and often before they ſuck milke or take any other thing, they voyde downewards many excrements diverſly coloured, as yellow, greene, and blacke. Therefore many, that they may ſpeedily evacuate the matter that cauſeth the fretting of the guts, doe not onely miniſter thoſe things fore-named, but alſo ſome laxative ſyrupe, as that that is made of damaske Roſes. But before the infant bee put to ſuck the mother, it is fitting to preſſe ſome milke out of her breaſt into its mouth, that ſo the fibres of the ſtomack may by little and little accuſtome themſelves to draw in the milke.

To draw ſeame from the childs mouth.

Milke ſoon corrupted in a flegmatick ſtomack.

Chap. XX.

That mothers ought to nurſe or give ſucke unto their owne children.

THat all mothers would nurſe their owne children were greatly to bee wiſhed: for the mothers milke is farre more familiar nouriſhment for the infant than that of any other nurſe: for it is nothing elſe but the ſame bloud made white in the dugges, wherewith before it was nouriſhed in the wombe. For the mother ought not to give the child ſuck for the ſpace of a few dayes after the birth, but firſt to expect the perfect expurgation and avoyding of the excrementall humours. And in the meane time let her cauſe her breaſts to bee ſucked of another, or many other children, or of ſome wholſome or ſober maide, whereby the milke may bee drawne by little and little unto her breaſts, and alſo by little and little purified.

The mothers milke is moſt familiar for the child.

For a certaine ſpace after the birth, the milke will bee troubled, and the humours of the body moved: ſo that by long ſtaying in the dugges, it will ſeeme to degenerate from its naturall goodneſſe, as the groſſeneſſe of it is ſomewhat congealed, the manifeſt heate in touching, and the yellow colour thereof teſtifieth evidently. Therefore it is neceſſary that others ſhould come in place thereof when it is ſucked out, wherewith the infant may be nouriſhed. But if the mother or the nurſe chance to take any diſeaſe, as a Feaver, Scouring, or any ſuch like, let her give the child to another, to give it ſucke, leſt that the child chance to take the nurſes diſeaſes. And moreover, mothers ought to nurſe their owne children, becauſe for the moſt part they are farre more vigilant and carefull in bringing up and attending their children, than hired and mercenary nurſes, which doe not ſo much regard the infant,

The diſeaſe of the nurſe is participated unto the child.

as the gaine they ſhall have by the keeping of it, for the moſt part. Thoſe that doe not nurſe their owne children, cannot rightly bee termed mothers : for they doe
Gel. lib. 12. ca. 1. not abſolutely performe the duty of a mother unto their childe, as *Marcus Aurelius* the Roman Emperour was wont to ſay. For this is a certaine unnaturall, imperfect and halfe kinde of a mothers duty, to beare a childe, and preſently to abandon or put it away as if it were forſaken : to nouriſh and feede a thing in their wombe (which they neither know nor ſee) with their owne bloud, and then not to nouriſh it when they ſee it in the world alive, a creature or reaſonable ſoule, now requiring the help and ſuſtentation of the mother.

Chap. XXI.

Of the choice of Nurſes.

MAny husbands take ſuch pitty 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 adde the trouble of nurſing them: wherefore ſuch a nurſe muſt bee choſen which hath had two or three children. For the dugges which have beene already ſucked and accuſtomed to bee filled, have the veines and arteries more large and capable to receive the more milke. In the choyce of a nurſe there are ten things to bee conſidered very diligently: as, her age, the habit of her body, her behaviour, the condition of her milke, the forme, not onely of her dugges or breaſts, but alſo of her teats or nipples, the time from her child-birth, the ſexe 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 twenty five yeares, nor above thirty five: the time that is betweene is the time of ſtrength, more temperate, and more wholeſome and healthy, and leſſe abounding with excrementall humours. And becauſe her body doth not then grow or encreaſe, ſhee muſt of neceſſity have the more abundance of bloud. After thirty five yeares in many the menſtruall fluxes do ceaſe, and therefore it is to bee ſuppoſed that they have the leſſe nutriment for children.

The beſt age of a nurſe.

The nurſe muſt alſo be of a good habit, or ſquare or wel ſet body, her breaſt broad, her colour lively, not fat, nor leane, but well made, her fleſh not ſoft and tender, but thick, and hard or ſtrong, whereby ſhe may be the more able to endure watching & taking of pains about the child; ſhe muſt not have a red or freckled face, but browne or ſomewhat ſhadowed or mixed with redneſſe: for truly ſuch women are more hot than thoſe that are red in the face, by reaſon whereof they muſt needs concoct and
Lib. de inf. nutr. turne their meate the better into bloud. For according to the judgement of *Sextus Cheronenſis*, as blackiſh or browne ground is more fertill than the white; even ſo a browne woman hath more ſtore of milke. You muſt looke well on her head, leſt ſhee ſhould have the ſcurfe or running ſores; ſee that her teeth bee not foule or rotten, nor her breath ſtinking, nor no ulcer nor ſore about her body, and that ſhe be not borne of gouty or leprous Parents.

The beſt habit of body in a nurſe.

Shee ought to bee quicke and diligent in keeping the childe neate and cleane, chaſte, ſober, merry, alwaies laughing and ſmiling on her infant, often ſinging unto it, and ſpeaking diſtinctly and plainely, for ſhee is the onely miſtriſſe to teach the childe to ſpeake. Let her bee well mannered, becauſe the manners of the nurſe are participated unto the infant together with the milke. For the welpes of dogges, if they doe ſucke Wolves or Lioneſſes, will become more fierce and cruell than otherwiſe they would. Contrariwiſe, the Lions whelps will leave their ſavageneſſe and fierceneſſe, if that they bee brought up and nouriſhed with the milke of any Bitch, or other tame beaſt. If a Goat give a Lambe ſucke, the ſame Lambes wooll will be more hard than others: contrariwiſe, if a Sheep give a Kyd ſuck, the ſame Kyds haire will be more ſoft than another Kyds haire. She ought to be ſober, and the rather for this cauſe, becauſe many nurſes being overloaden with wine & banqueting, often ſet their children unto their breaſts to ſuck, and then fall aſleep, and ſo ſuddenly ſtrangle or choak them.

Of what behaviour the nurſe muſt bee.

Shee

Shee muſt abſtaine from copulation: for copulation troubleth and moveth the humours and the bloud, and therefore the milke it ſelfe; and it diminiſheth the quantity of milke, becauſe it provoketh the menſtruall fluxe, and cauſeth the milke to have a certain ſtrong and virous quality, ſuch as we may perceive to breathe from them that are incenſed with the fervent luſt and deſire of venery. And moreover, becauſe that thereby they may happen to bee with childe, whereof enſueth diſcommodity both to her owne childe that is within her body, and alſo to the nurſe child: to the nurſe childe, becauſe that the milke that it ſucketh will be worſe and more depraved than otherwiſe it would bee, by reaſon that the more laudable bloud after the conception remaineth about the wombe, for the nutriment and increaſing of the infant in the wombe; and the more impure bloud goeth into the dugges, which breedeth impure or uncleane milke: but to the conceived childe, becauſe it will cauſe it to have ſcarcity of foode; for, ſo much as the ſucking childe ſucketh, ſo much the child conceived in the wombe, wanteth. Why the nurſe muſt abſtaine from copulation.

Alſo ſhee ought to have a broad breaſt, and her dugges indifferently bigge, not ſlacke or hanging, but of a middle conſiſtence, betweene ſoft and hard; for ſuch dugges will concoct the bloud into milke the better, becauſe that in firme fleſh the heate is more ſtrong and compact. You may by touching try whether the fleſh bee ſolid and firme, as alſo by the diſperſing of the veines, eaſily to bee ſeene by reaſon of their ſwelling and blewneſſe, through the dugges, as it were into many ſtreams or little rivelets; for in fleſh that is looſe and ſlacke, they lie hidden. Thoſe dugges that are of a competent bigneſſe, receive or containe no more milke than is ſufficient to nouriſh the infant. In thoſe dugges that are great and hard, the milke is as it were ſuffocated, ſtopped or bound in, ſo that the childe in ſucking can ſcarce draw it out: and moreover, if the dugges 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 ſucke, or if hee doth proceede to ſucke, by continuall ſucking, and placing of his noſe on the hard breaſt, it may become flat, and the noſtrils turned upwards, to his great deformity, when hee ſhall come to age. If the teates or nipples of the dugges doe ſtand ſomewhat low or depreſſed inwards on the toppes of the dugges, the childe can hardly take them betweene its lippes, therefore his ſucking will bee very laborious. If the nipples or teats bee very bigge, they will ſo fill all his mouth, that he cannot well uſe his tongue in ſucking or in ſwallowing the milke. What dugs a nurſe ought to have.

Wee may judge of or know the nature and condition of the milke, by the quantity, quality, colour, ſavour and taſte: when the quantity of the milke 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 body, or at leaſt of the dugges, eſpecially a hot and dry diſtemperature. But when it ſuper-aboundeth, and is more than the infant can ſpend, it exhauſteth the juice of the nurſes body; and when it cannot all bee drawne out by the infant, it cluttereth, and congealeth or corrupteth in the dugges. Yet I would rather wiſh it to abound, than to bee defective, for the ſuper-abounding quantity may bee preſſed out before the child be ſet to the breaſt. What is to bee obſerved in the milke.

That milke that is of a meane conſiſtence betweene thicke and thinne, is eſteemed to bee the beſt. For it betokeneth the ſtrength and vigour of the faculty that ingendereth it in the breaſts. Therefore if one droppe of the milke bee layd on the naile of ones thumbe, being firſt made very cleane and faire, if the thumbe bee not moved, and it runne off the naile, it ſignifieth that it is watery milke: but if it ſticke to the naile, although the end of the thumbe bee bowed downewards, it ſheweth that it is too groſſe and thicke: but if it remaine on the naile ſo long as you hold it upright, and fall from it when you hold it a little aſide or downewards by little and little, it ſheweth it is very good milke. And that which is exquiſitely white, is beſt of all. For the milke is no other thing than bloud made white. The laudable conſiſtence of milke.

Therefore, if it bee of any other colour, it argueth a default in the bloud: ſo that if it bee browne, it betokeneth melancholy bloud; if it be yellow, it ſignifieth choliericke bloud; if it bee wanne and pale, it betokeneth phlegmaticke bloud, if it bee ſomewhat red, it argueth the weakeneſſe of the faculty that engendreth the milke. Why the milke ought to be very white.

It

Why a woman that hath red hair, or freckles on her face cannot be a good nurse.

It ought to be ſweet, fragrant, and pleaſant in ſmell; for if it ſtrike into the noſtrills with a certaine ſharpeneſſe, as for the moſt part the milke of women that have red haire and little freckles on their faces doth, it prognoſticates a hot and cholerick nature: if with a certaine ſowerneſſe, it portendeth a cold and melancholy nature. In taſte it ought to be ſweet, and as it were ſugred, for the bitter, ſaltiſh, ſharp, and ſtipticke, is naught. And here I cannot but admire the providence of nature, which hath cauſed the blood wherewith the childe ſhould be nouriſhed to be turned into milke: which unleſſe it were ſo, who is he that would not turne his face from, and abhorre ſo grievous and terrible a ſpectacle of the childes mouth ſo imbrued and beſmeared with blood? What mother or nurſe would not be aſtoniſhed or amazed at every moment with the feare of the blood ſo often ſhedde out, or ſucked by the infant for his nouriſhment? Moreover, we ſhould want two helps of ſuſtentation, that is to ſay, butter and cheeſe.

Neither ought the childe to bee permitted to ſucke within five or ſixe dayes after it is borne, both for the reaſon before alledged, and alſo becauſe he hath need of ſo much time to reſt quiet, and eaſe himſelfe after the paines hee hath ſuſtained in his birth: in the meane ſeaſon the mother muſt have her breaſts drawne by ſome maide that drinketh no wine, or elſe ſhe may ſucke or draw them her ſelfe with an artificiall inſtrument which I will deſcribe hereafter.

Why that nurſe that hath borne a man childe is to be preferred before another.

That nurſe that hath borne a man childe is to be preferred before another, becauſe her milke is the better concocted, the heate of the male childe doubling the mothers heate. And moreover, the women that are great with childe of a male childe, are better coloured, and in better ſtrength, and better able to doe any thing all the time of their greatneſſe, which proveth the ſame: and moreover the blood is more laudable, and the milke better. Furthermore, it behoveth the Nurſe to bee brought on bed, or to travell at her juſt and prefixed or naturall time: for when the childe is born before his time of ſome inward cauſe, it argueth that there is ſome default lurking and hidden in the body and humours thereof.

Why ſhe cannot be a good nurſe whoſe childe was born before the time.

Chap. XXII.

What diet the Nurſe 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 nurſes diet muſt be divers, according as the nature of the childe both in habit and temperature ſhall be: as for example, if the childe bee altogether of a more hot blood, the nurſe both in feeding and ordering her ſelfe ought to follow a cooling diet. In generall, let her eat meates of good juice, moderate in quantity and quality, let her live in a pure and cleere aire, let her abſtaine from all ſpices, and all ſalted and ſpiced meats, and all ſharpe things, wine, eſpecially that which is not allayed or mixed with water, and carnall copulation with a man, let her avoyd all perturbations of the minde, but anger eſpecially, let her uſe moderate exerciſe, unleſſe it be the exerciſe of her armes and upper parts, rather than the legges and lower parts, whereby the greater attraction of the blood, that muſt be turned into milke, may bee made towards the dugges. Let her place her childe ſo in the cradle that his head may be higher than all the body, that ſo the excrementall humours may bee the better ſent from the braine unto the paſſages that are beneath it. Let her ſwathe it ſo as the neck and all the back-bone may be ſtraight and equall. As long as the childe ſucketh, and is not fed with ſtronger meat, it is better to lay him alway on his backe, than any other way, for the backe is, as it were the Keele in a ſhip, the ground-worke and foundation of all the whole body, whereon the infant may ſafely and eaſily reſt. But if hee lye on the ſide, it were danger leſt that the bones of the ribs being ſoft and tender, not ſtrong enough, and united with ſlacke bands, ſhould bow under the waight of the reſt, and ſo waxe crooked, whereby the infant might become crooke-backed. But when he beginneth to breed

Anger greatly hurteth the nurſe.

The exerciſe of the armes is beſt for the nurſe.

How the child ſhould be placed in the cradle.

teeth

teeth, and to bee fed with more ſtrong meat, and alſo the bones and connexions of them begin to waxe more firme and hard, hee muſt bee layed one while on this ſide, another while on that, and now and then alſo on his backe. And the more hee groweth, the more let him be accuſtomed to lye 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 he might become poore-blind, for the eye of its owne nature is bright and light-ſome, and therefore alwaies deſireth the light, and abhorreth darkeneſſe, for all things are moſt delighted with their like, and ſhunne their contraries. Therefore unleſſe the light come directly into the childes face, he turneth himſelfe every way being very ſorrowfull, and ſtriveth to turne his head and eyes that hee may have the light; and that often turning and rowling of his eyes at length grow eth into a cuſtome that cannot bee left: and ſo it commeth to paſſe that the infant doth either become poore-blind, if hee ſet his eyes ſtedfaſtly on one thing, or elſe his eyes doe become trembling, alwaies turning and unſtable, if hee caſt his eyes on many things that are round about him: which is the reaſon that nurſes, being taught by experience, cauſe over the head of the childe lying in the cradle, an arch or vault of wickers covered with cloath to be made, thereby to reſtraine, direct, and eſtabliſh the uncertaine and wandering motions of the childes eyes.

Why an arch of wickers muſt be made over the childes head lying in the cradle.

If the nurſe be ſquint-eyed, ſhe cannot look upon the childe but ſide-waies, whereof it commeth to paſſe that the childe being moiſt, tender, flexible and prone to any thing with his body, and ſo likewiſe with his eye, by a long and daily cuſtome unto his nurſes ſight, doth ſoone take the like cuſtome to looke after that ſort alſo, which afterwards he cannot leave or alter. For thoſe evill things that we learn in our youth, do ſtick firmly by us, but the good qualities are eaſily changed into worſe. In the eies of thoſe that are ſquint-eyed, thoſe two muſcles which do draw the eyes to the greater or leſſer corner, are chiefly or more frequently moved. Therefore either of theſe being confirmed in their turning aſide by long uſe, as the exerciſe of their proper office encreaſeth the ſtrength, ſoone overcomes the contrary or withſtanding muſcles, called the Antagoniſts, and brings them into their ſubjection, ſo that will they nill they, they bring the eye unto this or that corner as they liſt. So children become left-handed, when they permit their right hand to languiſh with idleneſſe and ſluggiſhneſſe, and ſtrengthen their left hand with continuall uſe and motion to do every action therewithall, and ſo bring by the exerciſe thereof, more nutriment unto that part. But if men (as ſome affirme) being of ripe yeers and in their full growth, by daily ſociety and company of thoſe that are lame and halt doe alſo halt, not minding ſo to doe, but it commeth againſt their wills, and when they thinke nothing thereof, why ſhould not the like happen in children, whoſe ſoft and tender ſubſtance is as flexible and pliant as waxe unto every impreſſion? Moreover, children, as they become lame and crook-backt, ſo doe they alſo become ſquint-eyed by the hereditary default of their parents.

Why a ſquint-eyed nurſe cauſeth the childe to be ſquint-eyed.

How children become left-handed.

Chap. XXIII.

How to make pappe for children.

Pappe is a moſt meet foode or meat for children, becauſe they require moiſt nouriſhment, and it muſt bee anſwerable in thickeneſſe to the milke, that ſo it may not be difficult to be concocted or digeſted. For pap hath theſe three conditions, ſo that it be made with wheaten flower, and that not crude but boiled: let it be 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 remaine there untill the bread bee baked and drawne out; for when it is ſo baked it is leſſe clammy and crude. Thoſe that mixe the meale crude with the milke, are conſtrained to abide one of theſe diſcommodities or other, either to give the meale groſſe & clammy unto the child, if that the pap be onely firſt boiled over the fire in a pipkin or skillet ſo long as ſhall bee neceſſary for

Three laudable conditions of pappe.

How the meale muſt be prepared to make the pap withall.

Why the meale wherewith the pap muſt be made, muſt firſt be boiled or baked.

for the milke; hence come obſtructions in the meſaraike veines, and in the ſmall veines of the liver, fretting and wormes in the guts, and the ſtone in the reines. Or elſe they give the child the milk, deſpoiled of its butteriſh and whayiſh portion, and the terreſtriall and cheeſelike or curdlike remaining, if the pap be boiled ſo long as is neceſſary for the meale: for the milke requireth not ſo great, neither can it ſuffer ſo long boyling as the meale. Thoſe that doe uſe crude meale, 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 nurſes milke, ſo long as the nurſe hath enough to nouriſh and feed it. And truely there are many children that are contented with milke only, and will receive no pappe untill they are three moneths old. If the child at any time bee coſtive, and cannot voide the excrements, let him have a cataplaſme made with one dramme of Aloes, of white and blacke Hellebore, of each fifteene graines, being all incorporated in as much of an oxe gall as is ſufficient, and extended or ſpread on cotton like unto a pultis, as broad as the palme of ones hand, and ſo apply it upon the navell warme: moreover, this cataplaſme hath alſo vertue to kill the wormes in the belly. Many times children have fretting of the guts, that maketh them to cry, which commeth of crudity. This muſt bee cured by applying unto the belly ſweaty or moiſt woole, macerated in oile of chamomile.

1. de ſanit. tuend.

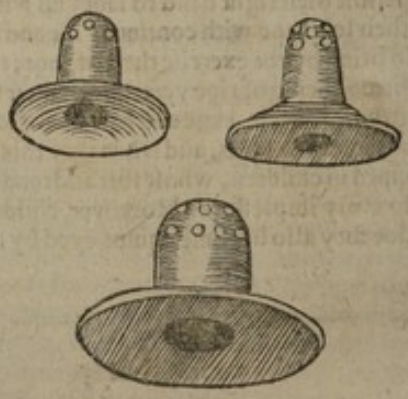
A cataplaſme to relaxe the childs belly.

For the fretting of the guts in children.

If when the childes teeth begin to grow, he chance to bite the nipple of the nurſes breaſt, there will bee an ulcer very contumacious and hard to be cured, becauſe that the ſucking of the childe, and the rubbing of the cloaths doe keep it alwaies raw; it muſt be cured with fomenting it with allome water, and then preſently after the fomentation putting thereupon a cover of leade, made like unto a hat, as they are here deſcribed, with many holes in the toppe, whereat both the milke, and alſo the ſanious matter that commeth from the ulcers may goe out, for lead it ſelfe will cure ulcers.

For the ulcers of the nipples or teats.

The figure of leaden Nipples to be put upon the Nipple or Teat of the Nurſe when it is ulcerated.



Children may be cauſed to ceaſe their crying foure manner of waies, that is to ſay, by giving them the teat, by rocking them in a cradle, by ſinging unto them, and by changing the cloaths and ſwathes wherein they are wrapped. They muſt not bee rocked too violently in the cradle, leſt that the milke that is ſucked ſhould be corrupted by the too violent motion, by reaſon whereof they muſt not be handled violently any other way, and not altogether prohibited or not ſuffered to cry. For by crying the breaſt and lungs are dilated and made bigger and wider, the naturall parts the ſtronger, and the braine, noſtrills, the eyes and mouth are purged, by the teares and filth that come from the eyes and noſtrills. But they muſt not bee permitted to cry long or fiercely, for feare of breaking the production of the *Peritonæum*, and thereby cauſing the falling downe of the guts into the cod, which rupture is called of the Greekes *Enterocele*, or of the caule, which the Greekes call *Epiplocele*.

What moderate crying worketh in the infant.

What immoderate crying cauſeth.

Chap.

Chap. XXIIII.

Of the weaning of children.

MAny are weaned in the eighteenth moneth, ſome in the twentieth, but all, or the moſt part, in the ſecond yeare, for then their teeth appeare, by whoſe preſence nature ſeemeth to require ſome harder meat than milke or pappe, wherewith children are delighted, and will feed more earneſtly thereon. But there is no certaine time of weaning of children. For the teeth of ſome will appeare ſooner, and ſome later; for they are prepared of nature for no other purpoſe than to chaw the meat. If children bee weaned before their teeth appeare, and bee fed with meat that is ſomewhat hard and ſolid, according to the judgement of *Avicen*, they are incident to many diſeaſes comming through crudity, becauſe the ſtomacke is yet but weake, and wanteth that preparation of the meates which is made in the mouth by chawing; which men of ripe yeers cannot want without offence: when the childe is two yeeres old, and the teeth appeare, if the childe more vehemently deſire harder meates, and doth feed on them with pleaſure & good ſucceſſe, he may be ſafely weaned; for it cannot be ſuppoſed that he hath this appetite of hard meats in vain, by the inſtinct of nature. Yet he may not be weaned without ſuch an appetite, if all other things be correſpondent, that is to ſay, his teeth and age, for thoſe things that are eaten without an appetite, cannot profit. But if the childe be weake, ſickly, or feeble, he ought not to be weaned. And when the meet time of weaning commeth, the nurſe muſt now and then uſe him to the teat, whereby he may leave it by little and little, and then let the teate be anointed or rubbed with bitter things, as with Aloes, water of the infuſion of *Colocynthus*, or worme-wood, or with muſtard, or ſoote ſteeped in water, or ſuch like. Children that are ſcabby in their heads, and over all their bodies, and which void much flegme at their mouth and noſtrills, and many excrements downwards, are like to be ſtrong and ſound of body; for ſo they are purged of excrementall humours: contrariwiſe, thoſe that are cleane and faire of body, gather the matter of many diſeaſes in their bodies, which in proceſſe of time will breake forth and appeare. Certainely by the ſodaine falling of ſuch matters into the backe-bone, many become crookebackt.

When children muſt be weaned

Why children muſt not be weaned before their teeth appeare.

How children muſt be weaned.

What children are ſtrong and ſound of body.

An often cauſe of ſudden crookedneſſe.

Chap. XXV.

By what ſignes it may bee knowne whether the childe in the wombe bee dead or alive.

IF neither the Chirurgians hand, nor the mother can perceive the infant to move, if the waters bee flowed out, and ſecundine come forth, you may certainely affirme that the infant is dead in the wombe, for this is the moſt infallible ſigne of all others: for becauſe the child in the wombe doth breathe but by the artery of the navell, and the breath is received by the *Cotyledon* of the arteries of the wombe, it muſt of neceſſity come to paſſe that when the ſecundine is ſeparated from the infant, no aire or breath can come unto it. Wherefore ſo often as the ſecundine is excluded before the childe, you may take it for a certaine token of the death thereof: when the childe is dead, it will be more heavie to the mother than it was before when it was alive, becauſe it is now no more ſuſtained by the ſpirits and faculties wherewith before it was governed and ruled, for ſo we ſee dead men to be heavier than thoſe that are alive, & men that are weak through hunger and famine to be heavier than when they are well refreſhed, and alſo when the mother enclines her body any way, the infant falleth that way alſo even as it were a ſtone. The mother is alſo vexed with ſharpe paine from the privities even to the navell, with a perpetuall deſire of making water, and going to ſtoole, becauſe that nature is wholly buſied in

A moſt certaine ſign of the child dead in the wombe.

When the child is dead in the wombe hee is more heavie than he was before being alive.

That which is alive will not suffer that which is dead.

the expulsion or avoidance of that which is dead: for that which is alive will expell the dead so farre as it can from it selfe, because the one is altogether different from the other; but likenesse, if any thing, conjoynes and unites things together: the genitalls are cold in touching, and the mother complaineth that she feeleth a coldnesse in her womb, by reason that the heat of the infant is extinguished, wherewith before her heate was doubled: many filthy excrements come from her, and also the mothers breath stinketh, she swouneth often, all which for the most part happen within three daies after the death of the childe: for the infants body will sooner corrupt in the mothers wombe than it would in the open aire, because that, according to the judgement of *Galen*, all hot and moist things, being in like manner enclosed in a hot and moist place, especially if by reason of the thickenesse or straitenesse of the place they cannot receive the aire, will speedily corrupt. Now by the rising up of such vapours from the dead unto the braine and heart, such accidents may soone follow, her face will be clean altered, seeming livid and ghastly, her dugs fall and hang loose and lanke, and her belly will be more hard and swollen than it was before. In all bodies so putrefying, the naturall heat vanisheth away, and in place thereof succeedeth a preternaturall, by the working whereof the putrefyed and dissolved humours are stirred up into vapours, and converted into winde, and those vapours, because they possesse and fill more space and roome (for naturalists say that of one part of water ten parts of aire are made) doe so puffe up the putrefyed body into a greater bignesse. You may note the same thing in bodies that are gangrenate, for they cast forth many sharpe vapours, yet nevertheless they are swollen and pusted up.

Lib. de tumorib.

Why the belly of a woman will be more bigge when the child is dead within her, than it was before, when it was alive.

Now so soone as the Chirurgian shall know that the childe is dead by all these forenamed signes, he shall with all diligence endeavour to save the mother so speedily as hee can, and if the Physitians cannot prevaile with potions, bathes, fumigations, sternutatories, vomits, and liniments appointed to expell the infant, let him prepare himselfe to the worke following; but first let him consider the strength of the woman, for if he perceive that shee bee weake and feeble by the smalnesse of her pulse, by her small, seldome and cold breathing, and by the altered and death-like colour in her face, by her cold sweats, and by the coldnesse of the extreme parts, let him abstaine from the worke, and onely affirme that shee will dye shortly; contrariwise, if her strength be yet good, let him with all confidence and industry deliver her on this wise from the danger of death.

The signes of a woman that is weake.

Chap. XXVI.

Of the Chyrurgicall extraction of the childe from the wombe either dead or alive.

After what sort the woman in travell must be placed when the child, being dead in her wombe, must be drawne out.

THerefore first of all the aire of the chamber must bee made temperate, and reduced unto a certaine mediocrity, so that it may neither be too hot nor too cold. Then she must be aptly placed, that is to say, overthwart the bed side, with her buttockes somewhat high, having a hard stuffed pillow or boulster under them, so that she may be in a meane figure of situation, neither sitting altogether upright, nor altogether lying along on her backe; for so shee may rest quietly, and draw her breath with ease, neither shall the ligaments of the womb bee extended so as they would if shee lay upright on her backe, her heeles must bee drawn up close to her buttocks, and there bound with broad and soft linnen rowlers. The rowler must first come about her neck, and then crosse-wise over her shoulders, and so to the feet, and there it must crosse again, and so be rowled about the legs and thighes, and then it must be brought up to the necke againe, and there made fast, so that she may not be able to move her selfe, even as one should be tyed when he is to be cut of the stone. But that shee may not bee wearied, or lest that her body should yeeld or sinke downe as the Chirurgian draweth the body of the infant from her, and so hinder the worke, let him cause her feet to bee set against the side of the bed,

How she must be bound.

and

and then let some of the strong standers by hold her fast by the legs and shoulders. Then that the aire may not enter into the wombe, and that the worke may bee done with the more decency, her privie parts & thighs must be covered with a warm double linnen cloath. Then must the Chirurgion, having his nailes closely pared, and his rings (if hee weare any) drawne off his fingers, and his armes naked, bare, and well anointed with oyle, gently draw the flappes of the necke of the wombe asunder, and then let him put his hand gently into the mouth of the wombe, having first made it gentle and slippery with much oile; and when his hand is in, let him finde out the forme and situation of the childe, whether it be one or two, or whether it be a Mole or not. And when he findeth that he commeth naturally, with his head toward the mouth or orifice of the wombe, he must lift him up gently, and so turne him that his feet may come forwards, and when he hath brought his feet forwards, he must draw one of them gently out at the necke of the wombe, and then hee must binde it with some broad and soft or silken band a little above the heele with an indifferent slack knot, and when he hath so bound it, he must put it up againe into the wombe, then he must put his hand in againe, and finde out the other foote, and draw it also out of the wombe, and when it is out of the wombe, let him draw out the other againe whereunto he had before tyed the one end of the band, and when hee hath them both out, let him join them both close together, & so by them by little & little let him draw all the whole body from the wombe. Also other women or Midwives may help the endeavour of the Chirurgion, by pressing the patients belly with their hands downewards as the infant goeth out: and the woman her selfe by holding her breath, and closing her mouth and nostrills, and by driving her breath downewards with great violence, may very much helpe the expulsion. I wish him to put backe the foot into the wombe againe after he hath tyed it, because if that he should permit it to remain in the necke of the womb, it would hinder the entrance of his hand when he putteth it in to draw out the other. But if there bee two children in the wombe at once, let the Chirurgian take heed lest that he take not of either of them a legge, for by drawing them so, hee shall profit nothing at all, and yet exceedingly hurt the woman. Therefore that he may not bee so deceived, when hee hath drawne out one foot and tyed it, and put it up again, let him with his hand follow the band wherewithall the foot is tyed, and so goe unto the foot, and then to the groine of the childe, and then from thence he may soone finde out the other foot of the same child: for if it should happen otherwise, he might draw the legges and the thighes out, but it would come no further, neither is it meet that hee should come out with his armes along by his sides, or bee drawne out on that sort, but one of his armes 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 grosse trunke, as it would be when his body should be drawne out with his armes along by his sides, would so shrinke and draw it selfe when the body should come unto the necke, onely by the accord of nature requiring union, that it would strangle and kill the infant, so that hee cannot be drawne there-hence unlesse it bee with a hooke put under, or fastened under his chinne, in his mouth, or in the hollownesse of his eye. But if the infant lyeth as if hee would come with his hands forwards, or if his hands bee forth already, so that it may seeme hee may bee drawne forth easily that way, yet it must not be so done; 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 assayed to draw out by the arme, so that the arme had been so long forth that it was gangrenate, whereby the childe dyed; I told them presently that his arme must bee put in againe, and hee must bee turned otherwise. But when it could not bee put backe by reason of the great swelling thereof, and also of the mothers genitals, I determined to cut it off with an incision knife, cutting the muscles as neare as I could to the shoulder, yet drawing the flesh upwards, that when I had taken off the bone with a paire of cutting pincers, it might come downe againe to cover the shivered end of the bone, lest otherwise when it were thrust in againe into the wombe, it might hurt the mother. Which being done, I turned him with his feete forwards, and drew him out as is before sayd. But if the tumour either naturally or by some

How the Chirurgion ought to prepare himselfe and his patient to the drawing out of the child from the wombe.

How the infant that is dead in the womb must be turned, bound and drawne out.

A caution to avoid strangling of the infant in drawing out the body.

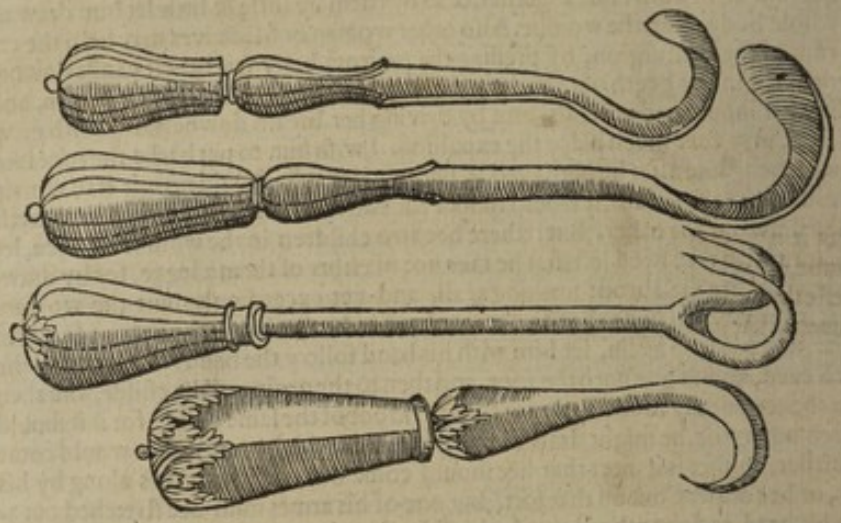
Why the child must not bee drawn out with his hands forwards.

A history.

accident, that is to say, by putrefaction, which may perchance come, bee so great that hee cannot bee turned according to the Chirurgions intention, nor be drawne out according as hee lyeth, the tumour must bee diminished, and then hee must bee drawne out as is aforesaid, and that must bee done at once. As for example, if the dead infant appeare at the orifice of the wombe, which our mydwives call the Garland, when it gapeth, is open and dilated, but yet his head being more great and puffed up with winde so that it cannot come forth, as caused to bee so through that disease which the Greeks call *Macrophysocephalos*, the Chirurgion must fasten a hooke under his chinne, or in his mouth, or else in the hole of his eye, or else, 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 whereat the winde may passe out, and so when the tumour falleth and decreaseth, let him draw the infant out by little and little, but not rashly, lest he should break that whereon he hath taken hold: the figure of those hookes is thus.

To diminish the wind wherewith the infant being dead in the wombe, swelleth & is puffed up that he cannot be gotten out of the wombe.

The forme of hookes for drawing out the infant that is dead in the wombe.



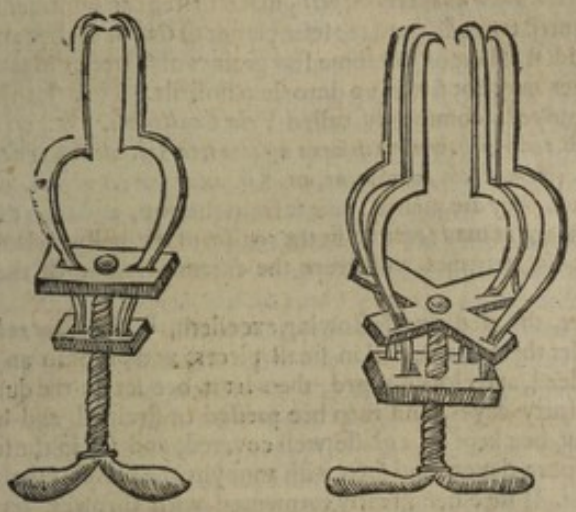
But if the breast bee troubled with the like fault, the hookes must bee fastened about the chanell bone: if there bee a Dropsie or a Tympany in the belly, the hooks must bee fastned either in the short ribs, that is to say, in the muscles that are betweene the ribbes, or especially, if the disease doe also descend into the feete, about the bones that are above the groine; or else putting the crooked knife here pictured into the wombe with his left hand, let him make incision in the childs belly, and so get out all his entrals by the incision, for when hee is so bowelled, all the water that caused the dropsie will out. But the Chirurgion must do none of all these things but when the child is dead, and the woman that travelleth in such danger that shee cannot otherwise be holpen.

How the head of the infant, if it remaine in the wombe separated from the body, may be drawne out.

But if by any meanes it happeneth that all the infants members bee cut away by little and little, and that the head onely remaineth behinde in the wombe, which I have sometimes against my will, and with great sorrow seene, then the left hand being anoynted with oyle of Lillies or fresh butter must bee put into the wombe, wherewith the Chirurgion must find out the mouth, putting his fingers into it; then with his right hand hee must put up the hooke, according to the direction of the left hand, gently, & by little & little, and so fasten it in the mouth, eye, or under the chin, and when hee hath firmely fixed or fastened it, hee must therewith draw out the head by little and little, for feare of loosening or breaking the part whereon hee hath hold. In steed of this hooke you may use the instruments that are here described

bed, which therefore I have taken out of the Chirurgery of *Francis Dalechamps*, for they are ſo made, that they may eaſily take hold of a ſphæricall and round body with the branches, as with fingers.

Gryphons Talons, that is to ſay, inſtruments made to draw out the head of a dead infant that is ſeparated in the wombe from the reſt of the body.



But it is not very eaſie to take hold on the head when it remaineth alone in the wombe, by reaſon of the roundneſſe thereof, for it will ſlip and ſlide up and downe, unleſſe the belly be preſſed downe, and on both ſides, thereby to hold it unto the inſtrument, that it may with more facility take hold thereon.

Why the head being alone in the wombe, is more difficult to be drawne out.

Chap. XXVII.

What muſt bee done unto the woman in travell preſently after her deliverance.

There is nothing ſo great an enemy to a woman in travell, eſpecially to her whoſe child is drawne away by violence, as cold: wherefore with all care and diligence ſhee muſt bee kept and defended from cold. For after the birth, her body being voyde and empty, doth eaſily receive the ayre that will enter into every thing that is empty, and hence ſhee waxeth cold, her wombe 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 many grievous accidents, as hyſtericall ſuffocation, painefull fretting of the guts, feavers, and other mortall diſeaſes.

Cold an enemy to women in travell.

What accidents follow the taking of cold in a woman that is delivered of child.

What woman ſoever will avoyde that diſcommodity, let her hold her legges or thighes acroſſe, for in ſo doing, thoſe parts that were ſeparated will bee joyned and cloſe together againe. Let her belly bee alſo bound or rowled with a ligature of an indifferent breadth and length, which may keep the cold ayre from the wombe, and alſo preſſe the bloud out that is contained in all the ſubſtance thereof. Then give her ſome Capon broth or Caudle, with Saffron, or with the powder called *Pulvis ducis*, or elſe bread toaſted and dipped in wine wherein ſpice is brewed, for to reſtore her ſtrength, and to keepe away the fretting of the guts. When the ſecundine is drawne out, and is yet hot from the wombe, it muſt bee layd warme unto the region of the wombe, eſpecially in the winter; but in the ſummer, the hot ſkinne of a Weather newly killed muſt be laid unto all the whole belly, and unto the

Secundines muſt be laid to the region of the wombe whileſt they be warme.

region of the loynes. But then the curtaines of the bed muſt bee kept drawne, and all the windowes and doores of the chamber muſt bee kept ſhut with all diligence, that no cold ayre may come unto the woman that travelleth, but that ſhee may lye and take her reſt quietly. The Weathers skinne muſt bee taken away after that it hath lyen five or ſixe houres, and then all the region of her belly muſt bee annointed with the oyntment following.

Unguents for the woman in travell that the region of the belly may not be wrinkled.

℞. *ſpermatis Ceti,* ℥ii. *olei amygdal. dulcium & hypericon. an.* ℥i ß. *ſevi hircini.* ℥i. *olei myrtillor.* ℥i. *ceræ novæ quantum ſufficit*; make thereof an oyntment, wherewith let her bee annoynted twice in the day: let a plaſter of *Galbanum* bee applyed to the navell, in the middeſt whereof put ſome few graines of Civet or Muske, ſo that the ſmell of the plaſter may not ſtrike up into her noſtrils. Then let this medicine following bee applyed, commonly called *Tela Gualterina.* ℞. *ceræ novæ* ℥iiii. *ſpermatis Ceti.* ℥i ß. *terebinth. venetæ in aqua roſacea lotæ* ℥ii. *olei amygdal. dulcium & hypericonis an.* ℥i. *olei maſtich. & myrtini, an.* ℥ß. *axungiæ cervi* ℥iß. melt them all together, and when they are melted, take it from the fire, and then dippe a linnen cloth therein, as bigge as may ſerve to fit the region of the belly, whereunto it is to bee applyed. Theſe remedies will keepe the externall region of the belly from wrinkling.

The medicine called *Tela Gualterina.*

But of all other, the medicine following excelleth. ℞. *limacum rub.* ℔i. *florum anthos quart.* iii. let them bee cut all in ſmall pieces, and put into an earthen pot well ſealed with lead, and cloſe ſtopped, then let it bee ſet in the dung of horſes for the ſpace of forty dayes, and then bee preſſed or ſtrained, and let the liqour that is ſtrayned out bee kept in a glaſſe well covered, and ſet in the ſunne for the ſpace of three or foure dayes, and therewith annoynt the belly of the woman that lyeth in child-bed. If ſhee bee greatly tormented with throwes, let the powder following bee given unto her. ℞. *aniſi conditi* ℥ii. *nucis moſchat. cornu cervi uſt. an.* ℥i. ß. *nucleorum dactyllor.* ℥ iii. *ligni aloës & cinamomi an.* ℥ ii. make thereof a moſt ſubtle powder, let her take ℥i. thereof at once with white wine warme. Or, ℞. *rad. conſolidæ major.* ℥i ß. *nucleorum perſicorum, nucis moſchat. an.* ℈ii. *carab.* ℈ß. *ambræ græcæ gra.* iiii. make thereof a powder, let her take one dramme thereof at a time with white wine, or, if ſhee have a feaver, with the broth of a Capon. Let there be hot bagges applyed to the genitalls, belly and raynes; theſe bagges muſt bee made of millet and oates fryed in a frying-pan with a little white wine.

A powder for the fretting of the guts.

What muſt bee done when the groine is torne in child-birth.

But if through the violence of the extraction the genitall parts bee torne, as ancient writers affirm it hath come to paſſe, ſo that the two holes, as the two holes of the privie parts and of the fundament have beene torne 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 travell againe, ſhee cannot have her genitall parts to extend and draw themſelves in againe by reaſon of the ſcarre. So that then it will bee needfull that the Chirurgion ſhall againe open the place that was cicatrized, for otherwiſe ſhee ſhall never bee delivered, although ſhee ſtrive and contend never ſo much. I have done the like cure in two women that dwelt in Paris.

Chap. XXVIII.

What cure muſt bee uſed to the Dugges and Teates of thoſe that are brought to bed.

To drive the milke downewards.

IF great ſtore and abundance of milke bee in the breaſts, and the woman bee not willing to nurſe her owne childe, they muſt bee annoynted with the unguent following, to repell the milke, and cauſe it to bee expelled through the wombe. ℞. *olei roſ. myrtini an.* ℥iii. *aceti roſat.* ℥i. incorporate them together, and therewith annoynt the dugges foure times a day, and preſently after the annoynting beſprinkle them with the powder of myrtils, and then apply the plaſter following. ℞. *pulv. maſtichini, nuc.*

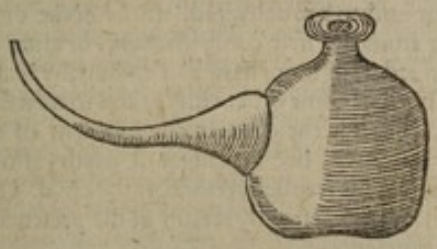
nucis moſchat. an. ℥ii. *nucis cupreſsi* ℥iii. *balauſt. myrtill. an.* ℥ iß. *Ireos, florent.* ℥ß. *olei myrtini* ℥ iii. *terebinth. venetæ* ℥ ii. *cereæ novæ quantum ſufficit,* make thereof a ſoft plaſter.

The leaves of brooke-lime, creſſes and boxe boyled together in urine and vinegar, are thought a preſent remedy for this purpoſe, that is to ſay, to draw the milke from the breaſts. And others take the clay that falleth downe into the bottome of the trough wherein the grindſtone, whereon ſwords are grownd, turneth, and mixe it with oyle of roſes, and apply it warme unto the dugges, which in ſhort ſpace, as it is thought, will aſſwage the paine, ſtay the inflammation, and drive the milke out of the dugges. The decoction of ground Ivie, Peruwincle, Sage, redde Roſes and roach Alome being prepared in oxycrate, and uſed in the forme of a fomentation, is thought to performe the like effect: the like vertue have the lees of red wine, applyed to the dugges with vinegar, or the diſtilled water of unripe Pine-apples applyed to the breaſts with linnen clothes wet therein, or hemlocke beaten and applyed with the young and tender leaves of a gourd.

This medicine following is approved by uſe: Take the leaves of Sage, Smallage, Rue, and Chervill, and cut or chop them very ſmall, and incorporate them in vinegar and oyle of Roſes, and ſo apply it warme to the breaſt, and renue it thrice a day. In the meane time let Cupping-glaſſes bee applyed to the inner ſide of the thigh and groine, and alſo above the navell. For this is very effectuall to draw the milke out of the breaſts into the wombe by the veines, whereby the wombe communicateth with the breaſts. Moreover, they may let children or little welpes ſucke their breaſts, whereby they may draw out the milke that is fixed faſt in their dugges, in ſteed whereof wee have invented this inſtrument of glaſſe, wherewith, when the broader orifice is faſtened or placed on the breaſt or dugge, and the pipe turned upwards towards her mouth, ſhee may ſuck her owne breaſts her ſelfe.

By what reaſon, and which way cupping-glaſſes, being faſtened on the groine or above the navell, do draw the milke out of the breaſts.

The forme of a little glaſſe, which being put on the nipple, the woman may ſucke her owne breaſts.



In ſteede of this inſtrument, a violl of glaſſe being firſt made warme, and the mouth thereof applyed to the nipple or teat, by reaſon of the heate and wideneſſe thereof will draw the milke forth into the bottome thereof, as it were by a certaine ſucking. The after purgations being firſt evacuated, which is done for the moſt part within twenty dayes after the birth, if the woman bee not in danger of a feaver, nor have any other accident, let her enter into a bath, made of marjerome, mints, ſage, roſemary, mugwurt, agrimonie, pennyroyall, the flowers of chamomile, melilote, dill, being boyled in moſt pure and cleare running water. All the day following let another ſuch like bath bee prepared, whereunto let theſe things following bee added. ℞. *farini fabarum & aven. an.* ℔. iii. *farin. orobi, lupinor. & gland. an.* ℔. i. *aluminis roch.* ℥iiii. *ſalis com.* ℔. ii. *gallarum, nucum cupreſsi, an.* ℥iii. *roſar. rub.* m. vi. *chariophyl. nucum moſchat. an.* ℥ iii. boyle them all in common water, then ſew them all in a cleane linnen cloth, as it were in a bagge, and caſt them therein into the bath wherein Iron red hot hath beene extinguiſhed, and let the woman that hath lately travelled ſit downe therein ſo long as ſhee pleaſeth, and when ſhee commeth out, let her bee layd warme in bedde, and

and let her take some preserved Orange pill, or bread toasted and dipped in Ipocras, or in wine brewed with spices, and then let her sweate, if the sweate will come forth of its owne accord.

Astringent fomentations for the privie parts.

On the next day let astringent fomentations bee applyed to the genitals on this wise prepared. R. *gallar. nucum Cupressi, corticum granat. an.* ℥ i. *rosar. rub.* m i. *thymi, majoran. an.* m. ß. *aluminis rochæ, salis com. an.* ℥ii. boyle them all together in redde wine, and make thereof a decoction for a fomentation, for the forenamed use.

A distilled liquor for to draw together the dugs that are loose and flacke.

The distilled liquor following is very excellent and effectuall to confirme and to draw in the dugges, or any other loose parts. R. *charyophyl. nucis moschat. nucum cupressi. an.* ℥ i ß. *mastich.* ℥ii. *alumin. roch.* ℥ i ß. *glandium & corticis querni, an.* ℔ ß. *rosar. rubr.* m. i. *cort. granat.* ℥ ii. *terræ sigillat.* ℥ i. *cornu cervi usti* ℥ ß. *myrtillor. sanguinis dracon. an.* ℥ i. *boli armeni.* ℥ ii. *ireos florent.* ℥ i. *sumach. berber. Hyppuris, an.* m. ß. *conquassentur omnia, & macerentur spatio duorum dierum. in* ℔ i ß. *aquæ rosarum* ℔ ii. *prunorum syvestr. mespilorum, pomorum quernorum, &* ℔ ß. *aquæ fabrorum, aceti denique fortiss.* ℥ iv. afterward distill it over a gentle fire, and keep the distilled liquor for your use, wherewith let the parts be fomented twice in a day. And after the fomentation, let wollen clothes or stupes of linnen cloth be dipped in the liquor, and then pressed out and laid to the place. When all these things are done and past, the woman may againe keep company with her husband.

Chap. XXIX.

What the causes of difficult and painefull travell in child-birth are.

The causes of the difficult child-birth that are in the woman that travelleth.

THe fault dependeth sometimes on the mother, and sometimes on the infant or childe within the wombe. On the mother, if shee bee more fat, if shee bee given to gurmundize or great eating, if she be too leane or yong, as *Savanarola* thinketh her to bee, that is great with childe at nine yeares of age, or unexpert, or more old, or weaker than shee should bee, eyther by nature or by some accident: as by diseases that shee hath had a little before the time of child-birth, or with a great fluxe of bloud. But those that fall in travell before the full and prefixed time, are very difficult to deliver, because the fruit is yet unripe, and not ready or easie to bee delivered. If the necke or orifice of the wombe bee narrow, eyther from the first conformation, or afterwards by some chance, as by an ulcer cicatrized: or more hard and callous, by reason that it hath beene torne before at the birth of some other childe, and so cicatrized againe, so that if the cicatrizced 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 mydwife may hinder the free deliverance of the child. Oftentimes women are letted in travell by shamefac'tnesse, by reason of the presence of some man, or hate to some woman there present.

The passions of the mind hinder the birth.

If the secundine bee pulled away sooner than it is necessary, it may cause a great fluxe of bloud to fill the wombe, so that then it cannot performe his exclusive faculty, no otherwise than the bladder when it is distended by reason of overabundance of water that is therein, cannot cast it forth, so that there is a stoppage of the urine. But the wombe is much rather hindred, or the faculty of child-bith is stopped or delayed, if together with the stopping of the secundine, there be either a mole or some other body contrary to nature in the wombe. In the secundines of two women whom I delivered of two children that were dead in their bodies, I found a great quantity of sand like unto that that is found about the banks of rivers, so that the gravell or sand that was in each secundine was a full pound in weight.

The causes of difficult child-birth that are in the infant.

Also the infant may bee the occasion of difficult child-birth, as, if too bigge, if it come overthwart, if it come with its face upwards, and its buttocks forwards, if it come with its feet and hands both forwards at once, if it be dead and swolne by reason of corruption, if it bee monstrous, if it have two bodies or two heads, if it bee manifold or seven-fold, as *Albucrasis* affirmeth hee hath seene, if there bee a mole

annexed

annexed thereto, if it be very weake, if when the waters are flowed out, it doth not move or ſtirre, or offer its ſelfe to come forth. Yet notwithſtanding, it happeneth ſometimes that the fault is neither in the mother nor the childe, but in the aire, which being cold, doth ſo binde, congeale and make ſtiffe the genitall parts, that they cannot bee relaxed: or, being contrariwiſe too hot, it weakeneth the woman that is in travell, by reaſon that it waſteth the ſpirits, wherein all the ſtrength conſiſteth: or in the ignorant and unexpert mydwife, who cannot artificially rule and governe the endeavours of the woman in travell. The externall cauſes of difficult child-birth.

The birth is wont to bee eaſie, if it bee in the due and prefixed naturall time, if the childe offer himſelfe luſtily to come forth with his head forwards, preſently after the waters are come forth, and the mother in like manner luſty and ſtrong: thoſe which are wont to bee troubled with very difficult child-birth, ought a little before the time of the birth, to goe into an halfe tub filled with the decoction of mollifying rootes and ſeeds, to have their genitals, wombe, and necke thereof to bee anoynted with much oyle, and the inteſtines that are full and loaded muſt bee unburthened of the excrements, and then the expulſive faculty provoked with a ſharpe glyſter, that the tumours and ſwelling of the birth concurring therewith, the more eaſie excluſion may be made. But I like it rather better, that the woman in travell ſhould be placed in a chaire that hath the backe thereof leaning backwards, than in her bed, but the chair muſt have a hole in the bottome, whereby the bones that muſt be dilated in the birth, may have more freedome to cloſe themſelves againe. Which is an eaſie birth. What cauſeth eaſinette of child-birth.

Chap. XXX.

The cauſes of Abortion or untimely birth.

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 maturity thereof. But that is called effluxion, which is the falling downe of ſeeds mixed together and coagulated but for the ſpace of a few dayes, onely in the formes of membranes or tunicles, congealed bloud, and of an unſhapen or deformed piece of fleſh; the mydwives of our countrey call it a falſe branch or budde. This effluxion is the cauſe of great paine and moſt bitter and cruell torment to the woman: leaving behinde it weakneſſe of body farre greater than if the childe were borne at the due time. The cauſes of abortion or untimely birth, whereof the the child is called an abortive, are many, as a great ſcouring, a ſtrangury joyned with heate and inflammation, ſharpe fretting of the guts, a great and continuall cough, exceeding vomiting, vehement labour in running, leaping, and dauncing, and by a great fall from on high, carrying of a great burthen, riding on a trotting horſe, or in a Coach, by vehement, often and ardent copulation with men, or by a great blow or ſtroke on the belly. For all theſe & ſuch like vehement and inordinate motions diſſolve the ligaments of the wombe, and ſo cauſe abortion or untimely birth. What Abortion is. What Effluxion is. Women are in more paine by reaſon of the effluxion than at the true birth. The cauſes of Abortion.

Alſo whatſoever preſſeth or girdeth in the mothers belly, and therewith alſo the wombe that is within it, as are thoſe Ivory or Whale-bone buskes, which women weare on their bodies, thereby to keepe downe 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 come forth before the legitimate and lawfull time. Thundering, the noyſe of the ſhooting of great Ordnance, the ſound, and vehement noyſe of the ringing of Bells conſtraine women to fall in travell before their time, eſpecially women that are young, whoſe bodies are ſoft, ſlacke and tenderer than thoſe that bee of riper yeares. Long and great faſting, a great fluxe of bloud, eſpecially when the infant is growne ſomewhat great: but if it bee but two moneths old, the danger is not ſo great, becauſe then hee needeth not ſo great quantity of nouriſhment, alſo a long diſeaſe of the mother, which conſumeth the bloud, cauſeth the childe to come forth being deſtitute of ſtore Girding of the belly may cauſe untimely birth.

ſtore of nouriſhment before the fit time. Moreover, fulneſſe, by reaſon of the eating great ſtore of meates, often maketh or cauſeth untimely birth; becauſe it depraveth the ſtrength, and preſſeth down the child: as likewiſe the uſe of meats that are of an evill juice, which they luſt or long for. But bathes, becauſe they relaxe the ligaments of the wombe, and hot houſes, for that the fervent and choaking ayre is received into the body, provoke the infant to ſtrive to goe forth to take the cold ayre, and ſo cauſe abortion.

How bathes & hot houſes cauſe untimely birth.

Hip. aph. 53. & 37 *ſect.* 5. *Hip. aph* 45 *ſect.* 5.

What women ſoever, being indifferently well in their bodies, travell in the ſecond or third moneth without any manifeſt cauſe, thoſe have the Cotylidones 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 continuall perturbations of the minde, whether they bee through anger or feare, may cauſe women to travell before their time, and are accounted as the cauſes of abortions, for that they cauſe great and vehement trouble in the body. Thoſe women that are like to travell before their time, their dugs will wax little: therefore when a woman is great with childe, if her dugs ſuddenly wax ſmall or ſlender, it is a ſigne that ſhee will travell before her time; the cauſe of ſuch ſhrinking of the dugs is, that the matter of the milke is drawne back into the wombe, by reaſon that the infant wanteth nouriſhment to nouriſh and ſuccour it withall. Which ſcarcity the infant not long abiding, ſtriveth to goe forth to ſeek that abroad which he cannot have within, for among the cauſes which do make

Hip. aph 38. *ſect.* 5.

the infant to come out of the womb, thoſe are moſt uſually named with *Hippocrate*, the neceſſity of a more large nutriment and aire.

Therfore if a woman that is with child have one of her dugs ſmall, if ſhe have two children, ſhe is like to travell of one of them before the full and perfect time: ſo that if the right dug be ſmall, it is a man child, but if it be the left dug it is a female. Women are in farre more paine when they bring forth their children before the time than if it were at the full and due time, becauſe that whatſoever is contrary to nature, is troubleſome, painefull, and alſo oftentimes dangerous. If there be any errour committed at the firſt time of childe-birth, it is commonly ſeene that it happeneth alwayes after at each time of child-birth. Therefore, to find out the cauſes of that errour, you muſt take the counſell of ſome Phyſician, and after his counſell endeavour to amend the ſame. Truly this plaſter following being applyed to the reine doth confirme the wombe, and ſtay the infant therein. ℞. *ladani* ℥ ii. *galang.* ℥ i. *nucis moſchat. nucis cupreſſi, boli armeni, terræ ſigill. ſanguin. dracon. balauſt. an.* ℥ß. *acatiæ, piſidiorum, hypociſtid. an.* ℥ i. *maſtich. myrrhæ, an.* ℥ ii. *gummi arabic.* ℥ i. *terebinth. venet.* ℥ ii. *picis naval.* ℥ i. ß. *ceræ quantum ſufficit, fiat emplaſt. ſecundem artem*; ſpread it for your uſe upon leather. If the part begin to itch, let the plaſter be taken away, & in ſtead thereof uſe *unguent. roſat.* or *refrig. Galen.* or this that followeth. ℞. *olei myrtini, maſtich. cydonior. an.* ℥ i. *hypociſt. boli armen. ſang. dracon. acatiæ, an.* ℥ i. *ſant. citrini* ℥ ß. *ceræ quant. ſuf.* make thereof an oyntment according unto art. There are women that beare the child in their wombe ten or eleven whole moneths, and ſuch children have their conformation of much and large quantity of ſeede: wherefore they will bee more bigge, great and ſtrong, and therefore they require more time to come to their perfection and maturity; for thoſe fruits that are great will not bee ſo ſoone ripe as thoſe that are ſmall. But children that are ſmall and little of body do often come to their perfection and maturity in ſeven or nine months: if all other things are correſpondent in greatneſſe and bigneſſe of body, it happeneth for the moſt part that the woman with child is not delivered before the ninth moneth bee done, or at the leaſtwiſe in the ſame moneth. But a male child will bee commonly borne at the beginning, or a little before the beginning of the ſame moneth, by reaſon of his engrafted heat which cauſeth maturity and ripeneſſe. Furthermore, the infant is ſooner come to maturity and perfection in a hot woman than in a cold, for it is the property of heat to ripen.

Women are in more pain at the untimely birth than at the due time of birth.

The errour of the firſt childbirth continues afterwards.

A plaſter ſtaying the infant in the wombe.

What children are ten or eleven moneths in the wombe.

A male will bee borne ſooner than a female.

Chap.

Chap. XXXI.

How to preserve the infant being in the wombe, when the mother is dead.

IF all the signes of death appeare in the woman that lieth in travell, and cannot be delivered, there must then be a Chirurgian ready and at hand, which may open her body so soone as shee is dead, whereby the infant may be preserved in safety; neither can it bee supposed sufficient if the mothers mouth and privie parts bee held open; for the infant being enclosed in his mothers wombe, and compassed with the membranes, cannot take his breath, but by the contractions and dilatations of the artery of the navell. But when the mother is dead, the lungs doe not execute their office and function: therefore they cannot gather in the aire that compasseth the body by the mouth or *aspera arteria* into their owne substance, or into the arteries that are dispersed throughout the body thereof, by reason whereof it cannot send it unto the heart by the veiny artery which is called *arteria venalis*: for if the heart want aire, there cannot bee any in the great artery which is called *arteria aorta*, whose function it is to draw it from the heart; also by reason thereof it is wanting in the arteries of the wombe, which are as it were the little conduits of that great artery, whereinto the aire that is brought from the heart is derived, and floweth in unto these little ones of all the body, and likewise of the wombe. Wherefore it must of necessity follow that the aire is wanting to the cotyledons of the secundines, to the arterie of the infants navell, the iliacke arteries also, and therefore unto his heart, and so unto all his body: for the aire being drawne by the mothers lungs, is accustomed to come to the infant by this continuation of passages. Therefore becaus death maketh all the motions of the mothers body to cease, it is farre better to open her body so soone as shee is dead, beginning the incision at the cartelage, *Xiphoides*, or breast-blade, and making it in a forme semicircular, cutting the skinne, muscles and *peritonæum*, not touching the guts: then the wombe being lifted up, must first be cut, lest that otherwise the infant might perchance be touched or hurt with the knife.

Why it is not sufficient to preserve life in the childe to hold open the mouth and privie parts of the mother so soone as she is dead and the childe alive in her body.

How the belly of the woman that dieth in travell must be cut open to save the childe.

You shall oftentimes finde the childe unmoveable, as though hee were dead; but not becaus he is dead indeed, but by reason that he, being destitute of the accesse of the spirits by the death of the mother, hath contracted a great weakenesse: yet you may know whether hee be dead indeed or not, by handling the artery of the navell, for it will beat and pant if he be alive, otherwise not; but if there be any life yet remaining in him, shortly after he hath taken in the aire, and is recreated with the accesse thereof, he will move all his members, and also all his whole body. In so great a weakenesse or debility of the strength of the childe, the secundine must not bee separated as yet from the childe, by cutting the navell string, but it must rather be laid close to the region of the belly thereof, that thereby the heat (if there be any jot remaining) may bee stirred up againe. But I cannot sufficiently marvaile at the insolency of those that affirme that they have seene women whose bellies and wombe have bin more than once cut, and the infant taken out, when it could no otherwise be gotten forth, and yet notwithstanding alive; which thing there is no man can perswade me can be done, without the death of the mother, by reason of the necessary greatnesse of the wound that must be made in the muscles of the belly, and substance of the wombe, for the wombe of a woman that is great with childe, by reason that it swelleth, and is distended with much blood, must needs yeeld a great flux of blood, which of necessity must be mortall. And to conclude, when that the wound or incision of the wombe is cicatrized, it will not permit or suffer the womb to be dilated or extended to receive or beare 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 be alive or not.

Chap.

Chap. XXXII.

Of ſuperfœtation.

What ſuperfœtation is.

Superfœtation is when a woman doth beare two or more children at one time in her wombe, 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 & birth, but all at once. For as preſently after meat the ſtomacke which is naturally of a good temper, is contracted or drawn together about the meate, to comprehend it on every ſide, though ſmall in quantity, as it were by both hands, ſo that it cannot rowle neither unto this or that ſide; ſo the wombe is drawne together unto the conception about both the ſeeds, as ſoone as they are brought into the capacity thereof, and is ſo drawne in unto it on every ſide, that it may come together into one body, not permitting any portion thereof to goe into any other region or ſide, ſo that by one time of copulation the ſeed that is mixed together, cannot engender more children than one, which are devided by their ſecundines. And moreover, becauſe there are no ſuch cells in the wombes of women, as are ſuppoſed, or rather knowne to bee in the wombs of beaſts, which therefore bring forth many at one conception or birth. But now if any part of the womans wombe doth not apply and adjoine it ſelfe cloſely to the conception of the ſeed already received, leſt any thing ſhould be given by nature for no purpoſe, it muſt of neceſſity follow that it muſt be filled with aire, which will alter and corrupt the ſeeds. Therefore the generation of more than one infant at a time, having every one his ſeverall ſecundine, is on this wiſe. If a woman conceave by copulation with a man as this day, and if that for a few daies after the conception, the orifice of the wombe be not exactly ſhut, but rather gape a little, and if ſhee doe then uſe copulation againe, ſo that at both theſe times of copulation there may be an effuſion or perfect mixture of the fertile ſeed in the wombe, there will follow a new conception, or ſuperfœtation. For ſuperfœtation is no other thing than a certaine ſecond conception, when the woman already with childe, againe uſeth copulation with a man, and ſo conceiveth againe, according to the judgement of *Hippocrates*. But there may be many cauſes alledged why the wombe which did joyne and cloſe doth open and unloſe it ſelfe againe. For there bee ſome that ſuppoſe the wombe to be open at certaine times after the conception, that there may be an iſſue out for certaine excrementall matters that are contained therein, and therefore that the woman that hath ſo conceived already, and ſhall then uſe copulation with a man againe, ſhall alſo conceive againe.

A womans wombe is not diſtinguiſhed into divers cels.

The reaſon of ſuperfœtation.

Lib. de ſuperfœtationibus.

Why the womb after the conception of the ſeed, doth many times afterwards open.

Others ſay that the wombe of it ſelfe, and of its own nature is very deſirous of ſeed or copulation, or elſe being heated or enflamed with the pleaſant motion of the man moving her thereto, doth at length uncloſe it ſelfe to receive the mans ſeed: for likewiſe it happeneth many times that the orifice of the ſtomack being ſhut after eating, is preſently unlooſed again, when other delicate meats are offered to be eaten: even ſo may the wombe uncloſe it ſelfe againe at certain ſeaſons, whereof come manifold iſſues, whoſe time of birth and alſo of conception are different. For as *Pliny* writeth, when there hath bin a little ſpace between two conceptions, they are both haſtened, as it appeared in *Hercules* and his brother *Iphicles*; and in her, which having two children at a birth, brought forth one like unto her husband, and another like unto the adulterer. And alſo in the Procomeſian 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 moneths end. And againe in another, who bringing forth her burthen on the ſeventh moneth, brought forth two more in the moneths following. But this is a moſt manifeſt argument of ſuperfœtation, that as many children as are in the wombe (unleſſe they bee twinnes of the ſame ſexe) ſo many ſecundines are there,

Lib. 7. cap. 11.

there, as I have often ſeene my ſelfe. And it is very 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 than two at one burden, it ſeemeth to bee a monſtrous thing, becauſe that nature hath given her but two breaſts. Although wee ſhall hereafter rehearſe many examples of more numerous births.

Chap. XXXIII.

Of the tumour called Mola, *or a Mole growing in the wombe of Women.*

OF the greeke word *Myle*, which ſignifieth a Mill-ſtone, this tumour 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 ſelfe ſame reaſon the whirle-bone of the knee is called of the Latines *mola*, and of the Greeks *Myle*. But the tumor called *Mola*, whereof we heere entreate, is nothing elſe but a certain falſe conception of deformed fleſh, round and hard, conceived in the wombe as it were rude and unperfect, and not diſtinguiſhed into members, comming by corrupt, weake, and diſeaſed ſeed, and of the immoderate fluxe of the termes, as it is defined by *Hippocrates*. This is encloſed in no ſecundine, but as it were in its owne skinne.

The reaſon of the name.

What a *mola* is.

Lib. de ſteril.

There are ſome that thinke the *Mola* to bee engendered of the concourſe or mixture of the womans ſeed and menſtruall blood, without the communication of the mans ſeed. But the opinion of *Galen* is, that never any man ſaw a woman conceive either a *Mola*, or any other ſuch thing, without copulation of man, as an hen laieth eggs without a cock: for the onely cauſe and originall 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 unfruitfull, onely puffes up or makes the womans ſeed to ſwell as leaven into a greater bigneſſe, but not into any perfect ſhape or forme. Which is alſo 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 unfruitfull and weake, doth conſtraine it to deſiſt from its enterpriſe of conformation already begun, as vanquiſhed or wholly overcome: for the generation of the *mola* commeth not of a ſimple heat working upon a clammy and groſſe humour, as wormes are generated; but of both the ſeeds, by the efficacy of a certaine ſpirit, after a ſort prolificall, as may be underſtood by the membranes wherein the *mola* is encloſed, by the ligaments whereby many times it is faſtened or bound to the true conception or child, engendered or begotten by ſuperfœtation; and finally, by the encreaſe, and great and ſluggiſh waight. If all men were not perſwaded that the confluxe of a mans ſeed muſt of neceſſity concurre to the generation of the *mola*, it would bee no ſmall cloake or cover to women to avoide the ſhame and reproach of their light behaviour.

Cap. 7. lib. 4. de uſu part.

How the *mola* is engendered.

Chap. XXXIIII.

How to diſcerne a true conception from a falſe conception or Mola.

WHen the *mola* is encloſed in the wombe, the ſame things appear as in the true and lawfull conception. But the more proper ſignes of the *mola* are theſe: there is a certaine pricking paine, which at the beginning troubleth the belly as if it were the cholicke, the belly will ſwell ſooner than it would if it were the true iſſue, and will be diſtended with greater hardneſſe, and is more difficult and troubleſome to carry, becauſe it is contrary to nature,

The ſignes of a *mola* encloſed in the wombe.

and voyd of ſoule or life. Preſently after the conception the dugges ſwell and puffe up, but ſhortly they fall and become lanke and laxe; for nature ſendeth milk thither in vaine, becauſe there is no iſſue in the wombe 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 intellectuall ſoule, but of the faculty of the wombe, and of the ſpirit of the ſeed diſperſed through the ſubſtance of the *mola*; for it is nouriſhed and encreaſeth 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 every ſide gently, but the *mola*, by reaſon of its heavineſſe, is fixed, and rowleth in manner of a ſtone, carried by the weight thereof unto what ſide ſoever the woman declineth her ſelfe. The woman that hath a *mola* in her wombe doth daily waxe leaner and leaner in all her members, but eſpecially in her legges, although notwithſtanding towards night they will ſwell, ſo that ſhee will bee very ſlow or heavie in going, the naturall heat forſaking the parts remote from the heart by little and little; and moreover, her belly ſwells, by reaſon that the menſtruall matter reſteth about thoſe places, and is not conſumed in the nouriſhment of the *mola*: ſhe is ſwolne as if ſhe had the dropſie, but that it is harder, and doth not riſe againe when it is preſſed with the fingers. The navell doth not ſtand out as it will do when the true iſſue is conteined in the womb, neither do the courſes flow as they ſometimes do in the true conception; but ſometimes great fluxes happen, which eaſe the waight of the belly. In many when the *mola* doth cleave not very faſt, it falleth away within three or foure moneths, being not as yet come unto its juſt bigneſſe; and many times it cleaveth to the ſides of the wombe and Cotyledons very firmely, ſo that ſome women carry it in their wombs five or ſixe yeeres, and ſome as long as they live.

By what faculty the wombe moveth.

How the motion of the *mola* differeth from the motion of the infant in the womb.

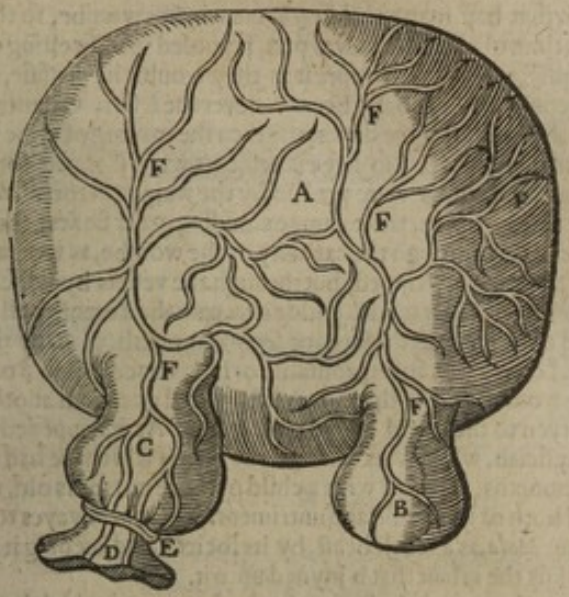
The *mola* doth turne to each ſide of the wombe, as the ſituation of the body is.

A hiſtory.

The wife of *Guiliam Roger* Pewterer, dwelling in S. *Victors* ſtreet, bore a *mola* in her womb ſeventeen yeeres, who being of the age of fifty yeers, died; and I having opened her, found the body of her womb to be almoſt looſed, and not tyed or bound by its accuſtomed ligatures, but as it were hanging onely by the necke, and furthermore cleaving to the Kall adjoyning to it, having but onely one teſticle, and that on the right ſide, and that ſomewhat broader and looſer than uſuall: the hornes were not to be ſeene except it were on that ſide, the veſſells were on the necke onely, and there very manifeſt and puffed up, it was as bigge as a mans head. When I had taken it out of her body, I brought it home unto my houſe, that at my leaſure I might finde out what was conteined in it ſo long; therfore on a certaine day, calling together the chiefe Phyſitians of Paris, as *Maſſilæus*, *Alexis*, *Vigor*, *de* S. *Pont*. *Feure*, *Brovet*, *Violais*, *Grealmus*, *Ravin*, *Mareſcotius*, *Milotus*, *Hautin*, *Riolan*, *Luſſon*; and Chirurgians, as *Brun*, *Cointerell*, *Guillemeau*: all theſe being preſent, I opened the wombe, and I found it in all the body thereof and in the proper tunicle, ſo ſchirrhous, and ſo hard, that I could hardly cut or make a knife to enter into it: the body thereof was three fingers thicke. In the midſt of the capacity thereof I found a lumpe of fleſh as bigge as both my fiſts, like unto a Cowes udder, cleaving to the ſides of the wombe but in certaine places, of a very thicke, unequall and clodditſh ſubſtance, with many bodies therein, even as are commonly found in wennes and griſtles, diſperſed through it as if it were bones. The judgement of all that were preſent was, that this great tumor at the firſt was a *mola*, which in proceſs of time degenerated into a ſchirrous body, together with the proper ſubſtance of the womb. Moreover, in the middle of the neck of the womb, we found a tumor as big as a Turkies egge, of ſubſtance hard, cartilaginous and bonie, filling all the whole necke, 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 goe out, or enter into the wombe: all that tumour weighed nine pounds and two ounces, which I, by reaſon of the novelty of the thing, keep in my cloſet, and here I have deſcribed it.

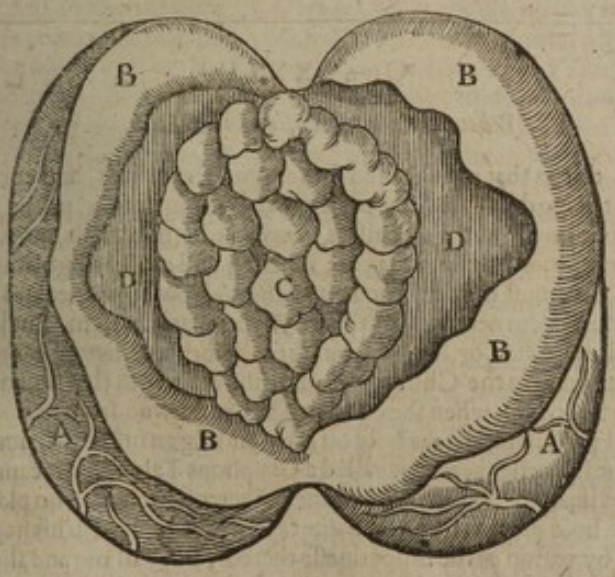
The deſcription of a *mola* carried ſeventeene yeeres in the wombe.

The externall forme and description of the fore-named wombe.



A. *Sheweth the body of the wombe.*
B. *The testicle.*
C. *The neck of the wombe, wherein that little tumour was contained.*
D. *Sheweth the end of the necke of the wombe 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 wombe.*

The description of the womb being open, and shewing the Mola *contained therein.*



AA. *Shew the externall and superficiall part of the wombe.*
BBBB. *Shew the thicknesse of the body or proper substance of the wombe.*
C. *Sheweth the* Mola.
DD. *Shew that concavity wherein the* mola *was conteined or incloſed in the womb.*

As long as the woman carried this *Mola* in her wombe, shee felt most sharpe pain in her belly, the region of her belly was marvellous hard, distended and large, as if it were a woman that had many children at once in her wombe, so that many Physicians when the time of child-birth was past, supposed that swelling of the belly to come of the dropsie, and assayed to cure it as they would the dropsie, but for all the medicines they could use, the belly became never the lesser. Oftentimes the urine was stopped for the space of three dayes, and then the making of urine was very painfull unto her, and many times also her excrements were stopped for the space of a weeke, by reason that the guts were pressed by the weight of the *Mola*. At certaine seasons, as every third moneth, there came exceeding great fluxes, the matter thereof could not be carryed through the capacity of the wombe, as wee said before, because it was exactly shut and stopped, but through the vessels by which virgins, and also certaine other women great with childe evacuate their menstruall matter. If the *Mola* be expelled or cast out in the first or second moneth, as many times it so happeneth, it is called of women an unprofitable or false conception. Sometimes there are found in one wombe two or three moles separated one from another, and sometimes bound or tyed to the sound and perfect infant. As it happened in the wife of *Valleriola* the Physician, which was delivered of a *Mola* which she had carryed in her wombe twelve moneths, annexed with a child of foure moneths old, which had deprived the infant both of its roome and nutriment. For it is alwayes to be certainely supposed, that the *Mola*, as a cruell beast, by its society, and keeping it from its nutriment and place, kils the infant that is joyned unto it.

A vaine or unprofitable conception.

The *mola* kils the infant in the womb when it is fastened unto it.

I remember once I opened the body of a dead woman, which had a *Mola* in her wombe as bigge as a goose egge, which when nature had assayed by many vaine endeavours to cast out, remained notwithstanding, and at length putrefied, and therewith infected the whole wombe, whereof she dyed. There be some which judging themselves great with childe, doe about the ninth or tenth moneth expell no other thing but sounding blasts of winde; whereby the wombe suddenly falling downe and waxing more slender, they are said in a mockery to have been delivered of a fart. To conclude, whatsoever resembles being with child, if it be not excluded at the due and lawfull time of child-birth by its owne accord or by the strength of nature, then must it bee expelled by art.

Chap. XXXV.

What cure must bee used to the Mola.

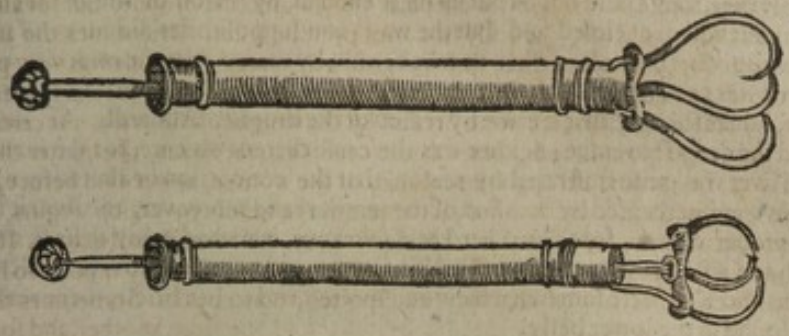
Those things that provoke the flowers forcibly, doe also consume or waste the *mola*.

ALL things that provoke the flowers and secundines, and exclude the infant being dead, are to be prescribed, given inwardly, put up, and applyed outwardly, as the trochisces of *myrrha*, hermodactils, and such like, first having fomentations that are relaxing and mollifying alwaies applyed to the places. You must use these medicines and phlebotomy, diet and bathes then & so long as it shall seem necessary to the Physician that is present. But if it happens that the *mola* is separated or loosed from the wombe, and nature cannot expell it when it is so loosed, let the Chirurgion place the woman in that situation that wee said she was to bee put in, when the child was to bee drawne from her. Then opening her genitall parts, let him take hold on it by putting an instrument into it, which by reason of the likenesse thereof, is called a Gryphons Talon, for it cannot be taken hold on otherwise, by reason of the roundnesse thereof, for it hath no place whereon it may be taken hold of: therfore, when one taketh hold on it with his hand, it cannot be holden fast by reason of the slipperinesse thereof, but will run and slip backe into the hollownesse of the wombe, like unto a bowle or great ball; but it may bee more easily taken hold on with the Gryphons Talon, if the belly be pressed on both sides that it may remaine still while the Gryphons Talon takes hold on it, for when it hath taken good hold on it, it may be easily drawne out. When the *mola* is drawne out, the same cure must be used to the woman, as is used to a woman after that she is delivered of child.

The Chirurgicall extraction of the *mola*.

The

The figure of an inſtrument called a Gryphons Talon, to draw out the Mola *when it is looſe in the wombe.*



CHAP. XXXVI.

Of Tumours or ſwellings happening to the Pancreas *or ſweet-bread, and the whole Meſentery.*

THe tumours of other places and parts in the belly ought diligently to bee diſtinguiſhed from the *mola*, and other tumours of the wombe. For when tumours ariſe in the *glandula* called *Pancreas*, and in all the whole *Meſenterium*, many unskilfull Chirurgions take them for *mola's* or ſcirrhous tumors of the wombe, and ſo goe erroneouſly about to cure them, as ſhall appeare by thoſe hiſtories following.

A hiſtory.

Iſabel Rolant the wife of *John Bony* dwelling in Paris in the ſtreet *Moncy* neere to St. *Geruiſe* his Church, being threeſcore yeares of age, departed this life in the yeare of our Lord God 1578. on the twenty ſecond day of October: and her body being opened in the preſence of Doctor *Milet* the Phyſician, hee when the Meſentery was taken out of the body, cauſed it to be carried home to his houſe, that at his leaſure he might find out the cauſe of this mortall diſeaſe, which was alwayes ſuſpected to be in the Meſentery. Therefore on a time calling *Varadeus, Brove, Chappell, Mareſcotius, Arragonius, Baillutius, Reburtius and Riolan*, all Doctors of Phyſick, and me and *Pineus* Chirurgions, to his houſe to ſee the ſame. Where wee found all the Meſentery and the *Pancreas* in the Meſentery ſwolne and puffed up with a marvellous and almoſt incredible tumour, ſo that it wayed ten pound and an halfe, altogether ſcirrhous on the out ſide, cleaving on the hinder part onely to the vertebres of the loynes: but on the fore part to the *Peritonæum*, being alſo ſcirrhous and wholly cartilaginous. Moreover, there were infinite other abſceſſes in the ſame Meſentery, every one cloſed in his ſeverall cyſt, ſome filled with a hony-like, ſome with a tallow-like, ſome with an albugineous, and ſome with a wateriſh liquor or humour, whereof ſome alſo were like unto pap, and to conclude, looke how many abſceſſes there were, ſo many kinds or differences of matters there were. It was then eight yeares ſince that tumour began to grow by little and little without feeling and paine unto ſuch a greatneſſe, becauſe that the Meſentery it ſelfe was without pain in a manner. For the woman her ſelfe could do all the faculties of nature almoſt as well as if ſhe had bin ſound and whole, except that two moneths before ſhe died, ſhe was conſtrained to keep her bed, becauſe ſhee had a continuall feaver, which endured ſo long as ſhe lived, and alſo becauſe that the Meſentery, being as it were ſeparated or torne from its roots or ſeate, did rowle up and downe in the belly, not without the feeling of grievous paine: for, as we ſaid before, it did ſtick but only to the vertebres of the loynes and *Peritonæum*, and nothing at all to the guts and other parts whereunto it is as it were naturally knit or joyned.

Apoſtumes of divers kinds in the *Meſenterium*.

The accidents that come when the *Meſenterium* is ſeparated from the bodies adjoyning.

Therefore becauſe the weight and heavineſſe thereof depreſſed the bladder, it cauſed a great difficulty in her making of water, and alſo becauſe it reſted on the guts, it made it very painefull for her to goe to ſtoole, ſo that the excrements would not come downe except ſhee tooke a ſharpe glyſter to cauſe them: and as concerning glyſters, they could not be put up high enough, by reaſon of the greatneſſe of the tumour which encloſed and ſhut the way; and ſuppoſitories did no good at all. It was alſo very difficult for her to take breath, by reaſon that the midriffe or *diaphragma* was compreſſed with the tumour. There were ſome that did ſuſpect it to be a *mola*, others thought that it came by reaſon of the dropſie. Aſſuredly this diſeaſe cauſed the dropſie to enſue; neither was the cauſe thereof obſcure, for the function of the liver was quite fruſtrated by reaſon that the concoction or alteration of the Chylus was intercepted by occaſion of the tumour: and moreover, the liver it ſelfe had a proper diſeaſe, for it was hard and ſcirrhous, and had many abſceſſes both within and without it, and all over it. The milt was ſcarce free from putrefaction, the guts and Kāll were ſomewhat blew and ſpotted, and to bee briefe, there was nothing found in the lower belly.

The dropſie comming of a tumour of the *Meſenterium*.

Tom. 1. tra. 1. c. 1. There is the like hiſtory to bee read, written by *Philip Ingraſsias*, in his booke of tumours, of a certaine Moore that was hanged for theft, for (ſaith he) when his body was publikely diſſected, in the *Meſenterium* were found ſeventy ſcrophulous tumours, and ſo many abſceſſes were contained or encloſed in their ſeverall cyſts or skins, and ſticking to the externall tunicle, eſpecially of the greater guts: the matter conteyned in them was divers, for it was hard, knotty, clammy, glutinous, liquid and wateriſh, but the entrals, eſpecially the liver and the milt, were ſound and free from all manner of tainture, becauſe (as the ſame Author alledgeth) nature being ſtrong, had ſent all the evill juice, and the corruption of the entrals into the Meſentery: and verily this Moore, ſo long as he lived, was in good and perfect health. Without doubt the corruption of ſuperfluous humours for the moſt part is ſo great (as it 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 downe into the parts adioyning, and eſpecially into the Meſentery and *pancreas*, which are as it were the ſink of the whole body. In thoſe bodies which through continuall and daily gluttony abound with choler, melancholy and flegme, if it be not purged in time, nature being ſtrong and luſty, doth depell and drive it downe into the *pancreas* and the Meſentery, which are as places of no great repute, and that eſpecially out of the liver and milt by thoſe veines or branches of the *vena porta* which end or goe not into the guts, but are terminated in the Meſentery and *pancreas*. In theſe places divers humours are heaped together, which in proceſſe of time turne into a looſe and ſoft tumour, & then if they grow bigger, into a ſtiffe, hard and very ſcirrhous tumour. Whereof *Fernelius* affirmeth that in thoſe places he hath found the cauſes of choler, melancholy, fluxes, dyſenteries, cachexia's, atrophia's, conſumptions, tedious and uncertain fevers, and laſtly of many hidden diſeaſes, by the taking away whereof ſome have received their health, that have been thought paſt cure. Moreover *Ingraſsias* affirmeth out of *Julius Pollux* that Scrophulaes may be engendred in the Meſentery, which nothing differs from the mind & opinion of *Galen*, who ſaith that Scrophulaes are nothing elſe but indurate & ſcirrhous kernels. But the *Meſenterium* with his glandules being great and many, making the *Pancreas*, doth eſtabliſh, ſtrengthen and confirme the diviſions of the veſſels. Alſo the ſcirrhus of the proper ſubſtance of the wombe is to bee diſtinguiſhed from the *mola*: for in the bodies of ſome women that I have opened, I have found the wombe annoyed with a ſcirrhous tumour as big as a mans head, in the curing whereof Phyſicians nothing prevailed, becauſe they ſuppoſed it to bee a *mola* contained in the capacity of the wombe, and not a ſcirrhous tumour in the body thereof.

Lib 6 part. morb. cap. 7.

The *Meſenterium* is the ſinke of the body.

The Scrophulaes in the *Meſenterium*.

A ſcirrhus of the wombe.

CHAP.

Chap. XXXVII.

Of the cauſe of barrenneſſe in men.

THere are many cauſes of barrenneſs in men, that is to ſay, the too hot, cold, dry or moyſt 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, becauſe that it doth not remaine his due and lawfull time in the teſticles, wherein it ſhould be perfectly wrought and concocted, but is evacuated by wanton copulation. Furthermore, that the ſeed may be fertile, it muſt of neceſſity be copious in quantity, but in quality well concocted, moderately thicke, clammy, and puffed up with the abundance of ſpirits; both theſe conditions are wanting in the ſeed of them that uſe copulation too often: and moreover, becauſe the wives of thoſe men never gather a juſt quantity of ſeede laudible both in quality and conſiſtence in their teſticles, whereby it commeth to paſſe that they are the leſſe provoked or delighted with venereous actions, and performe the act with leſſe alacrity, ſo that they yeeld themſelves leſſe prone to conception. Therefore let thoſe that would be parents of many children uſe a mediocrity in the uſe of venery. How the ſeed is unfertile.

The woman may perceive that the mans ſeed hath ſome diſtemperature in it, if when ſhee hath received it into her wombe, ſhee feeleth it ſharpe, hot or cold, if the man be more quick or ſlow in the act. Many become barren after they have beene cut for the ſtone, and likewiſe when they have had a wound behind the eares, whereby certaine branches of the jugular veines and arteries have been cut, that are there, ſo that after thoſe veſſels have been cicatrized, there followed an interception of the ſeminall matter downewards, and alſo of the community which ought of neceſſity to be betweene the braine and the teſticles, ſo that when the conduits or paſſages are ſtopped, the ſtones or teſticles cannot any more receive, neither matter nor lively ſpirits from the braine in ſo great quantity as it was wont, whereof it muſt of neceſſity follow, that the ſeed muſt bee leſſer in quantity, and weaker in quality. How the cutting of the veines behind the eares maketh men barren.

Thoſe that have their teſticles cut off, or elſe compreſſed or contuſed by violence, cannot beget children, becauſe that either they want the help that the teſticles ſhould miniſter in the act of generation, or elſe becauſe the paſſage of the ſeminall matter is intercepted or ſtopped with a Callus: by reaſon whereof they cannot yeeld forth ſeed, but a certaine clammy humour conteyned in the glandules called *proſtatæ* (yet with ſome feeling of delight).

Moreover the defects or imperfections of the yard may cauſe barrenneſſe: as, if it be too ſhort, or if it bee ſo unreaſonable great, that it renteth the privie parts of the woman, and ſo cauſeth a fluxe of bloud, for then it is ſo painefull to the woman, that ſhee cannot voyde her ſeed, for that cannot bee excluded without pleaſure and delight, alſo if the ſhortneſſe of the ligament that is under the yard doth make it to bee crooked, and violate the ſtiffe ſtraightneſſe thereof, ſo that it cannot be put directly or ſtraightly in the womans privie parts. There bee ſome 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 directly into the wombe. The defaults of the yard.

Alſo the particular palſie of the yard is numbred among the cauſes of barrenneſſe; and you may prove whether the palſie be in the yard by dipping the genitals in cold water: for except they do draw themſelves togethet or ſhrinke up after it, it is a token of the palſie, for members that have the palſie, by the touching of cold water, do not ſhrinke up, but remaine in their accuſtomed laxity and looſeneſſe: but in this caſe the genitals are endued with ſmall ſenſe; the ſeed commeth out without pleaſure or ſtiffeneſſe of the yard; the ſtones in touching are cold; and to conclude, thoſe that have their bodies daily waxing leane through a conſumption, or that are vexed with an evill habit or diſpoſition, or with the obſtruction of ſome of the entrals, are barren and unfertile, and likewiſe thoſe in whom ſome noble part neceſſary to life The ſigne of the palſie in the yard.

and

and generation exceedeth the bounds of nature with some great distemperature, and lastly those who by any meanes have their genitall parts deformed.

Magick bands and enchanted knots.

Here I omit those that are witholden 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 Cannons lawes 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 barrennesse or unfruitfulnesse of women.

The cause why the neck of the wombe is narrow.

A Woman may become barren or unfruitfull through the obstruction of the passage of the seed, or through straightnesse or narrownesse of the necke of the wombe, comming either through the default of the formative facultie, or else afterwards by some mischance, as by an absceſſe, 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:

The membrane called *Hymen*.

Moreover, the membrane called *Hymen*, when it groweth in the midst or in the bottome of the neck of the wombe, hinders the receiving of the mans seede. Also if the womb be over slippery, or moreloose, or slack, or over wide, it maketh the woman to bee barren, so doth the suppression of the menstruall fluxes, or the too immoderate flowing of the courses or whites: which commeth by the default of the wombe or some entrall, or of the whole body, which consumeth the menstruall matter, and carrieth the seed away with it.

The cause of the fluxe of women.

The cold and moyst distemperature of the wombe, extinguishes and suffocates the mans seed, and maketh it that it will not stay or cleave unto the wombe, and stay till it be concocted: but the more hot and dry doth corrupt for want of nourishment, for the seeds that are sowne either in a marish or sandy ground cannot prosper well: also a *mola* contained in the wombe, the falling down of the wombe, the leanneſse of the womans body, ill humours bred by eating crude and raw fruits, or great or overmuch drinking of water, whereof obstructions and crudities follow, which hinder her fruitfulnesse. Furthermore, by the use of stupefactive things, the seminall matter is congealed and restrained, and though it flow and be cast out, yet it is deprived of the prolificke power, and of the lively heat and spirits, the orifices or cotylidones of the veines and arteries are stopped, and so the passage for the menstruall matter into the wombe, is stopped. When the Kall is so fat that it girdeth in the wombe narrowly, it hindereth the fruitfulnesse of the woman, because it will not permit the mans seed to enter into the wombe. Moreover the fat and fleshy habit of the man or woman hinder generation. For it hindreth them that they cannot joyne their genitall parts together: and by how much the more bloud goeth into fat, by so much the lesse is remaining to be turned into seed & menstruall bloud, which two are the originals & principals of generation. Those women that are speckled in the face, some what lean, & pale, because they have their genitals moystned with a saltish, sharp and tickling humour, are more given to venery than those that are red & fat. Finally, *Hippocrates* sets downe foure causes onely why women are barren and unfruitfull. The first is, because they cannot receive the mans seede, by reason of the default of the neck of the wombe; the second, because when it is received into the wombe, they cannot conceive it; the third is, because they cannot nourish it; the fourth, because they are not able to carry or beare it untill the due and lawfull time of birth. These things are necessary to generation, the object, wil, faculty, concourse of the seeds, and the remaining or abiding thereof in the wombe, untill the due and appointed naturall time.

Apb. 36. sect. 5. Gal. lib. 14. de usu par. cap. 9. Arist. in prob. sect. de sect. quæ. 3. & 4.

Chap.

Chap. XXXIX.

The signes of a distempered wombe.

THat woman is thought to have her wombe too hot, whose courses come forth sparingly and with paine, and exulcerate by reason of their heate, the superfluous matter of the bloud being dissolved or turned into wind by the power of the heat: whereupon that menstruall bloud that floweth forth is more grosse and black. For it is the property 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 soone exclude the seede in copulation, and shee shall feele it more sharpe as it goeth through the passages. That woman hath too cold a wombe whose flowers are either stopped, or flow sparingly, and those pale and not well coloured. The signes of a hot wombe. The signes of a cold wombe.

Those that have lesse desire of copulation, have lesse delight therein, and their seed is more liquid and waterish, and not staying a linnen cloth by sticking thereunto, and it is sparingly and slowly cast forth. That wombe is too moist that floweth continually with many 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 dry a wombe appeare in the little quantity of the courses, in the profusion of a small quantity of seed, by the desire of copulation, whereby it may be made slippery by the moysture of the seede, by the fissures in the necke thereof, by the chaps and itching, for all things for want of moysture will soone chap, even like unto the ground, which in the summer by reason of a great drought or drynesse, will chap and chinke this way and that way, and on the contrary, with moisture it will close and joyne together againe as it were with glew. The signes of a moyst wombe. The signes of a dry wombe.

A woman is thought to have all opportunities unto conception when her courses or flowers doe cease, for then the wombe is voyd of excrementall filth, and because it is yet open, it will the more easily receive the mans seede, and when it hath received it, it will better retaine it in the wrinkles of the cotylidones yet gaping as it were in rough and unequall places. Yet a woman will easily conceave a little before the time that the flowers ought to flow: because that the menstruall matter falling at first like dew into the wombe, is very meet and fit to nourish the seede, and not to drive it out againe, or to suffocate it. A meet time for conception.

Those which use copulation when their courses fall downe abundantly, will very hardly or seldome conceive, and if they doe conceive, the child will be weake and diseased, and especially if the womans bloud that flowes out be unsound; but if the bloud bee good and laudable, the childe will bee subject to all plethoricke diseases. There are some women in whom presently after the fluxe of the termes, the orifice of the wombe will be closed, so that they must of necessity use copulation with a man when their menstruall fluxe floweth, if at lest they would conceive at all. A woman may beare children from the age of fourteene untill forty or fifty: which time whosoever doth exceed, will beare untill threescore yeares, because the menstruall fluxes are kept, the prolificall faculty is also preserved: therefore many women have brought forth children at that age, but after that time no woman can beare, as *Aristotle* writeth. *Arist. l. 7. de hist. anim. c. 2. & c. 5.*

Yet *Pliny* saith that *Cornelia* (who was of the house of the *Scipioes*) being in the sixty second yeare of her age, bare *Volusius Saturnius*, who was Consull; *Valescus de Tarenta* also affirmeth, that he saw a woman that bare a childe on the sixty second yeare of her age, having borne before on the sixtieth and sixty first yeare. Therefore it is to bee supposed that by reason of the variety of the ayre, region, diet and temperament, the menstruall fluxe and procreative faculty ceaseth in some sooner, in some later; which variety taketh place also in men. For in them although the seede be genitable for the most part in the second seventh yeare, yet truely it is unfruitfull untill the third seventh yeare. And whereas most men beget children untill they bee *Lib. 7. cap. 14.* *Lib. 6. cap. 12.* *Lib. 7. de hist. anim. c. 1. & c. 6.*

threescore

threescore yeers old, which time if they passe, they beget till seventy: yet there are some knowne that have begot children untill the eightieth yeere. Moreover, *Pliny* writeth that *Masinissa* the King begot a sonne when hee was fourescore and sixe yeeres of age, and also *Cato* the Censor after that he was fourescore.

Lib. 7. cap. 14.

Chap. XL.

Of the falling downe, or perversion, or turning of the wombe.

What is the falling downe of the wombe.

The wombe is said to fall downe and be perverted, when it is moved out of its proper and naturall place; as when the bands and ligatures thereof being looſed and relaxed, it falleth downe unto one side or other, or into its owne necke, or else passeth further, so that it comes out at the necke, and a great portion thereof appeares without the privie parts. Therefore what things soever resolve, relaxe, or burst the ligaments or bands whereby the wombe is tyed, are supposed to be the causes of this accident. It sometimes happens by vehement labour or travell in childe-birth, when the wombe with violence excluding the issue and the secundines, also followes and falls downe, turning the inner side thereof outward. And sometimes the foolish rashnesse of the midwife, when shee draweth away the wombe with the infant, or with the secundine cleaving fast thereunto, and so drawing it downe 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 body upwards in the time of greatnesse with childe, a fall, contusion, shaking, or jogling by riding, either in a waggon or a coach, or on horse backe, or by leaping or dancing, the falling downe of a more large and abundant humor, great griping, a strong and continuall cough, a *Tenesmus*, or often desire to go to stoole, yet not voiding any thing, neesing, a manifold and great birth, difficult bearing of the wombe, an asthmaticall and orthopnoicall difficulty of breathing, whatsoever doth waightily presse downe the *Diaphragma* or Midriffe, or the muscles of the *Epigastrium*, the taking of cold aire in the time of travell with childe, or in the flowing of the menstruall fluxe, sitting on a cold marble stone, or any other such like cold thing, are thought often times to bee the occasion of these accidents, because they may bring the wombe out of its place.

The causes.

Arist. lib. 7. de histor. anim. cap. 2.

It falls downe in many (saith *Aristotle*) by reason of the desire of copulation that they have, either by reason of the lustinesse of their youth, or else because they have abstained a long time from it.

The signes.

You may know that the wombe is fallen downe by the pain of those parts wherehence it is fallen, that is to say by the entrals, loynes, *os sacrum*, and by a tractable tumour at the necke of the wombe, and often with a visible hanging out, of a diverse greatnesse, according to the quantity that is fallen downe. It is seene sometimes like unto a piece of red flesh, hanging out at the necke of the wombe, of the bignesse and forme of a Goose egge; if the woman stand upright, shee feeleth the weight to ly on her privie parts, but if she sit or ly, then she perceiveth it on her back, or goe to the stoole, the straight gut called *intestinum rectum* will bee pressed or loaden as it were with a burthen, if shee lye on her belly, then her urine will bee stopped, so that shee shall feare to use copulation with a man.

The prognostications.

When the wombe is newly relaxed in a young woman, it may bee soone cured, but if it hath beene long downe in an old woman, it is not to bee helped. If the palsie of the ligaments thereof have occasioned the falling, it scarce admits of cure, but if it fall downe by meanes of putrefaction, it cannot possibly be cured. If a great quantity thereof hang out betweene the thighes, it can hardly be cured; but it is corrupted by taking the ayre, and by the falling downe of the urine and filth, and by the motions of the thighs in going it is ulcerated, and so putrefies.

A history.

I remember that once I cured a young woman who had her wombe hanging out at her privie parts as big as an egge, and I did so well performe and perfect the cure thereof, that afterwards she conceived, and bare children many times, and her womb never fell downe.

Chap.

Chap. XLI.

The cure of the falling downe of the Wombe.

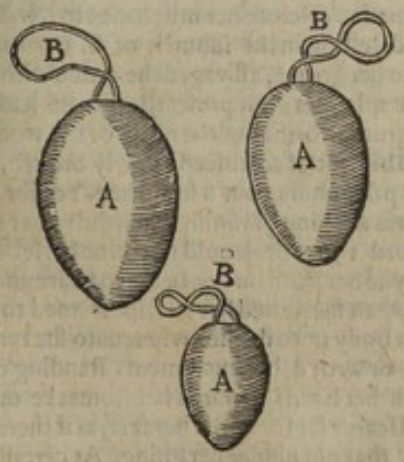
BY this word, falling downe of the wombe, we understand every motion of the womb out of its place or seat: therefore if the wombe ascend upwards, wee must use the same medicines as in the strangulation of the wombe. If it bee turned towards either side, it must bee restored and drawne backe to its right place, by applying and using cupping glasses. But if it descend and fall downe into its owne neck, but yet not in great quantity, the woman must be placed so that her buttockes may be very high, and her legs acrosse; then cupping glasses must bee applied to her navell and *Hypogastrium*, and when the wombe is so brought into its place, injections that binde and dry strongly must bee injected into the necke of the wombe, stinking fumigations must bee used unto the privie parts, and sweet things used to the mouth and nose. But if the wombe hang downe in great quantity betweene the thighes, 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 layed on her backe, her buttockes and thighes so lifted up, and her legges so drawne backe as when the childe or secundine are to bee taken or drawne from her; then the necke of the wombe, and whatsoever hangeth out thereat, must be anointed with oile of lillies, fresh butter, capons grease, 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 suppe; drawing up as it were that which is fallen downe.

Remedies for the ascension of the wombe.

For the falling downe of the wombe, properly so called.

After that the wombe is restored unto its place, whatsoever is filled with the ointment must be wiped with a soft and cleane cloth, lest that by the slipperinesse thereof the wombe should fall downe againe; the genitalls must bee fomented with an astringent decoction, made with pomegranate pills, cypresse nuts, galles, roach allome, horse-taile, sumach, berberies, boiled in the water wherein Smithes quench their irons; of these materialls make a powder, wherewith let those places be sprinkled: let a pessary of a competent bignesse be put in at the necke of the wombe, but let it bee eight or nine fingers in length, according to the proportion of the grieved patients body. Let them bee made either with latin, or of corke covered with waxe, of an ovall forme, having a thred at one end, whereby they may bee drawne backe againe as need requires.

The formes of ovall pessaries.



A. *sheweth the body of the Pessary.*
B. *sheweth the thread wherewith it must be tyed to the thigh.*

When

When all this is done, let the ſicke woman keep her ſelfe quiet in her bed, with her buttocks lying very high, and her legs acroſſe, for the ſpace of eight or ten daies: in the meane while the application of cupping glaſſes will ſtay the wombe in the right place and ſeat after it is reſtored thereunto: but if ſhee hath taken any hurt by cold aire, let the privie parts be fomented with a diſcuſſing and heating fomentation, on this wiſe. Rx. *fol. alth. ſalv. lavend. roriſmar. artemiſ. flor. chamæm. melilot. an.* m ß. *ſem. aniſ. fœnugr. an.* ʒ i. let them bee all well boyled 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 be received into the voyd and empty capacity of the belly: for this reaſon the bladder is alſo to be emptied, for otherwiſe it were dangerous leſt that the wombe lying betweene them both being full, ſhould be kept down and cannot be put up into its owne proper place by reaſon therof. Alſo vomiting is ſuppoſed to be a ſingular remedy to draw up the womb that is fallen down: furthermore alſo it purgeth out the phlegme which did moiſten and relaxe the ligaments of the wombe; for as the wombe in the time of copulation at the beginning of the conception is moved downewards to meet the ſeed, ſo the ſtomacke, even of its owne accord, is lifted upwards when it is provoked by the injury of any thing that is contrary unto it, to caſt it out with greater violence; but when it is ſo raiſed up, it drawes up together therewith the *peritonæum*, the wombe, 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 be ulcerated and ſo putrefyed that it cannot be reſtored unto his place againe, 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 tyed, and as much as is neceſſary muſt bee cut off, and the reſt ſeared with a cautery. There are ſome women that have had almoſt all their wombe cut off, without any danger of their life, as *Paulus* teſtifieth.

A diſcuſſing & heating fomentation.

How vomiting is profitable to the falling down of the wombe.

The cutting away of the womb when it is putrefyed.

Lib 6.

John Langius Phyſitian to the Count *Palatine*, writeth that *Carpus* the Chirurgian tooke out the wombe of a woman of *Bononia*, he being preſent, and yet the woman lived and was very well after it. *Antonius Benivenius* Phyſitian of *Florence*, writeth that hee was called by *Ugolius* the Phyſitian to the cure of a woman whoſe wombe was corrupted and fell away from her by peeces, and yet ſhee lived ten yeeres after it.

Epiſt. 39. lib. 2. Epiſt. med.

Tract. de mirand. morbor. cauſ.

There was a certaine woman, being ſound of body, of good repute, and about the age of thirty yeers, in whom ſhortly after ſhe had been married the ſecond time, which was in *Anno* 1571. having no childe by her firſt husband, the lawfull ſignes of a right conception did appear: yet in proceſſe of time there aroſe about the lower part of her privities the ſenſe or feeling of a waight or heavineſſe, being ſo troubleſome unto her by reaſon that it was painefull, and alſo for that it ſtopped her urine, that ſhe was conſtrained to diſcloſe her miſchance to *Chriſtopher Mombey* a Chirurgian her neighbour dwelling in the ſuburbs of S. *Germans*; who having ſeen the tumour, or ſwelling in her groine, aſſwaged the paine with mollifying and anodine fomentations and cataplaſmes; but preſently after he had done this, hee found on the inner ſide of the lip of the orifice of the necke of the wombe, an apoſtume rotten & running as if it had bin out of an abſceſſe newly broken, with ſanious matter, ſomewhat red, yellow, & pale, running out a long time. Yet for all this the feeling of the heavineſs or waight was nothing diminiſhed, but did rather encreaſe daily, ſo that from the yeere of our Lord 1573. ſhe could not turne herſelfe being in bed on this or that ſide, unleſſe ſhe layed her hand on her belly to beare and eaſe her ſelfe of the waight, and alſo ſhe ſaid when ſhe turned her ſelf, ſhe ſeemed to feele a thing like unto a bowle to rowle in her body unto the ſide whereunto ſhe turned her ſelfe, neither could ſhee goe to ſtoole, or avoyd her excrements ſtanding or ſitting, unleſſe ſhee lifted up that waight with her hands towards her ſtomacke or midriffe: when ſhee was about to go ſhe could ſcarce ſet forwards her feet, as if there had ſomething hanged between her thighes, that did hinder her going. At certaine ſeaſons that rotten apoſtume would open, or uncloſe of it ſelfe, and flow or run with its wonted ſanious matter, but then ſhe was grievouſly vexed with paine of the head, and all her members, ſwouning, loathing, vomiting, and almoſt choking, ſo that by the perſwaſi-

A hiſtory.

on

on of a fooliſh woman ſhe was induced and contented to take *Antimonium*; the working and ſtrength thereof was ſo great and violent, that after many vomits, with many frettings of the guts and watry dejections or ſtooles, ſhe thought her fundament fell downe; but being certified by a woman that was a familiar friend of hers, unto whom ſhe ſhewed her ſelfe, that there was nothing fallen downe at or from her fundament, but it was from her wombe, ſhee called, in the yeere of our Lord 1575. Chirurgians, as my ſelfe, *James Guillemeau*, and *Antony Vieux*, that we might helpe her in this extremity.

Antimonium taken in a potion doth cauſe the wombe to fall downe.

When we had diligently and with good conſideration weighed the whole eſtate of her diſeaſe, wee agreed with one conſent, that that which was fallen down ſhould bee cut away, becauſe that by the blacke colour, ſtinking, and other ſuch ſignes it gave a manifeſt teſtimony of a putrefyed and corrupted thing. Therefore for two daies wee drew out the body by little and little, and piece-meale, which ſeemed unto the Phyſicians that wee had called, as *Alexius*, *Gaudinus*, *Feureus*, and *Violaneus*, and alſo to our ſelves, to be the body of the wombe, which thing we proved to bee ſo, becauſe one of the teſticles came out whole, and alſo a thicke membrane or skin, being the relick of the *mola*, which being ſuppurated, and the abſceſſe broken, came out by little and little in matter; after that all this body was ſo drawne away, the ſicke woman began to waxe better and better, yet notwithſtanding for the ſpace of nine dayes before it was taken away, ſhe voided nothing by ſiege, and her urine alſo was ſtopped for the ſpace of foure daies.

The ſignes of the ſubſtance of the wombe drawne out.

After this all things became as they were before, and ſhee lived in good health three moneths after, and then died of a Pleuriſie that came on her very ſuddenly, and I having opened her body, obſerving and marking every thing very diligently, could not finde the wombe at all, but inſtead thereof there was a certaine hard and callous body, which nature, who is never idle, had framed in ſtead thereof to ſupply the want thereof, or to fill the hollowneſſe of the belly.

CHAP. XLII.

Of the tunicle or membrane called Hymen.

IN ſome virgins or maidens in the orifice of the neck of the womb there is found a certaine tunicle or membrane called of antient writers *Hymen*, which prohibiteth the copulation of a man, and cauſeth a woman to be barren; this tunicle is ſuppoſed by many, and they not of the common ſort onely, but alſo learned Phyſitians, to be, as it were, the encloſure of the virginity or maidenhead. But I could never finde it in any, ſeeking of all ages from three to twelve, of all that I had under my hands in the Hoſpitall of *Paris*.

Whether there be a membrane called *Hymen*.

Yet once I ſaw it in a virgin of ſeaventeene yeeres, whom her mother had contracted to a man, and ſhe knew nevertheleſſe there was ſomething in her privie parts that hindered her from bearing of children, who deſired me to ſee her; and I found a certaine very thin nervous membrane a little beneath the *nymphæ*, neere unto the orifice of the neck of the wombe; in the midſt there was a very little hole whereout the termes might flow: I ſeeing the thickeneſſe thereof, cut it in ſunder with my ſizzers, and told her mother what ſhe ſhould doe afterwards: and truely ſhee married ſhortly after and bore children. *Realdus Columbus* is of my opinion, and ſaith that this is ſeene very ſeldome, for theſe are his words: under the *nymphæ* in many, but not in all virgins, there is another membrane, which when it is preſent (which is but ſeldome) it ſtoppeth, ſo that the yard cannot be put into the orifice of the wombe; for it is very thicke above towards the bladder; it hath an hole by which the courſes flow out. And hee alſo addeth that he obſerved it in two young virgins, and in one elder maide.

A hiſtory.

Lib. 11. cap. 16.

Avicen writeth that in virgins in the necke of the wombe there are tunicles compoſed of veines and ligaments very little, riſing from each part of the necke thereof,

Lib. 3. fen. 21. tract. 1. cap. 1.

which at the first time of copulation are wont to bee broken, and the blood to runne out. *Almansor* writeth that in virgins, the passage or necke of the wombe is very wrinkled, or narrow and straight, and those wrinkles to be woaven or stayed together with many little veines and arteries, which are broken at the first time of copulation.

The trifles of midwives about the membrane called *Hymen*.

These are the judgements of Physitians of this membrane: Midwives will certainly affirme that they know a virgin from one that is defloured, by the breach or soundnesse of that membrane. But by their report too credulous Judges are soone brought to commit an errour. For that Midwives can speake nothing certainely of this membrane, may bee proved by this, because that one saith that the situation thereof is in the very entrance of the privie parts, others say it is in the midst of the necke of the wombe, and others say it is within at the inner orifice thereof, and some are of an opinion that they say or suppose that it cannot be seen or perceived before the first birth. But truly of a thing so rare, and which is contrary to nature, there cannot be any thing spoken for certainty. Therefore the blood that commeth out at the first time of copulation, comes not alwaies by the breaking of that membrane, but by the breaking and violating or renting of the little veines which are woaven and bespread all over the superficial & inward parts of the womb and neck thereof, descending into the wrinkles, whichin those that have not yet used the act of generation, are closed as if they were glewed together: although that those maides that are at their due time of marriage, feele no pain nor no flux of blood, especially if the mans yard be answerable to the neck of the womb; whereby it appeares evidently how greatly the inhabitants of *Fez*, the metropolitane city of *Mauritania*, are deceived: for *Leo* the Affrican writeth that it is the custome among them, that so soon as the married man and his spouse are returned home to their house from the church where they have been married, they presently shut themselves into a chamber, and make fast the dore, while the marriage dinner is preparing: in the mean while some old or grave matron standeth waiting before the chamber dore, to receive a bloody linnen cloth the new married husband is to deliver her there, which when she hath received, she brings it into the midst of all the company of guests, as a fresh spoile and testimony of the married wives virginity, and then for joy thereof they all fall to banqueting solemnely. But if through evill fortune it happeneth that in this time of copulation the spouse bleedeth not in the privie parts, shee is restored againe unto her parents, which is a very great reproach unto them, and all the guests depart home sad, heavie, and without dinner.

What virgins at the first time of copulation doe not bleed at their privie parts. *Lib. 3.*

The filthy deceit of bauds & harlots.

Moreover, there are some, that having learned the most filthy and infamous arts of bawdry, prostitute common harlots to make gaine thereof, making men that are naughtily given to beleeve that they are pure virgins, making them to thinke that the act of generation is very painefull and grievous unto them, as if they had never used it before, although they are very expert therein indeed; for they doe cause the necke of the wombe to be so wrinkled and shrunke together, so that the sides thereof shall even almost close or meet together; then they put thereinto the bladders of fishes, or galles of beasts filled full of blood, and so deceive the ignorant and young lecher, by the fraud and deceit of their evill arts, and in the time of copulation they mixe sighes with groanes, and womanlike cryings, and the crocodiles teares, that they may seeme to be virgins, and never to have dealt with man before.

Chap. XLIII.

A memorable history of the membrane called Hymen.

Lib. de præst. dæmon. cap. 38.

Iohn Wierus writeth that there was a maid at Camburge, who in the middest of the necke of the wombe, had a thicke and strong membrane growing overthwart, so that when the monethly termes should come out, it would not permit them, so that thereby the menstruall matter was stopped and flowed back againe, which caused a great tumour and distension in the belly, with great torment, as if she had beene in travell with child: the

the mydwives being called, and having ſeene and conſidered all that had beene done, and did appeare, did all with one voyce affirme, that ſhee ſuſtained the paines of childe-birth, although that the maide her ſelfe denyed that ſhee ever dealt with man. Therefore then this foreſaid Author was called, who, when the mydwives were void of help and counſell, might helpe this wretched maid, having already had her urine ſtopped now three whole weeks, and perplexed with great watchings, loſſe of appetite, and loathing: and when hee had ſeene the grieved place, and marked the orifice of the neck of the wombe, he ſaw it ſtopped with a thick membrane; he knew alſo that that ſudden breaking out of bloud into the wombe and the veſſels thereof, and the paſſage for thoſe matters that was ſtopped, was the cauſe of her grievous and tormenting paine. And therefore hee called a Chirurgian preſently, and willed him to divide the membrane that was in the midſt, that did ſtop the fluxe of the bloud, which being done, there came forth as much black congealed and putrefied bloud as wayed ſome eight pounds. In three dayes after ſhee was well and void of all diſeaſe and paine. I have thought it good to ſet downe this example here, becauſe it is worthy to be noted, and profitable to be imitated, as the like occaſion ſhall happen.

Chap. XLIIII.

Of the ſtrangulation of the wombe.

What is the ſtrangulation of the wombe.

THe ſtrangulation of the wombe, or that commeth from the wombe, is an interception or ſtopping of the liberty in breathing or taking wind, becauſe that the wombe, ſwolne or puffed up by reaſon of the acceſſe of groſſe vapours and humours that are contained therein, and alſo ſnatched as it were by a convulſive motion, by reaſon that the veſſels and ligaments diſtended with fulneſſe, are ſo carried upwards againſt the midriffe and parts of the breaſt, that it maketh the breath to bee ſhort, and often as if a thing lay upon the breaſt and preſſed it.

Why the womb ſwelleth.

Moreover, the wombe ſwelleth, becauſe there is contained or incloſed in it a certaine ſubſtance, cauſed by the defluxion either of the ſeed or flowers, or of the womb or whites, or of ſome other humour, tumour, abſceſſe, rotten apoſtume, or ſome ill juice, putrefying, or getting or engendering an ill quality, and reſolved into groſſe vapours. Theſe, as they affect ſundry or divers places, inferre divers and ſundry accidents, as rumbling and noyſe in the belly, if it be in the guts, deſire to vomit, after (with ſeldome vomiting) commeth wearineſſe and loathing of meat, if it trouble the ſtomack. Choaking with ſtrangulation, if it aſſaile the breaſt and throate; ſwouning, if it vex the heart; madneſſe, or elſe that which is contrary thereto, ſound ſleep or drouſineſſe, if it grieve the brain: all which oftentimes prove as maligne as the biting of a mad dogge, or equall the ſtinging or bitings of venemous beaſts.

The accidents that come of the ſtrangling of the wombe.

Why the ſtrangulation that commeth of the corruption of the ſeed is more dangerous than that that comes of the corruption of the bloud.

It hath been obſerved, that more grievous ſymptomes have proceeded from the corruption of the ſeede, than of the menſtruall bloud. For by how much every thing is more perfect and noble, while it is conteyned within the bounds of the integrity of its owne nature, by ſo much it is the more grievous and perillous, when by corruption it hath once tranſgreſſed the lawes thereof. But this kind of accident doth very ſeldome grieve thoſe women which have their menſtruall fluxe well and orderly, and doe uſe copulation familiarly; but very often thoſe women that have not their menſtruall fluxe as they ſhould, and do want, and are deſtitute of husbands, eſpecially if they be great eaters, and lead a ſolitary life. When the veſſels and ligaments of the wombe are ſwollen and diſtended as wee 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 wombe, being removed out of its ſeate, doth one while fall to the right ſide towards the liver, ſometimes to the left ſide towards the milt, ſometimes upwards unto the midriffe and ſtomacke, ſometimes downewards, and ſo forwards unto the bladder, whereof commeth an Iſchury and ſtrangury; or backwards, where-

The cauſe of the divers turning of the wombe into divers parts of the body.

of commeth oppreſſion of the ſtraight gut, and ſuppreſſion of the excrements, and the *Teneſmus*.

But although wee acknowledge the wombe to decline to thoſe parts which wee named, yet it is not by accident onely, as when it is drawne by the proper and common ligaments and bands, when they are contracted or made ſhorter, being diſtended with fulneſſe, but alſo of it ſelfe, as when it is forced or provoked through the griefe of ſomething contrary to nature that is contained therein: it wandreth ſometimes unto one ſide, and ſometimes unto another part with a plaine and evident naturall motion, like unto the ſtomack which imbraceth any thing that is gentle and milde, but avoydeth any thing that is offenſive and hurtfull, yet we deny that ſo great accidents may bee 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 wombes are ſo diſtended by reaſon that the childe is great, that it doth preſſe the midriffe, might be troubled with a ſtrangulation like unto this; but much rather by a venemous humour breathing out a maligne and groſſe vapour, not onely by the veines and arteries, but alſo by the pores that are inviſible, which pollutes the faculties of the parts which it toucheth with its venemous malignity & infection, and intercepts the functions thereof. Neither doth the variety of the parts receiving only, but alſo of the matter received, cauſe variety of accidents.

The wombe is not ſo greatly moved by an accident, but by it ſelfe.

Whereof come ſuch divers accidents of ſtrangulation of the wombe.

For, ſome accidents come by ſuppreſſion of the termes, others come by corruption of the ſeede, but if the matter bee cold, it bringeth a drouſineſſe, being lifted up unto the braine, whereby the woman ſinketh downe as if ſhee were aſtoniſhed, and lyeth without motion, and ſenſe or feeling, and the beating of the arteries, and the breathing are ſo ſmall, that ſomtimes it is thought they are not at all, but that the woman is altogether dead. If it be more groſſe, it inferreth a convulſion; if it participate of the nature of a groſſe melancholick humour, it bringeth ſuch heavineſſe, fear, and ſorrowfulneſſe, that the party that is vexed therewith ſhall thinke that ſhee ſhall die preſently, and cannot be brought out of this minde by any meanes or reaſon: if of a cholerick humour, it cauſeth the madneſſe called *furor uterinus*, and ſuch a prattling, that they ſpeake all things that are to be concealed; and a giddineſſe 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, than that this diſeaſe taketh the patient ſometimes with laughing, and ſometimes with weeping, for ſome at the firſt will weepe and then laugh in the ſame diſeaſe and ſtate thereof.

The cauſe of ſleepineſs in the ſtrangulation of the wombe.

The cauſe of a drouſie madnes.

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 houre or two before the fitte, which neither for feare, admonition, nor for any other meanes 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 aſcention of the wombe is diligently to bee diſtinguiſhed from the ſtrangulation thereof; for the accidents of the aſcention and of the ſtrangulation are not one, but the woman is onely oppreſſed with a certaine paine of the heart, difficulty of breathing, or ſwouning, but yet without feare, without raving or idle talking, or any other greater accident.

A hiſtory.

The aſcention of the womb is to be diſtinguiſhed from the ſtrangulation.

Therefore often times contrary cauſes inferre the aſcention: that is, overmuch dryneſſe of the wombe, labouring through the defect of moyſture, whereby it is forced after too violent and immoderate evacuations of the flowers, and in childebed, and ſuch like, and laborious and painefull travell in child-birth, through which occaſion it waxeth hot, contrary to nature, and withereth and turneth it ſelfe with a certaine violence unto the parts adjoyning, that is to ſay, unto the liver, ſtomacke and midriffe: if happely it may draw ſome moyſture therehence unto it. I omit that the wombe may be brought unto its place upwards by often ſmelling to aromatick things, yet in the meane while it infers not the ſtrangulation that wee deſcribed before.

CHAP.

Chap. XLV.

The signes of imminent strangulation of the wombe.

BEfore that these forenamed accidents come, the woman thinks that a certaine painefull thing ariseth from her wombe unto the orifice of the stomacke and heart, and shee thinketh her selfe to bee oppressed and choaked, shee complaineth her selfe to bee in great paine, and that a certaine lumpe or heavie thing climes up from the lower parts unto her throat, and stoppeth her winde, her heart burneth and panteth. And in many the wombe and vessels of the wombe so swell, that they cannot stand upright on their legs, but are constrained to lye downe flat on their bellies, that they may bee the lesse grieved with the paine, and to presse that downe strongly with their hands, that seemeth to arise upwards, although that not the wombe it selfe, but the vapour ascendeth from the wombe, as wee said before: but when the fitte is at hand, their faces are pale on a sudden, their understanding is darkened, they become slow and weak in the legges, with unableness to stand. Hereof commeth sound sleepe, foolish talking, intercepTion of the senses, and breathe as if they were dead, losse of speech, the contraction of their legs, and the like.

The wombe it selfe doth not so well make the ascention as the vapour thereof.

Chap. XLVI.

How to know whether the woman be dead in the strangulation of the wombe or not.

I Have thought it meet (because many women not onely in ancient times, but in our owne and our fathers memory have beene so taken with this kind of symptome, that they have beene supposed and layd out for dead, although truly they were alive:) to set downe the signes in such a case which do argue life and death. Therefore first of all it may be proved, whether she be alive or dead, by laying or holding a cleere and smooth looking-glasse before her mouth and nostrils. For, if she breathe, although it be never so obscurely, the thin vapour that commeth out will staine or make the glasse duskie. Also a fine downish feather taken from under the wing of any bird, or else a fine flocke being held before the mouth, will by the trembling or shaking motion thereof, shew that there is some breath, and therefore life remaining in the body. But you may prove most certainly whether there be any sparke of life remaining in the body, by blowing some sneesing powders of pellitory of Spaine, & ellebore into the nostrils. But though there no breath appeare, yet must you not judge the woman for dead, for the small vitall heat, by which, being drawn into the heart, she yet liveth, is contented with transpiration onely; and requires not much attraction, which is performed by the contraction & dilatation of the breast and lungs unto the preservation of its selfe. For so flyes, gnats, pismires and such like, because they are of a cold temperament, live unmoveably 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 errour which almost cost the life of him who in our time first gave life to anotomicall administration, that was almost decayed and neglected.

Women living taken for dead.

How women that have the suffocation of the wombe, live only by transpiration without breathing.

How flies, gnats and pismires do live all the winter without breathing.

For he being called in Spaine to open the body of a noble woman which was supposed dead through strangulation of the wombe, behold at the second impression of the incision knife, she began suddenly to come to her selfe, and by the moving of her members and body, which was supposed to be altogether dead, and with crying, to shew manifest signes that there was some life remaining in her. Which thing

A history.

ſtrooke ſuch an admiration & 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 way for him, if he would live ſafe, than to forſake the countrey. But neither could hee ſo alſo avoyde the horrible pricke and inward wound of his conſcience (from whoſe judgment no offender can be abſolved) for his inconſiderate dealing, but within few dayes after, being conſumed with ſorrow, he dyed, to the great loſſe of the common wealth, and the art of phyſick.

Chap. XLVII.

How to know whether the ſtrangulation of the wombe comes of the ſuppreſsion of the flowers, or the corruption of the ſeed.

The ſignes of ſuffocation of the womb comming of corrupt ſeed.

THere are two chiefe cauſes eſpecially, as moſt frequently happening of the ſtrangulation of the wombe: but when it proceedeth from the corruption of the ſeed, all the accidents are more grievous and violent: difficulty of breathing goes before, and ſhortly after comes deprivation thereof; the whole habit of the body ſeemeth more cold than a ſtone: the woman is a widow: or elſe hath great ſtore or abundance of ſeed, and hath been uſed to the company of a man, by the abſence whereof ſhe was before wont to be pained with heavineſſe of the head, to loath her meat, and to bee troubled with ſadneſſe and feare, but chiefly with melancholy. Moreover when ſhe hath ſatisfied, and every way fulfilled her luſt, and then preſently on a ſudden begins to containe her ſelfe. It is very likely that ſhee is ſuffocated by the ſuppreſſion of the flowers, which formerly had them well and ſufficiently, which formerly hath bin fed with hot, moiſt, and many meats, and therefore engendring much bloud, which fitteth much, which is grieved with ſome weight and ſwelling in the region of the belly, with paine in the ſtomacke, and a deſire to vomit, and with ſuch other accidents as come by the ſuppreſſion of the flowers. Thoſe who are freed from the fit of the ſuffocation of the wombe, either by nature or by art, in a ſhort time their colour commeth into their faces by little and little, and the whole body beginneth to wax ſtrong, and the teeth, that were ſet and cloſed faſt together, begin (the jawes being looſed) to open and uncloſe againe, and laſtly, ſome moiſture floweth from the ſecret parts with a certaine tickling pleaſure; but in ſome women, as in thoſe eſpecially in whom the necke of the wombe is tickled with the mydwives finger, in ſtead of that moyſture comes thick and groſſe ſeed, which moyſture or ſeed when it is fallen, the wombe being before as it were raging, is reſtored unto its owne proper nature and place, and by little and little all ſymptomes vaniſh away. Men by the ſuppreſſion of their ſeede have not the like ſymptomes as women have, becauſe mans ſeed is not ſo cold and moyſt, 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 ſignes when it comes of the ſuppreſſion of the flowers.

The ſignes of one recovering ofer from the ſuffocation of the wombe.

Why the ſuppreſſion of the ſeed is not perilous or deadly to men.

Chap. XLVIII.

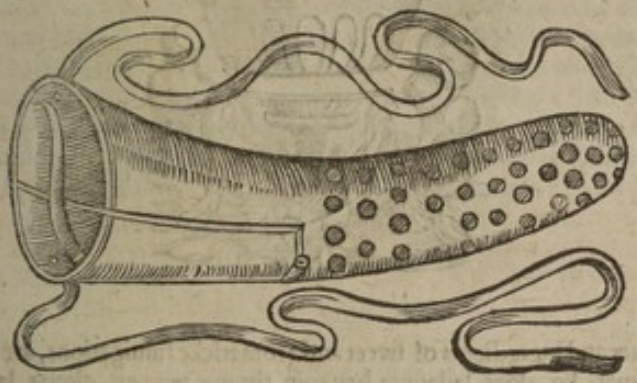
Of the cure of the ſtrangulation of the wombe.

The pulling of the haires of the lower parts are profitable both for this malady and for the cauſe of the ſame.

SEeing that the ſtrangulation of the wombe is a ſudden and ſharp diſeaſe, it therefore requireth a preſent and ſpeedy remedy, for if it be neglected it many times cauſeth preſent death. Therefore, when this malady commeth, the ſick woman muſt preſently be placed on her back, having her breaſt and ſtomack looſe, and all her clothes & garments ſlack & looſe about her, whereby ſhe may take breath the more eaſily; and ſhe muſt be called on by her owne name, with a loud voice in her eares, and pulled hard by the haires of the temples

temples and neck, but yet eſpecially by the haires of the ſecret parts, that by provoking or cauſing paine in the lower parts, the patient may not onely be brought to her ſelfe againe, but alſo that the ſharpe and maligne vapour aſcending upwards, may be drawne downewards: the legs and armes muſt bee bound and tied with painefull ligatures, all the body muſt bee rubbed over with rough linnen clothes beſprinkled with ſalt and vinegar, untill it be very ſore and red, and let this peſſary following be put into the wombe. ℞. *ſucci mercurial. artemiſ. an.* ℥ ii. *in quibus diſſolve pul. bened.* ℥ iii. *pul. radic. enulæ camp. galang. minor. an.* ℥ i. make thereof a peſſary. Then let the ſoales of her feet bee anoynted with oyle of bayes, or with ſome ſuch like oyle, let a great cupping-glaſſe with a great flame be applyed to the belly below the navell, 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 way, may be brought downwards or drawn back. There may be made a fumigation of ſpices to be received up into the wombe, which, that it may be the eaſier done, the wombe may be held open by putting in this inſtrument here deſcribed into the neck thereof. Let it be made of gold, ſilver or latin into the forme of a peſſary; at the one end thereof, that is to ſay, that end which goeth up into the necke of the wombe, let there be made many holes on each ſide, but at the lower end let it be 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 be made faſt unto a ſwathe or girdle tyed about the patients belly. A Peſſary.

The forme of a Peſſary to be put into the neck of the wombe to hold it open.



The

The deſcription of a veſſell made with a funnell or pipe for to fumigate the wombe.



The matter of ſweet fumigations.

The matter and ingredients of ſweet and aromaticke fumigations, are cinnamon, callam. aromat. lig. aloes, ladanum, benzoin, thyme, pepper, cloves, lavander, calaminth, mugwort, penniroyall, *alepta moſchat.* nutmegs, muske, moſſe, amber, ſquinant, and ſuch like, which for their ſweet ſmell and ſympathy, allure or entice the wombe downewards, by their heat conſume and digeſt the thicke vapours, and putrefied ill juice. Contrariwiſe, let the noſtrils bee perfumed with fœtide and ranke ſmels, and let theſe be made with *gum. galbanum, ſagapenum, ammoniacum, aſſa fœtida, bitumen*, oyle of Jeat, ſnuffe of a tallow candle when it is blowne out, with the fume of birds feathers, eſpecially of Partridges and Woodcocks, of mans haire or goats haire, of old leather, of horſe hoofes, and ſuch like things burned, whoſe noyſome or offenſive ſavour the wombe avoyding, doth returne unto its owne place or ſeate againe.

By what power ſweet fumigations do reſtore the womb unto its owne nature and place.

Stinking ſmels to be applied to the noſtrils.

Moreover it ſhall be very neceſſary to procure vomit by thruſting a gooſe feather downe into the throate, or elſe the haires of the patients owne head. Shortly after ſhee muſt uſe a potion of fifteene graines of blacke pepper bruiſed and diſſolved in *hydromel*, or water and hony mixed together, or in ſome ſtrong wine, which remedy *Avicen* holdeth for a ſecret.

Avicens ſecret for ſuffocation of the wombe.

Alſo in ſtead thereof three houres before meat ℥ ß. of treacle diſſolved in ℥ i. of the water of wormewood may be given her: Alſo it is thought that one drop of the oyle of Jeat dropped on the tongue, is a very profitable remedy. There bee ſome that allow a potion of halfe 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 drinke, but alſo

Caſtoreum drunken.

so to inject it into the wombe, being first dissolved in *aquavitæ*, and in the meane time to drop two drops of oyle of sage, or some such chymicall oyle into the eares. If shee bee drousie or sleepy, she must be awaked or kept waking with sneesing powders of white ellebore and pellitory. Expressions into the wombe.

It is also requisite to inject glysters both into the fundament and secret parts, which must be made of the decoction of things that discusse winde, as of calamint, mugwort, lavender, pennyroyall, chamomel, melilote, and such like; and let pessaries or suppositories be made of ladanum, ginger, *gallia moschat.* treacle, mithridate, civet and muske, of the oyle of cloves, anniseeds, sage, rosemary, and such like, chymically drawne; this following is a convenient description of a glyster. R. *radic. enulæ, camp. Ireos, tbuli, aristoloch. an.* ℥ i. *fol. absynth. artemesiæ, matricar. puleg. origani, an.* m. i. *baccarum lauri, juniperi & sambuc. an.* p. i. *sem. amios, eymini, rutæ an.* ℥ ii. *florum sræchados, roris marin. salviæ, centaur. minor. aa.* p. ii. *fiat decoctio, cape colaturæ* lb. i. *in qua dissolve mellis authosati, sacch. rubr. & bened. an.* ℥ i. *diacharth.* ℥ ii. *olei aneth. nard. an.* ℥ i ß. make thereof a glyster, and apply this plaster following to the belly. R. *mast. empl. oxycrocei, & meliloe. an.* ℥ iii. *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 belly when the fitte is ended: if she be married, let her forthwith use copulation, and bee strongly encountered by her husband, for there is no remedy more present than this. The matter of pessaries. A glyster scattering grosse vapours. A quick, certain & a pleasant remedy for the suffocation of the wombe.

Let the mydwife annoint her fingers with *oleum nardinum* or *moschetalinum*, or of cloves, or else of spike mixed with muske, ambergreese, civet, and other sweet powders, and with these let her rub or tickle the top of the necke of the wombe which toucheth the inner orifice; but her secret parts must first be warmed by the applying of warme linnen clothes, for so at length the venemous matter contained in the wombe, shall bee dissolved and flow out, and the maligne, sharpe and flatulent vapours, whereby the wombe is driven as it were into a fury or rage, shall bee resolved and dissipated, and so when the conjunct matter of the disease is scattered and wasted, the wombe, and also the woman shall bee restored unto themselves againe. Some hold it for a secret to rub the navell with the juice of garlicke boyled and mixed with aloes. Tickling of the neck of the wombe.

Chap. XLIX.

Of womens monethly fluxe or courses.

Usually they call the fluxe of bloud, that issueth from the secret parts of women, monethly flowers or courses, because it happeneth to them every month so long as they are in health. There bee some which call them termes, because they returne at their usuall time. Many of the French men call it sepmaines, because in such as sit much, and are given to plentifull feeding, it endureth almost for the space of seven dayes. Some call them purgations, because that by this fluxe all a womans body is purged of superfluous humours. There bee some also that call those fluxes the flowers, because 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. The reason of the names of the monthly flux of women.

For the courses flow not before a woman bee able to conceive: for how should the seede being cast into the wombe have his nourishment and encrease, and how should the child have his nourishment when it is formed of the seed, if this necessary humour were wanting in the wombe? yet it may bee some women may conceive without this fluxe of the courses: but that is in such as have so much of the humour gathered together, as is wont to remaine in those which are purged, although it bee not so great a quantity that it may flow out, as it is recorded by *Aristotle*. But as it is in some very great, and in some very little, so it is in some seldome, and in some very often. What women do conceive this flux not appearing at all.

There are some that are purged twice, and some thrice in a moneth, but it is altogether

What women have this menstruall flux often, abundantly & for a longer space than others.

together in those who have a great liver, large veines, and are filled and fed with many and greatly nourishing meats, which sit idely at home all day, which having slept all night, doe notwithstanding lye in bed sleeping a great part of the day also, which live in a hot, moyst, rainie and southerly ayre, which use warme bathes of sweet waters and gentle frictions, which use and are greatly delighted with carnall copulation: in these and such like women the courses flow more frequently and abundantly.

What women have thi fluxe more seldome, lesse, and a far more short time than others.

But contrariwise, in those that have small and obscure veines, in those that have their bodies more furnished and bigge either with flesh or with fat, are more seldome purged, and also more sparingly, because that the superfluous quantity of bloud useth to goe into the habit of the body. Also tender, delicate and faire women are lesse purged than those that are browne and endued with a more compact flesh, because that by the rarity of their bodies, they suffer a greater wasting or dissipation of their substance by transpiration. Moreover, they are not so greatly purged with this kind of purgation, which have some other solemne or accustomed evacuation in any other place of their body, as by the nose or hemorrhoids.

Why young women are purged in the new of the Moone.

And as concerning their age, old women are purged when the Moone is old, and young women when the Moone is new, as it is thought. I thinke the cause thereof is, for that the Moone ruleth moyst bodies, for by the variable motion thereof the Sea floweth and ebbeth, and bones, marrow and plants abound with their genitall humour.

Why old women are purged in the wane of the Moone.

Therefore young people which have much bloud, and more fluxible, and their bodies more fluxible, are soone moved unto a fluxe, although it bee even in the first quarter of the Moones rising or increasing: but the humours of old women, because they wax stiffe as it were with cold, & are not so abundant, and have more dense bodies and straighter vessels, are not so apt to a fluxe, nor do they so easily flow, except it bee in the full of the Moon, or else in the decrease; that is to say, because the bloud 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 Moone this time of the month is more cold and moyst.

Chap. L.

The causes of the monethly flux or courses.

The materiall cause of the monthly fluxe.

BEcause a woman is more cold, and therefore hath the digestive faculty more weake, it commeth to passe, that shee requireth and desireth more meate or foode than shee can digest or concoct: And because that superfluous humour that remaineth is not digested by exercise, nor by the efficacy of strong and lively heat, therefore by the providence or benefit of nature it floweth out by the veines of the wombe, by the power of the expulsive faculty, at its owne certaine and prefixed season or time. But then especially it beginneth to flow, and a certaine crude portion of bloud to bee expelled, being hurtfull and maligne otherwise in no quality, when nature hath laid her principall foundations of the encrease of the body, so that in greatnesse of the body, she hath come as it were in a manner to the highest toppe, that is to say, from the thirteenth to the fiftieth yeare of our age.

When the monthly flux begins to flow.

The final cause.

A woman exceeds a man in quantity of bloud.

Moreover, the childe cannot bee formed in the wombe, nor have his nutriment or encrease without this fluxe: therefore this is another finall cause of the monethly flux. Many are perswaded that women do farre more abound with bloud than men, considering how great an abundance of bloud they cast forth of their secret parts every moneth, from the thirteenth to the fiftieth yeare of their age: how much women great with childe, of whom also many are menstruall, yeelde unto the nutriment and encrease of the childe in their wombes, and how much Physicians take from women that are with childe by opening of a veine, which otherwise would bee delivered before their naturall and prefixed time; how great a quantity thereof they

they avoid in the birth of their children, and for ten or twelve daies after, and how great a quantity of milk they ſpend for the nouriſhment of the child when they give ſucke, which milke is none other thing than blood made white by the power of the kernels that are in the dugges, which doth ſuffice to nouriſh the childe, be he great or little; yet notwithſtanding many nurſes in the meane while are menſtruall: and as that may be true, ſo certainely this is true, that one dramme (that I may ſo ſpeake) of a mans blood, is of more efficacy to nouriſh and encreaſe, than two pounds of womans blood, becauſe it is farre more perfect, more concocted, wrought, and better repleniſhed with abundance of ſpirits: whereby it commeth to paſſe that a man endued with a more ſtrong heat, doth more eaſily convert what meat ſoever he eateth unto the nouriſhment & ſubſtance of his body; & if that any ſuperfluity remains, 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 humours, which becauſe ſhee cannot diſperſe, by reaſon of the unperfectneſſe and weakeneſſe of her heat, it is neceſſary that ſhee ſhould ſuffer, and have her monethly purgation, eſpecially when ſhee groweth unto ſome bigneſſe; but there is no ſuch need in a man.

A man exceedeth a woman in the quality of his blood.

A man is more hot than a woman, and therefore not menſtruall.

Chap. LI.

The cauſes of the ſuppreſſion of the courſes or menſtruall fluxe.

THe courſes are ſuppreſſed or ſtopped by many cauſes, as by ſharp, vehement, and long diſeaſes, by feare, ſorrow, hunger, immoderate labours, watchings, fluxes of the belly, great bleeding, hœmorrhoides, fluxes of blood at the mouth, and evacuations in any other part of the body whatſoever, often opening of a veine, great ſweats, ulcers flowing much and long, ſcabbineſſe of the whole skinne, immoderate groſſeneſſe and clammineſſe of the blood, and by eating of raw fruites, and drinking of cold water, by ſluggiſhneſſe and thickneſſe of the veſſels, and alſo the obſtruction of them by the defaults and diſeaſes of the wombe, by diſtemperature, an abſceſſe, 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 necke of the wombe, which place many women endeavour fooliſhly to make narrow: I ſpeake nothing of age, greatneſſe with child, & nurſing of children, becauſe theſe cauſes are not beſides nature, neither doe they require the helpe of the Phyſitian.

The fooliſh endeavour of making the orifice of the wombe narrow, is rewarded with the diſcommodity of ſtopping of the flowers.

Many women, when their flowers or tearmes be ſtopped, degenerate after a manner into a certaine manly nature, whence they are called *Viragines*, that is to ſay, ſtout, or manly women; therefore their voice is more loud and bigge, like unto a mans, and they become bearded.

What women are called *viragines*.

In the city *Abdera* (ſaith *Hippocrates*) *Phaethuſa* the wife of *Pytheas* at the firſt did beare children and was fruitfull, but when her husband was exiled, her flowers were ſtopped for a long time: but when theſe things happened, her body became manlike and rough, and had a beard, and her voice was great and ſhrill. The very ſame thing happened to *Namyſia* the wife of *Gorgippus* in *Thaſus*. Thoſe virgins that from the beginning have not their monethly fluxe, and yet nevertheleſſe enjoy their perfect health, they muſt neceſſarily be hot and dry, or rather of a manly heat and dryneſſe, that they may ſo diſperſe and diſſipate by tranſpiration, as men doe, the excrements that are gathered, but verily all ſuch are barren.

Lib. 6. epidem. ſect. 7.

The women that are called *viragines* are barren.

Chap.

Chap. LII.

What accidents follow the suppression or stopping of the monthly fluxe or flowers.



Hen the flowers or monethly fluxe are stopped, diseases affect the womb, and from thence passe into all the whole body. For thereof commeth suffocation of the womb, head ache, swouning, beating of the heart, and swelling of the breasts and secret parts, inflammation of the wombe, an abscesse, ulcer, cancer, a feaver, nauseousnesse, vomitings, difficult and slow concoction, the dropsie, stranguary, the full wombe pressing upon the orifice of the bladder, blacke and bloody urine, by reason that portion of the blood sweateth out into the bladder. In many women the stopped matter of the monethly fluxe is excluded by vomiting, urine, and the hœmorrhoides, in some it groweth into *varices*. In my wife, when shee was a maide, the menstruall matter was excluded and purged by the nostrills. The wife of *Peter Feure* of *Castleaudun*, was purged of her menstruall matter by the dugges every moneth, and in such abundance, that scarce three or foure cloaths were able to dry it and sucke it up.

Why the stranguary, or bloodinesse of the urine followeth the suppression of the flowers.

Histories of such as were purged of their menstruall flux by the nose and dugges.

In those that have not the fluxe monethly to evacuate this plenitude by some part or place of the body, there often followes difficulty of breathing, melancholy, madnesse, the gout, an ill disposition of the whole body, dissolution of the strength of the whole body, want of appetite, a consumption, the falling sickenesse, an apoplexie.

Those whose blood is laudable, yet not so abundant, doe receive no other discommodity by the suppression of the flowers, unlesse it be that the wombe burnes or itcheth with the desire of copulation, by reason that the wombe is distended with hot and itching blood, especially if they lead a sedentary life. Those women that have beene accustomed to beare children, are not so grieved and evill at ease when their flowers are stopped by any chance contrary to nature, as those women which did never conceive, because they have beene used to be filled, and the vessels by reason of their customary 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 throughly concoct or digest, the face waxeth pale, and without its lively colour, because that the heat with the spirits, go from without inwards, so to helpe and aide the expulsive faculty.

To what women the suppression of the moneths 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 veine called *Saphena* which is at the ankle, but first let the basilike veine of the arme be opened, especially if the body bee plethoricke, lest that there should a greater attraction be made into the wombe, and by such attraction or flowing in, there should come a greater obstruction. When the veines of the wombe are distended with so great a swelling that they may be seen, it will be very profitable to apply horse-leeches to the necke thereof: pessaries for women may be used; but fumigations of aromaticke things are more meet for maides, because they are bashfull and shamefaced. Unguents, liniments, emplasters, cataplasmes, that serve for that matter, are to bee prescribed and applied to the secret parts, ligatures and frictions of the thighes and legges are not to bee omitted, fomentations and sternutatories are to be used, and cupping glasses are to bee applied to the groines, walking, dancing, riding, often and wanton copulation with her husband, and such like exercises, provoke

Why the veine called *basilica* in the arme must be opened before the vein *saphena* in the foot.

Horse-leeches to be applied to the neck of the wombe.

voke the flowers. Of plants, the flowers of St. Johns wort, the rootes of fennell, and asparagus, bruſcus or butchers broom, of parſley, brooke-lime, baſill, balme, betony, garlicke, onions, criſta marina, coſtmary, the rinde or barke of caſſia fiſtula, calamint, origanum, pennyroyall, mugwort, thyme, hiſſope, ſage, marjoram, roſemary, horehound, rue, ſavine, ſpurge, ſaffron, agaricke, the flowers of elder, bay berries, the berries of Ivie, ſcammony, *Cantharides*, *pyrethrum* or pellitory of Spaine, *euphorbium*. The aromaticke things are *amomum*, cynamon, ſquinanth, nutmegs, *calamus aromaticus*, *cyperus*, ginger, cloves, galangall, pepper, cubibes, amber, muske, ſpiknard, and ſuch like; of all which let fomentations, fumigations, baths, broaths, boles, potions, pills, ſyrupes, apozemes, and opiates be made as the Phyſitians ſhall thinke good. Plants that provoke the flowers. Sweet things.

The apozeme that followeth is proved to be very effectuall. R. *fol. & flor. dictam. an.* p ii. *pimpinel.* m ß. *omnium capillar. an.* p i. *artemiſ. thymi, marjor. origan. an.* m ß. *rad. rub. major. petroſelin. fœnicul. an.* ℥ i ß. *rad. pæon. biſtort. an.* ℥ ß. *cicerum rub. fem. pæon. fœnicul. an.* ℥ ß. make thereof a decoction in a ſufficient quantity of water, adding thereto cinamon ℥ iii. in one pinte of the decoction diſſolve (after it is ſtrained) of the ſyrupe of mugwort, and of hiſſope, *an.* ℥ ii. *diarrhod. abbat.* ℥ i. let it bee ſtrained through a bagge, with ℥ ii. of the kernells of dates, and let her take ℥ iiii. in the morning. An apozeme to provoke the flowers.

Let peſſaries bee made with *galbanum*, *ammoniacum*, and ſuch like mollifying things, beaten into a maſſe in a mortar with a hot peſtell, and made into the forme of a peſſary, and then let them be mixed with oile of Jaſmine, *euphorbium*, an oxe gall, the juice of mugwort, and other ſuch like, wherein there is power to provoke the flowers, as with ſcammony in powder: let them be as bigge as ones thumbe, ſixe fingers long, and rowled in lawne, or ſome ſuch like thinne linnen cloath; of the ſame things nodula's may bee made. Alſo peſſaries may be prepared with hony boyled, adding thereto convenient powders, as of ſcammony, pellitory, and ſuch like. Neither ought theſe to ſtay long in the necke of the wombe, leſt they ſhould exulcerate, and they muſt be pulled backe by a threed that muſt bee put through them, and then the orifice of the womb muſt be fomented with white wine of the decoction of pennyroyall 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 bee cured before wee come unto thoſe things that of their proper ſtrength and vertue provoke the flowers: as for example, if ſuch things be made and given when the wombe is enflamed, the blood being drawne into the grieved place, and the humours ſharpened, and the body of the wombe heated, the inflammation will be encreaſed. So if there be any ſuperfluous fleſh, if there be any Callus of a wound or ulcer, or if there be any membrane ſhutting the orifice of the wombe, and ſo ſtopping the fluxe of the flowers, they muſt firſt bee conſumed and taken away before any of thoſe things bee adminiſtred. But the oportunity of taking and applying of things, muſt be taken from the time wherein the ſicke woman was wont to be purged before the ſtopping, or if ſhe never had the flowers, in the decreaſe of the moone; for ſo we ſhall have cuſtome, nature, and the externall efficient cauſe to helpe art. When theſe medicines are uſed, the women are not to bee put into bathes or hot houſes, as many doe, except the malady proceed from the denſity of the veſſels, and the groſſeneſſe and clammineſſe of the blood. For ſweats hinder the menſtruall fluxe, by diverting and turning the matter another way. What cauſes of the ſtopping of the flowers muſt be cured before the diſeaſe it ſelfe. The fitteſt time to provoke the flowers. Why hot houſes do hurt thoſe in whom the flowers are to be provoked.

Chap. LIIII.

The signes of the approaching of the menstruall fluxe.

What women do love and what women doe hoath the act of generation when the moneths are stopped.

WHen the monethly fluxe first approacheth, the dugges itch and become more swollen and hard than they were wont, the woman is more desirous of copulation, by reason of the ebullition of the provoked blood, and the acrimony of the blood that remaineth, her voice becommeth bigger, her secret parts itch, burne, swell, and waxe red. If they stay long, shee hath paine in her loynes and head, nauseousnesse and vomiting troubleth the stomacke: notwithstanding, if those matters which flow together in the wombe, either of their owne nature, or by corruption, be cold, they loath the act of generation, by reason that the wombe waxeth feeble through sluggishnesse and watery humours filling the same, and it floweth by the secret parts very softly. Those maides that are marriageable, although they have the menstruall fluxe very well, yet they are troubled with head ache, nauseousnesse, and often vomiting, want of appetite, longing, an ill habite of body, difficulty of breathing, trembling of the heart, swouning, melancholy, fearfull dreames, watching, with sadnesse and heavinesse, because that the genitall parts burning & itching, they imagine the act of generation, whereby it commeth to passe that the seminall matter, either remaining in the testicles in great abundance, or else powred into the hollownesse of the womb, by the tickling of the genitalls, is corrupted, and acquireth a venemous quality, and causeth such like accidents as happens in the suffocation of the wombe.

With what accidents those that are marriageable and are not maried, are troubled.

The cause of so many accidents

Maides that live in the country are not so troubled with those diseases, because there is no such lying in wait for their maiden-heads, and also they live sparingly and hardly, and spend their time in continuall labour. You may see many maides so full of juice, that it runneth in great abundance, as if they were not menstruall, into their dugges, and is there converted into milke, which they have in as great quantity as nurses, as we read it recorded by *Hippocrates*. If a woman which is neither great with child, nor hath born children, hath milke, she wants the menstruall fluxes; whereby you may understand that that conclusion is not good which affirmeth that a woman which hath milke in her breasts, either to be delivered of childe, or to be great with childe: for *Cardanus* writeth that hee knew one *Antony Buzus* at *Genua*, who being thirty yeeres of age, had so much milk in his breasts as was sufficient to nurse a child; for the breeding and efficient cause of milke proceeds not onely from the engrafted faculty of the glandulous substance, but much rather from the action of the mans seed; for proofe whereof you may see many men that have very much milk in their breasts, and many women that almost have no milke, unlesse they receive mans seed. Also women that are strong and lusty 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 likenesse of the substance it is drawne into the duggs, and becommeth perfect milk: those that have the flowers plentifully and continually for the space of foure or five daies, are better purged and with more happy successe than those that have them for a longer time.

Aph. 36. sect. 5.

Lib. 2. de subt.

The efficient cause of the milke is to be noted.

CHAP. LV.

What accidents follow immoderate fluxes of the flowers or courses.

IF the menſtruall flux floweth immoderately, there alſo followes many accidents; for the cocoction is fruſtrated, the appetite overthrown, then followes coldneſſe throughout all the body, exolutionof all the faculties,an ill habite of all the body,leanneſſe, the dropſie, a hecticke feaver, convulſion, ſwouning, and often ſodaine death: if any have them too exceeding immoderately, the blood is ſharpe and burning, and alſo ſtinking, the ſicke woman is troubled with a continuall feaver, and her tongue will bee dry, ulcers ariſe in the gummes and all the whole mouth. In women the flowers doe flow by the veines and arteries which riſe out of the ſpermaticke veſſels, and are ended in the bottome and ſides of the wombe, but in virgins and in women great with childe, whoſe children are ſound and healthfull, by the branches of the hypogaſtrick veine and artery, which are ſpred and diſperſed over the necke of the wombe. The cauſe of this immoderate flux is in the quantity or quality of the blood, in both the fault is unreaſonable copulation, eſpecially with a man that hath a yard of a monſtrous greatneſſe, and the diſſolution of the retentive faculty of the veſſels: oftentimes alſo the flowers flow immoderately by reaſon of a painfull & a difficult birth of the child or the after-birth, being pulled by violence from the cotyledons of the wombe, or by reaſon that the veins and arteries of the necke of the wombe are torne by the comming forth of the infant with great travell, and many times by the uſe of ſharpe medicines, and exulcerating peſſaries. Often times alſo nature avoides all the juice of the whole body critically by the wombe after a great diſeaſe, which fluxe is not raſhly or ſodainely to be ſtopped. That menſtruall blood that floweth from the wombe is more groſſe, blacke, and clotty, but that which commeth from the necke of the wombe is more clere, liquid and red.

By what pores the flowers doe flow in a woman and in a maide.

The cauſes of an unreaſonable fluxe of blood.

The criticall fluxe of the flowers.

The ſignes of blood flowing from the womb or necke of the wombe.

CHAP. LVI.

Of ſtopping the immoderate flowing of the flowers or courſes.

YOu muſt make choice of ſuch meats and drinkes as have power to incraſſate the blood, for as the flowers are provoked with meats that are hot, and of ſubtle parts, ſo they are ſtopped by ſuch meates as are cooling, thickening, aſtringent and ſtipticke, as are barly waters, ſodden rice, the extreme parts of beaſts, as of oxen, calves, ſheep, either fryed or ſodden with ſorrell, purſlaine, plantaine, ſhepheards purſe, ſumach, the buds of brambles, berberries, and ſuch like. It is ſuppoſed that a harts horne burned, waſhed, and taken in aſtringent water, will ſtoppe all immoderate fluxes; likewiſe *ſanguis draconis, terra ſigillata, bolus armenus, lapis hæmatites*, corall beaten into moſt ſubtle powder and drunke in ſteeled water; alſo pappe made with milk, wherein ſteele hath often times been quenched, and the floure of wheat, barly, beanes or rice, is very effectuall for the ſame. Quinces, cervices, medlars, cornelian berries, or cherries may likewiſe be eaten at the ſecond courſe, Juleps are to be uſed of ſteeled waters, with the ſyrupe of dry roſes, pomegranates, ſorrell, myrtles, quinces, or old conſerves of red roſes, but wine is to bee avoided: but if the ſtrength be ſo extenuated that they require it, you muſt chooſe groſſe and aſtringent wine tempered with ſteeled water; exerciſes are to be ſhunned, eſpecially venereous exerciſes, anger is to bee avoided, a cold aire is to be choſen, which, if it be not ſo naturally, muſt bee made ſo by ſprinkeling cold things on the ground, eſpecially if the ſummer or heat bee then in his full ſtrength; ſound ſleeping ſtayes all evacuations except ſweating. The opening of a

The inſtitution or order of life.

veine in the arme, cupping glaſſes faſtened on the breſts, bands, and painfull friction ons of the upper parts are greatly commended in this malady.

Purging. But if you perceive that the cauſe of this accident lieth in a cholerick ill juice mixed with the blood, the body muſt bee purged with medcines that purge choler and water, as Rubarbe, Myrobalanes, Tamarinds, Sebeſtens, and the purging ſyrupe of roſes.

Chap. LVII.

Of locall medicines to bee uſed againſt the immoderate flowing of the Courſes.

ALſo unguents are made to ſtay the immoderate fluxe of the tearmes, and likewiſe injections and peſſaries. This or ſuch like may bee the forme of an unguent. An unguent. ℞. *ol. maſtich. & myrt. an.* ℥ ii. *nucum cupreſ. olibani, myrtil. an.* ℥ ii. *ſucci roſar. rubr.* ℥ i. *pulv. maſtichin.* ℥ ii. *boli armen. terræ ſigillat. an.* ℥ ß. *cereæ quantum ſufficit, fiat unguentum.* An injection may be thus made. An aſtringent injection. ℞. *aq. plantag. roſar. rubrar. burſæ paſtor. centinodii, an.* ℔ ß. *corticis querni, nucum cupreſſi, gallar. non maturar. an.* ℥ ii. *berberis, ſumach. balauſt. alumin. rob. an.* ℥ i. make thereof a decoction, and inject it with a ſyringe blunt pointed into the wombe, leſt if it ſhould be ſharpe it might hurt the ſides of the necke of the wombe; alſo ſnailes beaten with their ſhells and applied to the navell, are very profitable. Quinces roaſted under the coals, and incorporated with the powder of myrtills, and bole armenick, and put into the necke of the wombe, are marvellous effectuall for this matter. The forme of a peſſary may be thus. Aſtringent peſſaries. ℞. *gallar. immaturar. combuſt. & inaceto extinctar.* ℥ ii. *ammo.* ℥ ß. *ſang. dracon. pul. rad. ſymphyt. ſumach. maſtich. ſucci acaciæ, cornu cer. uſt. colophon, myrrhæ, ſcoriæ ferri, an.* ℥ i. *caphur.* ℈ ii. mixe them, and incorporate them all together with the juice of knot-graſſe, ſyngreen, night-ſhade, henbane, water lillies, plantaine, of each as much as is ſufficient, and make thereof a peſſary.

Cooling things, as oxycrate, *unguentum roſatum*, and ſuch like, are with great profit uſed to the region of the loines, thighes, and genitall parts: but if this immoderate flux doe come by eroſion, ſo that the matter thereof continually exulcerateth the necke of the wombe, let the place be anointed with the milke of a ſhee Aſſe, with barly water, or binding and aſtringent mucelages, as of *pſilium*, quinces, gumme tragacanth, arabicke, and ſuch like.

Chap. LVIII.

Of womens fluxes, or the Whites.

The reaſon of the name. The differences BEſides the forenamed fluxe, which by the law of nature happeneth to women monethly, there is alſo another called a womans fluxe, becauſe it is onely proper and peculiar to them: this ſometimes wearieth the woman with a long and continuall diſtillation from the wombe, or through the wombe, comming from the whole body without paine, no otherwiſe than when the whole ſuperfluous filth of the body is purged by the reines or urine; ſometimes it returneth at uncertaine ſeaſons, and ſometimes with pain and exulcerating the places of the wombe: it differeth from the menſtruall fluxe, becauſe that this for the ſpace of a few dayes, as it ſhall ſeeme convenient to nature, caſteth forth laudable blood, but this womans fluxe yeeldeth impure ill juice, ſometimes ſanious, ſometimes ſerous and livide, otherwhiles white and thicke, like unto barly creame, proceeding from flegmaticke blood: this laſt kind thereof is moſt frequent. What women are apt to this fluxe. Therefore wee ſee women that are flegmaticke, and of a ſoft and looſe habite of body, to be often troubled with this diſeaſe, and therefore they will ſay among themſelves

ſelves that they have the whites. And as the matter is divers, ſo it will ſtaine their ſmockes with a different colour. Truely if it bee perfectly red and ſanguine, it is to be thought that it commeth by eroſion, or the exolution of the ſubſtance of the veſſels of the wombe, or of the necke thereof: therefore it commeth very ſeldome of blood, and not at all except the woman be either great with childe, or ceaſe to bee menſtruall for ſome other cauſe; for then in ſtead of the monethly fluxe there floweth a certaine whayiſh excrement, which ſtaineth her cloaths with the colour of water wherein fleſh is waſhed. Womens fluxe commeth very ſeldome of blood.

Alſo it very ſeldome proceeds of a melancholy humour, and then for the moſt part it cauſeth a cancer in the wombe. But often times the purulent and bloody matter of an ulcer lying hidden in the wombe, deceiveth the unskilfull Chirurgian or Phyſitian: but it is not ſo hard to know theſe diſeaſes one from the other; for the matter that floweth from an ulcer, becauſe (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 necke of the wombe, cannot have copulation with a man without paine. By what ſignes an ulcer in the wombe may be known from the white flowers.

Chap. LIX.

Of the cauſes of the Whites.

Sometimes the cauſe of the whites conſiſteth in the proper weakneſſe of the wombe, or elſe in the uncleanneſſe thereof, and ſometimes by the default of the principall parts. For if the brain or the ſtomacke be cooled, or the liver ſtopped or ſchirrous, many crudities are engendered, which if they runne or fall downe into the wombe that is weake by nature, the cauſe the fluxe of the wombe, or whites: but if this fluxe be moderate and not ſharpe, it keepeth the body from maligne diſeaſes; otherwiſe it uſeth to inferre a conſumption, leanneſſe, paleneſſe, and an œdematous ſwelling of the legges, the falling downe of the wombe, the dejection of the appetite and all the faculties, and continuall ſadneſſe and ſorrowfulneſſe; from which it is very hard to perſwade the ſicke woman, becauſe that her minde and heart will bee almoſt broken, by reaſon of the ſhame that ſhee taketh becauſe ſuch filth floweth continually; it hindereth conception, becauſe it either corrupteth, or driveth out the ſeed when it is conceived. Often times, if it ſtoppeth for a few moneths, the matter that ſtayeth there cauſeth an abſceſſe about the wombe in the body or necke thereof, and by the breaking of the abſceſſe there followeth rotten and cancerous ulcers, ſometimes in the wombe, ſometimes in the groine, and often in the hippes. How a womans fluxe is wholſome. How it cauſeth diſeaſes. How it letteth the conception.

This diſeaſe is hard to bee cured, not onely by reaſon of it ſelfe, as becauſe all the whole filth and ſuperfluous excrements of a womans body floweth downe into the womb, as it were into a ſink, becauſe it is naturally weak, hath an inferiour ſituation, many veſſells ending therein; and laſt of all, becauſe the courſes are wont to come through it; as alſo by reaſon of the ſicke woman, who often times had rather dye than to have that place ſeene, the diſeaſe knowne, or permit locall medicines to bee applied thereto: for ſo ſaith *Montanus*, that on a time hee was called to a noble woman of *Italy* who was troubled with this diſeaſe, unto whom hee gave counſell to have cleanſing decoctions injected into her wombe, which when ſhee heard, ſhe fell into a ſwoune, and deſired her husband never thereafter to uſe his counſell in any thing. Why it is hard to be cured. A hiſtory.

Chap. LX.

The cure of the Whites.

If the fluxe of a woman be red, wherein it differeth from the menstruall flux.

IF the matter that floweth out in this disease bee of a red colour, it differeth from the naturall monthly fluxe in this onely, because it keeps no order or certain time in its returning. Therfore phlebotomy and other remedies which we have spoken of, as requisite for the menstruall fluxe when it floweth immoderately, is here necessary to be used. But if it bee white, or doth testifie or argue the ill juice of this or that humour by any other colour, a purgation must be prescribed of such things as are proper to the humour that offends: for it is not good to stop such a flux suddenly; for it is necessary, that so the body should be purged of such filth or abundance of humours: for they that doe hasten to stop it, cause the dropsie, by reason that this sinke of humours is turned backe into the liver; or else a cancer in the womb, because it is stayed there; or a feaver, or other diseases, according to the condition of the part that receiveth it. Therefore we must not come to locall detersives, desiccatives, restrictives, unlesse we have first used universall remedies according to art. Alom baths, baths of brimstone, and of bitumen, or iron, are convenient for the whites that come of a phlegmaticke humour; instead whereof bathes may bee made of the decoction of herbes that are hot, dry, and endued with an aromaticke power, with alome and pebbles, or flint-stones red hot throwne into the same. Let this bee the forme of a cleansing decoction and injection. R. *fol. absynth. agrimon. centinod. bursp. past. an.* m ß. boyle them together, and make thereof a decoction, in which dissolve *mellis rosar.* ℥ ii. *aloes, myrrhe, salis nitri, an.* ℥ i. make thereof an injection, the woman being so placed on a pillow under her buttockes that the necke of the wombe being more high, may be wide open: when the injection is received, let the woman set her legges acrosse, and draw them up to her buttockes, and so shee may keepe that which is injected. They that endeavour to dry and bind more strongly, adde the juice of *acatia*, greene galles, the rindes of pomegranates, roch alome, romane vitrioll, and they boile them in Smithes water and red wine; pessaries may be made of the like faculty.

A woman's flux is not to idenly to be stopped.

What baths are profitable.

An astringent injection.

The signes of a putrefyed ulcer in the wombe.

If the matter that commeth forth be of an ill colour or smell, it is like that there is a rotten ulcer; therefore we ought to inject those things that have power to correct the putrefaction: among which *ægyptiacum*, dissolved in lye or red wine, excelleth.

The virulent Gonorrhœa is like unto the fluxe of women.

There are women which when they are troubled with a virulent *Gonorrhœa*, or an involuntary fluxe of the seed, cloaking the fault with an honest name, doe untruly say that they have the whites, because that in both these diseases a great abundance of filth is voided. But the Chyrurgian may easily perceive that malady by the rottennesse of the matter that floweth out, and hee shall perswade himselfe that it will not bee cured without salivation or fluxing at the mouth, and sweats. In the meane while let him put in an instrument made like unto a pessary, and cause the sicke woman to hold it there: this instrument must have many holes in the upper end, through which the purulent matter may passe, which by staying or stopping might get a sharpnesse; as also that so the womb may breathe the more freely, and may be kept more temperate and coole by receiving the aire, by the benefit of a spring whereby this instrument, being made like unto a pessary, is opened and shut.

The

The forme of an inſtrument made like unto a peſſary, whereby the wombe may bee ventilated.



A. *ſheweth the end of the inſtrument, which muſt have many holes therein.*
B. *ſheweth the body 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 receive the aire more freely.*
D. *ſheweth the ſpring.*
EE. *ſhew the laces and bands to tye about the patients body, that ſo the inſtrument may be ſtayed and kept faſt in his place.*

CHAP. LXI.

Of the hæmorrhoides and wartes of the necke of the wombe.

LIke as in the fundament, ſo in the necke of the wombe there are hœmorrhoides, and as it were varicous veines, often times flowing with much blood, or with a red and ſtinking whayiſh humor. Some of theſe by reaſon of their redneſſe and great inequality as it were of knobs, are like unripe mulberries, and are called vulgarly *vena morales*, that is to ſay, the veines or hœmorrhoides like unto mulberries; others are like unto grapes, and therefore are named *uvales*; other ſome are like unto warts, and therefore are called *vena verrucales*: ſome appeare & ſhew themſelves with a great tumour, others are little and in the bottome of the neck of the wombe, others are in the ſide or edge thereof. *Achrochordon* is a kinde of wart with a callous bunch or knot, having a thin or ſlender root, and a greater head, like unto the knot of a rope, hanging by a ſmall thread; it is called of the Arabians, *verruca botoralis*.

The differences of the hœmorrhoides of the necke of the wombe.

What an *Achrochordon* is.

There is alſo another kinde of wart, which becauſe of his great roughneſſe and unequality is called *thymus*, as reſembling the flower of Thyme. All ſuch diſeaſes are exaſperated and made more grievous by any exerciſe, eſpecially by venereous acts: many times they have a certaine malignity, and an hidden virulency joyned with them, by occaſion whereof they are aggravated even by touching onely, becauſe they have their matter of a raging humour: therefore to theſe we may not rightly uſe a true, but onely the palliative cure, as they terme it: the Latines call them onely *ficus*, but the French men name them with an adjunct, St. *Fiacrius* figges.

What a *thymus* is.

St. *Fiacrius* figges.

CHAP.

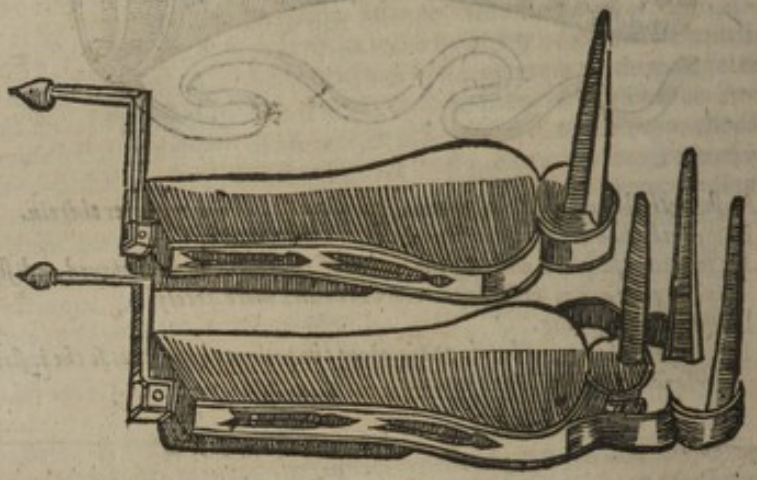
Chap. LXII.

Of the cure of the Warts that are in the necke of the wombe.

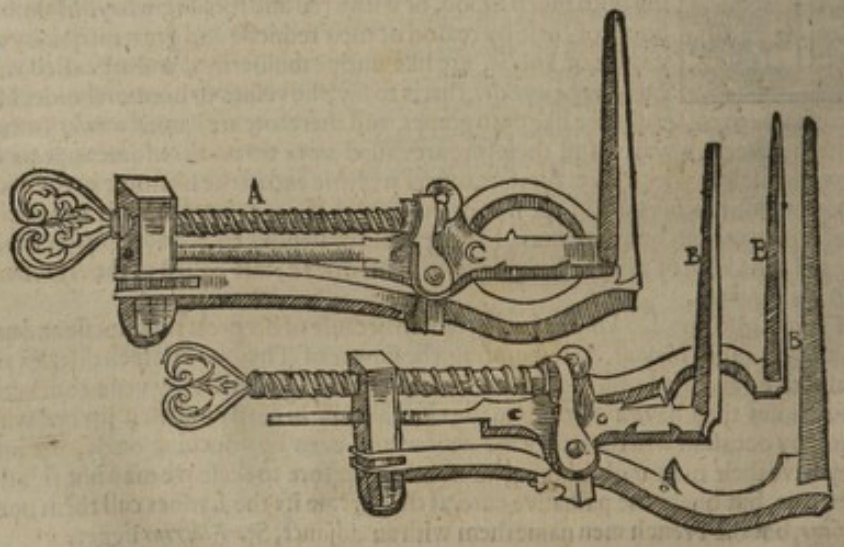
What warts of the womb must be bound and so cut off.

THe warts that grow in the necke of the wombe, if they bee not maligne, are to bee tyed with a thread, and so cut off. Those that lye hid more deep in the wombe, may be seene 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 forme of a dilater or Speculum matricis, *whereof the declaration followeth.*



A. *sheweth the screw which shutteth and openeth the dilater of the matrix.*
B. B. *shew the armes or branches of the instrument, which ought to be eight or nine fingers long.*

But

But these dilaters of the matrix ought to be of a bignesse correspondent to the patients body; let them be put into the matrix when the woman is placed as wee have said, when the child is to be drawne out of her body. That instrument is most meet to tye the warts, which wee have described in the relaxation of the palate or *Uvula*: let them bee tyed harder and harder every day untill they fall away. Therefore for the curing of warts there are three chiefe scopes, as bands, sections, cauteries, and lest they grow up againe, let oyle of vitriol be dropped on the place, or *aqua fortis*, or some of the lye wherewith potentiall cauteries are made. This water following is most effectuall to consume and waste warts. R. *aq. plantag.* ℥ vi. *virid. æris,* ℥ ii. *alum. roch.* ℥iii. *sal. com.* ℥ ß. *vit. rom. & sublim. an.* ℥ ß. beat them all together, and boile them; let one or two drops of this water be dropped on the grieved place, not touching any place else; but if there be an ulcer, it must be cured as I have shewed before. A certain man, studious of physick, of late affirmed to me that oxe dung tempered with the leaves or powder of savine, would waste the warts of the wombe, if it were applied thereto warme; which whether it be true or not, let experience, the mistresse of things, be judge: verily *cantharides* put into unguents, will doe it, and (as it is likely) more effectually; for they will consume the callousnesse which groweth betweene the toes or fingers. I have proved by experience that the warts that grow on the hands, may be cured by applying of purslain beaten or stampt in its own juice. The leaves and flowers of marigolds doe certainely performe the selfe same thing.

Three scopes of the cure of warts in the wombe.

An effectuall water to consume warts.

Unguents to consume warts.

Chap. LXIII.

Of chaps, and those wrinkled and hard excrescences which the greeks call Condylomata.

Chapps or fissures, are cleft and very long little ulcers, with paine very sharpe and burning, by reason of the biting of an acride, salt and drying humour, making so great a contraction, and often times narrownesse in the fundament and the necke of the wombe, that scarcely the toppe of ones finger may be 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 speake, eat, nor open his mouth, so that the Chirurgian is constrained to cut it. In the cure thereof, all sharpe things are to be avoided, and those which mollifie are to be used, and the grieved part or place is to be moistened with fomentations, liniments, cataplasmes, emplasters, and if the malady bee in the wombe, a dilater of the matrix or pessary must be put thereinto very often, so to widen that which is over hard, & too much drawn together or narrow, and then the cleft little ulcers must be cicatrized. *Condylomata* are certaine wrinkled and hard bunches, and as it were excrescences of flesh, rising especially in the wrinkled edges of the fundament and neck of the womb. Cooling and relaxing medicines ought to be used against this disease, such as are oile of egges, and oyle of linseed, 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 be an inflammation, put thereto a little camphire.

What chaps are.

The cure.

What *condylomata* are.

The cure.

Chap. LXIV.

Of the itching of the wombe.

In women, especially such as are old, there often times commeth an itching in the neck of the wombe, 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 counsell, that was so troubled with this kind of malady, that she was constrained to extinguish or stay the itching burning of her

What the itch of the womb is.

A history. her ſecret parts by ſprinkling cinders of fire, and rubbing them hard on the place, I counſelled her to take *ægypt.* diſſolved in ſea-water or lye, & inject it into her ſecret parts with a ſyringe, and to wet ſtupes of flaxe in the ſame medicine, and put them up into the wombe, and ſo ſhe was cured. Many times this itch commeth in the fundament or teſticles of aged men, by reaſon of the gathering together or confluxe of ſalt flegme, which when it falleth into the eyes, it cauſeth the patient to have much adoe to refraine ſcratching: when this matter hath diſperſed it ſelfe into the whole habite of the body, it cauſeth a burning or itching ſcabbe, which muſt be cured by a cooling and a moiſtening diet, by phlebotomy and purging of the ſalt humour, by bathes and hornes applied, with ſcarification and anointing of the whole body with the unction following. R. *axung. 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 enulatum cum mercurio* is thought to have great force, not without deſert, to aſſwage the itch, and dry the ſcab. Some uſe this that followeth. R. *alum. ſpum. nitr. ſulph. viv. an.* ℥ vi. *ſtaphiſ.* ℥ i. let them all be diſſolved in vinegar of roſes, adding thereto *butyr. recent. q. ſ.* make thereof a liniment for the forenamed uſe.

The cauſe of the itch.

The vertue of *unguent. enulat.*

Chap. LXV.

Of the relaxation of the great gut or inteſtine, which happeneth to women.

The cauſe. Many women that have had great travell and ſtraines in child-birth, have the great inteſtine (called of the Latines *craſſum inteſtinum*) or gut, relaxed and ſlipped down; which kind of affect happeneth much to children, by reaſon of a phlegmaticke humour 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 be fomented with a decoction of heating and reſolving herbes, as of ſage, roſemary, lavander, thyme, and ſuch like; and then of aſtringent things, as of roſes, myrtills, the rinds of pomegranats, cypreſſe nuts, galles, with a little alome, then it muſt be ſprinkled with the pouder of things that are aſtringent without biting, and laſt of all it is to be reſtored and gently thruſt into its place. That is ſuppoſed to bee an effectuall and ſingular remedy for this purpoſe, which is made of twelve red ſnailes put into a pot with ℥ ß. of alome, and as much of ſalt, and ſhaken up and down a long time, for ſo at length when they are dead there will remaine an humour, which muſt bee put upon cotton, and applied to the gut that is fallen downe. By the ſame cauſe (that is to ſay of painefull childe-birth in ſome women) there ariſeth a great ſwelling in the navell; for when the *peritonæum* is relaxed or broken, ſometimes the Kall, and ſometimes the guts ſlippe out: many times flatulencies come thither: the cauſe, as I now ſhewed, is over great ſtraining or ſtretching of the belly, by a great burthen carried in the wombe, and great travaile in childe-birth: if the fallen downe guts make that tumour, paine joyned together with that tumour doth vexe the patient, and if it be preſſed you may heare the noiſe of the guts going backe againe: if it be the Kall, then the tumour is ſoft, and almoſt without pain, neither can you heare any noiſe by compreſſion: if it be winde, the tumour is looſe and ſoft, yet it is ſuch as will yeeld to the preſſing of the finger with ſome ſound, and will ſoone returne againe: if the tumour be great, it cannot be cured unleſſe the *peritonæum* bee cut, as it is ſaid in the cure of ruptures. In the church-porches of *Paris* I have ſeene begger-women, who by the falling downe of the guts, have had ſuch tumours as big as a bowle, who notwithſtanding could goe, and doe all other things as if they had beene ſound and in perfect health: I think it was becauſe the *faces* or excrements, by reaſon of the greatneſſe of the tumor, and the bigneſſe or wideneſſe of the inteſtines, had a free paſſage in and out.

The cure.

An effectuall remedy.

The differences and ſignes.

A hiſtory.

Chap.

Chap. LXVI.

Of the relaxation of the navell in children.

OFten times in children newly borne, the navell ſwelleth as bigge as an egg, becauſe it hath not bin well cut or bound, or becauſe the whayiſh humours are flowed thither, or becauſe that part hath extended it ſelfe too much by crying, by reaſon of the paines of the fretting of the childes guts, many times the childe bringeth that tumour joined with an abſceſſe with him from his mother wombe: but let not the Chirurgian aſſay to open that abſceſſe, for if it be opened, the guts come out through the inciſion, as I have ſeene in many, and eſpecially in a child of my Lord *Martigues*; for when *Peter* of the Rocke, the Chirurgian, opened an abſceſſe that was in it, the bowels ranne out at the inciſion, and the infant died; and it wanted but little that the Gentlemen of my Lords retinue that were there, had ſtrangled the Chirurgian. Therefore when *John Gromontius* the Carver deſired me, and requeſted mee of late that I would doe the like in his ſonne, I refuſed to doe it, becauſe it was in danger of its life by it already, and in three daies after the abſceſſe broke, and the bowells guſhed out, and the childe died.

An abſceſſe not to be opened.

A hiſtory.

Chap. LXVII.

Of the paine that children have in breeding of teeth.

CHildren are greatly vexed with their teeth, which cauſe great paine when they begin to break, as it were, out of their ſhell or ſheath, and begin to come forth, the gummes being broken, which for the moſt part happeneth about the ſeventh month of the childs age. This paine commeth with itching and ſcratching of the gummes, an inflammation, fluxe of the belly, whereof many times commeth a feaver, falling of the hair, a convulſion, and at length death. The cauſe of the paine is the ſolution of the continuity of the gummes by the coming forth of the teeth. The ſignes of that pain is an unaccuſtomed burning, or heat of the childes mouth, which may bee perceived by the nurſe that giveth it ſucke, a ſwelling of the gummes and cheekes, and the childes being more wayward and crying than it was wont, and it will put its fingers to its mouth, and it will rubbe them on its gummes as though it were about to ſcratch, and it ſlavereth much. That the Phyſitian may remedy this, hee muſt cure the nurſe as if ſhe had the feaver, and ſhee muſt not ſuffer the childe to ſucke ſo often, but make him coole and moiſt when hee thirſteth by giving him at certaine times *ſyrupus alexandrinus*, *ſyrup. de limonibus*, or the ſyrupe of pomegranats with boiled water; yet the childe muſt not hold thoſe things that are actually cold long in his mouth, for ſuch by binding the gums, doe in ſome ſort ſtay the teeth that are newly comming forth; but things that lenifie and mollifie are rather to bee uſed, that is to ſay, ſuch things as doe by little and little relaxe the looſe fleſh of the gummes, and alſo aſſwage the paine. Therefore the nurſe ſhall often times rubbe the childs gummes with her fingers, anointed or beſmeared with oyle of ſweet almonds, freſh butter, hony, ſugar, mucilage of the ſeeds of *pſilium*, or of the ſeeds of marſh mallowes extracted in the water of pellitory of the wall. Some thinke that the braine of a hare, or of a ſucking pig roſted or ſodden, through a ſecret property, are effectuall for the ſame: and on the outſide ſhall be applied a cataplaſme of barly meale, milke, oyle of roſes, and the yelkes of egges. Alſo a ſticke of liquorice ſhaven and bruiſed and anointed with hony, or any of the forenamed ſyrupes, and often rubbed in the mouth or on the gummes, is likewiſe profitable: ſo is alſo any toy for the childe to play withall, wherein a wolves tooth is ſet, for this by ſcratching doth aſſwage the painfull itching, and rarifie the gummes, and in ſome weareth them that the teeth appeare the ſooner. But many times it happeneth that all

The time of breeding of the teeth.

The cauſe of the paine in breeding teeth.

The ſignes.

The cure.

What power ſcratching of the gums hath to aſſwage the pain of them.

all theſe and ſuch like medicines profit nothing at all, by reaſon of the contumacy of the gums, by hardneſſe or the weakneſſe of the childes nature: therefore in ſuch a cauſe, before the forenamed mortall accidents come, I would perſwade the Chirurgian to open the gummes in ſuch places as the teeth bunch out with a little ſwelling, with a knife or lancet, ſo breaking and opening a way for them, notwithſtanding that a little fluxe of blood will follow by the tenſion of the gummes: of which kind of remedy I have with proſperous and happy ſucceſſe made tryall in ſome of mine owne children, in the preſence of *Fenreus*, *Altinus*, and *Cortinus*, Doctors of Phyſick, and *Guillemeau* the Kings Chirurgian, which is much better and more ſafe than to doe as ſome nurſes doe, who taught onely by the inſtinct of nature, with their nailes and ſcratching, breake and teare, or rent the childrens gummes. The Duke of *Nevers* had a ſonne of eight moneths old, which died of late, and when wee, with the Phyſitians that were preſent, diligently ſought for the cauſe of his death, we could impute it unto nothing elſe, than to the contumacious hardneſſe of the gums, which was greater than was convenient for a childe of that age; for therefore the teeth could not breake forth, nor make a paſſage for themſelves to come forth: of which our judgement this was the tryall, that when we cut his gummes with a knife, we found all his teeth appearing as it were in an array, ready to come forth, which if it had bin done when he lived, doubtleſſe he might have beene preſerved.

A hiſtory.

The End of the twenty fourth Booke.

OF MONSTERS AND PRODIGIES.

THE TWENTY FIFTH BOOK.

THE PREFACE.

WEe call Monsters, what things soever are brought forth contrary to the common decree and order of nature. So wee terme that infant monstrous, which is borne with one arme alone, or with two heads. But we define Prodigies, those things which happen contrary to the whole course of nature, that is, altogether differing and dissenting from nature: as, if a woman should bee delivered of a Snake, or a Dogge. Of the first sort are thought all those, in which any of those things, which ought, and are accustomed to bee, according to nature, is wanting, or doth abound, is changed, worne, covered or defended, hurt, or not put in his right place: for somtimes some are born with more fingers than they should, othersome but with one finger: some with those parts devided which should be joyned, others with those parts joyned which should bee devided: some are borne with the privityes of both sexes, male and female. And Aristotle saw a Goate with a horne upon her knee. No living creature was ever borne which wanted the Heart, but some have beene seene wanting the Spleene, others with two Spleenes, and some wanting one of the Reines. And none have bin known to have wanted the whole Liver, although some have bin found that had it not perfect and whole: and there have beene those which wanted the Gall, when by nature they should have had it: and besides, it hath beene seene that the Liver, contrary to his naturall site, hath lien on the left side, and the Spleene 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 borne with their fundaments, eares, noses, and the rest of the passages shut, and are accounted monstrous, nature erring from its entended scope. But to conclude, those Monsters are thought to portend some ill, which are much differing from their nature.

what a monster is.

What a prodigie is.

Lib. 4. de. anim. cap. 4.

Chap. I.

Of the cause of Monsters; and first of those Monsters which appeare for the glory of God, and the punishment of mens wickednesse.

THere are reckoned up many causes of monsters; the first whereof is the glory of God, that his immense power may be manifested to those which are ignorant of it, by the sending of those things which happen contrary to nature: for thus our Saviour Christ answered the Disciples (asking whether he or his parents had offended, who, being born blind, received his sight from him) that neither he nor his parents had committed any fault so great, but this to have happened onely that the glory and majesty of God should be divulged by that miracle, and such great workes.

Another cause is, that God may either punish mens wickednesse, or shew signes of punishment at hand, because parents sometimes lye and joine themselves together without law and measure, or luxuriously and beastly, or at such times as they ought to forbeare by the command of God and the Church, such monstrous, horrid and unnaturall births doe happen.

At *Verona Anno Dom.* 1254. a mare foaled a colt, with the perfect face of a man, but all the rest of the body like an horse: a little after that, the warre betweene the *Florentines* and *Pisans* began, by which all *Italy* was in a combustion.

The figure of a Colt with a mans face.



About the time that Pope *Julius* the second raised up all *Italy*, and the greatest part of Christendome, against *Lewis* the twelfth the King of *France*, in the yeere of our Lord 1512. (in which yeere, upon Easter day, neere *Ravenna* was fought that mortall battell, in which the Popes forces were overthrowne) a monster was borne in *Ravenna*, having a horne upon the crowne 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 eye, the privities of male and female, the rest of the body like a man, as you may see by the following figure.

The

The figure of a winged Monster.



The third cause is, an abundance of seed & overflowing matter. The fourth, the same in too little quantity, and deficient. The fift, the force and efficacy of imagination. The sixt, the straightnesse of the wombe. The seaventh, the disorderly site of the party with childe, and the position of the parts of the body. The eighth, a fall, straine or stroake, especially upon the belly of a woman with child. The ninth, hereditary diseases, or affects by any other accident. The tenth, the confusion and mingling together of the seed. The eleventh, the craft and wickednesse of the divell. There are some others which are accounted for monsters, because they have their originall or essence full of admiration, or doe assume a certaine prodigious forme by the craft of some begging companions; therefore we 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 truely finall causes of monsters, we must now come to those which are the matereall, corporeall, and efficient causes, taking our beginning from that we 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 any time a creature bearing one at once, as man, shall cast forth more seed in copulation than is necessary to the generation of one body, it cannot be that onely one should bee begot of all that; therefore from thence either two or more must arise: whereby it commeth to passe, that these are rather judged wonders, because they happen seldome, and contrary to common custome. Superfluous parts happen by the same cause, that twinnes, and many at one birth, contrary to natures course, doe chance, that is, by a larger effusion of seed than is required for the framing of that part, that so it exceeds either in number or else in greatnesse. So *Austin* tells that in his time in the East an infant was borne, having all the parts from the belly upwards double, but from thence downewards single and simple: for it had two heads, foure eyes, two breasts, foure hands, in all the rest like to another child, and it lived a little while. *Cælius Rhodiginus* saith he saw two monsters in *Italy*, the one male, the other female, handsomly & neatly made through all their bodies, except their heads, which were double; the male died within a few daies after it was borne; but the female (whose shape is here delineated) lived 20. five yeers, which is contrary to the common custome of monsters; for they for the most part are very short lived, because they both live and are born, as it were, against natures consent; to which may be added, they doe not love themselves, by reason they are made a scorne to others, and by that meanes lead a hated life.

Monsters are seldome long lived.

The effigies of a maide with two heads.



But it is most remarkeable which *Lycosthenes* telleth of this woman-monster, for excepting her two heads, shee was framed in the rest of her body to an exact perfection: her two heads had the like desire to eat and drinke, to sleepe, to speake, and to doe every thing; she begged from dore to dore, every one giving to her freely. Yet at length she was banisht *Bavaria*, lest that by the frequent looking upon her, the imaginations of women with childe, strongly moved, should make the like impression in the infants they bare in their wombes.

The effigies of two girles whose backes grew together.



In the yeere of our Lord 1475. at *Verona* in *Italy*, two Girles were borne with their backes sticking together from the lower part of the shoulders unto the very burtockes. The novelty and strangenesse of the thing moved their parents, being but poor, to carry them through all the chiefe townes in *Italy* to get mony of all such as came to see them.

In the yeere 1530. there was a man to bee seene at *Paris*, out of whose belly another, perfect in all his members except his head, hanged forth as if he had been grafted there. The man was forty yeeres old, and hee carried the other implanted or growing out of him, in his armes, with such admiration to the beholders, that many ranne very earnestly to see him.

The

The figure of a man with another growing out of him.



The effigies of the horned or hooded monster.



At *Quiers*, a small village some ten miles from *Turine* in *Savoy*, in the yeere 1578. upon the seventeenth day of January, about eight a clocke at night, an honest matron brought forth a childe having five hornes, like to Rams hornes, set opposite to one another upon his head: he had also a long piece of flesh, like in some sort to a French-hood which women used to wear, hanging downe from his forehead by the nape of his necke almost the length of his backe: two other pieces of flesh, like the collar of a shirt, were wrapped about his necke: the fingers ends of both his hands somewhat resembled a Haukes talons, and his knees seemed to be in his hammes: the right leg and the right foot were of a very red colour; the rest of the body was of a tawny colour: it is said he gave so terrible a scritch when he was brought forth, that the Midwives, and the rest of the women that were at her labour, were so frighted that they presently left the house and ran away. When the Duke of *Savoy* heard of this monster, he commanded it should be brought to him, which performed, one would hardly think what various censures the Courtiers gave of it.

The shape of a monster found in an egge.



The monster you see here delineated, was found in the middle and innermost part of an egge, with the face of a man, but haires yeelding a horrid representation of snakes; the chinne had three other snakes stretched forth like a beard. It was first seene at *Autun*, at the house of one *Bancheron* a Lawyer, a maide breaking many eggs to butter: the white of this egge 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 effigies of a monstrous childe, having two heads, two armes & foure legs.



Arist. in problem.

In the yeere 1546. a woman at *Paris* in her sixt moneth of her account, brought forth a childe having two heads, two armes and foure legges: I dissecting the body 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 principall part: for if the body have but one heart, it is but one, if two, it is double by the joyning together in the conception.

The

The portraiture of Twinnes joyned together with one head.



In the yeere 1569. a certaine woman of *Towers* was delivered of twinnes joyned together with one head, and mutually embracing each other. *Renatus Ciretus* the famous Chirurgian of those parts, sent mee their *Sceleton.*

The effigies of two girles, being Twinnes joyned together by their fore-heads.



Munster writes that in the village *Bristant*, not farre from *Wormes*, in the yeere 1495. he saw two Girles perfect and entire in every part of their bodies, but they had their foreheads so joined together that they could not be parted or severed by any art: they lived together ten yeeres; then the one dying, it was needfull to separate the living from the dead: but she did not long out-live her sister, by reason of the malignity of the wound made in parting them asunder.

In the yeere 1570. the twentieth of July, at *Paris*, in the street *Gravilliers*, at the signe of the Bell, these two infants were borne, differing in sexe, with that shape of body that you see expressed in the figure. They were baptized in the Church of St. *Nicholas* of the fields, and named *Ludovicus* and *Ludovica*, their father was a Mason, his name was *Peter German*, his surname *Petit dieu* (*i*) little-God, his mothers name was *Mathea Petronilla.*

The

The shape of the infants lately borne at Paris.



The figure of two girles joyned together in their breasts and belly.



In the yeere 1572. in *Pont de See*, neare *Angers* a little towne, were borne upon the tenth day of *July*, two girles, perfect in their limbs, but that they had but foure fingers apiece on their left hands: they clave together in their fore parts, from their chin to the navell, which was but one, as their heart was also but one; their liver was divided into foure lobes: they lived halfe an houre, and were baptized.

The figure of a child with two heads, and the body as bigge as one of foure moneths old.



Var. lect. lib. 14. cap. 3.

Calius Rhodiginus tells that in a town of his country called *Sarzano*, *Italy* being troubled with civill warres, there was born a monster of unusual bigness; for he had two heads, having all his limbs answerable in greatness & tallnesse to a child of foure 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 eares in length, for it was not all seen: it was born the 5. of the Ides of *March* 1514.

The

The shape of two monstrous Twinnes, being but of one onely Sexe.



In the yeere 1572. on Easter Munday at *Metz* in *Loraine*, in the Inne whose signe is the Holy-Ghost, a Sow pigged a pigge, which had eight legges, foure eares, and the head of a dogge; the hinder part from the belly downeward was parted in two as in twinnes, but the foreparts grew into one; it had two tongues in the mouth, with foure teeth in the upper jaw, and as many in the lower. The sexe was not to be distinguished, whether it were a Bore or Sow pigge, for there was one slit under the taile, and the hinder parts were all rent and open. The shape of this monster, as it is here set downe, was sent me by *Borgesius* the famous Physitian of *Metz*.

The shape of a monstrous Pigge.



Chap. III.

Of women bringing many children at one birth.

WOman is a creature bringing usually but one at a birth: but there have been some who have brought forth two, some three, some foure, five, sixe, or more at one birth. *Empedocles* thought that the abundance of seed was the cause of such numerous births: the *Stoikes* affirme the divers cells or partitions of the wombe to be the cause: for the seed being vari-

The figure of one with foure legges and as many armes.



Jovianus Pontanus tells in the yeere 1529. the ninth day of *January*, there was a man childe borne in *Germany*, having foure armes and as many legges.

The figure of a man out of whose belly another head shewed it selfe.



In the yeere that *Francis* the first King of *France* entered into league with the *Swisses*, there was borne a monster in *Germany*, out of the midst of whose belly there stood a great head; it came to mans age, and this lower, and as it were inserted head, was nourished as much as the true and upper head.

In the yeere 1572. the last day of *February*, in the parish of *Viaban*, in the way as you goe 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 untill the Sunday following, being but of one onely sexe, which was the female.

The

variously parted into these partitions, and the conception divided, there are more children brought forth; no otherwise than in rivers, the water beating against the rockes, 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 sowes, taketh no place; for womens wombes have but one cavity, parted into two recesses, the right & left, nothing comming between, except by chance distinguished by a certain line; for often twins lye in the same side of the womb. *Aristotles* opinion is, that a woman cannot bring forth more than five children at one birth. The maide of *Augustus Cæsar* brought forth five at a birth, & a short while after, she & her children died. In the yeer 1554. at *Bearn* in *Switzerland*, the wife of Dr. *John Gelinger* brought forth five children at one birth, three boies and two girles. *Albucrasis*, affirmes a woman to have bin the mother of seven children at one birth; & another, who by some externall injury did abort, brought forth fifteene perfectly shaped in all their parts. *Pliny* reports that it was extant in the writings of Physitians, that twelve children were borne at one birth; and that there was another in *Peloponnesus* which foure 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 *Savill*, a Gentleman of *Sena*, at one time brought forth seven children, of which four were baptized. In our time, between *Sarte* and *Maine*, in the parish of *Seaux*, not far from *Chambellay*, there is a family and noble house called *Maldemeure*; the wife of the Lord of *Maldemeure*, the first yeere she was married brought forth twinnes, the second yeere she had three children, the third yeere foure, the fourth yeere five, the fift yeere sixe, and of that birth she died: of those sixe one is yet alive, and is Lord of *Maldemeure*. In the valley of *Beaufort*, in the county of *Anjou*, a young woman the daughter of *Mace Channiere*, when at one perfect birth shee had brought forth one child, the tenth day following she fell in labour of another, but could not be delivered untill it was pulled from her by force, and was the death of the mother. *Martin Cromerus* the author of the Polish history, writeth that one *Margaret*, a woman sprung from a noble and antient family neere *Cracovia*, and wife to Count *Virbosla-us*, brought forth at one birth thirty five live children, upon the twentieth day of *January*, in the yeere 1296. *Franciscus Picus Mirandula* writeth that one *Dorothy* an Italian had twenty children at two births, at the first nine, and at the second eleven, and that she was so bigge, that she was forced to beare up her belly, which lay upon her knees, with a broad and large scarfe tyed about her necke, as you may see by the following figure.

4. de gen. anim. cap. 4.

Lib. 7. cap. 11. Cap. 3.

The ninth book of the Polish history.

The

The picture of Dorothy, *great with child with many children.*



And they are to bee reprehended here againe, who affirme the cause of numerous births to consist in the variety of the cells of the wombe, for they feigne a womans wombe to have seven cells or partitions, three on the right side for males, three on the left side for females, and one in the midst for Hermaphrodites or Scrats: and this untruth hath gon so far, that there have bnene some that affirmed every of these seven cells to have bin divided into ten partitions, into which the seed disperseed, doth bring forth a divers and numerous encrease, according to the variety of the cells furnished with the matter of seed; which though it may seeme 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.

Lib. 4. de gen. anim. cap. 4.

The opinion of *Aristotle* is more probable, who saith twinnes and more at one birth, are begot and brought forth by the same cause that the sixt finger groweth on the hand, that is, by the abundant plenty of the seed, which is greater and more copious than can bee all taken up in the naturall framing of one body: for if it all be forced into one, it maketh one with the parts encreased more than is fit, either in greatnesse or number; but if it bee, as it were, cloven into divers parts, it causeth more than one at one birth.

CHAP. IV.

Of Hermaphrodites or Scrats.

AND here also we must speake of Hermaphrodites, because they draw the cause of their generation and conformation from the plenty and 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 passe that the forming faculty (which alwaies endeavours to produce some-

ſomething like it ſelfe) doth labour both the matters almoſt with equall force, and is the cauſe that one body is of both ſexes.

Yet ſome make foure differences of Hermaphrodites; the firſt of which is the male Hermaphrodite, who is a perfect and abſolute male, and hath onely a ſlit in the *Perinæum* not perforated, and from which neither urine nor ſeed doth flow. The ſecond is the female, which beſides her naturall privity, hath a fleſhy and skinny ſimilitude of a mans yard, but unapt for erection and ejaculation of ſeed, and wanteth the cod and ſtones; the third difference is of thoſe, which albeit they beare 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 performe the part both of man and woman, becauſe they have the genitalls of both ſexes compleat and perfect, and alſo the right breaſt like a man, and the left like a woman: the lawes command thoſe to chuſe the ſexe which they will uſe, and in which they will remaine and live, judging them to death if they be found to have departed from the ſexe they made choice of, for ſome are thought to have abuſed both, and promiſcuouſly to have had their pleaſure with men and women. There are ſignes by which the Phyſitians may diſcerne whether the Hermaphrodites are able in the male or female ſexe, or whether they are impotent in both: theſe ſignes are moſt apparent in the privities and face, for if the matrix be exact in all its dimenſions, and ſo perforated that it may admit a mans yard, if the courſes flow that way, if the haire of the head bee long, ſlender, and ſoft, and to conclude, if to this tender habite of the body a timide and weake condition of the minde be added, the female ſexe is predominant, and they are plainely to bee judged women. But if they have the *Perinæum* and fundament full of haires (the which in women are commonly without any) if they have a yard of a convenient largeneſſe, if it ſtand well & readily, and yeeld ſeed, the male ſexe hath the preheminence, and they are to be judged men. But if the conformation of both the genitalls be alike in figure, quantity, and efficacy, it is thought to be 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 Hermaphrodite twinnes cleaving together with their backes.



Anno Dom. 1486. In the *Palatinate*, at the village *Robach*, neere *Heidelberg*, there were twinnes, both Hermaphrodites, borne with their backs ſticking together.

The effigies of an Hermaphrodite, having foure hands and feet.



The same day the *Venetians* and *Genoeses* entred into league, there was a monster borne in *Italy* having foure armes and feet, and but one head; it lived a little after it was baptized. *James Ruef* a *Helvetian* Chirurgian saith hee saw the like, but which besides had the privities of both sexes, whose figure I have therefore here set forth.

Chap. V.

Of the changing of Sexe.

Amatus Lusitanus reports that in the village *Esquina*, there was a maid named *Maria Pateca*, who at the appointed age for her courses to flow, had in stead of them a mans yard, lying before that time hid and covered, so that of a woman she became a man, and therefore laying aside her womans habite, was cloathed in mans, and changing her name, was called *Emanuel*; who when hee had got much wealth by many and great negotiations and commerce in *India*, returned into his country, and married a wife: but *Lusitanus* saith he did not certainely know whether he had any children, but that he was certaine he remained alwaies beardlesse.

Anthony Loqueneux, the Kings keeper or receiver of his rents of St. *Quintin* at *Vermandois*, lately affirmed to me that he saw a man at *Reimes*, at the Inne having the sign of the swan, in the yeer 1560. who was taken for a woman untill the fourteenth yeere of his age; for then it happened as he played somewhat wantonly with a maid which lay in the same bed with him, his members (hitherto lying hid) started forth and unfolded them selves: which when his parents knew (by helpe of the Ecclesiasticke power) they changed his name from *Joane* to *John*, and put him in mans apparell.

Some yeeres agone, being in the traine of King *Charles* the ninth, in the French Glasse-house, I was shewed a man called *Germane Garnierus*, but by some *Germane Maria* (because in former times when he was a woman hee was called *Mary*) he was of an indifferent stature, and well set body, with a thicke and red beard; he was taken for a girle untill the fifteenth yeere of his age, because there was no signe of being a man seene in his body, and for that amongst women, he in like attire did those things which pertaine to women: in the fifteenth yeere of his age, whilest he somewhat earnestly pursued hogges given into his charge to bee kept, who running into the corne, he leaped violently over a ditch, whereby it came to passe that the stayes and foldings being broken, his hidden members sodainly broke forth, but not without paine; going home, hee weeping complained to his mother that his guts came forth:

forth: with which his mother amazed, calling Physitians and Surgeons to counsell, heard he was turned into a man; therefore the whole businesse being brought to the Cardinall the Bishop of *Lexuncure*, an assembly being called, he received the name and habite of a man.

Pliny reports that the sonne of *Cassinus* of a girle became a boy, living with his parents; but by the command of the Soothsayers he was carried into a desart Isle, because they thought such monsters did alwaies shew or portend some monstrous thing. Certainely women have so many and like parts lying in their wombe, as men have hanging forth; onely a strong and lively heat seemes to bee wanting, which may drive forth that which lyes hid within: therefore in processe of time, the heat being encreased and flourishing, and the humidity (which is predominant in childhood) overcome, it is not impossible that the virile members, which hitherto sluggish by defect of heat, lay hid, may be put forth, especially if to that strength of the growing heat some vehement concussion or jactation of the body be joined. Therefore I thinke it manifest by these experiments and reasons, that it is not fabulous that some women have beene changed into men: but you shall finde in no history men that have degenerated into women; for nature alwaies intends and goes from the imperfect to the more perfect, but not basely from the more perfect to the imperfect.

Chap. VI.

Of monsters caused by defect of seed.

IF, on the contrary, the seed be any thing deficient in quantity, for the conformation of the infant or infants, some one or more members will be wanting, or more short and decrepite. Hereupon it happens that nature intending twinnes, a childe is borne with two heads, and but one arme, or altogether lame in the rest of his limbes.

The effigies of a monstrous childe, by reason of the defect of the matter of seed.



Anno Dom. 1573. I saw at St. *Andrewes* Church in *Paris*, a boy nine yeeres old, borne in the village *Parpavilla*, fixe miles from *Guise*; his fathers 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 wrest, but from thence to his two fingers ends it was very deformed, he wanted his leggs and thighes, although from the right buttocke a certaine unperfect figure, having onely foure toes, seemed to put it selfe forth; from the midst of the left buttock two toes sprung out, the one of which was not much unlike a mans yard, as you may see by the figure.

In the yeere 1562. in the Calends of *November*, at *Villa-franca* in *Gascony*, this monster, a headlesse woman, whose figure thou heere seest, was borne, which figure Dr. *John Altinus* the Physitian gave to mee when I went about this booke of Monsters, he having received it from *Fontanus* the Physitian of *Angolestre*, who seriously affirmed he saw it.

The figure of a monstrous woman without a head, before and behind.



A few yeeres agone there was a man of forty yeeres old to be seene at *Paris*, who although he wanted his armes, notwithstanding did indifferently performe all those things which are usually done with the hands, for with the top of his shoulder, head and necke, hee would strike an Axe or Hatchet with as sure and strong a blow into a poast, as any other man could doe with his hand; and hee would lash a coach-mans whip, that he would make it give a great crack, by the strong refraction of the aire: but he ate, drunke, plaid at cardes, and such like, with his feet. But at last he was taken for a thiefe and murderer, was hanged and fastened to a wheele.

Also not long agoe there was a woman at *Paris* without armes, which nevertheless did cut, sew, and doe many other things, as if she had had her hands.

Gell. 2. lib. 2. epidem. We read in *Hippocrates*, that *Attagenis* his wife brought forth a childe all of flesh without any bone, and notwithstanding it had all the parts well formed.

The

The effigies of a man without armes, doing all that is usually done with hands.



The effigies of a monster with two heads, two legs, and but one arme.



Chap. VII.

Of monsters which take their cause and shape by imagination.

The force of imagination upon the body and humours.

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 powerfull in us, as for the most part, it may alter the body of them that imagine, they soon perswaded themselves that the faculty which formeth the infant may be led and governed by the firme and strong cogitation of the Parents begetting them (often deluded by nocturnall and deceitfull apparitions) or by the mother conceiving them, and so that which is strongly conceived in the mind, imprints the force into the infant conceived in the wombe: which thing many thinke to be confirmed by *Moses*, because he tells that *Jacob* encreased and bettered the part of the sheepe granted to him by *Laban*, his wives father, by putting roddes, having the barke in part pulled off, finely stroaked with white and greene, in the places where they used to drinke, especially at the time they engendered, that the representation apprehended in the conception, should be presently impressed in the young; for the force of imagination hath so much power over the infant, that it sets upon it the notes or characters of the thing conceived.

Gen. chap. 30.

We have read in *Heliodorus* that *Persina* Queene of *Aethiopia*, by her husband *Hidustes*, being also an Æthiope, had a daughter of a white complexion, because in the embraces of her husband, by which she proved with childe, she earnestly fixed her eye and mind upon the picture of the faire *Andromeda* standing opposite to her. *Damascene* reports that he saw a maide hairy like a Beare, which had that deformity by no other cause or occasion than that her mother earnestly beheld, in the very instant of receiving and conceiving the seed, the image of St. *John* covered with a camells skinne, hanging upon the poasts of the bed.

They say *Hippocrates*, by this explication of the causes, freed a certain noble woman from suspicion of adultery, who being white her selfe, and her husband also white, brought forth a childe as blacke as an Æthiopian, because in copulation she strongly and continually had in her minde the picture of the Æthiope.

The effigies of a maid all hairy, and an infant that was blacke by the imagination of their Parents.



There

There are some who thinke the infant once formed in the wombe, which is done at the utmost within two & forty dayes after the conception, is in no danger of the mothers imagination, neither of the seed of the father which is cast into the womb; because when it hath got a perfect figure, it cannot be altered with any external form of things; which whether it be true, or no, is not here to be enquired of: truly I think it best to keep the woman, all the time she goeth with childe, from the sight of such shapes and figures.

The effigies of a horrid Monster, having feet, hands, and other parts like a Calfe.



In *Stecquer* a village of *Saxony*, they say, a monster was borne, with foure feet, eyes, mouth, and nose like a calfe, with a round and redde excrescence of flesh on the forehead, and also a piece of flesh like a hood hung from his necke upon his backe, and it was deformed with its thighes torne and cut.

The figure of an infant with a face like a Frog.



Anno Dom. 1517. in the parish of Kings-wood, in the forrest *Biera*, in the way to *Fontain-Bleau*, there was a monster borne, with the face of a Frog, being seen by *John Bellanger*, Chirurgian to the Kings Engineers, before the Justices of the towne of *Harmoy*, principally *John Bribon* the Kings procurator in that place. The fathers name was *Amadæus* the *Little*, his mothers, *Magdalene Sarbucata*, who troubled with a feaver, by a womans perswasion, held a quicke frogge in her hand untill it died, she came thus to bed with her husband and conceived; *Bellanger*, a man of an acute wit, thought this was the cause of the monstrous deformity of the childe.

CHAP.

Chap. VIII.

Of Monsters caused by the straitnesse of the wombe.

That the straitnesse or littlenesse of the wombe may be the occasion of monsters.

WEE are constrained to confesse by the event of things, that monsters are bred and caused by the straitnesse of the wombe; for so apples hanging upon the trees, if before they come to just ripenesse, they bee put into strait vessels, their growth is hindered. So some whelps which women take delight in, are hindered from any further growth by the littlenesse of the place in which they are kept. Who knowes not that the plants growing in the earth, are hindered from a longer progresse and propagation of their roots, by the opposition of a flint, or any other solid body, 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 forme of the thing placed; it is necessary that those things that are shut up in straiter spaces, prohibited of free motion, should be lessened, depraved 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 straitnesse or figure of the womb: which they thought the chiefest of all; because they thought the case was such in naturall births, as in forming of metals and fusible things, of which statues being made, doe lesse expresse the things they be made for, if the moldes or formes into which the matter is poured, bee rough, scabrous, too strait, or otherwise faulty.

Chap. IX.

Of monsters caused by the ill placing of the mother, in sitting, lying downe, or any other site of the body in the time of her being with childe.

WEE often too negligently and carelesly corrupt the benefits and corporall endowments of nature in the comelinesse and dignity of conformation: it is a thing to be lamented and pitied in all, but especially in women with childe, because that fault doth not onely hurt the mother, but deformes and perverts the infant which is conteined in her wombe: for wee moving any manner of way, must necessarily move whatsoever is within us. Therefore they which sit idely at home all the time of their being with childe, or crosse-legged, those which holding their heads downe, doe sow or worke with the needle, or doe any other labour, which presse the belly too hard with cloaths, breeches or swathes, doe 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 effigies 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 stroake, fall, or the like occasion.

THere is no doubt but if any injury happen to a woman with childe, by reason of a stroake, fall from on high, or the like occasion, the hurt also may extend to the child. Therefore by these occasions the tender bones may bee broken, wrested, strained, or depraved after some other monstrous manner; and more, by the like violence of such things, a veine is often opened or broken, or a fluxe of blood, or great vomiting is caused by the vehement concussion of the whole body, by which meanes the childe wants nourishment, and therefore will be small and little, and altogether monstrous.

Chap. XI.

Of monsters which have their originall by reason of hereditary diseases.

BY the injury of hereditary diseases, infants grow monstrous, that is, monstrously deformed: for crooke-backt produce crooke-backt, and often times so crooked, that betweene the bunch behind and before, the head lies hid, as a Tortoise in her shell: so lame produce lame, flat nosed their like, dwarfes bring forth dwarfes, leane bring forth leane, and fat produce fat.

Chap. XII.

Of monsters by the confusion of seed of divers kindes.

That which followeth is a horrid thing to be spoken; but the chast minde of the Reader will give mee pardon, and conceive that, which not onely the Stoikes, but all Philosophers, who are busied about the search of the causes of things, must hold, That there is nothing obscene or filthy to be spoken. Those things that are accounted obscene may bee spoken without blame, but they cannot bee acted or perpetrated without great wickednesse, fury and madnesse; therefore that ill which is in obscenity consists not in word, but wholly in the act. Therefore in times past there have beene some, who nothing fearing the Deity, neither Law, nor themselves, that is, their soule, have so abjected and prostrated themselves, that they have thought themselves nothing different from beasts: wherefore Atheists, Sodomites, Out-lawes, forgetfull of their owne excellency and divinity, & transformed by filthy lust, have not doubted to have filthy and abhominable copulation with beasts. This so great, so horrid a crime, for whose expiation all the fires in the world are not sufficient, though they, too maliciously crafty, have concealed, and the conscious beasts could not utter, yet the generated mis-shapen issue hath abundantly spoken and declared, by the unspeakable power of God, the revenger and punisher of such impious & horrible actions. For of this various and promiscuous confusion of seedes of a different kinde, monsters have beene generated and borne, who have beene partly men and partly beasts.

The like deformity of issue is produced, if beasts of a different species doe copulate together, nature alwaies affecting to generate something which may bee like it selfe: for wheat growes not but by sowing of wheat, nor an apricocke but by the setting or grafting of an apricocke; for nature is a most diligent preserver of the species of things.

The effigies of a monster halfe man and halfe dogge.



Anno Dom. 1493. there was generated of a woman and a dogge, an issue, which from the navell upwards perfectly resembled the shape of the mother, but therehence downewards the sire, that is, the dogge. This monster was sent to the Pope that then reigned, as *Volaterane* writeth: also *Cardane* mentions it; wherefore I have here given you the figure thereof.

Card. lib. 14. de var. rerum cap. 64.

Cælius

Calius Rhodiginns writes that at *Sibaris*, a heards-man 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 legges resembled the damme, but the face was like the fathers.

The figure of a monster in face resembling a man, but a Goat in his other members.



Anno Dom. 1110. In a certaine towne 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 body resembling a swine.

The figure of a pigge, with the head, face, hands, and feet of a man.



Anno Dom. 1564. at *Bruxels*, at the house of one *Joest Dietzpeert*, in the street *Warmoesbroecks*, a sow farrowed sixe pigs, the first whereof was a monster representing a man in the head, face, fore feet and shoulders, but in the rest of the body another pigge, for it had the genitalls of a sow pigge, and it sucked like the other pigs. But the second day after it was farrowed, it was killed of the people together with the sow, by reason of the monstrousnesse of the thing. Here followeth the figure thereof.

The

The effigies of a monster halfe man and halfe swine.



Anno Dom. 1571. at *Antwerpe*, the wife of one *Michaell* a Printer, dwelling with one *John Molline* a Graver or Carver, at the signe of the Golden Foot, in the *Camistrate*, on St. *Thomas* his day, at ten of the clocke in the morning, brought forth a monster wholly like a dogge, but that it had a shorter necke, and the head of a bird, but without any feathers on it. This monster was not alive, for that the mother was delivered before her time; but she giving a great scritch in the instant of her deliverance, the chimney of the house fell downe, yet hurt nobody, no not so much as any one of foure little children that sate by the fire side.

The figure of a monster like a dogge, but with a head like a bird.



Lewis Celleus writeth that hee hath read in an approved author, that an Ewe once brought forth a Lion, a beast of an unlike and adverse nature to her.

Anno Dom. 1577. in the towne *Blandy*, three miles from *Melon*, there was lambed a Lambe, having three heads, the middlemost of which was bigger than the rest, when one bleated they all bleated. *John Bellanger* the Chirurgian of *Melon* affirmed that hee saw this monster, and he got it drawne, and sent the figure thereof to mee, with that humane monster that had the head of a Frogge, which we have formerly described.

The

The figure of a three-headed Lambe.



There are some monsters in whose generation by this there may seeme to be some divine cause, for that their beginnings cannot be derived or drawne from the generall cause of monsters, that is, nature, or the errors thereof, by reason of some of the forementioned particular causes: such are these monsters that are wholly against all nature, like that which we formerly mentioned, of a Lion yeaned by an Ewe.

Yet Astrologers (lest there should seeme to be any thing which they are ignorant of) referre the causes of these to certaine constellations and aspects of the Planets and Stars, according to *Aristotles* saying in his Problemes; in confirmation whereof they tell this tale. It happened in the time of *Albertus Magnus*, that in a certaine village, a Cow brought forth a Calfe, which was halfe a man: the townesmen apprehended the heardsman, and condemned him as guilty of such a crime, to be presently burnt together with the cow; but by good lucke *Albertus* was there, to whom they gave credit by reason of his much and certaine experience in Astrologie, that it was not occasioned by any humane wickednesse, but by the efficacy of a certaine position of the starres, that this monster was borne.

Chap. XIII.

Of monsters occasioned by the craft and subtlety of the Devill.

IN treating of such monsters as are occasioned by the craft of the Devill, wee crave pardon of the courteous Reader, if peradventure going further from our purpose, wee may seeme to speake more freely and largely of the existence, nature, and kindes of Devills. Therefore first it is manifest that there are Conjurers, Charmers, and Witches, which whatsoever they do, performe it by an agreement & compact with the Devill, to whom they have addicted themselves: for none can be admitted into that society of Witches, who hath

There are forcerers, and how they come to be.

What induceth them thereto.

hath not forsaken God the Creator, and his Saviour, and hath not transferred the worship due to him above, upon the Devill, to whom he hath obliged himselfe. And assuredly, whosoever addicts himselfe to these magicall vanities and witch-crafts, doth it, either because hee doubts of Gods power, promises, study and great good will towards us: or else for that hee is madded with an earnest desire of knowing things to come; or else because disdaining poverty, hee affects and desires from a poore estate to become rich on the sodaine. It is the constant opinion of all, both ancient and modern, as well Philosophers as Divines, that there are some such men; which when they have once addicted themselves to impious and divellish arts, can by the wondrous craft of the Divell, doe many strange things, and change and corrupt bodies, and the health & life of them, and the condition of all mundane things. Also experience forceth us to confesse the same, for punishments are ordained by the lawes against the professors and practisers of such arts; but there are no lawes ordained against those things which neither ever have beene, nor ever came into the knowledge of men: for such things are rightly judged and accounted for impossibilities, which have never beene seene nor heard of.

Exod. cap. 22. Levit. cap. 19.

Before the birth of Christ there have beene many such people, for you may finde in *Exodus* and *Leviticus* lawes made against such persons by *Moses*, by whom God gave the law to his people. The Lord gave the sentence of death to *Ochasias* by his Prophet, for that he turned into these kinde of people. We are taught by the scriptures that there are good and evill spirits, and that the former are termed Angells, but the latter Devills; for the law is also said to be given by the ministry of Angels:

Hebr. 1. 14. Galat. 3. 19. 1 Thes. 4. 16.

and it is said that our bodies shall rise againe at the sound of a trumpet, and the voice of an Arch-angell. Christ said that God would send his Angells to receive the elect into the heavens.

John 13. Mat. 26. 34.

The historie of *Job* testifieth that the Devill sent fire from heaven, and killed his sheep and cattell, and raised winds that shooke the foure corners of the house, and overwhelmed his children in the ruines thereof. The history of *Achab* mentioneth a certaine lying spirit in the mouth of the false Prophets. Sathan entring into *Judas*, moved him to betray Christ. Devils, who in a great number possessed the body of a man, were called a Legion, 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 Angells, that those divine and incorporeall spitits might inhabite heaven, and as messengers, signifie Gods pleasure to men, and as ministers or servants, performe his commands, who might be as overseers and protectors of humane affaires. Yet of this great number there were some who were blinded by pride, and thereby also cast downe from the presence, and heavenly habitation of God the creator. These harmefull and crafty spirits delude mens mindes by divers jugling trickes, and are alwaies contriving something to our harme, and would in a short space destroy mankinde, but that God restraines their fury; for they can onely doe so much as is permitted them: Expelled heaven, some of them inhabite the aire, others, the bowels of the earth, there to remaine untill God shall come to judge the world: and as you see the clouds in the aire somewhiles to resemble centaures, otherwhile serpents, rocks, towers, men, birds, fishes, and other shapes: so these spirits turne themselves into all the shapes and wondrous formes of things; as oft times into wild beasts, into serpents, toads, owles, lapwings, crowes or ravens, goats, asses, dogs, cats, wolves, 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 transforme themselves into angells of light.

The power of evill spirits over mankind.

The differences of devills.

The delusions of devills.

They feigne themselves to bee shut up and forced by magicall rings, but that is onely their deceit and craft, they wish, feare, love, hate, and oft times as by the appointment and decree of God they punish malefactors: for we read that God sent evill angels into Egypt, there to destroy. They houle on the night, they murmure & rattle, as if they were bound in chaines, they move benches, tables, counters, props, cupboards, children in the cradles, play at tables and chesse, turne over books, tell mony, walk up & down roomes, and are heard to laugh, to open windowes & dores, cast sounding vessels, as brasse and the like, upon the ground, breake stone pots and glasses,

glasses, and make other the like noises. Yet none of all these things appeare to us when as wee arise in the morning, neither finde we any thing out of its place or broken. They are called by divers names; as, Devills, evill Spirits, *Incubi*, *Sucubi*, Hobgoblines, Fairies, Robin-good-fellowes, evill Angels, Sathan, Lucifer, the father of lies, Prince of darkenesse and of the world, Legion, and other names agreeable to their offices and natures. Their titles & names.

Chap. XIV.

Of the subterrene Devills, and such as haunt Mines.

Lewis Lavater writes, that by the certaine report of such as worke in Mines, that in some Mines there are seene spirits, who in the shape and habite of men, worke there, and running up and down seeme to doe much worke, when as notwithstanding they doe nothing indeed. But in the meane time they hurt none of the bystanders, unlesse they bee provoked thereto by words, or laughter. For then they will throw some heavie or hard thing upon him that hurt them, or injure them some other way. What the devills in Mines doe.

The same author affirmes that there is a silver Mine in *Rhetia*, out of which *Peter Briot*, the Governour of the place, did in his time get much silver. In this Mine there was a Devill, who chiefly on Frie-dayes, when as the Miners put the minerall they had digged into tubbes, kept a great quarter, and made himselfe exceeding busie, and poured the minerall, as he listed, out of one tubbe into another. It happened one day that he was more busie than he used to be, so that one of the Miners reviled him, and bad him bee gone on a vengeance to the punishment appointed for him. The Devill offended with his imprecation and scoffe, so wrested the Miner, taking him by the head, that twining his necke about, hee set his face behinde him, yet was not the workman killed therewith, but lived, and was known by divers for many yeeres after.

Chap. XV.

By what meanes the Devills may deceive us.

OUr mindes involved in the earthy habitation of our bodies, may bee deluded by the Devills divers waies; for they excell in purity and subtlety of essence, and in the much use of things: besides, they challenge a great preheminence, as the Princes of this world, over all sublunary bodies. Wherefore it is no marvell if they, the teachers and parents of lyes, should cast clouds and mists before our eyes from the beginning, & turne themselves into a thousand shapes of things and bodies, that by these juglings and trickes they may shadow and darken mens mindes. Devills are spirits, and from eternity.

Chap. XVI.

Of Sucubi *and* Incubi.

POwerfull by these forementioned arts and deceipts, they have sundry times accompanied with men in copulation, whereupon such as have had to doe with men, were called *Sucubi*, those which made use of women, *Incubi*. Verily St. *Augustine* seemeth not to be altogether against it, but that they, taking upon them the shape of man, may fill the genitalls The reason of the name. *Lib. 15. de civit Dei, cap. 22. & 23.*

talls, as by the helpe of nature, to the end, that by this meanes they may draw aside the unwary, by the flames of lust, from vertue and chastity.

A history. *John Ruef* in his book of the conception and generation of man, writes that in his time, a certaine woman of monstrous lust, and wondrous impudency, had to doe by night with a Divell, that turned himselfe into a man, and that her belly swelled up presently after the act; and when as she thought shee was with childe, she fell into so grievous a disease, that shee voided all her entrailes by stoole, medicines nothing at all prevailing.

Another. The like history is told of the servant of a certaine Butcher, who thinking too attentively on venereous matters, a Divell appeared to him in the shape of a woman, with whom (supposing it to bee a woman) when as hee had to doe, his genitalls so burned after the act, that becomming enflamed, hee died with a great deale of torment.

An opinion confuted. Neither doth *Peter Paludanus*, and *Martin Arelatensis* thinke it absurd to affirme that Devills may beget children, if they shall ejaculate into the womans womb seed taken from some man, either dead or alive. Yet this opinion is most absurd and full of falsitie, mans seed consisting of a seminall or sanguineous matter, and much spirit: if it runne otherwaies than into the wombe from the testicles, and stay never so little a while, it loseth its strength and efficacy, the heat and spirits vanishing away; for even the too great length of a mans yard, is reckoned amongst the causes of barrennesse, by reason that the seed is cooled by the length of the way. If any in copulation, after the ejaculation of the seed, presently draw themselves from the womans embraces, they are thought not to generate, by reason of the aire entring into the yet open womb, which is thought to corrupt the seed. By which it appeares how false that history in *Averrois* is, of a certaine woman that said she conceived with child by a mans seed shed in a bath, and so drawne into her wombe, she entring the bath presently after his departure forth. It is much lesse credible that Divells can copulate with women, for they are of an absolute spirituous nature, but blood and flesh are necessary for the generation of man. What naturall reason can allow that the incorporeall Divells can love corporeall women? And how can we thinke that they can generate, who want the instruments of generation? How can they who neither eate nor drinke be said to swell with seed? Now where the propagation of the species is not necessary to bee supplied by the succession of Individuals, Nature hath given no desire of venery, neither hath it imparted the use of generation; but the divels once created were made immortall by Gods appointment: If the faculty of generation should be granted to devills, long since all places had beene full of them. Wherefore if at any time women with childe by the familiarity of the devill, seeme to travell, we must thinke it happens by those arts we mentioned in the former chapter, to wit, they use to stuffe up the bodies of living women with old clouts, bones, pieces of iron, thornes, twisted haires, pieces of wood, serpents, and a world of such trumpery, wholly dissenting from a womans nature: who afterwards, the time, as it were, of their delivery drawing nigh, through the wombe of her that was falsly judged with child, before the blinded, and, as it were, bound up eyes of the by-standing women, they give vent to their impostures. The following history, recorded in the writings of many most credible authors, may give credit hereto.

Averrois his history convict of falshood.

The illusions of the devills.

A history. There was at *Constance* a faire damosell called *Margaret*, who served a wealthy Citizen: she gave it out every where that she was with child by lying with the devill on a certaine night. Wherefore the Magistrates thought it fit she 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 paines like those which women endure in travell; at length, after many throwes, by the midwives helpe, in stead of a childe, shee brought forth iron nailes, pieces of wood, of glasse, bones, stones, haires, towe, 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 devill to delude the too credulous mindes of men.

Our sins are the cause that the devils abuse us. The Church acknowledgeth that devils, by the permission and appointment of God punishing our wickednesse, may abuse a certaine shape, so to use copulation with

with mankinde. But that a humane birth may thence arise, it not onely affirmes to bee false, but detests as impious, as which beleeves that there was never any man begot without the seed of man, our Saviour Christ excepted. Now what confusion and perturbation of creatures should possesse this world (as *Cassianus* saith) if divells could conceive by copulation with men? or if women should prove with childe by accompanying them, how many monsters would the divells have brought forth from the beginning of the world? how many prodigies by casting their seed into the wombes of wilde and brute beasts? for by the opinion of Philosophers, as often as faculty and will concurre, the effect must necessarily follow: now the Devils never have wanted will to disturbe mankinde, and the order of this world: for the devill, as they say, is our enemy from the beginning; and as God is the author of order, and beauty, so the devill, by pride, contrary to God, is the causer of confusion and wickednesse.

Wherefore if power should accrew equall to his evill minde and nature, and his infinite desire of mischiefe and envie, who can doubt but a great confusion of all things and species, and also great deformity would invade the decent and comely order of this universe, monsters arising on every side? But seeing that devills are incorporeall, what reason can induce us to beleeve that they can be delighted with venereous actions? and what will can there be where as there is no delight, nor any decay of the species to be feared? seeing that by Gods appointment they are immortall, so to remaine for ever in punishment: so what need they succession of individualls by generation? wherefore if they neither will nor can, it is a madnesse to thinke that they doe commixe with man.

Chap. XVII.

Of Magicke and supernaturall diseases and remedies.

THat I may refresh the mind of the Reader, invited to these histories of monsters, raised up by the art of the divell, witches, and conjurers, his servants, I have thought good to add the following histories of certaine diseases, and remedies supernaturall, and wholly magicall, out of *Fernelius*. There are diseases, which as they are sent amongst men by God being offended, so they cannot expect cure otherwise than from God, from whence they are thought supernaturally to have their essence and cure. Thus the aire oft-times, yet chiefly in the time of King *David*, being defiled with the pestilence, killed sixty odde thousand persons. *Lib. 2. de abdit. caus. cap. 16.*

Thus *Ezechias* was strucke with a grievous disease: *Job* was defiled with filthy ulcers by Sathan at Gods command. And as the Devill, the cruell enemy of mankinde, commonly useth by Gods permission to afflict those, so wicked persons by the wondrous subtlety of the devill, offer violence, and doe harme to many. Some invoke I know not what spirits, and adjure them with herbes, exorcismes, imprecations, incantations, charmes: others hang about their neckes, or otherwise carry certaine writings, characters, rings, images, and other such impious stuffe. Some use songs, sounds or numbers: sometimes potions, perfumes, and smells; sometimes gestures and jugling. There be some that make the portraiture of the absent party in waxe, and boast that they can cause or bring a disease into what soever part thereof they prick, by the force of their words and starres, into the like part of the party absent; and they have no few other trickes to bring diseases. Witches hurt by the devills assistance.

We know for certain that magicians, witches, and conjurers, have by charmes so bound some, that they could not have to do with their wives; and have made others so impotent, as if they had bin gelt or made eunuches. Neither do wicked men onely send diseases into mans body, but also devills themselves. These truely are soone distracted with a certain fury, but in this one thing they differ from simple madnesse, for that they speake things of great difficulty, tell things past and hid, disclose the

secrets of such as are present, and revile them many waies, and are terrified, tremble or grow angry by the power of divine words.

A history. One not very long agone, being by reason of heat exceeding dry in the night time, rising out of his sleep, and not finding drinke, took an apple that he found by chance, and eating it, he thought his jawes were shut and held fast as by ones hands, and that he was almost strangled: and also, now possessed of a Devill entring into him, hee seemed in the darke to bee devoured of a huge exceeding blacke dogge, which hee, afterwards restored to his former health, orderly related to me. There were divers, who by his pulse, heat, and the roughnesse of his tongue, thought him to be in a feaver, and by his watching, and the perturbation of his minde, thought him onely to rave.

A history. Another young Noble-man, some few yeeres since, was troubled at set times with a shaking of the body, and as it were, a convulsion, wherewith one while hee would move onely his left arme, another while the right arme, and also sometimes but one finger onely, somewhiles but one legge, sometimes the other, and at other times the whole trunk of his body, with such force and agility, that lying in his bed, he could scarce be held by foure men; his head lay without any shaking, his tongue and speech was free, his understanding sound, and all his senses perfect even in the height of his fit. He was taken at the least ten times a day, well in the spaces between, but wearied with labour: it might have beene judged a true Epilepsie, if the understanding and senses had failed.

The most judicious Physitians who were called to him, judged it a convulsion, cosen-germane to the falling sickenesse, proceeding from a maligne and venemous vapour impact in the spine of the backe, whence a vapour disperst it selfe over all the nerves, which passe from the spine every way into the limbes, but not into the braine. To remove this, which they judged the cause, frequent glysters are ordained, and strong purges of all sorts, cupping glasses are applied to the beginnings of the nerves, fomentations, unctions, emplasters, first to discusse, then to strengthen and weare away the maligne quality: These things doing little good, he was sweated with bathes, stoves, and a decoction of *Guajacum*, which did no more good than the former, for that wee were all farre from the knowledge of the true cause of his disease: for in the third moneth, a certaine Devill was found to be the author of all this ill, bewraying himselfe by voice, & unaccustomed words and sentences, as well latine as greeke (though the patient were ignorant of the greeke tongue): he laied open many secrets of the by-standers, but chiefly of the Physitians, deriding them for that hee had abused them to the patients great harme, because they had brought his body so low by needlesse purgations.

The devill shewes himselfe by speaking of greeke.

When his father came to visite him, he would cry out long before he came at him, or saw him, drive away this visitant, & keep him from comming in here, or else pluck his chaine from about his necke: for on this (as it is the custome of the French order of Knights) there hangs the image of St. *Michael*. If holy or divine things were read before him, he shooke and trembled more violently. When his fit was over, hee remembred all that he had done, and affirmed that hee did it against his will, and that he was sorry for it. The devill, forced by ceremonies and exorcismes, denied that he was damned for any crime, and said that he was a spirit: being asked who he was, and by what meanes and power he did these things, he said that hee had many habitations into which hee could betake him selfe, and in the time of his rest, hee could torment others: that he was cast into this body by a certain person whom he would not name, and that he entred by his feet up to his necke, and that he would go forth againe the same way, when as his appointed time was come. He spoke of sundry other things, as others which are possessed use to doe.

Devils wax angry, and are terryed by divine things.

Now I speake not these things as new or strange, but that it may appeare that devills sometimes entring into the body, doe somewhiles torment it by divers and uncouth waies; other whiles they doe not enter in, but either agitate the good humours of the body, or draw the ill into the principall parts, or with them obstruct the veins or other passages, or change the structure of the instruments, from which causes innumerable diseases proceed: of these, Divells are the authors, and wretched and forlorne

lorne persons the ministers: and the reason of these things is beyond the search of nature.

Pliny tells that the Emperour *Nero* in his time, found magicall arts most vain and false: but what need we alledge profane writers, when as those things that are recorded in scripture of the pythoniſſe, of the woman speaking in her belly, of King *Nebuchodonozor*, of the Magitians of *Pharaoh*, and other such things not a few, prove that there both is, and hath beene Magicke? *Pliny* tells of *Demarchus*, that he tasting of the entrailes of a sacrificed childe, turned himselfe into a Wolfe. We read in *Homer* that *Circes*, in the long wandering of *Ulysses*, changed his companions into beasts, with an inchanted cuppe or potion: and in *Virgil*, that the growing corne may bee spoiled or carried away by inchantments: which things, unlesse they were approved and witnessed by many mens credits, the wisedome of Magistrates and Lawyers, would not have made so many Lawes against Magitians, neither would there have beene a mulct imposed upon their heads by the law of the twelve tables, who had enchanted other mens corne. But as in magicall arts the devill doth not exhibite things them selves, as those which he cannot make, but onely certaine shewes or appearances of things: so in these which are any wayes accommodated to the use of Physicke, the cure is neither certaine, nor safe, but deceitfull, captious, anddangerous.

I have seene the Jaundise, over the whole body, cured in one night, by a written scroule hanged about the neck: also I have seene Agues chased away by words and such ceremonies, but within a short while after they returned againe and became much worse. Now there are some vaine things, and verily the fancies of old women, which because they have long possessed the minds of men, weakened with too much superstition, we terme them superstitious. These are such as we cannot truely say of them, wherefore and whence they have the faculties ascribed to them: for they neither arise from the temperament, neither from other manifest qualities, neither from the whole substance, neither from a divine or magicall power, from which two last mentioned, all medicines beyond nature, and which are consequently to be used to diseases, whose essence are supernaturall, must proceed. Such like old wives medicines and superstitious remedies are written figures and characters, rings, where neither the assistance of God or Spirits is implored. Let me aske you, is it not a superstitious medicine to heale the falling sickenesse, to carry in writing the names of the three Kings, *Gaspar*, *Melchior*, and *Balthasar*, who came to worship Christ? To help the tooth ache, if one whilst Masse is in saying, touch his teeth, saying these words, *Os non comminuetis ex eo?* To stay vomiting with certaine ceremonies and words, which they absent pronounce, thinking it sufficient if that they but onely know the patients name.

It is but a deceitfull cure that is performed by the devill.

Old-wives superstitious medicines against divers diseases.

I saw a certaine fellow that with murmuring a few words, and touching the part, would stanch blood out of what part soever it flowed: there be some who to that purpose say this, *De latere ejus exivit Sanguis & Aqua.* How many prayers or charmes are carried about to cure agues? some taking hold of the patients hand, say, *Æquè facilis tibi Febris hæc sit, atque Mariæ virgini Christi partus.* Another washeth his hands with the patient before the fir, saying to himselfe that solemne Psalme, *Exaltabo te Deus meus Rex*, &c. If one tell an Asse in his eare that hee is stung by a Scorpion, they say that the danger is immediately over.

As there are many superstitious words, so there are many superstitious writings also. To helpe sore eyes, a paper wherein the two greeke letters, Π and Α, are written must bee tyed in a thred, and hanged about the necke. And for the tooth ache this ridiculous saying, *Strigiles, falcesque dentatæ, dentium dolorem persanate.* Also oft times there is no small superstition in things that are outwardly applied. Such is that of *Apollonius* in *Pliny*, to scarifie the gummes in the tooth ache with the tooth of one that died a violent death: to make pils of the skull of one hanged, against the bitings of a mad dogge: to cure the falling sickenesse by eating the flesh of a wilde beast, killed with the same iron wherewith a man was killed: that he shall be freed from a quartaine ague who shall drinke the wine whereinto the sword that hath cut off a mans head, shall be put: and he, the parings of whose nailes shall be tyed in a linnen

cloath

cloth to the necke of a quicke Eele, and the Eele let goe into the water againe. The paine of the Milt to be asswaged, if a beasts Milt bee laid upon it, and the Physitian say that he cures or makes a medicine for the Milt. Any one to bee freed from the cough, who shall spit in the mouth of a Toad, letting her goe away alive. The halter wherein one hath beene hanged put about the temples, to helpe the head ache. This word *Abracadabra*, written on a paper, after the manner described by *Serenus*, and hanged about the necke, to help agues or feavers, especially semitertians. What truth can bee in that which sundry affirme, that a leafe of *Lathyris*, which is a kinde of Spurge, if it be plucked upwards, will cause vomit, but broken downewards, will move to stoole? You may also finde many other superstitious fictions concerning herbes, such as *Galen* reports that *Andreas* and *Pamphilus* writ, as incantations, transformations, and herbes dedicated to conjurers and devills.

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 preserve the health of mans body, flye to the superstitious & ridiculous remedies of sorcerers, or rather of devils, which notwithstanding the devill sometimes makes to performe their wisht for effects, that so hee may still keep them ensnared & addicted to his service. Neither is it to be approved which many say, that it is good to be healed by any art or meanes, for that healing is a good worke. This saying is unworthy of a Christian, and savours rather of him that trusts more in the devill than in God. Those Empericks are not of the society of Sorcerers and Magitians, who heale simple wounds with dry lint, or lint dipt in water: this cure is neither magicall nor miraculous, as many suppose, but wholly naturall, proceeding from the healing fountains of nature, wounds & fractures, which the Chirurgian may heale by onely taking away the impediments, that is, paine, defluxion, inflammation, an abscesse and gangrene, which retard and hinder the cure of such diseases. The following examples will sufficiently make evident the devils maliciousnesse, alwaies wickedly and craftily plotting against our safety and life.

Lib. epist. 38. ep.

A certaine woman at *Florence* (as *Langius* writes) having a maligne ulcer, and being troubled with intolerable paine at the stomacke, so that the Physitians could give her no ease: behold on a sudden shee vomited up long and crooked nailes, and brasse needles, wrapped up with wax and haires, and at length a great gobbit of flesh, so bigge that a Giants jawes could scarce swallow it.

But that which happened in the yeere of our redemption 1539. in a certain town called *Fugenstall*, in the Bishopricke of *Eistet*, exceeds all credit, unlesse there were eye-witnesses of approved integrity yet living. In this towne, one *Ulrich Neusesser* a husbandman, was tormented with grievous paine in the one side of his belly, hee sodainely got hold of an iron key with his hand under the skinne, which was not hurt, the which the Barber-Chirurgian of the place cut out with his razour; yet for all this the paine ceased not, but hee grew every day worse than other: wherefore expecting no other remedy but death, he got a knife and cut his throat. His dead body was opened, and in his stomacke were found a round and longish piece of wood, foure steele knives, part sharpe, and part toothed like a saw, and two sharpe peices of iron, each whereof exceeded the length of a spanne, there was also as it were a ball of haire. All these things were put in by the craft and deceit of the devill. Thus farre *Langius*.

Chap. XVIII.

Of the Cozenages and crafty Trickes of Beggars.

Having treated of Monsters, it follows that wee speake of those things which either of themselves, by reason of their nature full of admiration, have some kinde of monstrousnesse in them; or else from some other waies, as by the craft and cozenage of men. And because to the last mentioned crafts of the Devill, the subtle devices of begging companions are sowewhat alike,

alike, therefore I will handle them in the next place, that the Chirurgian being admonished of them, may be more cautious and cunning in discerning them when hee meets with them.

A history of a counterfeit arme.

Anno Dom. 1525. when I was at *Anjou*, there stood a crafty beggar begging at the Church dore, who tying and hiding his owne arme behind his backe, shewed in steed thereof, one cut from the body of one that was hanged, and this he propped up and bound to his breast, and so laid it open to view, as if it had been all enflamed, so to move such as passed by unto greater commiseration of him. The cozenage lay hid, every one giving him mony, untill at length his counterfeit arm not being surely fastened, fell upon the ground, many seeing and observing it: hee being apprehended and layed in prison, by the appointment of the Magistrate, was whipped through the towne, with his false arme hanging before him, and so banished.

Another of a cancerous breast

I had a brother called *John Parey*, a Chirurgian, who dwelt at *Vitre* in *Britany*; he once observed a young woman begging, who shewed her breast, as if it had a cancrous ulcer thereon, looking fearfully by reason of much and sordid filth, wherewith it seemed to defile the cloath that lay under it. But when as hee had more diligently beheld the womans face, and the fresh colour thereof, as also of the places about the ulcer, and the good habite of the whole body agreeable to that colour (for she was somewhat fat, and of a very good habite of body) he was easily hereby induced to suspect some roguery and deceit. He acquainted the Magistrate with this his suspicion, and got leave that hee might carry her home to his house, so to search her more narrowly. Where opening her breast, he found under her arme-pit, a sponge moistened with a commixture of beasts blood and milke, and carried through an elder pipe to the hidden holes of her counterfeit cancer. Therefore he foments her breast with warme water, and with the moisture thereof looseth the skinnes of blacke, greene, and yellow frogges, laid upon it, and stucke together with glew, made of bole armenick, the white of an egge, and flower; and these being thus fetched off, he found her breast perfectly sound.

A counterfeit ulcer of the leg

The beggar being cast for this into prison, confessed that shee was taught this tricke by a beggar that lay with her, who himselfe also, by putting about his legge an oxes Milt, and perforating it in sundry places, that so the forementioned liquor might drop out, counterfeited an ulcer of a monstrous bignesse and malignity, covering the edges of the Milt on every side with a filthy cloath. This beggar was diligently enquired after, but could not bee found; and so shee was whipped and banished.

Of one feigning himselfe leprous.

Within lesse than a yeere after there came into the same city another notable crafty companion, who presently taking up the church doores, laid open his wares, to wit, a Kercher with some small pieces of mony lying thereon, a wooden Barrell, and * Cliquets, wherewith he would ever now and then make a great noise: his face was spread over with great thicke pustles, being of a blackish red colour, and made with glew like those that have the Leprosie: this his ghasty look made him to be pitied by all men, which was the cause that every one gave him mony. Then my brother came somewhat nearer him, and asked him how long hee had beene troubled with this so cruell disease; hee answered with an obscure and hoarse voice, that hee was borne a Leper from his mothers wombe, and that his parents both died of this wicked disease, so that their members fell away piece-meale. Now hee had a woollen swathe about his chapps, wherewith (having his left hand under his cloake) hee so straitened his chapps, that much blacke blood rose into his face, and made him so hoarse that he could scarce speake; yet hee could not conteine himselfe, but that in speaking hee ever now and then slackened the swathe with his hand, the freelier to draw his breath: which when my brother had observed, suspecting some cozenage, he obtained leave of the Magistrate to search and examine the man whether hee were truely leprous, or no. First therefore he tooke away his swathe or rowler that was about his necke, then washed his face with warme water, so that the counterfeit glewed pustles were dissolved, and his face, free from all tainture, shewed it selfe of a good and naturall colour and shape. Then he laid bare his whole body, and diligently viewed each part, and found no signe of a leprosie, one or other. Which when

* Cliquets are things made somewhat resembling a smal wool-card, but have two or three little pieces of boords so fastened together with leather, that they will make a great noise with them, and these are used by the French beggars.

when the Magistrate once heard, he made him to bee put in prison, and to be thrice whipped through the streets of the city, with his barrell hanging before him, and his cliquets behind him, adding thereto the punishment of perpetuall banishment. It happened that as hee was whipped the third market day, the people cryed out to the hang-man in jest, that he should not feare to lash him soundly, for being leprous he could not feele it: the executioner incited by this cry of the people, did so belabour him, that the wretch died of his whipping within a short while after, having a just reward for his wickednes. For these impostors, besides that they live like drones, feigning this or that disease, and so being idle, enjoy the fruits of others labours; they also divers times conspiring together, take away the lives and goods of honest and substantiall 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 being granted them, they, when as the master of the house and his family are asleepe, open the doores to their comrades, men as wicked as themselves, and kill and carry away all they can.

A multitude of beggars hurtfull to the city.

Certainly we may justly affirme that this crafty begging is the mother and schoole of all dishonesty: for how many acts of bawdry and poisoning every where corrupt the wells and publicke fountaines? how many places have beene burnt under the shew of begging? where can you get more fit spies? where more fit undertakers and workers of all manner of villany, than out of the crew of these beggars?

How to discover such as counterfeit the Jaundise.

Some of them there are, who besmeare their faces with soot layed in water, so to seeme to have the Jaundise. But you may at the first sight find out the deceit, by the native whitenesse of the utter coat of the eye, called *Adnata*, which in such as truely have the Jaundise, useth to bee died and overcast with a yellowish colour; also you may be more certaine thereof, if you wet a cloath in water or spittle, and so rub the face, for the adventitious yellownesse will quickly vanish, and the true native colour shew it selfe.

Some there bee, who not content to have mangled, and filthily exulcerated their limbes with caustick herbs, and other cauteries; or to have made their bodies more swolne, or else leane, with medicated drinks; or to have deformed themselves some other way, but from good and honest Citizens, who have charitably relieved them, they have stollen children, have broken or dislocated their armes and legges, have cut out their tongues, have depressed the chest, or whole breast, that with these, as their owne children, begging up and downe the country, they may get the more relieve, pitifully complaining that they came by this mischance by thunder, or lightning, or some other strange accident.

Lastly they part the kingdome amongst themselves as into Provinces, & communicate by letters one to another, what newes or new quaint devises there are to conceale or advance their roguery: to which purpose they have invented a new language onely knowne to themselves, so to discourse together and not bee understood by others. [We here vulgarly terme it *Canting*].

Of one counterfeiting the falling of the fundament.

Dr. *Flecelle*, a Physitian of *Paris*, entreated me to beare him company to his country house at *Champigny*, foure miles from *Paris*. Where as soone as wee arrived, and were walking in the Court, there came presently to us a good lusty well flesht manly woman, begging almes for St. *Fiacre* sake, and taking up her coat and her smocke, shee shewed a great gut hanging downe some halfe a foot, which seemed as if it had hanged out of her fundament, whereout there dropped filth like unto *pur*, which had all stained her legges and smocke, most beastly and filthy to looke upon. *Flecelle* asked her how long she had beene troubled with this disease: she answered that it was foure yeeres since she first had it. Hence he easily gathered that she plaied the counterfeit: for it was not likely that such abundance of purulent matter came forth of the body of so well flesht and coloured a woman; for she would rather have been very leane and in a consumption. Wherefore provoked with just anger, by reason of the wickednesse of the deceit, he run upon her and threw her downe upon the ground, and trod her under his feet, and hit her divers blowes upon the belly, so that he made the gut which hung at her, to come away, and by threatning her with more grievous punishment, made her confesse the cozenage, and that it was not her gut,

but

but of an oxe, which being filled with blood and milke, and tyed at both ends, shee put the one of them into her fundament, and let the filth flow forth at very little holes.

Not very long agoe, a woman equally as shameleſſe, offered herſelfe to the overſeers of the poore of *Paris*, entreating that ſhe might be entred for one of their Penſioners, for that her wombe was fallen downe by a dangerous and difficult birth, wherefore ſhe was unable to worke for her living. Then they commanded that ſhee ſhould be tryed and examined, according to the cuſtome, by the Chirurgians which are therefore appointed. Who ſeeing how the whole buſineſſe was carried, made report ſhe was a counterfeit; for ſhe had thruſt an oxes bladder, halfe blown and beſmeared with beaſtly blood by the neck, whereto ſhe had faſtned a little ſpunge, into the necke of her wombe, for the ſpunge being filled and ſwollen up by the accuſtomed moiſture of the wombe, ſo held up the oxes bladder that hanged thereat, that ſhe might ſafely goe without any feare of the falling of it out, neither could it be pulled forth but with good force. For this her device ſhee was put into Priſon, and being firſt whipped, was after baniſhed. Their cozenage is not much unlike this, who by fitly applying a ſheepes paunch to their groine, counterfeit themſelves to bee burſten. Of one faigning the falling down of the wombe.

Anno Dom. 1561. there came to *Paris* a luſty, ſtout, and very fat Norman woman, being about ſome thirty yeeres old, who begging from doore to doore, did caſt to meet with rich women, and very familiarly and pitifully would relate unto them her misfortune, ſaying ſhe had a ſnake in her belly, which crept in at her mouth as ſhee ſlept in an hempe-land: ſhee would let one feele her ſtirre, by putting their hand unto her belly, adding alſo that ſhe was troubled day & night with its unceſſant gnawing of her guts. The novelty of this ſad chance, moved all to pity & admiration, wherefore as much as they could, they aſſiſted her with means & counſell. Amongſt the reſt, there was a woman of great devotion and charity, who ſending for Dr. *Hollerius*, *Chevall*, and mee, asked us if this ſnake could by any meanes be gotten forth. *Hollerius* gave her a ſtrong purgation, hoping that by ſtirring up the expulſive faculty, the ſerpent might be caſt forth, together with the noxious humors. But this hope had no ſuch ſucceſſe. Wherefore when as we met againe, wee thought it fit to put a *Speculum matricis* into the necke of her wombe, ſo to ſee if we could diſcerne either her head or taile: but I making large dilatation of her womb, could ſee no ſuch thing, onely wee obſerved a certaine voluntary motion, whereof ſhee her ſelfe was the author, by contracting and dilating the muſcles of the lower belly. Which when as we had obſerved, perceiving the deceit and impoſture, we thought good ſo to terrifie her and make her confeſſe the deceit, to tell her that ſhee muſt take another, but that a more ſtrong purgation, that what wee could not doe by the former, as more gentle, we might attaine to by the latter, as farre ſtronger. She diſſembling all feare, and conſcious of her craft and diſſimulation, after wee were gone in the evening, packing up her ſtuffe, and a great deale more than her owne, ſhe ſecretly ſtole away, not bidding her hoſteſſe farewell: and thus at length the fraud was apparent, to the loſſe of the honeſt Gentlewoman. I ſaw this baggage, ſixe daies after, ſitting luſtily upon a Packe-horſe, at the gate *Mont-martre*, and laughing heartily with ſuch as brought Sea-fiſh to towne; and ſhee was returning (as it was moſt likely) into her country, ſeeing her cozenage was diſcovered here. Of a beggar that faigned her ſelfe to have a ſnake in her belly.

Such as feigne themſelves dumbe, draw backe and double their tongues in their mouths. Such as falling downe counterfeit the falling ſickeneſſe, bind ſtraitly both their Wreſts with plates of iron, tumble and rowle themſelves in the mire, ſprinkle and defile their heads and faces with beaſts blood, and ſhake their limbes and whole body. Laſtly by putting ſope into their mouths, they foame at the mouth like thoſe that have the falling ſickeneſſe. Otherſome with floure make a kind of glew, wherewith they beſmeare their whole bodies, as if they had that Leproſie or Scab, that is vulgarly termed, *Malum ſancti manis*. Neither muſt we thinke this art of counterfeiting, and cheating begging to bee new, and of late invention, for long agoe it flouriſhed in *Aſia*, even in the time of *Hippocrates*, as may appeare by his booke *De Aëre, Locis, & Aquis*. But by how much this diſeaſe hath taken more deepe root, and growne The craft of ſuch as faigne themſelves to have the falling ſickeneſſe. Of ſuch as faigne themſelves leprous.

grown more inveterate by processe 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 fained begging, as the nourisher of sloth and shoppe of all dishonesty, that which is taken from the good is bestowed upon the ill, and one wicked & counterfeit beggar hurts all other wretched people.

Chap. XIX.

Of strange or monstrous accidents in Diseases.

WHat monstrousnesse soever was in the last mentioned parties, it was made up by the craft of beggars for filthy gaine. But if there be any monstrousnesse in the following narrations, it is of nature, but working, as it were, miraculously, by some secret and occult meanes; for thus there are oft times monsters in diseases. Before the towne of St. *John de Angeley*, a souldier called *Francis*, of the company of Captaine *Muret*, was wounded with a Harquebuze shot on the belly, betweene his navell and sides; the bullet was not taken out, because the Chirurgians, who searched him diligently, could not finde it: wherefore hee was troubled with grievous and tormenting paines, untill the ninth day after hee received the wound, the bullet came forth at his fundament: wherefore within three weekes after he was perfectly whole. Hee was healed by *Simon Crinay*, the Chirurgian of the French companies.

Monsters happen also in diseases.

A bullet shot into the belly came forth at the fundament.

James Pope, Lord of St. *Albanes* in *Dauphine*, was wounded at the skirmish at *Chasenay*, having three harquebuze bullets entring into his body, one whereof pierced under his throate, where it buncheth out as with a knot, neare to the pipe of his lungs, even to the beginning of the *vertebræ* of the necke, in which place the leaden bullet stuck, and as yet doth remaine. Hereupon he was afflicted with many and fearfull symptomes, as a feaver, and a great swelling of his whole necke, so that for ten whole daies he could swallow nothing but broaths and liquid things. Yet he recovered, and remaineth well at this present, by the cure of *James Dalam* the Chirurgian.

A bullet sticking to the throat and patient recovering.

Alexander Benedictus makes mention of a certaine countrie-man, who, shot into the backe with a dart, drawing out the shaft, the head was left behinde, being in length about the breadth of two fingers, but hooked and sharpe on the sides. When as the Chirurgian had carefully and diligently sought for it, and could by no meanes finde it, he healed up the wound, but two months after this crooked head came forth at his fundament.

Lib. 3. anat. cap 9.

A crooked iron shot into the back came forth at the fundament.

The same author telleth that at *Venice* a virgin swallowed a needle, which some two yeeres after she voided by urine, covered over with a stony matter, gathered about viscous humours.

A swallowed needle voided by urine.

Catherine Perlan, the wife of *William Guerrier*, a Draper of *Paris*, dwelling in the Jewry, as she rode on horse-backe into the country, a needle out of her pin-cushion, which got under her by accident, ran so deepe into her right buttocke, that it could not by any art or force bee plucked forth. Foure moneths after shee sent for mee to come to her, and she told mee that as often as she had to doe with her husband, shee suffered extreme pricking paine in her right groine; putting my hand thereto, as I felt it, my fingers met with something sharpe and hard: wherefore I used the matter so, that I drew forth the needle all rusty: this may be counted a miracle, that steele, naturally heavie, should rise upwards, from the buttocke to the groine, and pierce the muscles of the thigh, without causing an abscesse.

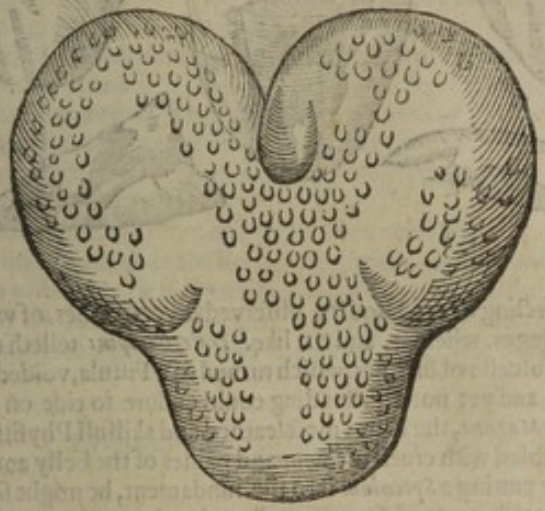
A needle running in at the buttocke came forth at the groine.

Anno Dom. 1566. the two sonnes of *Laurence Collo* (men excellent in cutting for the stone) tooke forth a stone of the bignesse of a wall-nut, in the midst whereof was a needle, just like those that shooe-makers use: the patients name was *Peter Cocquin*, dwelling in the street *Galand*, at the place called *Manbert* at *Paris*, and I thinke hee is yet living. This stone was shewed to King *Charles* the ninth, for the monstrousnesse of the thing, I being then present, which being given me by the Chirurgian, I preserve

A needle in the midst of a stone taken forth of the bladder.

preserve amongst my other rarities. *Anno Dom.* 1570. the Dutchesse of *Ferrara* at *Paris*, sent for *John Collo*, to take a stone out of a Confectioner. This stone, though it waighed nine ounces, and was as thicke as ones fist, yet was it happily taken out, the patient recovering, *Francis Rousset*, and *Joseph Javelle*, the Dutchesse Physitians, 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 kidneies to the bladder, stayed 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. 1566. *Laurence Collo* the younger, tooke three stones out of the bladder of one dwelling at *Marly*, called commonly *Tire-vit*: because being troubled with the stone from the tenth yeere of his age, hee continually scratched his yard, each of the stones were as bigge as an Hens egge; of colour white, they all together waighed twelve ounces. When they were presented to King *Charles*, then lying at Saint *Maure des Faussez*, hee made one of them to bee broken with a hammer, and in the middest thereof there was found another, of a chesnut colour, 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 formes and figures, as of pigges, whelpes, and the like. *Dalechampius* telleth that hee saw a man, which by an abscesse of his loins, which turned to a Fistula, voided many stones out of his kidneies, and yet notwithstanding could endure to ride on horse-backe, or in a coach. *John Magnus*, the Kings most learned and skilfull Physitian, having in cure a woman, troubled with cruell torment and paines of the belly and fundament, sent for me, that by putting a *Speculum* into the fundament, he might see if he could perceive any discernable cause of so great and pertinacious paine: and when as hee could see nothing which might further him in the finding out of the cause of her paine (following reason as a guide) by giving her often glysters and purgations, hee brought it so to passe, that shee at length voided a stone at her fundament of the bignesse of a Tennis ball: which once avoided, all her paines ceased.

A stone by the force of purging medicines voided by the fundament.

Hippocrates tells that the servant of *Dyseris* in *Larissa*, when shee was young, in using venery was much pained, and yet sometimes without paine, yet shee never conceived. But when as she was sixty yeeres old, she was pained in the after-noone as if she had beene in labour. When as she one day before noone had eaten many leekes, afterward shee was taken with a most violent paine, farre exceeding all her former, and she felt a certaine rough thing rising up in the orifice of her wombe. But she falling into a swoune, another woman putting in her hand, got out a sharpe stone of the bignesse of a whirle, and then she forthwith became well, and remained so.

5. Epid.

A stone comming out of the necke of the wombe.

In a certaine woman, who, as *Hollerius* tells, for the space of foure moneths was troubled with an incredible paine in making water, two stones were found in her heart, with many abscesses, her kidneyes and bladder being whole.

Lib. 1. cap. de palp. cord.

Anno Dom. 1558. I opened in *John Bourlier* a Taylour, dwelling in the street of St. *Honoré*, a watry abscesse in his knee, wherein I found a stone, white, hard, and smooth, of the thickenesse of an Almond; which being taken out, hee recovered. Certainely there is no part of the body wherein stones may not breed and grow.

No part of the body wherein stones may not bee found.

Anthony Benevenius a Florentine Physitian writes, that a certaine woman swallowed a brasse needle without any paine, and continued a yeere after without feeling or complaining of it: but at the end thereof she was molested with great paines in her belly; for helping of which she asked the advise of all the Physitians she could, making, in the interim, no mention of the swallowed needle. Wherefore shee had no benefit by all the medicines she tooke; and shee continued in paine for the space of two yeeres, untill at length the needle came forth at a little hole by her navell, and then she recovered her health.

A needle swallowed, came forth at the navell some two yeeres after.

them that are about him; then with prongs, and such things they so belabour his belly, where as his skin is soft and thinne, that at length they kill him, and uncasing him, they make ready his flesh, and eat it for delicious food. *John Lereus*, in his history of *Brasil*, writes that the Salvages of that country willingly feed upon Crocodiles, and that hee saw some who brought into their houses young ones, wherewith the children gathering about it, would play without receiving any harme thereby. *Cap. 10.*

True (saith *Pliny*) is that common opinion, Whatsoever is brought forth in any part of Nature, that also is in the sea, and many other things over and above, that are in no other place. You may perceive that there are not onely the resemblances of living creatures, but also of other things; if you looke upon the sword, saw, cowcumber, like in smell and colour to that of the earth, that you may lesse wonder at the Sea feather and grape, whose figures I have here given you out of *Rondeletius*. *Lib. 9. cap. 2.*

The sea feather is like those feathers of birds, which are worne in hats for ornament, after they are trimmed and drest for that purpose. The fishermen call them sea-prickes, for that one end of them resembleth the end of a mans yard, when the prepuce is drawne off it. As long as it is alive it swells, and becomes sometimes bigger and sometimes lesser; but dead, it becomes very flaccide and lanke: it shines bright on the night like a starre.

You may by this gather, that this which wee here expresse is the Grape whereof *Pliny* makes mention, because in the surface and upper part thereof it much resembles a faire bunch of Grapes; it is somewhat longish, like a mis-shapen clubbe, and hangs upon a long stalke. The inner parts are nothing but confusion, sometimes distinguished with little glandules, like that wee have here figured alone by it selfe.

The figures of the Sea Feather and Grape.



In the Sea neere the Island *Hispaniola* in the West Indies, there may be seene many monstrous fishes, amongst which *Thevet* in his Cosmography thought this most rare and observable, which in the vulgar language of the natives is termed *Aloes*. For it is just like a goose, with a long and straight necke, with the head ending sharpe, or in a Cone, not much unlike a sugar-peare, it is no bigger than a goose, it wanteth scailes, it hath foure finnes under the belly for swimming, when it is above water you would say that it were a goose.

The Sarmatian, or Easterne Germane Ocean containes fishes unknowne to hot countries, and very monstrous. Such is that which resembling a snaile, equalls a barrell in magnitude of body, and a stag in the largenesse and branches of her hornes: the ends of her hornes are rounded as it were into little balls, shining like unto pearles, the necke is thicke, the eyes shining like to lighted candles, with a roundish nose set with haires like to a cats, the mouth wide, whereunder hangs a piece of flesh very ugly to behold. It goes on foure legges, with so many broad and crooked feet, the which with a long taile, and variegated like a Tiger, serves her for finnes to swim withall.

withall. This creature is so timerous, that though it be an *Amphibium*, that is, which lives both in the water and ashore, yet usually it keeps it selfe in the sea, neither doth it come ashore to feed unlesse in a very cleare season. The flesh thereof is very good and gratefull 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 Cosmography affirmeth that hee saw this in *Denmarke*.

The blood of great Tortoises good for the leprosie. *Tom. 2. lib. 20.*

In a deepe lake of fresh water, upon which stands the great city or towne of *Themistitan*, in the Kingdome of *Mexico*, which is built upon piles, like as *Venice* is, there is found a fish of the bignesse of a Calfe, called by the southerne 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*, of the length of some halfe a foot, like the beard of a Barbell. It hath flesh very gratefull and good to eat. It bringeth forth live young like as the Whale. As it swimmes in the waters, it seemes greene, yellow, red, and of many colours, like a Chameleon: it is most frequently conversant about the shore sides of the lake, and there it feeds upon the leaves of the tree called *Hoga*, whence also the fish hath its name. It is a fearefully toothed and fierce fish, killing and devouring such as it meeteth withall, though they bee bigger than her selfe: which is the reason why the Fishermen chiefly desire to kill her, as *Thevet* affirmeth in his Cosmography.

The monstrous fish Hoga.



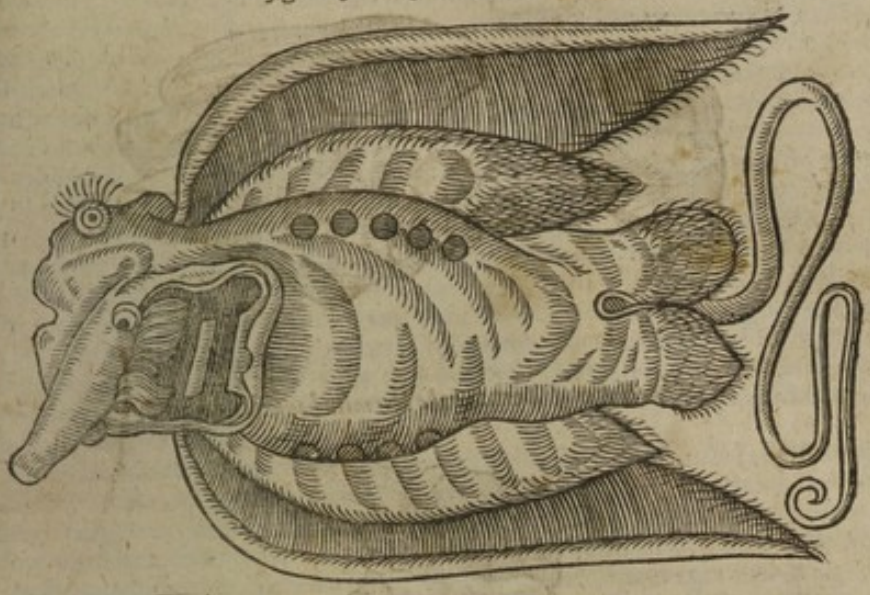
Andrew Thevet in his Cosmography writes that as he sailed to *America*, hee saw infinite store of flying fishes, called by the salvages *Bulampech*, who rising out of the water, flye some fifty paces, escaping by that meanes from other greater fish that thinke to devoure them.

This kinde of flying fish exceeds not the bignesse of a Mackrell, is round headed, with a blewish backe, two wings which equall the length of almost all their body. They oft times flye in such a multitude, that they fall foule upon the sailes of ships, whilest they hinder one anothers sight, and by this meanes they fall upon the decks, and become a prey to the Sailers: which same thing we have read confirmed by *John Lereus* in his history of *Brasil*.

In the Venetian gulfe, betweene *Venice* and *Ravenna*, two miles above *Quioza*, *anno Dom.* 1550. there was taken a flying fish, very horrible and monstrous, being foure foot long, it had a very great head, with two eyes standing in a line, and not one against another, with two eares, and a double mouth, a snout very fleshy and greene, two wings, five holes in her throat, like those of a Lamprey, a taile an ell long

long, at the setting on whereof there were two little wings. This monster was brought alive to *Quioza*, and presented to the chiefe of the city, as a thing whereof the like had not beene formerly seene.

The figure of a monstrous flying Fish.



There are so many and different sorts of shells to be found in the Sea, that it may be truely said, that Nature, the hand-maid of the Almighty, desports it selfe in the framing of them. In so great diversity I have chiefly made choice of three to treat of here, as those that are worthy of the greatest admiration. In these lye hid certain little fishes, as snailes in their shells, which *Aristotle* calls *Cancelli*, and hee affirmeth them to be the common companions of the * crusted and shell fishes, as those which in their *species* or kinde are like to Lobsters, and use to be bred without shells; but as they creepe into shells, and there inhabite, they are like to shell fishes. It is one of these that is termed the Hermite. He hath two somewhat long and slender hornes, under which are his eyes, alwaies standing out of his head, as those which he cannot plucke and draw in, as Crabbes can. His fore-feet have clawes upon them, wherewith he defends himselfe, and carries meat to his mouth, having two other on each side, and a third being lesser, the which he useth in going. The female laies egges, which hang forth at her backe part as if they were put upon a thread, being joyned together by certaine little membranes. Lastly, in the opinion of *Ælian*, the *Cancellus* or small Cray-fish is borne naked and without a shell, but within a while after, she of many which shee findes empty, makes choice of a fit one, and when as growne bigger, she cannot bee contained or dwell any longer therein, or else being stimulated with a naturall desire of copulation, she removes into a more capacious and convenient one. These little Cray-fishes oft times fight together for their habitation, and the stronger carries away the empty shell, or else makes 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, she carries it about, there feeds and growes, and then seekes a more capacious one, as *Aristotle* saith in the formerly cited place.

4. *de hist. anim. cap.* 4.

* By crusted is meant Crabs, Lobsters, Shrimps, and such like.

The description of the Hermite cray-fish.

Lib. 7. *cap.* 31.

They change their habitation for two causes.

The effigies of the empty shells whereinto the Cancelli *use to creep to dwell.*



The effigies of Bernard *the Hermite housed in his shell.*



The figure of him out of his Cell.



Some

Some thinke that this Bernard the Hermite is that kinde of *Cancellus* which is by *Pliny* termed *Pinnoter*; but in truth the *Pinnoter* is not a kinde of *Cancellus* or Crayfish, but of a little Crab. Now in *Aristotle* there is much difference betweene *Cancellus* and *Cancer parvus*, though *Pliny* may seeme to confound them; for he is bred naked, having his cruſt onely, but without a ſhell: wherefore ſeeing that by nature he wants it, he diligently ſearches for it, and dwells in it, when as he hath found it: But the *Pinnoter* is not bred by it ſelfe alone, but in *Pinnæ* and ſome others, and hee changeth not his habitation, becauſe (as *Ariſtotle* thinks) being of the kind of dwarfe Crabbes, it never growes bigge, neither dwells it in empty ſhells. Now the *Pinna*, or Pinne is a kinde of ſhell-fiſh, it breeds in muddy places, and is alwaies open, neither is it at any time without a companion, which they therefore call the *Pinnoter*, or *Pinnophylax* (*i. e.*) the Pin-keeper, as *Pliny* ſaith. Verily that theſe things are thus, you may plainely perceive by theſe words of *Athenæus*. *Chryſippus Solenſis* 5. *de Honeſt. & Volupt.* ſaith the *Pinna* and *Pinnoter* aſſiſt and further each other, neither can they live aſunder. The *Pinna* may be referred to the kinds of oyſters, but the *Pinnoter* is a dwarfe Crabbe: the *Pinna* opens her ſhell for the little fiſhes to enter thereinto; the *Pinnoter* ſtands by, obſerving if any come in, which if they doe, he gives the Pin notice thereof by biting, who preſently thereupon ſhuts her ſhell, and ſo they feed together upon that they catch by this meanes. Thus *Athenæus*. Shee is alſo for this her craft mentioned by *Plutarch* in his writings. The *Pinnoter* is ſometimes called by *Pliny*, *Cancer dapis aſſectator*.

What the Pinnoter, or dwarfe crab is.

What the Pinna is.

Lib. 9. cap. 48. Lib. 3. Dipno.

The familiarity and craft of the *Pinna* and *Pinnoter*.

But that which by theſe authors is attributed to the dwarfe Crabbe, the ſame by *Cicero* is aſcribed to the little ſhrimpe: now the *Pinna* (ſaith hee) opening her two large ſhels, enters into confederacy with the little ſhrimp for getting of food, wherefore when little fiſhes ſwimme into her gaping ſhell, then the *Pinna*, admoniſhed by the ſhrimps biting her, ſhuts her ſhell; thus two unlike creatures get their livings together. But *Plutarch* ſeemes to make the *Pinna* to be the Pearle Oiſter, in that work of his, whereas he enquireth whether the craft of Water or Land beaſtes bee the greater.

Lib. 2. de nat. deorum.

But amongſt the moſt miraculous fiſhes may fitly bee placed the *Nautilos*, or Sayler, of ſome called *Pompylos* (it is thought to bee a kinde of *Polypus*) it comes with the face upwards to the toppe of the Sea, raiſing it ſelfe by little and little, that caſting forth all the water by a pipe, as if it had a Pumpe, it eaſily floats; then putting backe the two firſt tendrills or armes, it extends betweene them a membrane of wondrous fineneſs or thinneſſe, which gathering aire like as a ſaile, and ſhe rowing with the reſt of her armes, ſhe guides her ſelfe with her taile in the midſt, as a Rudder. Thus ſhee ſailes along in imitation of Pinnaces, and if any thing affright her, ſhe preſently takes in water, and ſinkes her ſelfe.

Plin. lib. 9. cap. 29.

The ſhape of the Nautilus, *or Sayler-fiſh.*



How the Whale may be reckoned amongst monsters.

The better to store this treatise of Monsters, abusing the name with the Poets, we will reckon up the whale amongst the Sea-monsters, by reason of his monstrous and wondrous magnitude. Now the Whale is the greatest by much of all the fishes of the Sea, for most commonly this beast is thirty sixe cubits long, eight high, the slit of his mouth is eighteene foot long, teeth they have none, but in stead thereof in each Jaw horny blacke excrescences or finnes [which we vulgarly terme Whale-bones] which by little and little end in small haires like to a swines bristles, which comming and standing out of his mouth, are in stead of Guides, lest whilest he swimmes with a blind and rapide violence, he might runne against a rocke. His eyes are distant one from the other the space of foure elles, which outwardly appeare small, but inwardly they are bigger than a mans head; wherefore they are deceived that say that they are no bigger than an Oxes eyes: his nose is short, but in the middle of his forehead he hath a pipe whereat hee drawes in the aire, and casts forth a whole shower or river of water, that therewith he will even sinke the vessels or boats of the Marriners; when hee hath filled himselfe beyond measure, hee cryes or roars with so great or strong a voice, that hee may bee heard two miles off. Hee hath two very large finnes upon his sides wherewith he swimmes, and under which in time of danger he hides his young; hee hath none upon his backe. His taile in fite is like to the tailes of Dolphines, neither is it much unlike in shape, which when he moves, hee so tosseth the Sea, that he drownes and overturnes the boats that hee toucheth. You may by dissecting them finde that a Whale brings forth live young, and gives them sucke; for the male hath testicles and a yard, but the female a wombe and dugges. They are taken in divers places about winter, but chiefly about the coast of *Aquitaine*, at a small towne which is vulgarly called *Biarris*, some sixe miles distant from *Bayon*: whereunto I being sent by King *Charles* the ninth when he was at *Bayon*, to cure the Prince of *Roche Sur-Yon*, I was an eye witnesse how they are caught; and also I confirmed that which I had formerly read to that purpose, in that excellent and most true history of fishes set forth by *Rondeletius*. Now at that towne there is a little hill, in the toppe whereof there is a Tower of very great antiquity, from which as from a watch-Tower they keepe watch whether or no any Whales swimme that way. Wherefore the watch-men from the tower, either seeing, or by the horrible noise hearing a Whale to passe by that way, they give warning thereof to the inhabitants by the beating of Drums, and ringing a Bell: which signe once given, they all runne forthwith, as to extinguish the city if it were on fire, being furnished with weapons and all things fitting for that purpose. For the people of that country are very diligent and expert in catching the Whale. Wherefore in each of the boats furnished with all things either to assaile or flye, there are put ten lusty rowers, and divers others furnished with harping-irons to strike the Whale; which being cast and fastened in her, they loose out huge long ropes fastened to them, untill such time as he be dead, then together with the ropes, and assisted by the waves of the sea, they draw the Whale (wearied with running and labouring, and fainting by reason of the magnitude and multitude of his wounds, being in the time of their conflict diligently chased and driven toward the shore) a land; & merrily part the prey, each whereof hath his share, according to the number of the irons throwne, the magnitude of the wound, and the necessity and excellency of the wounded part for life: each of their harping-irons are knowne by their peculiar markes. In the heat of the skirmish many stand up and downe in boats, onely for this purpose, to take up such as chance to fall into the Sea, lest they should be drowned. The males are caught with more difficulty, the females more easily, especially if their young ones bee with them; for whilest they linger to helpe and succour them, they lose the occasion of escaping. The flesh is of no esteeme, the tongue onely is commendable; for being very large, and of a very laxe substance, it is poudred, and by most Gentlemen accounted for a dainty. The larde is dispersed over many countries, to be boiled & eaten with fish in the time of Lent, that Gourmandizers may have something to serve them in stead of flesh which is then forbidden. There is great store of fat in them in the parts under the skin and belly, which melted, concretes not againe, by reason of the subtlety of the parts, they keepe it to burne in lampes, and to use about their ships. The

A whale brings forth young, & suckles them.

How they are caught.

Why the females are more easily caught than the males.

houses

houses of the fish-eaters are builded with their bones; also orchards in the coast of *Aquitaine* are fenced with these bones. The finnes that stand forth of their mouths, which are commonly called Whale-bones, being dryed and polished, serve to make buskes for women, whip-staves, and little staves, as also to stiffen garments. Many make seats or stooles of the *vertebræ*, or spondills of the backe-bone. Whalebone.

The manner of the cutting up of the Whale.



In the river *Scalde*, ten miles from *Antwerpe*, *Anno Dom.* 1577. the second day of *July*, there was a Whale taken, of a blackish blue colour, shee had a spout hole in the top of her head, out of which shee cast great store of water: she was fifty eight foot long, and sixteene foot high: her taile was fourteene foot broad; from the eye to the end of her nose was some sixteene foot. Her lower jaw was sixe foot on each side, she had twenty five teeth, which shee could hide in her upper jaw, there being holes for them, it being wholly toothlesse; for which one thing this Whale may bee judged monstrous, for that nature hath denied them teeth, 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 chaw their meat. The longest of these teeth exceeded not sixe inches.

There is (as *Pliny* reports) a very small fish accustomed to live about rockes, it is called *Echeneis*, never exceeding the length of a foot; it is thought that shippes goe more slowly if this stick to them: wherefore the Latines have also given it the name of *Remora*, for that a ship being under saile with a good wind, may by the *Echeneis* seazing on her as if she would devoure her, be stayed against the Saylers wills, and stand still as if she were in a safe harbour. Wherefore shee is said in the Actian fight to have stayed the ship of *Marcus Antonius*, hastening to goe about and encourage his souldiers, so that he was forced to enter into another ship, and thereupon *Cæsars* navie came upon them too hastily, and before they were provided. *Lib. 9. cap. 25. & lib. 32. ca. 1.* The wondrous power of the *Remora*.

Shee also staid the ship of the Emperour *Caius*, comming from *Astura* to *Antes*, his ship of all the navie making no way; neither did they long wonder at this stay, the cause being presently knowne; some forthwith leaping into the Sea to finde the cause thereof, there found her about the ship, even sticking to the Rudder, and they shewed her to *Caius*, being wrath that this so small a thing should stoppe him, and countermaund the endeavour of forty Rowers.

Therefore this little fish tames and infringes the violence and madnesse of the world, & that with no labour, not with holding or any other way, but only by sticking thereto. Certainly how ever it comes to passe, who from this example of holding of ships, can doubt of any power or effect of nature, in medicines which grow naturally? Yea & without this example, the *Torpedo* out of the sea also may be sufficient, who a farre off, and at a distance, if it be touched with a speare or rod, will benumbe even the strongest armes, and retarde the feet, how ever nimble to runne away. The wondrous force of the *Torpedo*.

Chap. XXII.

Of the admirable nature of Birds, and of some Beasts.

THAT there bee divers things not onely in the Sea, but also in the aire, and earth, which by the wonderfull condition of their nature may equall that of Monsters, the onely Estrich may serve for a witnesse. It is the biggest of Birds, though indeed it partly resembles a bird, and partly a beast (and it is familiar to *Africa* and *Æthiopia*) as which contrary to the nature of beasts hath feathers, and against the custome of birds, cannot flye aloft; for it hath not feathers fit to flye, but like unto haires, yet will it out-run a horse. The naturall force of the stomacke in concocting is miraculous, as to which nothing is untameable: shee layes egges of a wondrous largenesse, so that they may bee framed into cuppes: their feathers are most beautifull, as you may perceive by this following figure.

The Estrich is betweene a bird and a beast.

The wondrous force of her stomacke.

The figure of an Estrich.



Any one may easily gather of what a prodigious magnitude an Estrich is, by the greatnesse of his bones. Three of these birds were kept at the Kings charge, by the *Mareschall de Rets*: one whereof dying, it was bestowed upon mee, whereof I have with great diligence made a *Sceleton*.

The

The delineation of the Sceleton *of an Estrich.*



A. Shewes the head, which was somewhat thicker than the head of a Crane, of the length of ones hand, plaine from the crowne even to the beake; the beake being divided to the middle region of the eye, being roundish at the end thereof.

B. The necke, a yard long, consisting of seventeene *vertebræ*, each whereof on each side is furnished with a transverse processe looking downewards, of some fingers length, excepting the two which are next the head, as which want these, and are joyned together by *Ginglymos*.

C. The backe is of a foots length, consisting of seven *Vertebræ*.

D. The holy-bone of two foot long, in whose top there is a transverse processe, under which there lyes a great hole.

E. Three more, but lesse.

F. G. H. After which there followes the cavity 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 say 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 than the other. The lesse is noted with the letter, *L.* then are they both united at the letter *M.* each of them is halfe a foot and foure inches long But from that part whereas they first begun to bee divided, to that whereas they are united, there is a hole some foure fingers broad, but the length of ones 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 sixe in length: at the end whereunder is the letter, *O.* it is joyned by coalition.

P. The rumpe consisting of nine *vertebræ*, like to a mans. The thigh-bones are two, whereof that which is noted with the letter *Q.* is of the length of a foot, and of thickenesse equall to a horses thigh. The other next under (which peradventure you may call the legge-bone) noted with *R.* is a foot and halfe long: it hath joyned thereto the *Fibula*, or lesser focile of the like length, but which growes smaller as it comes lower.

S. Is the legge, to which the foot adheres, being one foot and a halfe long, divided

ded at the end into two clawes, the one bigger, the other lesse, whereof each consists of three bones.

T. Eight ribbes, which are inserted into the *Sternon*, the three middlemost of these have a bony production like to a hook.

V. Is the *Sternon*, consisting of one bone of some foots length, representing a buckler, to this there is joyned 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 halfe long.

Y, Two bones under this, equivalent to the ell and wand, under which there are fixe other bones composing the point of the wing, noted with *Z*.

This whole *Sceleton* is seven foot long, and so many foot or more high from the feet to the beake: there are many other observable things in her composure, but I have thought fit to omit them for brevities sake.

The description of the bird of Paradise.

Jerome Cardane in his bookes *De subtilitate*, writes that in the Ilands of the *Molucca's*, you may sometimes find lying upon the ground, or take up in the waters, a dead bird called a *Manucodiata*, that is in Hebrew, the bird of God, it is never seene alive. It lives aloft in the aire, it is like a Swallow in body and beake, yet distinguished with divers coloured feathers: for those on the toppe of the head are of a golden colour, those of the necke like to a Mallard, but the taile and wings like Peacocks; * it wants feet: Wherefore if it become weary with flying, or desire sleepe, it hangs up the body by twining the feathers about some bough of a tree. It passeth through the aire, wherein it must remaine as long as it lives, with great celerity, and lives by the aire and dew onely. The cocke hath a cavity depresst in the backe, wherein the hen laies and sits upon her egges. I saw one at *Paris* which was presented to King *Charles* the ninth.

* Whosoever desires to know more of the truth of this bird, let him read *Clusius* in the *Auctarium ad lib.* 5. *cap.* 1. *exoticorum.*

The effigies of a Manucodiata, *or bird of Paradise.*



Tom. 2. *lib.* 21. *cap.* 12.

Wee have read in *Thevets* Cosmography, that he saw a bird in *America*, which in that country speech is called *Touca*, in this very monstrous & deformed, for that the beake in length and thickenesse, exceeds the bignesse of the rest of the body; it feeds on pepper, as the black-birds and felfires with us do upon Ivie berries, which are not lesse hot than pepper.

A certaine Gentleman of *Provence* brought a bird of this kinde from that country, to present it to King *Charles* the ninth, but dying in the way he could not present it alive. Wherefore the King wished the *Mareschal de Rets* to give her to me, that I might

might take forth her bowells and embalme her, that she might bee kept amongst the Kings rarities. I did what I could, yet not long after she rotted: she resembled a crow in body and feathers, but had a yellowish beake, cleere, smooth, and toothed like a saw, and of such length and thickenesse as we formerly mentioned. I keep it yet as a certaine monstrous thing.

Thevet writes that in the Iland *Zocotera* there is frequently found a certaine wild beast called *Hulpalis*, of the bignesse of an Æthiopian Monkey. It is a very monstrous creature, but in nothing more, than that it is thought to live upon the aire only; the skinne, as if it were died in graine, is of a scarlet colour, yet is it in some places spotted & variegated: it hath a round head like to a boule, with feet round, broad, and wanting hurtfull nailes. The Moores kill it and use to eat the flesh of it, being first bruised, that so it may be the more tender. *Tom. 1. cap. 11. lib. 4.*

In the Realme of *Canota*, of *Ahob*, of *Benga*, and other mountaines of *Cangipa*, *Plimariq*, *and Catagan*, which are in the inner *India*, beyond the river of *Ganges*, some five degrees beyond the Tropicke of *Cancer*, is found a beast, which the westerne Germanes call Giraffe. This beast in head, eares, and cloven feet, is not much unlike our Doe; it hath a very slender necke, but it is some sixe foot long, and there are few beasts that exceed him in the length of their legges: his taile is round, but reacheth no further than his hammes, his skin is exceeding beautifull, yet somewhat rough, having haire thereon somewhat longer than a Cow, it is spotted and variegated in some places with spors of a middle colour, betweene white and chesnut, so as Leopards are: for which cause by some greeke Historians it is called a *Cameleopardalis*: it is so wilde before it bee taken, that with the good-will it will not so much as be seen. Therefore it inhabites and lives only in desart and secret places, unknown to the rest of the beasts of that region. He presently flyes away at the sight of a man, yet is he taken at length, for that he is not very speedy in his running away; once taken, he is as easily and speedily tamed as any wild beast whatsoever. He hath above his crowne two straight horns covered with haires, and of a foots length. When as he holds up his head and necke hee is as high as a Lance. He feeds upon herbes, and the leaves and boughes of trees, yea and he is also delighted with bread. *Thevet tom. 1. lib. 11. cap. 15.*

The effigies of a Giraffa.



Such as saile in the red sea alongst the coast of *Arabia*, meet with an Iland called by the *Arabians Cademota*; in that part thereof where the river *Plata* runnes, is found a wild beast, called by the barbarous inhabitants *Paraſſoupi*, being of the bigneſſe of a Mule, headed not unlike one, yet rough and haired like to a Beare, but not of so dark a colour, but inclining to yellow, with cloven feet like a Hart: shee hath two long hornes on her head, but not branched, somewhat resembling those so much magnifyed hornes of Unicornes. For the natives of the place, bitten by the venemous tooth of either beast or fish, are presently helped and recover by drinking the water wherein such hornes have beene infused for sixe or seven dayes space, as *Thevet* in his Cosmography reports.

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 *Camphurch*, it is of the bigneſſe of an Hart, it hath one horne in the forehead, moveable after the fashion of the nose of a Turky-cocke: it is some three foot and an halfe long, and never thicker than a mans arme; his neck is covered over with haire of an ash colour, he hath two feet like to a gooses feet, wherwith he swims both in fresh and salt waters. His fore feet are like to a stags,

hee

he lives upon fish. Many have perswaded themselves that this beast is a kind of Unicorne, and that therefore his horne should bee good against poysons. The King of the Iland loves to be 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 pretious and observable in their dominions, as *Thevet* reports.

Mauritania and *Æthiopia*, and that part of *Africke* that is beyond the desarts and syrtes, bring forth Elephants; but those of *India* are farre larger. Now although in the largenesse of their body they exceed all foure footed beasts, yet may they bee more speedily and easily tamed than other beasts. For they may be taught to doe many things above the common nature of beasts. Their skin is somewhat like to a Buffles, with little haire upon it, but that which is, is ash coloured, his head large, his necke short, his eares two handfulls broad, his nose or trunke very long, and hanging down almost to the ground, hollow like as a trumpet, the which he useth in stead of an hand, his mouth is not farre from his breast, not much unlike a swines, from the upper part whereof two large teeth thrust forth themselves, his legges are thicke and strong, not consisting of one bone as many formerly have falsly believed (for they kneele to admit their Rider, or to bee laden, and then rise up againe of themselves) his feet are round like a quoit some two or three hands breadth, and divided into five clefts. He hath a taile like a Buffle, but not very rough, some three hands breadth long, wherefore they would be much troubled with flyes and waspes, but that nature hath recompenced the shortnesse of their tailes by another way; 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 overtake a man running by going onely, for his legges are proportionable to the rest of his body.

The Indian Elephants are bigger than the Africane.

How they keep flyes from them.

They feed upon the leaves and fruits of trees, neither is any tree so strong or well rooted, which they cannot throw downe and breake. They grow to bee sixteene handfulls high, wherefore such as ride upon an Elephant are as much troubled as if they went to sea. They are of so unbridled a nature, that they cannot endure any head-stall or reines, therefore you must suffer them to take the course and way they please. Yet doe they obey their country men without any great trouble; for they seeme after some sort to understand their speech, wherefore they are easily governed by their knowne voices and words. They throw down a man that angers them, first taking him up with their Trunke and lifting him aloft, and then letting him fall, they tread him under foot, and leave him not before he bee dead. *Aristotle* writes that Elephants generate not before they be twenty yeeres old: they know not adultery, neither touch they any female but one, from which they also diligently abstain when they know she hath once conceived. It cannot be knowne how long they goe 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 legges, and with paine like women, they licke their young, and these presently see and goe, and sucke with their mouths, and not with their Trunkes. You may see Elephants teeth of a monstrous and stupendious bignesse, at *Venice*, *Rome*, *Naples*, and *Paris*; they terme it Ivory, and it is used for Cabinets, Harps, Combes, and other such like uses.

Lib. 9. de hist. anim. cap. 47.

It is not knowne how long an Elephant goes with young.

The

The figure of an Elephant.



We have read in *Thevet*, that in *Florida* there are great Bulls, called in that country tongue *Beautrol*, they have hornes of a foot long, a bunch on their backe like a Camell, their haire long and yellow, the taile of a Lion; there is scarce any creature more fierce or wild, for it can never be tamed unlesse it be taken from the dam. The Salvages use their Hides against the cold, and their hornes as an Antidote against poyson. *Tom. 2. lib. 23. cap. 2.*

Their hornes good against poysons.

The same author affirmes that whilest he sayled in the red sea, hee saw a monster in the hands of certaine Indian merchants, which in bignesse and shape of his limbs was not unlike a Tiger, yet had the face of a man, but a very flat nose: besides, his fore feet were like a mans hands, but the hinde like the feet of a Tiger, hee had no taile, he was of a dun colour: to conclude, in head, eares, necke, and face it resembled a man, but in the blackish and curled haire, a More; for the other parts they were like a Tiger; they called it *Thanacth*. *Tom. 1. lib. 2. cap. 10.*

The figure of a beast called Thanacth.



This following monster is so strange that it will scarce bee believed, but by those that have seene it: it is bred in *America*, and by the Salvages called *Haiit*, of the bignesse of a Monkey, with a great belly, almost touching the ground, and the head and face of a child: being taken, it mournes and sighes like to a man that is troubled and perplext; it is of an ashe colour, hath the feet divided into three clawes, foure fingers long, and sharper than those of a Lion: it climbes trees, and lives there more frequently than upon the ground, the taile is no longer than the breadth of three fingers. It is strange and almost monstrous that these kinde of creatures have never bin seene to feed upon or eat any thing: for the salvages have kept them long in their houses to make triall thereof, wherefore they thinke them to live by the aire.

The figure of a beast called Haiit.



I have taken this following monster out of *Leo's* African history; it is very deformed, being round after the manner of a Tortoise, two yellow lines crossing each other at right angles, divide his backe, at every end of which he hath one eye, and also one eare, so that such a creature may see on every side with his foure eyes, as also heare by his so many eares: yet hath hee but one mouth, and one belly to containe his meat; but his round body is encompassed with many feet, by whose helpe he can go any way he please without turning of his body, his taile is something long and very hairy at the end. The inhabitants affirme that his blood is more effectuall in healing of wounds than any balsome.

Blood as good as balsome.



It is strange that the *Rhinoceros* should be a born enemy to the Elephant; wherfore he whets his horne, which growes upon his nose, upon the rockes, and so prepares himselfe for fight, wherein he chiefly assailes the belly, as that which he knowes to be the softest: he is as long as an Elephant, but his legs are much shorter, he is of the colour of box, yet somewhat spotted. *Pompey* was the first that shewed one at *Rome*.

Plin. lib. 8. cap. 29.

The

Chap. XXIII.

Of cœlestiall Monsters.

PEradventure it hath not bin strange that monsters have beene generated upon the earth and in the Sea: but for monsters to appeare in heaven, and in the upper region of the aire, exceeds all admiration. Yet have wee often read it written by the antients, that the face of heaven hath beene 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 Moones, Sunnes, and the like monsters and prodigies.

Antiquity hath not seene any thing more prodigious than that Commet which appeared with bloody haire in *Ilvestine*, upon the ninth day of *October*, 1528. for it was so horrible and fearefull a spectacle, that divers died with feare, and many fell into grievous diseases; going from the East to the South, it endured no longer than one hower and a quarter: in the toppe thereof was seene a bending arme holding a great sword in a threatning hand; at the end thereof appeared three starres, but that over which the point of the sword directly hanged was more bright and cleare than the rest: on each side of this Comet were seene many speares, swords, and other kinds of weapons died with blood, which were intermixt with mens heads, having long and terrible haire and beards, as you may see in the following figure.

A Comet with bloody haire.

The figure of a fearefull Comet.



Also there have beene seene great and thicke barres of Iron to have fallen from heaven, which have presently beene turned into swords and rapiers. At *Sugolia* in the borders of *Hungaria*, a stone fell from heaven with a great noise, the seventh day of *September*, *anno Dom.* 1514. it weighed two hundred and fifty pound: the Citizens hanged it up with a great iron chaine put through it, in the midst of the Church of

of their City, and used to shew it, as a miracle, to travellers of better note that past
Lib. 2. cap. 57. that way. *Pliny* reports that the clashing of armour, and the sound of a trumpet were heard from heaven often, before and after the Cimbrian warre. The same author also writes that in the the third Consul-ship of *Marius*, the *Amarines* and *Tudortines* saw the heavenly armies comming from East and West; and so joyning, those being vanquished which came from the East. Which same thing was seene in *Lusalia*, at a towne called *Jubea*, two houres after mid-night, *anno Dom.* 1535. But in *anno Dom.* 1550. upon the nineteenth day of *July*, in *Saxony*, not farre from *Wittenberg*, there appeared in the aire a great stagge, incompassed 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 into two pieces, and the one of them
Presages of the taking of *Constantinople.* to fall upon the earth. A little before the taking of *Constantinople* from the Christians, there appeared a great army in the aire appointed to fight, attended on with a great company of dogs and other wild beasts. *Julius Obsequius* reports that in *anno*
Monstrous rains *Dom.* 458. it rained flesh in *Italy*, 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 unputrefyed, and unchanged in colour and smell. *Anno Dom.* 989. *Otho* the third being Emperour, it rained corne in *Italy*. *Anno Dom.* 180. it rained milke and oyle in great abundance, and fruit-bearing trees brought forth corne. *Lycosthenes* tells that in the time of *Charles* the fift, whilest *Maidenberg* was besieged, three sunnes first appeared about seven a clocke in the morning, and then were seene for a whole day, whereof the middlemost was the brightest, the two others were reddish and of a bloody colour; but in the night time there appeared three moones. The same appeared in *Bavaria*, *anno Dom.* 1554.

Earthquakes. But if so prodigious and strange things happen in the heavens besides the common order of nature, shall wee thinke it incredible that the like may happen in the earth? *Anno Dom.* 542. the whole earth quaked, mount *Ætna* cast forth flames and sparkes of fire, with which many houses of the neighbouring villages were burnt. *Anno Dom.* 1531. in *Portugall* there was an earthquake for eight dayes, and it quaked seven or eight times each day; so that in *Lisbone* alone it cast downe a thousand and fifty houses, and more than sixe hundred were spoiled. *Ferrara* lately was al-
Lib. 2. cap. 73. most wholly demolisht by a fearefull earthquake. Above all which ever have been heard is that prodigie which happened in the time of *Pliny*, at the death of *Nero* the Emperour in the *Marucine* field, the whole Olive-field of *Vectius Marcellus* a Romane Knight going over the high way, and the fields which were against it comming into the place thereof. Why should I mention the miracles of waters, from whose depth and streames, fires and great flames have oft broke forth? They tell out of St. *Augustine*, that the fire of the sacrifice, which for those seventy yeeres of the Babylonian captivity 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 naturall efficacy, and that the water should forget the extinguishing faculty! Verily Philosophers truely affirme that the elements, which are understood to bee contrary, and to fight in variety among themselves, are mutually joyned and tyed together by a marvellous confederacy.

The End of the Twenty fift Booke.

OF THE FACULTIES OF SIMPLE MEDICINES, AS ALSO OF THEIR COMPOSITION and Use.

The Twenty Sixth Book.

The Preface.

Amongst the causes which we terme healthfull, 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 be abhorred by a wise man; for there is nothing in the world, which sooner, and as by a miracle, asswageth the horride torments of diseases. Therefore* Herophilus *called them fittingly administred, The hands of the Gods. And hence it was that such Physitians as excelled in the knowledge of Medicines, have amongst the Antients acquired an opinion of Divinity. It cannot by words bee expressed what power they have in healing. Wherefore the knowledge of them is very necessary not only for the prevention, but also for the driving away of Diseases,*

The excellency of Medicines.

CHAP. I.

What a Medicine is, and how it differeth from nourishment.

WEE define a medicine to bee, That which hath power to change the body according to one or more qualities; and that such as cannot bee changed into our nature: contrary whereto we terme that nourishment which may be converted into the substance of our bodies. But we define them by the word power, because 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 Quaile, but a medicine to man: Hemlocke is nourishment to a Sterling, but poison to a Goose: the *Ferula* is food to an Asse, but poison to other cattell. Now this diversity is to be attributed to the different natures of creatures.

It is recorded in history, that the same by long use may happen in men. They report that a maide 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 very breath she breathed was deadly to the by-standers. Therefore it ought to seeme no marvaile, if it at any time happen, that medicines turne into the nature and nourishment of out bodies: for we commonly may see birds and swine feed upon serpents and toads without any harme: and lastly,

——Serpenti Ciconia pullos
Nutrit, & per devia rura lacerta:
Illi eadem sumptis quærunt animalia pennis.

The Storke with Serpents and with Lizards caught,
In wayleſſe places nourisheth her brood:
And they the same pursue, when as they're taught
To use their wing, to get their wish't for food.

CHAP. II.

The differences of Medicines in their matter and substance.

The earth the mother of riches and medicines.

EVen as the concealed glory of worldly riches lyeth hid in the bowels of the earth, and depths of the sea and waters, as gold, silver, and all sorts of metals, gemmes and pretious stones, furnisht with admirable vertues; so we may behold the superficies of this earth clothed with almost an infinite variety of trees, shrubs, and hearbs: where wee may contemplate and wonder at the innumerable diversities of roots, leaves, flowers, fruits, gummes, their smells, pleasant tasts and colours, but much more at their vertues. This same mother Earth, as with her breasts, nourisheth marvellous distinct kindes of living creatures, various in their springing, encrease and strength. Wherein the immense goodnesse of God, the great Architect and framer of all things, doth most clearely appeare towards man, as who hath subjected to our government, as a patrimony, so ample and plentifull provision of nature for our delight in nourishment, and necessity of healing. Therefore the antient Phisitians have rightly delivered, that all sorts of medicines may bee abundantly had from living creatures, plants, the earth, water and aire.

what medicines taken from living creatures.

Medicines are taken from living creatures either whole and entire, or else the parts and excrements of them. Wee oft times use in Phisicke whole creatures, as foxes, whelps, hedge-hogs, frogs, snailes, wormes, crabbes, and other living creatures. Wee also make use of some parts of them, as the liver of a wolfe or goat, the lungs

lungs of the foxe, the bone of the ſtagges 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 uſefull in Phyſicke. We know alſo that there are ſome medicines taken from excrements, as hornes, nailes, haires, feathers, skin; as alſo from urine, dung, ſpittle, hony, egges, waxe, milke, wooll, ſweat, and others of this kinde, under which wee may comprehend muske, civet, pearle, *æſipus*, and ſundry others of this nature.

Wee take medicines from plants, both whole, and alſo from their parts, whether trees, ſhrubs, or herbes. For we oft times uſe ſuccory, marſh-mallowes, mallowes, plantaine, and the like, whole: but otherwhiles onely the roots of plants, their pith, wood, barke, ſhoots, ſtalkes, leaves, flowers, ſeeds, fruits, juices, gummes, roſines, moſſes, and the like. Whatfrom plants.

Things taken from the earth for the uſe and matter of medicine, are either earths, ſtones, or mineralls. The ſorts of earth are Bole armenicke, *Terra ſigillata*, fullers earth, chalke, potters clay, and ſuch like. Stones are the pumice, Marchiſite of gold, ſilver, braſſe, marble, the load-ſtone, plaiſter, chalke, *ſulphur vivum*, *lapis ſpecularis*, and others. Metals and mineralls are gold, ſilver, tinne, lead, braſſe, iron, ſteele, antimony, ceruſſe, brimſtone, cinnaber, litharge of gold and ſilver, tutty, true *Pompholix*, verdigreece, alume, romane vitrioll, coproſe white and greene, ſalts of ſundry kinds, both the Arſenickes, and ſuch like. What from the earth.

The following medicines are from freſh water, raine water, ſpring water, river water, and all things thence ariſing, as water lentile, common flagges, water lillies, water mints, and all the creatures that live therein. From the ſalt water are taken ſalt, *Alcyonium*, all ſorts of corall, ſhels of fiſh, as alſo cuttle bones, ſponges, and all creatures of the ſea. From waters mixt of ſalt and freſh, the herbe *Androſace* (which growes in plenty in the marſhes at *Fontignan* and *Cape de Sete*) *Aſphaltum*, which is found in the dead ſea. What from the water.

From the aire proceeds *Manna*, therefore called *melaërium* (*i.e.*) hony of the aire, and alſo all other kindes of dew that are uſefull in Phyſicke by reaſon of the vertues they receive from the ſunne which raiſeth them up, from the aire, whereas they make ſome ſtay, as alſo from the plants, whereupon they fall and reſide. What from the aire.

Chap. III.

The differences of ſimples in their qualities and effects.

ALL the mentioned ſorts of ſimples are endued with one or more of the foure faculties, whereof I now purpoſe to treat.

The firſt faculty common to all the reſt, and as it were their foundation, flowes from the foure firſt qualities of the prime bodies or elements, that is, heat, coldneſſe, dryneſſe, and moiſture, and this either ſimple or compound, as one or two of theſe prime qualities exceed in the temper of the medicine, as it may appeare by the following tables.

The ſimple quality is either to { Heat, Coole, Humect, Dry.

The compound, ariſing from two joyned qualities, either { Heats and dries, Heats and moiſtens, Cooles and dries, Cooles & moiſtens.

Heat

Heat, which is
- moderate,
  - Heats,
  - Attenuates,
  - Rarifyes,
  - Opens the passages,
  - Digests,
  - Suppurates.
- immoderate
  - Inflames and burnes,
  - Bites, whence followes
    - Violent attraction,
    - Rubrification,
    - Consumption,
    - Colliquation,
    - An eschar,
    - Mortification.

Cold, which is
- moderate,
  - Cooleth,
  - Condenseth,
  - Obstructeth.
- immoderate,
  - Congeales,
  - Stupefyes,
  - Mortifyes.

Moisture, which is
- moderate,
  - Humects,
  - Lubricates,
  - Levigates and mitigates,
  - Glues.
- immoderate,
  - Obstructs,
  - Lifts up into a flatulent tumour, especially if it be a vaporous humidity.

Dryness, which is
- moderate,
  - Dryes,
  - Rarifyes,
  - Attenuates.
- immoderate,
  - Binds,
  - Contracts or shrinks,
  - Causeth chops and scailes.

5. simp. & 1. de aliment.

The effect of these qualities is distinguished, and as *Galen* observes, digested into these orders, which wee terme Degrees; so that by a certaine proportion and measure, they may serve to oppugne diseases, as the same *Galen* affirmes. For to a disease (for example) hot in the second degree, no other medicine must bee used than that which is cold in the like degree: Wherefore all simple medicines are,

Hot, Cold, Moist, Dry, in the Beginning, Middle, Extreme, of the first, second, third, fourth, degree.

The Heat, Coldnesse, Moisture, Dryness, of the first, second, third, fourth, degree, is Obscure, Manifest, Vehement, Excessive.

Examples of the degrees of heat.

An example of heat distinguished thus by degrees, may bee thus, Warme 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

come to the third; but if it scald, then we know that it hath arrived to the fourth degree of heate. Such also is the distinction of coldnesse, moisture, and drinesse, by their degrees. Wherefore it will be worth our labour, 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.
Althæa.
Amygdala dulcia.
Beta.
Brassica.
Chamæmelum.
Ladanum.
Semen Lini.
Saccharum.
Ervum, sive Orobus.
Vinum novum: For old is judged hot in the second or third degree, as it is more or lesse yeares old.

Second degree.

Ammoniacum. *Apium.*
Arthemisia. *Chamæpytis.*
Anethum. *Crocus.*
Fœnugræcum. *Ficus.*
Mastiche. *Thus.*
Salvia *Myrrha.*
Marrubium. *Mel.*
Melissa. *Nux moschata.*
Pix utraque tum arida corporibus particulisque solidioribus aptior, tum liquida delicatioribus.
Scilla. *Sal.*
Sarcocolla. *Opopanax.*
Bryonia. *Ammi.*

Simples hot in the

Third degree.

Abrotanum.
Agnus castus.
Anisum. *Asarum.*
Aristolochia.
Chamædrys.
Sabina.
Calamintha.
Cinamomum. *Iris.*
Juniperus.
Hyssopus.
Origanum.
Sagapenum.
Chelidonium majus.
Ruta saliva.

Fourth degree.

Allium.
Cæpa.
Euphorbium.
Nasturtium.
Pyrethrum.
Sinapi.
Tithymallis.
Anacardi.
Chelidonium minus, Galeno. Yet ours, by reason of the gentlenes of the ayre, & moisture of our soile, is not so acride.
Ruta sylvestris. This, as all wilde and not cultivated things, becomes more strong and acride than 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.

Fourth degree.

Cicuta.
Papaveris genera omnia, excepto Cornicula-

Third degree.

Portulaca.
Sempervivum.
Mandragora.

Fourth degree.

to, huic enim incidendi & abstergendi vim attribuit Gal. Certè nitrosum & salsum gustu percipitur, quo fit ut calida & sicca sit natura.
Opium.

Simples moist in the

First degree.

Buglossum.
Viola.
Malva.
Rapum.
Spinacia.

Second degree.

Ammoniacum.
Lactuca.
Cucurbita.
Cucumis.
Meloues. *Portulaca.*

Simples dry in the

First degree.

Thus.
Chamæmelum.
Brassica.
Sarcocolla.
Crocus.
Faba.
Fænugræcum.
Hordeum integrum.

Second degree.

Artemisia. *Pix arida.*
Orobus. *Plantago.*
Balaustia. *Nux moschata.*
Lens.
Mastiche.
Mel. *Sal.*
Anethum.
Myrrha.

Third degree.

Abrotonum ustum.
Absinthium. *Myrtus.*
Acetum. *Aloe.*
Milium. *Cuminum.*
Sanguis draconis.
Galla. *Sabina.*

Fourth degree.

Piper.
Allium.
Nasturtium.
Sinapi.
Euphorbium.

The effects of the first qualities by accident.

Those we have mentioned have of themselves and their own nature all such qualities, yet doe they produce farre other effects by accident, and besides their owne nature in our bodies, by reason of which they are termed accidentall causes. This shall be made manifest by the following examples.

Externall heat by accident refrigerates the body within, because it opens the passages and pores, and cals forth the internall heate, together with the spirits and humours by sweats: whence it followes, that the digestion is worse, and the appetite is diminished. The same encompassing heate also humects by accident, whilest it diffuses the humours concrete with cold: for thus Venery is thought to humect.

The like may be said of Cold, for that it heates not by its proper and native, but by an adventitious force: whereof you may make tryall in Winter, when as the ambient cold, by shutting the pores of the body, hinders the breathing forth and dissipation of the native heat. Whence it is inwardly doubled, and the concoction better performed, and the appetite strengthened. This same cold also dries by accident, when as it by accident repercusses the humour that was ready to flow down into any part, and whilst it concretes that which is gathered in the part: for thus by the immoderate use of repercussers, an œdematous tumour, proceeding from gross and viscide phlegme, degenerates into a *scirrhus*.

Drinesse and moisture, because they are more passive qualities, shew their effects by not so manifest operations, as heate and cold doe; but in comparison of them they are rather to be judged as matter or a subject.

Chap.

Chap. IV.

Of the second faculties of Medicines.

We terme those the second faculties of Medicines, which have dependance upon the first, which are formerly mentioned, as it is the part

- Of Heate to { Rarefie, Attract, Open, Attenuate, Levigate, Cleanse. }
- Of Cold to { Condense, Repercusse, Shut up, Incrassate, Exasperate, Constipate. }
- Of Moisture to { Soften, Relaxe. }
- Of Drinesse to { Harden, Stiffen. }

Hence we terme that an attractive medicine, which hath an attractive faculty, as on the contrary, that a repercussive, that repels; a detergent, that which cleanses viscous matter. We call that an Emplasticke medicine, which not only shuts up the pores of the body, but reduces the liquid bodies therein contained to a certaine equality of substance. Thus also emollients, relaxers, and the rest, have their denominations from their effects, as we shall declare hereafter.

Chap. V.

Of the third faculties of Medicines.

The third faculty of medicines depends for the most part upon the first and second faculties, sometimes conjoyned, otherwhiles separate. Also sometimes it followes neither of these faculties, but a certaine property and inexplicable quality, which is only knowne by experience. Now the operations of this third faculty are to agglutinate, to fill with flesh, to cicatrize, to asswage paine, to move or stay the urine, milke, seed, the courses, sweats, vomits, and performe such like operations in or about the body.

Thus the generation of flesh is produced by the concourse of two faculties, that is, of drying and cleansing. But drinesse and astriction produce a glutinating and cicatrizing faculty. A hot and attenuating faculty causeth sweats, moves urine, the courses, and the like in the body; but contrary faculties retarde and stop the same.

To mitigate paine, proceeds only from the first faculty, to wit, from heate, or a moderately heating faculty; to procure rest, from cold onely, or coldnesse joyned with some moisture. But to procure vomit, proceeds neither from the first nor second faculty, but from a certaine occult and essentiall property, which is naturally implanted in Agaricke, and other nauseous and vomitory medicines.

Chap. VI.

Of the fourth faculty of Medicines.

The fourth faculty of medicines is not of the same condition with those that are formerly mentioned; for it depends not upon them, or any other manifest or elementary quality, but on an occult property of the whole substance, by meanes whereof, it workes rather upon this than that part, upon this rather than that humour. Wherefore Physitians cannot by any reason finde out this faculty, but only by experience, as we have said a little before of medicines

The fourth faculty of medicines depends only upon an occult propertie.

dicines 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 Betony, Marjerome, Sage, Roſemary, *Stachas*: Pneumonicks, which reſpect the Lungs, as Liquorice, ſweet Almonds, Orris, Elecampane. Cordials, that ſtrengthen the heart, as Saffron, Cinamon, Citrons; but chiefly their rindes, Bugloſſe, Corall, Ivory. Stomaticall, which reſpect the ſtomacke, and the orifice thereof, as Nutmegs, Mint, Aniſe, Maſticke, Pepper, Ginger. Hepaticks, which reſpect the Liver, as Wormwood, Agrimony, Spikenard, Succory, Sanders. Spleniticks, which have relation to the ſpleene, as Time, *Epithymum*, Broome flowers, Cetrach, Capers, the barke of their rootes, the barke of Tamariske. Diureticks, ſuch as reſpect the kidneyes and urenary paſſages, as the rootes of Smallage, Aſperagus, Fennell, Butchers brome, the foure greater cold ſeeds, Turpentine, Plantaine, Saxifrage. Arthniticks, or ſuch as ſtrengthen the joynts, as Cowſlips, *Chamæpytis*, Elecampane, Calaminte, Hermodactiles, and the like.

To this ranke may be referred purging medicines, which, furniſhed with a ſpecificke property, ſhew their efficacy on one humour more than another humour, and that impact more in one part than in another. For thus Agricke chiefly drawes phlegme from the head and joynts, Rubarbe drawes choller chiefly from the Liver, and hurts the kidneyes. But let us here forbeare the conſideration of ſuch things, as not appertaining to Surgery. But ſome medicines of this kinde are furniſhed with one ſimple faculty, otherſome with more, and thoſe contrary, whereof your taſte may give you ſufficient notice: for Rubarbe at the firſt touch of the tongue is found acride and hot; but when you come to chaw and throughly to taſte it, you ſhall find it to partake of an earthy aſtriction. Therefore becauſe taſtes give notice of the faculties of medicines, therefore I have thought good to treat of them briefly.

CHAP. VII.

Of Taſtes.

Lib. 1. ſimpl.

TAſte, as *Galen* delivers according to *Ariſtotle* and *Theophraſtus*, is a certaine concoction of moiſture in drineſſe, cauſed by meanes of heate, which we know or diſcerne by the tongue well tempered, and fittingly furniſhed with ſpittle and his nerves. There are nine differences of taſtes; for there are three judged hot, to wit, the acride, bitter, and ſalt: three cold, the acide, auſtere, and acerbe: three temperate, the ſweet, the oily or fat, and the inſipide. Now they are thought ſo many, according to the different degrees of concoction; for it appeares greater in hot taſtes, and as it were a certaine aſſation, but leſſe in cold, but indifferent, and as it were an elixation in things temperate: therefore Nature obſerves this order in the concoction of ſapide bodies, that at the firſt the acerbe taſte ſhould take place, then the auſtere, and laſtly, the acide; from theſe (as it were) rudiments of concoction, ariſes an inſipide, then an oily, then a ſweet perfectly concocted and temperate. This concoction exceeding the bounds of mediocrity, there ariſes a ſalt taſte, then a bitter, and then an acride with the higheſt exceſſe, of almoſt a fiery heate. Yet I would be thus underſtood, that all things that are by nature ſapide, do not alwayes aſcend to the height of ſweetneſſe by the degrees of acerbity, auſterity, and acidity, as though it were of abſolute neceſſity, that all things that are ſweete, they ſhould firſt bee acerbe, auſtere, and acide. For there are many things found, eſpecially in plants and their fruits, which when they ſhall arrive to their perfection and maturity, are acide, bitter, or ſalt, but being yet unripe, and not come to full perfection, they have a certaine ſweetneſſe, which afterwards, by a further digeſtion, or perfection and concoction, acquire a bitter, auſtere, or acide taſte. For thus bitterneſſe in Wormwood and Aloes, acrimony in Pepper or Pellitory, is a perfection of nature, a full ripeneſſe and perfect concoction, and not an exceſſe of heate in that *ſpecies*. Alſo acerbity and auſterity is a perfection of nature, and not a

Differences of taſtes.

rudiment

rudiment in Services and Cornelians; acidity or tarnesse is also so in verjuice. But in very many things it so fals out, that the sweet or fatty taste become so, and acquire their perfection by concoction, as in Grapes, Figges, Peares, 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 the cold tastes.

The acerbe taste is cold and terrestriall, and of a substance absolutely grosse, being lesse humide than the austere, but much lesse than the acide. It notably cooles and dryes, it condensats, binds, repels, especially from the superficies, and it also exasperates; this taste resides, and may be found in Pomegranate pils, Galls, *Sumach*, and Cypresse nuts. The acerbe taste.

The austere is nigheſt in temper and effects to the acerbe, but somewhat moisture; for the acerbe absolutely consists in a terrestriall & cold substance. Wherefore this, increased by a degree of concoction, acquires more store eyther of heate alone, or else of moisture alone, or else of both together: moisture, I say, and that is either ayery, or else watry. Therefore if these fruits, which before their maturity are acerbe, have an accession of heate, then doe they become sweet, as you perceive by Chesnuts; but if there be an accession of moisture only, and that more grosse, of acerbe they become austere: for both the tastes are in the like degree of cold, but the austere is the moisture. But if to the same frigidity remaining in fruits, a certain subtle humidity accrew, then is there caused an acide taste. But if they have an accession of a watrish moisture and heate, they will acquire a sweet taste, or else oily, if the humidity accrewing with the heate be ayery. The austere.

I have judged it requisite to admonish you hereof, that you might know by what meanes sapide bodies mitigated become sweet of acerbe, as it were by these interposed degrees of austerity, acidity, and oylinesse, as they acquire a various accession of heate and moisture separately, or conjunctly.

Now by all that wee have delivered, you may gather, that all acerbe and austere things are cold and dry; and as they are cold, they repell and hinder defluxions: as they are dry and terrestriall, they condensate, incrassate, constipate, and straiten the passages; yea, and they also cicatrize: but acerbe things performe this farre more powerfully, as those which are absolutely terrene, cold, and dry, not partaking of moisture, or water. Now austere things consist (as it were) in a middle matter, that is, in a more dilute terrene body, as it is apparent in Services, unripe Grapes, Cornelians, Medlars, Crabs, wilde Peares, and all sorts of unripe fruits, whence it is termed a crude taste.

The acide taste is of a cold and watrish nature, but most subtle, by benefit whereof it penetrates, and divides almost as powerfully as the acride. It incides, or divides, attenuates, bites, cleanses, opens obstructions, repels and dryes. For by the meanes of the deep piercing cold, it repels all defluxions; and by the drying faculty, which is strong even in its watry consistence, it stayes and stops all bleedings, the hæmorrhoides and dysenteries. The force thereof is chiefly manifest in Vinegar, as also in the juice of Citrons, Sorrell, Cherries, Berberries, and the like. And this is the nature of cold tastes, now it is time we speake of such as are temperate. The acide taste.

The insipide is unproperly termed a taste, as that which is rather a privation of tastes, it is in some sort cold, and of a very watrish and grosse nature, it inspissates, constipates, and stupifies. This kinde of taste is chiefly manifest in water, and next in Gourds, Citruls, and many such like things. The insipide.

The oily taste is hot, humide, and ayery; therefore it humects, relaxates, mollifies, lubricates. Of this kinde are oyle, butter, fat which is not raucide by age, nor acride by nature, as that of Lyons and Foxes. The oily.

The sweet taste is made by a moderate and well concocting heate, consisting in a matter more tenuious and hot than the insipide, but in somewhat more grosse than the oily, from which in the first qualities it doth not differ; therefore it is of a hot, ayery, and temperate nature. Therefore every sweet thing detergeth, levigates, concocts, ripens, relaxes, and asswageth paine. Examples of this taste may be had in Sugar, Honey, Manna, sweet Almonds, Milke, and other like. Now let us come to hot tastes. The sweet.

The ſalt. The ſalt taſte is hot and aſtringent, leſſe earthy than the bitter, as that which reſides as it were in a middle matter. For it proceeds from an earthy drineſſe, which is formerly torrified & attenuated by the force of heate in a watry humidity. Wherefore that which is ſalt contracts the pores, cuts, cleanſes, digeſts, or rather dryes up the humours by the drineſſe thereof, without any manifeſt ſenſe of heate, whence it is, that it vindicates from putrefaction. Under this kinde are contained all ſorts of ſalt, as ſalt-Peter, *niter*, *ſal Ammoniacum*, *ſal gemmæ*, common ſalt, ſea water, and ſuch other like.

The bitter. The bitter taſte is hot, earthy, and drying; for the matter thereof is groſſe and earthy, which the abounding heate hath torrified and dryed up. Wherefore bitter things taken inwardly, purge and carry away ſuperfluous humours: and outwardly applyed, they mundifie and deterge ulcers, they open the mouthes and paſſages of the veines oft-times by their abſtergent faculty; whence it is that they move the courſes and hæmorrhoides. The principall things indued with this taſte are Aloes, Gall, Wormwood, Gentian, the leſſer Centaury, Coloquintida, Fumitory, Soot, and ſuch like.

The acride. The acride taſte is hot, of a ſubtle and fiery nature; for it is kindled of a hot, ſubtle, and dry matter, neither can it conſiſt in any other. Therfore that which is acride, heats, prickes or bites the mouth by the acrimony, it heates, and oft-times burnes, it penetrates, opens the paſſages, attenuates, attracts and drawes forth groſſe humours, evacuates and ſends forth urine, the courſes, and ſweat: beſides it oft-times is ſepticke, bliſtering, and eſcharotick; and laſtly, burning, and cauſticke. The ſepticke & putrefactive things are ſublimate, *Chamælea*, the juice of *Thapſia*. The veſicatories are Dittander, Cantharides, Crowfoot, Muſtard, Pellitory of Spaine, *Euphorbium*. But the cauſticke and eſcharoticke are Lime, Oake 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 we judge of and try the goodneſſe of medicines, and diſtinguiſh the true legitimate from the adulterate. The touch judges what are hot and cold, moiſt and dry, rough and gentle, or ſmooth, hard and ſoft, brittle or friable, glutinous and viſcide, dry or ſlippery. We approve of the goodneſſe of medicines by their colour, brightneſſe, or duskineſſe, whereof the eye is judge; for wee commend that Senna which is ſomewhat greeniſh, but diſlike the whitiſh: as alſo we like well of ſuch Caſſia as is blacke both within and without, ſhining and full, and not dry and ſhrunke up. Yet the judgement of the firſt qualities, by the colour is deceitfull, or none at all; for ſuch things as are white, or of the colour of Snow, are not therefore cold: for ſundry of them are hot, as Lime. Neither are red things to be therefore judged hot; for Roſes coole. Alſo medicines are choſen by the ſmell; for ſuch as have a good, freſh, and naturall ſmell, are commonly hot, and in their perfect vigour. On the contrary, things that want ſmell are for the moſt part cold and evanide. By hearing we diſtinguiſh things full from ſuch as are empty: thus we chooſe Caſſia, which ſhaken, makes no noyſe with the grains or ſeeds ratling in it. Hitherto we have explained the firſt, ſecond, third, and fourth faculties of medicines in generall, & have ſhewed how they may be found out: now muſt we more particularly treat of their ſecond and third faculties, becauſe by reaſon of theſe they chiefly come into uſe in Surgery: Yet let mee firſt briefly ſhew by what meanes and arts they may be prepared.

Chap.

Chap. VIII.

Of the preparation of medicines.

To prepare medicines, is nothing else, than by art to make them more commodious for use and composition, whereby they are eyther made

More gentle.

By bruising, as when medicines are broke by striking and rubbing or grinding in a mortar, & that either of: Brasse, Iron, Lead, Glasse, Wood, Marble, & other like. — considering: The thing which is to be beaten. The strength or force wherewith it must be performed. The time or space. The situation. The things to be added. The consistence which the thing beaten must be of.

More strong.

By searsing, whereby we separate the pure and finer from the more impure and gross, which is done by sives and searses, made of: Wood, Parchment, Horse haire, Silke, Lawne. — 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 powdred, must bee searsed in a finer tearse: such as are more grosse, in a coursser.

More pleasant.

By dissolving or mollifying. Which is nothing else but a dissolving of a simple or 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 heate onely; for by heate gums and homes are mollified: or by liquor, as by vinegar, water, wine, juice of Lemmons, &c.

All which are performed

By desiccation or hardening, which: Is nothing else, but the consuming of the superfluous and hurtfull moisture, and this is performed, either: By the Sun, or By Fire.

More wholesome.

By infusion, which is nothing else but the tempering or macerating of a medicine a little beaten or cut, in some liquor appropriate and fit for our purpose, as in Milke, Vinegar, Water, Oyle, and the like, so long as the nature of the medicine requires. To infusion: Nutrition may bee reduced, which is nothing else, but as it were a certaine accression of the medicine, by being moistened, macerated, rubbed, or ground with some moisture, especially wth heate.

By burning, that is, by consuming the humidity which is in them. And that, either that they may be the better powdred, being otherwise too glutinous, or that they may lay aside their gross essence, and become of a subtler temper; or that they may put off, or partly lose some fiery quality, as acrimony, *Gal. lib. 4. cap 9. simplicium*. Or that they may acquire a new colour. Now all things are burnt, eyther: Alone, as such things as have a fatty moisture, as haires, sweaty wooll, homes: Or else with some combustible matter, as sulphur, alome, salt, barley, &c.

More fit for mixture.

By boyling or elixation, which is performed by a humide heate, as burning is by a dry, & that either that wee may increase the weake faculties of such medicines as are boyled, by boyling them with such as are stronger; or else to weaken such as are too strong, or else wholly to dissipate such as are contrary: Or that one faculty may arise of sundry things of different faculties being boyled together, or for the longer keeping them, or bringing them to a certaine forme or consistence: all which are done, eyther by the: Fire, or Sun.

By washing or cleansing, wherby the impurity of the medicine is wasted away or cleansed, and such things are eyther: Hard, as mettals, stones, parts of living creatures, condensed juices, & other like: Or soft, as Rosines, Gums, Fats, Oyles. — And these ought first: To be finely beaten, that the water may penetrate into all their substance. Or to be dissolved, & cast into a vessell filled with water, and so stirred, & then suffered to subside, so that the fat may swim aloft: and this must be done so long that the water retaine nothing thereof in colour, smell, or taste.

Chap. IX.

Of repelling, or repercuſsive medicines.

Aſtringents are underſtood by the name of repellers.

REpelling or repercuſſive medicines are cold, and of groſſe and earthy parts; by which name alſo aſtringent medicines are underſtood, becauſe they hinder the falling downe of the humours upon the part. Repercuſſives are ſuch, either of their nature and of themſelves, or elſe by accident, being not ſuch of their own nature. Theſe which of themſelves are ſuch, are of two kinds; for ſome are watriſh & moiſt, without any aſtrictive faculty, which almoſt wholly proceeds from an earthy eſſence; wherefore that faculty of repelling which they poſſeſſe, they have it wholly from coldneſſe. Of this kinde are lettuce, purſlaine, ſow-thiſtle, duckes-meat, kidney wort, cowcumbers, melons, gourds, houſe-leeke, mandrake apples, night-ſhade, henbane, and the like, which coole powerfully, and unleſſe they be taken away before the part waxe blackiſh, they extinguiſh the naturall heat. Other ſome are of an earthy eſſence, and therefore aſtrictive; but yet ſome of theſe are hot, other ſome cold. Such things as are cold of temper, and of an earthy conſiſtence, are properly and truly termed repellers. Of theſe, ſome are ſimple, other ſome compound: the ſimples are plantaine, vine leaves, leaves of roſes, oakes, brambles, cypreſſe, berberies, *ſumach*, all unripe fruits, verjuice, vinegar, red wine, the juice of ſower pomegranats, *acacia*, the juice of barberries, and quinces, *hypociſtis*, pomegranate pills, oake barke, the flowers of wilde pomegranates, the meale of barly, beanes, panicke, oats, millet, *orobus* mixed with juices in forme of a pultis, bole armenick, *ſanguis draconis*, ceruſſe, litharge, *terra ſigillata*, fullers earth, chalke, marle, the load-ſtone, lead, coralls, all marchiſites, antimony, *ſpodium*, true *pomphilix*, all ſorts of earth, and other things of the like nature.

The differences of repercuſsives

Why things of ſubtle parts are oft times mixed with repercuſſives.

Now compound things are *oleum roſaceum*, *omphacinum*, *mirtillorum*, *papaveris*, *cidoniorum*, *nenupharis*, *unguentum roſatum*, *album rhaſis*, *camphoratum*, *emplaſtrum diacalcitheos*, diſſolved in vinegar and oile of roſes, *deſiccativum rubrum*, *populeon*, *emplaſtrum nigrum ſeu tetrapharmacum* of *Galens* deſcription, *empl. contra rupturam*, *de ceruſa*, *pro matrice*. All ſuch cold repercuſſives are more effectuall if they be aſſociated with tenuity of ſubſtance, either of themſelves, or by mixture with ſome other things: for to this purpoſe we often mixe vinegar, camphire, and the like things of ſubtle parts, with repercuſſives of groſſe parts, that they may ſerve as vehicles to carry in the repercuſſives faculty. Repercuſſives of groſſe parts and hot, are wormwood, centory, gentian, agrimony, ſavin, coriander, mint, bay leaves, cardamomes, *calamus aromaticus*, aloes, ſpikenard, ſaffron, nutmeg, cinamon, amber, ſalt, alome, coporoſe, *ſulphur*, *oleum abſinthinum*, *maſtichinum*, *nardinum*, *coſtinum*, *ceratum*, *Gal. ſtomachicum*, *ſantalinum*, *emplaſtrum diacalcitheos*. But ſuch things as repell by accident, are bandages, compreſſes, linnen cloaths, and rowlers of all ſorts, caſes, cauteries, blood-letting, cupping, painefull frictions in the oppoſite parts, and other ſuch like things as are properly ſaid to make revulſion. The uſe of repercuſſives is to force backe the humour which flowes from any 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 helpe paine, the feaver, abſceſſe, maligne ulcers, and mortification. Such repercuſſives muſt alwaies bee ſo oppoſed to the diſeaſe, that reſpect may bee had to the temper, complection, and particular nature of the part whereto they are applied; for all parts cannot equally beare the like force of repercuſſives, as nervous & other ſpermatick and cold parts. Furthermore, there are ſome parts whereto wee may by no meanes apply repercuſſives, as the groines, arme-pits, and thoſe glandules or kernells which are behind the eares and braine, leſt the humour ſhould retire backe into ſome of the principall parts: the like reaſon is alſo of bodies, for the bodies of women, children, eunuches, cannot endure ſo ſtrong repercuſſives and the like exceſſe of cold as manly and vigorous bodies may. Beſides, every diſeaſe requires not repercuſſives, for if the body bee repleat with ill humours, if it bee plethorick

Repellers by accident.

When, and to what parts repercuſsives muſt be applied.

thoricke, the use of repercussives, unlesse after generall purgation, cannot be safe; as neither if the humour which is in motion shall be venenate, grosse, acrid, criticall, or shall cause great paine in the part, for then on the contrary wee must rather make use of attractives. But now if the disease be great, weake repercussives will availe nothing against it, as lettuce against a great inflammation; and thou shalt doe ill if thou set upon a small defluxion with powerfull repellers; for by that meanes the skin is straitened, and the passages thereof stopt, whereby the inflammation is encreased, or else brought to a *schirrhus*. Wherefore let the Chirurgian have a care that hee temper the force of his Repercussives according to the magnitude of the disease.

Chap. X.

Of attractive medicines.

What an attractive medicine is.

AN attractive medicine is contrary to the repeller; the greeks call it *Helcticum*, it is of a hot and thin substance, whereby it draweth forth into the superficies of the body that which lyeth hid in the center, although sometimes it doth it by an occult quality; other whiles also by accident, as by the acrimony. Those things which by a manifest quality doe attract, are either simple or compound.

Attractives by a manifest quality.

The simple are *Bryonia, allium, capa, porrum, arastolochia, hermodactyli, ciclamen, lilium, sigillum beatæ Mariæ, arum, asarum, asphodelus, gentiana, pyrethrum, ruta, sabina, calamentum, omnes tithymalorum species, viscum, abrotanum, anagallis, urtica, ranunculus, struthium,* and such like: *ammoniacum, bdellium, gabbanum, sagapenum, euphorbium, asphaltum, cinis e fæce vini vel aceti, calx viva, sulphur, sal ammoniacus, omnes salis species, auripigmentum, oleum vetus, adeps leonis, ursi, canis, anseris, viperæ, ranarum, axungia porci vetustate acris, aut attritu rotarum. Composita vero, ut oleum de spica, philosophorum, de terebinthina, de croco, de scorpionibus, rutaceum, vulpinum, laurinum, anethinum, de vitriolo, unguentum Agrippæ, aragon, seu auxiliare, martiatum, enulatum, theriaca, mithridatium, empl. de melilote, diachylon magnum & parvum, oxycroceum, divinum.*

By an occult.

Those things which draw by a secret property in nature, as are the load-stone, quick-silver, pyony, amber, all antidotes and treacles that are remedies against the bitings of venemous beasts, and all purging medicines.

By accident.

These which draw by accident, performe it otherwise than of their owne nature, they have that quality out of putrefaction and corruption, as doves dung, goats dung, cow dung, mans dung, and all kinde of dungs: also leven, old cheese, and such like.

Cupping glasses, leaches, syrenges, rougher and harder frictions, sucking, paine, straight ligations, cauteries doe also draw, but after a different manner from them spoken of before.

Their use.

Attractive medicaments must neither burne nor discusse, and being very strong and sharpe, they should bee tempered and mixed with oyle of roses, and other lenitives: but to weake ones should be added oyle of bayes, *calx viva*, and such like to strengthen them. The use of attractives is to draw poyson toward the skin, & to hasten forward criticall absceesses; and they make those parts which were benumbed and consumed, to have life, they restore the refrigerated parts by drawing thither the spirits; they draw forth the viscous filth of maligne ulcers that lies hid in the nerves, and hollow passages of them; they also draw out scailes of bones, splinters of wood, nailes, thornes, arrowes, and that matter which is impact 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 tenuity of his substance openeth the pores, attenuates the humours, dissipates and discusseth by evaporating the unprofitable matter. There are two sorts of these kindes of medicines; the one is called *Araeoticum* or rarifying; the other is termed *Diaphoreticum* or digesting.

The *Araeoticum* by a meane heat, and not dry, and endued with a tenuity of substance, openeth and relaxeth the skinne, and draweth forth the matter shut up under it, whereby it may ease paine, like as Anodines, because it doth not much depart from a temperate heat.

But the *Diaphoreticum* being much hotter, whatsoever sticketh in the part being there impact, it doth by thin vapour insensibly dissipate: therefore the acrid and hot things are in this case to be made use of rather than attractives, because that cold and grosseneese is more difficultly to be digested, and the length and involution of the waies being to be considered. The Araeoticke, which we may call weake resolvers, are either simple or compound.

The simples are these, *bismalva tota, parietaria, adianthum, mercurialis, ebulus, valeriana, rosmarinus, salvia, thymus, chamaemelum, melilotum, anethum, farina hordei, tritici, seminis lini, fanugraeci, nigella, furfur, adeps gallina, anseris, anatis, cuniculi, vituli*; almost all metalls unlesse such as are acrid. The compounds are *oleum chamaemolinum, anethinum, liliaceum catellorum, lumbricorum, Keirinum, de vitellis ovorum, de tritico, amygdalarum dulcium, unguentum de althaea, empl. diachylum, ireatum.* Diaphoretickes or digestives, are also both simple and compound: the simple are *Aristolochia, enula campana, iris, cepa, scylla, sigillum Salomonis, sigillum beatae Mariae, bryonia, panis porcinus, dracunculus, asphodelus, origanum, mentha, pulegium, sabina, serpillum, calamentha, hyssopus, urtica, artemisia, lavendula, chamepytis, anisum, faenículum, cuminum, piper, nux moschata, coriandrum, baccae lauri & juniperi, farina fabarum, lupinorum, orobi, milii, frumenti, furfur, mica panis, acetum tepidum, oxycratum, vinum vetus aut aromaticum, mel, aqua vitae, muria, adeps tauri, equi, leonis, canis, hirci, medulla cervi, cruris bovis & arietis, ammoniacum, galbanum, opopanax, sagapenum, myrrha, bdellium, thus, terebinthina, pix nigra, ladanum, styrax, calamita, benoinum, stercus caprinum, columbinum, caninum, bubulum, & aliae stercorum species.*

Compound diaphoretickes are *oleum amygdalarum amararum, juniperinum, laurinum, de scorpionibus, irinum, costinum, nardinum, de terebinthina, de croco, canabinum, raphaninum, è cucumere agresti, vulpinum, rutaceum, philosophorum de lateribus, de euphorbio, de tartaro, de petroleo, de kerva, sivericininum, unguent. Agrippae, aragon, martiatum, enulatum, empl. de Vigo,* without addition, and with addition, *oxycroceum, diacalcitheos,* dissolved in a digesting oyle to the forme of a cerat.

Araeotickes are profitably used in the increase and state of superficiall tumours.

The use of diaphoreticks.

But Diaphoretickes are not to bee used in the encrease of tumours, unlesse some astringent bee added, lest by their more strong digestion, they should draw and increase the defluxion: but when the tumours decline, they are then onely to be used in the parts chiefly where the skinne is dense and hard, and when the humour is cold and grosse, and lying hid deep in the body, so that the vertue of medicaments can hardly come thereto: but consideration is to bee had of the parts to which resolutives are to be applied; for you may not apply relaxers or diaphoretickes to the liver, spleen, stomacke, or bowels, unlesse you adde some astringents, of which a great part must be aromatickes.

To the parts where sense is more dull, may be applied the stronger diaphoreticks, but those parts which are endued with a more exquisite sense, as the eye and the nerves, to them we must apply weaker. When the matter is grosse and cold, things cutting and attenuating, and then emollients are to be used, and so by degrees come to diaphoretickes; otherwise that onely is resolved which is the most subtle of the unprofi-

unprofitable matter, the grosser becomming concrete and hardened. But if the part be afflicted with a continuall defluxion, so that there may be danger of a gangrene or sphacel, it is not lawfull then to make use of resolvers, but you must in the place where the humour flowes, devide the skin by scarification, as it is most learnedly noted by *Hollerius* in that profitable booke of his left to posterity, whose title is, *De materia Chirurgica.*

Chap. XII.

Of suppuratives.

A Suppurative medicine is said to bee that, which shutting the pores, and preventing transpiration by his emplasticke 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 emplasticke consistence, that so it may hinder the native heat from being exhaled; in which respect it differeth from emollients and malactickes, of which wee shall speake hereafter. There bee two kindes of suppuratives, for some doe it of themselves, and by their proper qualitie; others by accident. Those things which by their owne strength do bring to suppuration, are either simples or compounds. What a suppurative medicine is. Differences of suppuratives.

Simples are *radix liliorum, capa, allium, malvarum omnium folia & semina, buglos. sum, acanthus, senecio, viola, parietaria, crocus, caules, ficus, passula mundatæ*, with a decoction of these things, *farina tritici, farina volatilis, farina hordei excorticati, lolii, seminis lini & fœnugraci, galbanum, ammoniacum, styrax pinguis, ladanum, viscum aucupatorum, thus, pix, cera, resina, colla, adeps suillus, vitulinus, vaccinus, caprinus, butyrum, vitellus ovi, æsipus humida, stercus suillum, columbinum, caprinum, pueri.*

Compounds are *oleum liliorum, lumbricorum, de croco, unguent. basilicum, emplast. diachylon commune, magnum, de mucilaginibus.*

Those things doe suppurate by accident which worke it onely by the meanes of an emplasticke consistence: for so often times astringents, because they are of earthy and thicke parts, are found to suppurate; such are *unguentum de bolo nutritum*, and such like. Such also are those which by their coldnesse keep the heat in, and shut the pores. Hence is it that the qualities of sorrell are commended to generate *pus*: for whilest it keepeth the heat within, it encreaseth his effects, to the thickening of the suppurable matter, and the overcomming other rebellious qualities. We use things ripening in great inflammations, whose growth we cannot hinder with repellers, or increase with resolvers or discussers. Suppuratives by accident.

Chap. 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 any manifest quality of drying or moistning, again malaxeth or softeneth hardned bodies: wherefore this differs from that which suppurates, because that may bee hot in the first or second degree, according to the severall temper of the body, or part to which it is applied, working rather by the quantity of heat than the quality: contrariwise, that which mollifieth being endued with a greater heat, rather worketh by the quality of the heat, being otherwise in drynesse and moisture temperate. *Gal. cap. 7. lib. 5. simpl.* How suppuratives and emollients differ.

Although as many things agree together in some respects, though of a divers nature; so many emollients are such as are hot in the first degree, and dry in the second and

and third, that ſo they may the better diſperſe and diffuſe that which is congealed, by taking away a little of the humidity, which is contained within the part affected; but not by exhauſting it wholly by the violence of heate or drineſſe: for hereon would follow a greater hardneſſe.

The differences of emollients.

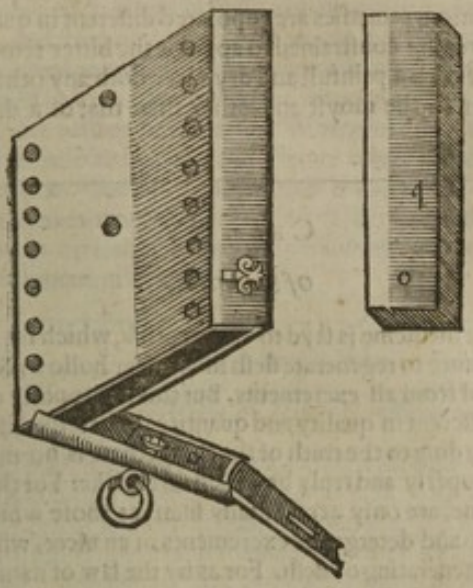
Things mollifying, are either ſimple or compound; and theſe againe ſtrong or weake. The weake are, *Radix liliorum alborum, cucumeris agreſtis, althææ, folia malvæ, biſmalvæ, liliorum, anethi ſummitates, viola, branca urſina, ſemen malvæ, biſmalvæ, lini, fœnugræci, carici pingues, paſſulæ mundatæ, pedum, capitum, inteſtinorum vervecinorum decoctum, adeps ex junioribus & caſtratis, domeſticis, fœminis animalibus, adeps ſuillus, vitulinus, hœdinus, caprinus, bubulus, vulpinus, gallinaceus, anſerinus, anatinus, olorinus, efficaces.* The weaker are things more gentle, as, *Butyrum, lana ſuccida, cera pinguis, vitellus ovi, medulla ex oſſibus, cervina, ovilla, caprina.* The compound are oyle, wherein are boiled mollifying herbes, as, *Oleum liliorum, chamæmelinum, amygdalarum dulcium.* Stronger emollients are, *Acetum, adeps taurinus, urſinus, cervinus, leoninus, pardalinus, apri, equi ſevum, pinea, picea, abietina, terebenthina, ammoniacum, bdelium, ſtyrax, galbanum, ladanum, propolis, opopanax, ung. de althæa, emp. diachylon commune & magnum, de mucilaginibus, cereneum, oxycroceum, Joannis de vigo.*

Their uſe.

We uſe emollients in ſcirrhous tumours of the muſcles, or in the lips of ulcers, in any of the limbes, belly, glandules, bowels, by reaſon of a groſſe, cold, and viſcous matter, eyther flegmaticke, or melancholicke. Yet thoſe tumours which come of melancholy, commonly turne to cancers, which are exaſperated by mollifying things. On the contrary, ſuch as proceed from a flegmaticke matter, are brought to an equality of conſiſtence, by the uſe of emollients. Furthermore, there are three things obſervable in the uſe of emollients: the firſt is, duely to conſider how much the affected part differs from his proper and naturall temper and proportion, that ſo we may apply an equivalent remedy. The ſecond is, that wee diſtinguiſh the natures of the parts. The third is, that we artificially gather after what maner this mollifying muſt be performed, that is, whether we ſhould mingle with the emollients, deterſive or diſcuſſing medicines. For there are many deſperate ſchirrhous tumours, that is, ſuch as cannot be overcome by any emollient medicine, as thoſe which are growne ſo hard, that they have loſt their ſenſe; and thereupon are become ſmooth and without haires. Here you muſt obſerve, that the part ſometimes becomes cold in ſo great an exceſſe, that the native heate plainly appeares to languiſh, ſo that it cannot actuate any medicine. That this languiſhing heate may be reſuſcitated, an iron ſtove ſhall be ſet neere to the part, wherein a good thicke peece of iron heated red hot ſhall be incloſed, for ſo the ſtove will keep hot a long time.

Things obſervable in the uſe of emollients.

The figure of an iron stove.



A. *The casse of the stove.*
B. *The iron Bat to be heated.*
C. *The lidde to shut the stove.*

CHAP. XIV.

Of Detersives, or Mundificatives.

A Detersive 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 drawne forth from the bottome of the ulcer, by the edificatious quality of the medicine, the other is more thin and watery, which the Greekes call *Ichor*, the Latines *Sanies*, which is taken away by the drinesse of the medicine; and therefore *Hippocrates* hath well advised, that every ulcer must be cleansed and dryed.

Detersives. Of Detersives, some are simple, some compound, some stronger, some weaker. The simple are eyther bitter, sweet, or sowre: the bitter are *Gentiana, Aristolochia, iris, enula, scilla, serpentaria, centaurinum minus, absinthium, marrubium; perforata, abrotonon, apium, chelidonium, ruta, hyssopus, scabiosa, arthemisia, eupatorium, aloë, fumus terræ, hædera 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 benè cocta, squamma æris, æs ustum, ærugo, scoria æris, antimonium, calx, chalcitis, misy, sory, alumen.* The sweet are *Viola, rosa, mellilotum, ficus pingues, dactyli, uvæ passæ, glycyrrhiza, aqua hordei, aqua mulsa, vinum dulce, mel, saccharum, serum lactis, manna, thus.* The sharpe are all kinde of sowre things, *Capreoli vitium, acetum*, and other acide 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.* We use such things as deterge, that the superfluous matter being taken away, nature may the more conveniently regenerate flesh to fill up the cavity: But in the use of them, consideration is first to bee had of the whole body, whether it be healthy, plethoricke, or ill disposed, there is consideration to be had of the part, which is moyster and drier, endued with a more exquisite

Their use.

or

or duller ſenſe. But oftentimes accidents befall ulcers beſides nature, as a *callus*, a defluxion of a hot or otherwiſe maligne humour, and the like ſymptomes. Laſtly, conſideration is to be had, whether it be a new or inveterate ulcer; for from hence, according to the indication, remedies are appointed different in quantity and quality: ſo that oftentimes wee are conſtrained to appoint the bitter remedy in ſtead of the ſweet. Neither truly with a painfull and dry ulcer doth any other than a liquid deterſive agree: neither to the moyſt any other than that of a dry conſiſtence, as Powders.

Chap. XV.

Of Sarcoticks.

No medicine truly ſarcotick.

WHat medicine is ſayd to be ſarcotick, which by its drineſſe helpes nature to regenerate fleſh in an ulcer hollow, & diligently cleanſed from all excrements. But this is properly done by bloud indifferent in quality and quantity. Wherefore, if we muſt ſpeak according to the truth of the thing, there is no medicine which can properly and truly be called ſarcoticke: For thoſe which vulgarly goe under that name, are only accidentally ſuch; as thoſe which without biting and eroſion do dry 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 flowes to the nouriſhing of the part, there is a remaine, or a certaine thin excrement, flowing from ſome other place, called by the Greekes *Ichor*, and by the Latines *Sanies*: Thus by the corruption of the part there concretes another groſſer excrement, termed *Rypos* by the Greekes, and *Sordes* by the Latines. That makes the ulcer more moyſt, this more filthy. Hence it is, that every wound which requires reſtitution of the loſt ſubſtance, muſt be cured with two ſorts of medicines, the one to dry up and waſte the ſuperfluous humidity thereof, the other to fetch off the filth: and by how much the wound is the deeper, by ſo much it requires more liquid medicines, that ſo they may the more eaſily enter into every part thereof.

But diverſity of things ſhall be appointed according to the various temper of the part. For if the affected part ſhall be moyſt by nature, ſuch things ſhall be choſen as ſhall be leſſe dry: if on the contrary the part be dry, then ſuch things ſhall bee uſed as be more dry; but many ſorts of medicines ſhall be aſſociated with the ſarcoticks, according to the manifold complication of the affects poſſeſſing the ulcer. Therefore nature only is to be accounted the workmaſter, and the efficient cauſe in the regenerating of fleſh, and laudable bloud the matteriall cauſe, and the medicine the helping or aſſiſting cauſe, or rather the cauſe without which it cannot be: as, that by cleanſing and moderately drying without any vehement heat, takes away all hinderances of incarnation and orders, and fits the bloud to receive the forme of fleſh. This kinde of medicine, according to *Galen*, ought to be dry only in the firſt degree, leſt by too much drineſſe, it might drink up the bloud and matter of the future fleſh, which notwithſtanding is to be underſtood of ſarcoticks, which are to bee applyed to a delicate and temperate body. For if the ulcer be more moyſt, or the body more hard than is fit, we may aſcend to ſuch things as are dry, even in the third degree. And hence it is, that ſuch drying medicines may firſt be called deterſives, and then preſently ſarcoticks. A ſarcoticke medicine is eyther ſimple or compound, ſtronger or weaker.

Simple Sarcoticks. Simple ſarcoticke medicines are, *Ariſtolochia utraque, iris, acorus, dracunculus, aſarum, ſymphyti omnia genera, betonica, ſanicula, millefolium, lingua canis, verbena, ſcabioſa, pimpinella, hypericon, ſcordium, plantago, rubia major & minor, eorumq; ſuci. Terebinthina lota & non lota, reſina pini, gummi arabicum, ſarcocolla, maſtiche, colophonia, manna thuris, cortex ejuſdem, aloè, olibanum, myrrha, mel, vinum, ſanguis draconis, lythargyros auri, ſpodium, pompholix, tutia, plumbum uſtum lotum, ſcoria ferri.*

Compound Sarcoticks. The compound ſarcoticks are, *Oleum hypericonis, ol. ovorum, maſtichinum, & cætera olea, quæ balſami nomine appellantur, unguentum aureum, emp. de betonica, vi-*

gonis,

gonis, de janua, Emp. gratia Dei, Emp. nigrum. We use not sarcoticks before that the ulcer be cleansed and freed from paine, defluxion, inflammation, hardnesse, and distemper. In using these things we consider the temper of the body, and the affected part: For oft-times a part otherwise lesse dry by nature, requires a more powerfull drying medicine, and stronger sarcotick, than another part which is more dry, and this for some other reason, which ought to come into our consideration: For example, the glans would be more dryed than the prepuce, although it be of a temper lesse dry, because it is the passage of the urine. Wherefore wee must diligently observe 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 sarcoticke, makes a sordid ulcer: the first, because it dries not sufficiently; the latter, for that by its acrimony it causeth defluxion. Therefore diligent care must bee used in the examination hereof.

CHAP. XVI.

Of Epuloticks, or skinning medicines.

AN Epuloticke medicine is that which covereth the part with skin: it is said to bee such as by drinesse and astriction without biting dericcates, bindes, and condensates the flesh into a certain callous substance, like to the skinne, which we commonly call a cicatrize or scarre: yet this, as the generating of flesh, is the worke of nature. A medicine therefore is said to be Epuloticke, for that it assists nature in substituting and generating a scarre, in stead of the true skinne, whilest it consumes the superfluous humidities, condensates, incrassates, and binds the next adjacent flesh; therefore it ought to dry more powerfully than a sarcoticke. Epuloticke medicines are of three kindes: the first is the true epulotick, which only dries and binds. The second is an acride and biting epuloticke, which, for that it wastes the proud flesh, is called so; and this must bee sparingly used, and that only to hard and rusticke bodies. The third is that which onely dries without astriction. The things whereof they consist are these: *Aristolochia utraque, gentiana, iris, centaurium majus, pentaphyllon, symphitum majus, chamædrys, betonica, cauda equina, eupatorium, verbenaca, plantaginis & symphyti folia, gallæ, baccæ myrti, glandes & earum calices, balaustia, cupressi nuces, malicorium, cortex quercus, cortex tamaricis, cortex ligni aloës, acacia, colophonia, sarcocolla, sanguis draconis, ladanum, lithargyros auri, argenti, ceruſa, plumbum ustum, alumen ustum, tuthia, squamma æris & ferri, & eorum scoria, ærugo, flos æris, as ustum & lotum, sulphur vivum, chrysocolla, corali, bolus armenus, terra sigillata, cineres buccinarum, ostreorum, silicis, ossa usta & siccata, caries lignorum, ung. diapompholygos, ung. alb. rhasis, desiccativum rubrum, emp. de ceruſa, de betonica, diacalcitheos, emp. nigrum.*

Three sorts of Epuloticks.

We use Epuloticks when as the ulcer is almost filled up, and equall to the adjacent skinne. In the use of these we must also have respect to the tendernesse and hardnesse of the body; for such things as are corrosives to tender and delicate bodies, are epuloticke to hard and rusticke bodies. Also wee must have regard, whether the body be plethoricke or replete with ill humours, for such do not easily admit cicatrization. Also it is most worthy of your observation, to marke whether the ulcer that is to be cicatrized, be fed or nourished by the present defect of any part, as the liver, spleene, lungs, or a *varix* lying about it. For it cannot be cicatrized before these impediments (if any such be) be taken away. Lastly, the callous lips of an ulcer, unlesse they be scarified or softened, hinder cicatrization. Therefore all such defaults must be taken away, and then such an epuloticke applyed, as may not by the too much drinesse leave the scarre too hollow, or the too little, leave it too high.

Their use.

Chap. XVII.

Of Agglutinatives.

AGlutinating or agglutinative medicine is of a middle nature, between the sarcoticke and epuloticke, more strong than the former, and weaker than the latter, for it is dry to the second degree. It by the drying and astrictive faculty, voide of all detersion, conjoynes parts that are distant, or rather lends helping hands to nature the principall agent in this work. Glutinatives, whether they be strongly or weakly such, doe agglutinate either by their proper or accidentall nature: Of this sort are *Plantaginis omnes species, consolida utraque, buglossa, millefolium, verbena, pimpinella, piloſella, cauda equina, sempervivum, telephium, sanicula, atractilis, folia quercus & dracunculi, salix, ebulus, sambucus, pentaphyllon, veronica, cortex pini, ulmi, palmæ quercus, Aqua vitis, aq. è folliculis ulmi, succus calaminthæ, 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 defluxion, and binde the part, as Sutures, Bandages, rest, rowlers, and the like. We use glutinatives in greene, and as yet bloudy wounds, whence the Greekes call a glutinative medicine *Enæma*, although sometimes they are used to inveterate, maligne, fistulous and sinuous ulcers; for they hinder the defluxion from comming to the lips of ulcers. You must consider, when as you intend to apply them, whether the skinne be whole or no: For ulcers knit together, or heale more difficultly, if the skinne be rubbed off, or cut, or otherwise lost. Neither ought you to be unmindfull of the fore-mentioned cautions and indications drawne from the sexe, the tendernesse or hardnesse of the affected body, the continuance and magnitude of the ulcer: for hence indication must bee taken, what the quantity and quality of the medicine ought to be.

Chap. XVIII.

Of Pyrotickes, or caustick Medicines.

THat medicine is said to be Pyroticke or Caustick, which by its acrimony and biting, commonly consisting in an earthy consistence, either superficially corrodes, or more deeply eates and putrefies, or lastly, burnes and consumes the skin and flesh, so that it even pierces into callous and hard bodies. Therefore there are three degrees of Pyrotickes; for some are termed cathæreticke or corroding, for that they waste the proud flesh of an ulcerated or any other part, and these are judged the weaker sort of the Pyrotickes. Othersome are termed Septicke or putrefying, as those which destroy and dissolve the tender and new sprung up flesh, and raise blisters in the skinne, and these are more powerfull than the cathæretickes. Lastly, there are othersome termed most powerfull Escharotickes, which by their fiery and terrestriall quality cause eschars or crusts; whereupon they are also termed *Ruptoria*, & potentiall Cauteries: Now all these differences are taken from that they are more or lesse powerfull. For it oft-times happens, that according to the different temper and consistence of the parts, according to the longer or shorter stay, a Cathæreticke may penetrate as farre as a Septicke, and on the contrary, an Escharoticke may enter no farther than a Septicke.

Three degrees of Caustick.

Cathæreticks.

These are judged Cathæretickes, *Spongia usta, alumen ustum & non ustum, vitriolum ustum, calx mediocriter lota, æruga, chalcanthum, squamma æris, oleum de vitriolo, trochisci andronis, phasionis, asphodelorum, ung. Ægyptiacum, apostolorum, pulvis mercurii, arsenicum sublimatum.*

Septicks and Vesicatories.

Septickes and Vesicatories are, *Radix scillæ, bryoniæ, sigill. beatæ Mariæ, buglossa, radix ranunculi, panis porcini, apium, risus, lac tithymallorum, lac fici, euphorbium, anacardus,*

cardus, ſinapi, cantharides, arſenicum ſublimatum: For all theſe weaken the native temper and conſiſtence of the part, and draw thereunto humours plainly contrary to nature.

Eſcharotickes or Cauſtickes are, *Calx viva, ſax vini cremata, & præcipuè aceti, ignis*, whereto are referred all Cauteries, as well actuall as potentiall, whereof wee ſhall treat hereafter. Eſcharoticks.

Wee uſe Cathæretickes in tender bodies and diſeaſes not very contumacious; therefore by how much they are leſſe acride & painfull, by ſo much oft-times they penetrate the deeper, for that they are leſſe troubleſome by delay; but we uſe Septickes, and ſometimes Eſcharotickes in ulcers that are callous, putride, and of inexhauſted humidity, but principally in cancers, carbuncles, and exceſſive hæmorrhagies. When as we make uſe of theſe, the patient muſt have a convenient dyet appointed, muſt abſtaine from wine: laſtly, they muſt not be uſed but with great diſcretion; for otherwiſe they may cauſe feavers, great inflammations, intolerable paines, ſwounings, gangrenes, and ſphacels. Cauteries heedfully uſed, ſtrengthen and dry the part, amend an untameable diſtemper, dull the force of poyſon, bridle putrefaction and mortification, and bring ſundry other benefits. Their uſe.

Chap. XIX.

Of Anodynes, or ſuch as mitigate or aſſwage paine.

Before we treat of Anodyne medicines, we thinke it fit to ſpeake of the nature of paine. Now paine is a ſorrowfull and troubleſome ſenſe, cauſed by ſome ſodaine diſtemper, or ſolution of continuity. There are three things neceſſary to cauſe pain; The efficient cauſe, that is, a ſodain departure from a naturall temper or union: the ſenſibleneſſe of the body receiving the dolorificke cauſe: laſtly, the apprehenſion of this induced change, cauſed either by diſtemper or union; for otherwiſe with how exquiſite ſoever ſenſe the body receiving the cauſe is indued with, unleſſe it apprehend and marke it, there is no paine preſent. Hence is that Aphoriſme of *Hippocrates*, *Quicunq; parte aliqua corporis dolentes dolorem omninò non ſentiunt, his mens ægrotat*, that is, Whoſoever pained in any part of their bodies doe wholly feele no paine, their underſtanding is ill affected and depraved. Heat, cold, moiſture, and drineſſe, induce a ſodain change of temper; and heate and cold cauſe ſharpe paine, drineſſe moderate, but moiſture ſcarce any at all: for moiſture cauſeth not paine ſo much by its quality, as it doth by the quantity. Both the fore-mentioned qualities, eſpecially aſſociated with matter, as alſo certaine externall cauſes too violently aſſailing, ſuch as theſe that may cauſe contuſion, cut, pricke, or too much extend. Wherefore paine is a ſymptome of the touch, accompanying almoſt all diſeaſes; therefore oft-times leaving theſe, they turn the councell of the Phyſitian to mitigate them, wch is performed either by mitigating the efficient cauſes of paine, or dulling the ſenſe of the part. Hereupon they make three differences of Anodynes: For ſome ſerve to cure the diſeaſe, otherſome to mitigate it, otherſome ſtupefie, and are narcotick. We terme ſuch curative of the diſeaſes, which reſiſt, and are contrary to the cauſes of diſeaſes. Thus paine, cauſed by a hot diſtemper, is taken away by oyle of Roſes, Oxycrate, and other ſuch like things, which amend and take away the cauſe of paine, to wit, the exceſſe of heate. Paine cauſed by a cold diſtemper, is amended by *Oleum Laurinum, Nardinum, de Caſtoreo*. Paine occaſioned by too much drineſſe, is helped by *Hydraleum*, a bath of freſh and warme water. Laſtly, by this word Anodyne, taken in the largeſt ſenſe, we underſtand all purging medicines, Phlebotomy, Scarification, Cauteries, Cuppings, Glyſters, and other ſuch like things as evacuate any ſtore of the dolorificke matter. But ſuch as are properly termed Anodynes, are of two ſorts: for ſome are temperate, others hot and moiſt in the firſt degree, and conſequently, neere to thoſe that are temperate: theſe preſerve the native heate in the proper integrity, thus they amend all diſtemperatures; of this kinde are accounted Sallade oyle, oyle of ſweete Almonds, What paine is. What properly termed Anodynes are.

almonds, the yolks of egs, and a few other such like things, these strengthen the native heat, that thus encreased in substance, it may with the more facility orecome the cause of paine: besides also, they rarifie, attenuate, digest, and consequently evacuate both grosse and viscide humours, as also cloudy flatulencies hindred from passing forth: such are *flores chamæmeli, meliloti, crocus, oleum chamæmelinum, anethinum, oleum lini, oleum ex semine althæa, lumbricorum, ovorum, ex tritico, butyrum, lana succida, suillus adeps, vitulinus, gallinaceus, anserinus, humanus, ex anguilla, cunicula, & aliis. Lac muliebre, & vaccinum, mucago seminis lini, fænugræci, althæa, malvæ, vel ejusmodi seminum decoctum*: as also *Decoctum liliorum, violariæ, capitis, pedum, & intestinorum arietis & hædi.*

Narcoticks improperly termed anodines.

Narcotickes, or stupefying medicines, improperly termed Anodines, are cold in the fourth degree, therefore by their exceesse of cold, they intercept or hinder the passage of the animall 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.*

The use of them.

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 expugne paines that are not very contumacious, that by their application wee may resist defluxion, inflammation, the feaver, and other symptomes. But whereas the bitternesse of paine is so excessive great that it will not stoop to other medicines, then at the length must wee come to the third sort of anodynes. Yet oft times the bitternesse of paine is so great that very narcoticks must be applied in the first place, if we would have the part and the whole man to be in safety. Yet the too frequent use of them, especially alone without the addition of saffron, myrrh, *castoreum*, or some such like thing, useth to be very dangerous: for they extinguish the native heat, and cause mortification, manifested by the blackenesse of the part. But intolerable paines, to wit, such as are occasioned by the excesse of inflammation and gangrenes, may bee sooner mitigated by opening a veine, purging and scarifying the part affected, than either by properly termed anodines or narcotickes, to wit, that paine may bee the remedy of paine. By purgers we here understand not onely such, as taken by the mouth, produce that effect, but also such as outwardly applied performe the same, as those whereof *Aetius* makes mention. As,

Tetrab. 1. serm. 3. cap. 35.

Purgatives to bee externally applied.

℞. *pulpa seu medul. colocynth. semin. eruc. rut. sylvest. elaterii, gr. cindii, lathyrid. expurgatar. galban. nitri, cera, singulorum,* ℥ iiii. *opopan.* ℥ ii. *terebinth.* ℥ vi. *terenda territo, & taurino felle paulatim irrigato, donec apte imbibantur.* Then apply it about the navill even to the share, for thus it will purge by stoole; if on the contrary you apply it to the bottome of the stomacke, it will cause vomit. Another; ℞. *elaterii,* ℥ iii. *colocynth. scammon. squamma æris, radic. cucumer. agrest. lathyrid. an.* ℥ i. *aut pro lathyrid. tithymal. succum terito & cribrato, ac cum oleo plurimum salis habente subigito; magnam inde pilam e lana confertam hoc medicamento illitam, umbilico aut lumbis applicato.* Or, ℞. *fellis taurin.* ℥ i. *gr. cindii virid.* ℥ iv. *succi lupinor. virid.* ℥ ii. *euphorb.* ℥ i. *pulp. colocynth. tantundem adip. vulpin. recent.* ℥ ii. *adip. viper.* ℥ ii ß. *stercor. muris,* ℥ iv. *succi pæon. castor. singulor.* ℥ iv. *ol. ligustrin.* ℥ vi. *ol. antiq.* ℥ i. *fiat unguentum vel oleum.* It purgeth without trouble, and besides the other commodities it also is good against distraction or madnesse. Two spoonefulls is the greatest quantity to be used at one time, for in some one is sufficient: anoint with it the navill and thereabouts, and a just purgation will ensue thereupon, which if it shall flye out beyond your expectation, you may foment the belly with a sponge moistened in warm wine and pressed forth againe, and it will be presently stayed. Moreover *Fernelius lib. 7. methodi*, makes mention of a laxative ointment.

The composition of a purging oile and ointment.

Chap.

Chap. XX.

Of the composition and use of Medicines.

Hitherto wee have spoken of the faculties of simple medicines, now wee thinke good to say something of the compounding of them: for so by the Architect are had & known every thing apart, and then he settles the workemen to the building, the conceived forme of which hath beene in his minde ever since hee did enterprise it. Therefore the composition of divers medicaments with their qualities and effects, is a mingling appointed by the art of the Physitian. Hence therefore *rheum, aloe, rosa, absinthium*, although they have divers substances and faculties, yet are notwithstanding called simple medicines, because they have that variety from nature, not from art. But we many times call simple such things as are compounded by art, as *oxym. simpl. oxysacch. simplex*, as compared to greater compositions. And therefore often times wee use compound medicines, because alwaies the simple medicine alone, hath not strength enough to oppugne the disease. For many times the sicke labour with manifold, and not simple affects, from which there being taken a various indication, we gather contrary simple medicines, to apply to every affect, in one composition. But often times the nature of the part of the patient, or of the body affected, requireth another kind of medicament which may bee proper for the removing that disease; wherefore it is so made to oppugne the disease and not offend the body: and we mingle many other together, whose effects may temper one another. Moreover, the composition of medicines was necessary, that because those things which have not a good taste, colour, or smell, by art or composition might be made more gratefull. Compound medicines of which we intend to speak, are Glysters, Suppositories, *Noduli*, Pessaries, Oiles, Liniments, Ointments, Emplasters, Cerats, Pultisses, Cataplasmes, Fomentations, Embrocations, Epithemaes, Vesicatories, Cauteries, *Collyria*, *Errhina*, Sneesing powders, Masticatories, Gargarismes, Dentitrices, Bags, Fumigations, Semicupiums, Baths. But first it is expedient that I say something of weights and measures, with their notes, by which medicines commonly are measured and noted by Physitians.

Gal. 2. simp. 4. de fac. t. tend.

The necessity of compound medicines.

Chap. XXI.

Of weights and measures, and the notes of both of them.

Every weight ariseth from a beginning and foundation, as it were; for as our bodies doe arise of the foure first simple bodies or elements, into which they are often resolved: so all weights do arise from the graine, which is as it were the beginning and end of the rest. Now hereby is understood a barly corne or graine, and that such as is neither too dry, or overgrowne with mouldinesse, or rancide, but well conditioned, and of an indifferent bignesse.

A graine the beginning of all weight.

What is meant by a graine.

Ten graines of these make an *Obolus*; two Oboli, or twenty graines make a scruple, three scruples, or sixty graines make a dramme, eight drammes make one ounce, twelve ounces make one pound medicinall, which is for the most part the greatest waight used by Physitians, and which they seldome exceed; and it is resolved into ounces, drammes, scruples, *oboli* and graines, which is the least weight. To expresse these weights we use certaine notes; the pound is expressed by this note, ℔. the ounce by this, ℥. the dramme thus, ʒ. the scruple thus, ℈. the *obolus* with the beginning letter thus, *obol.* the graine with his beginning letter thus, g. But sometimes we measure the quantity of medicines by measures and not alwaies by weights; and therefore we expresse a handfull by this note, m. a pugill thus, p. number thus, n. and the halfe part of every weight and measure is expressed by this note, ß. put after every note of the aforesaid weights and measures of the same sort, as the halfe pound, ℔. ß

Obolus
A scruple.
A dramme.
An ounce.
A pound.

℔ ß. the halfe ounce, ℥ ß. and so of the rest. Moreover, in describing the same medicament wee use the notes sometimes of weights, sometimes of measures; and therefore it is to bee noted that herbes, greene or dry, are signed with these notes, m. p. but those which are dry and be brought to powder, with these notes, ℥. ℥. p.

Roots, Barks, Seeds, Fruits, Flowers, Pulses,	by these notes,	℥. ℥. p. m. ℥. ℥. ℥. ℥. an. p. ℥. ℥. ℈. p. m. ℥. ℥. p. ℥. ℥.

All other medicaments either dry or liquid, are described with these notes, ℔. ℥. ℥. ℈. obol. g.

Having expounded these things, let us come to the description of compound medicines, beginning with glysters first, as the remedy which is most common and familiar, and almost chiefly necessary of all others.

Chap. XXII.

Of Glysters.

What a glyster is.

A Glyster is an injection prepared first and properly for the grosse intestines and fundament; for sometimes glysters are used & made for the stomack, spleen, reines, bladder, wombe, mesentery, and also for the head, from whence often times by sharpe glysters, the hurtfull matter is brought downewards, as we see in Apoplexies. Therefore there is no part of the body which receives not some benefit by glysters, but more or lesse according to the vicinity they have with the belly, and the strength of the glyster: for there are divers sorts of glysters, some emollients, other evacuating, some anodines, some astringents, some cleansing, some sarcoticke, and epuloticke, and some may bee said to nourish.

Differences of glysters.

The materials of glysters.

They are all made of the parts of plants or beasts, with compound medicines either solutive or altering, and others according to the advise of the Physitian. The parts of plants which are used to this purpose, are roots, seedes, leaves, flowers, fruits, shouts, juices, mucilages. Parts of beasts are yelkes of egges and whites, honey, chickens, capons, old cockes well beaten, heads and feet of sheepe, the intestines, whey, milke, sewet, axungia, and such like in decoctions, wherein wee mingle and dissolve simple and compound medicines. Wee sometimes use without any other medicament, to make a glyster with oyle alone, as oile of nuts for the Cholicke, of whey alone, the decoction of the head and feet of the sheepe alone, and of the decoction of Cicers and barly do we prepare glysters.

Their quantity.

The quantity of a glyster is sometimes lesse according to the divers disposition of men and their diseases: for weake children the quantity is lesse: for women with child, and in the cholicke, dysentery, lyentery, or when much hardened excrement is within. But when wee would abundantly move the excrement, and there is nothing that may hinder, the dose of a glyster for the most part is halfe a pound, one pound, or three quarters of a pound. The glyster must bee injected warme or hot, more or lesse, according to the nature or condition of the sicke; for being cold it offends the intestines, and the neighbouring nervous parts, which are cold of themselves. It must bee given by degrees, for being injected sodainely, the winde which is usually in the guts will beat it backe againe, whence comes intolerable pain. But this will bee more cleere by that wee shall teach concerning the differences of glysters, whereof there shall be sufficient examples.

An emollient glyster.

℞. *malv. violar. bismalv. acanth. an.* m i. *radic. alth. lilior. an.* ℥ i. *passul. ficuum ping.* ℥ ß. *fiat decoctio ad* ℔ i. *in qua dissolve cass. butyr. recent. an.* ℥ i. *ol. viol.* ℥ iii. *fiat clyster.*

Glysters

Glysters, that doe evacuate, are prepared by the councell of the Physitian, and of divers Simples, being boyled for severall purposes. Therefore if the humours bee cold which are to bee evacuated, the Glyster shall be after this manner: ℞. *Salviæ, origani, abrotoni, chamæm. melilot. an.* m.β. *seminum anisi, fœnic. cumini, an.* ℥iii. *semin. cart lar.* ℥ii. Make a decoction of them, wherein dissolve *Diaphon. Hier. Simpl. an.* ℥β. *ol. aneth. chamæm. an.* ℥i. β. *Mellis Anthos. sachar rub. an.* ℥.i. *fiat Clyster.* A Glyster to evacuate a cold phlegmaticke humour.

To evacuate Cholericke matter, prepare a Glyster after this manner.

℞ *quat. remollient. pariet. Cichor. endi. an.* m.ß. *Semin. quat. frigid. Major. an.* ℥iii. *hordei integri* p.i. Make a decoction of them, and dissolve in it *Cass.* ℥.i. *Ol. viol. mellis viol. an.* ℥ii. *fiat Clyster.*

To evacuate melancholy, this Glyster following will be usefull.

℞ *Fumiter. Centaur. minoris, Mercurialis, an.* m.i. *Polyp. Qu. folicul. sennæ, an.* ℥iii. *seminis agni casti, Thymi, an.* ℥ii. Make a decoction, and dissolve therein, *Confect. Hamech.* ℥β. *Cass. recens extract.* ℥iii. *olei violati, lilior. an.* ℥β. *Sach. rub. mellis viol. an.* ℥iβ. *salis,* ℥i. And those Glysters doe not only evacuate the humours that offend, but also correct the distemper of the bowels and inward parts. For the Glysters described against pituitous and melancholy matter, helpe the cold distemper; but that which is for choler, the hot distemper. Purging medicines, which are dissolved in the decoctions of Glysters, are very strong, as, *Confect. Hamech. Benedicta, Diaprun. Solutivum, Diaphœnicon,* being used from ℥.vi. to ℥i. at most: but the weaker and more gentle are *Catholicon. Cassia, Hiera simplex,* from ℥vi. to ℥ii. at most.

An Anodyne Glyster is usually made without such things as purge or evacuate: as,

℞. *Flor. Chamæm. melil. Aneth. an.* p.i. *rad. Bismal.* ℥.i. boyle them in Milke, and to the decoction adde *Mucaginis seminis lini fœnugræci extractæ in aqua Malvæ* ℥ ii. *sachari albi, olei anethi, chamæmeli, an.* ℥i. *vitellos ovorum duos, fiat Clyster.* These Glysters should be kept longer in the body, that so they may more easily mitigate paine. An Anodyne Glyster.

The example of an astringent Glyster.

℞. *Equiseti, plantag. poligani. an.* m.i. boyle them *in lacte ustulato,* to ℥xii. to the decoction strained adde *Boli armeni, sanguinis draconis, an.* ℥ii. *olei rosati,* ℥ii. *album. ovorum duorum, fiat Clyster.* We use these kinde of Glysters in Dysenteries, and in the immoderate fluxe of the Hemoroid veines, having first evacuated the usuall excrements. Glysters, which be sarcoticke, epuloticke, and cleansers of the greater guts, and fit for the curing of ulcers, are to be prepared of such medicines as are described before in their proper Chapters. An astringent Glysters.

Alimentary Glysters are made of the decoction of Chickens, Capons, Cockes, being boyled to a gelly, and strongly prest forth. They are also prepared of Marrow, gelly, which are not altogether so strong as those which are commonly taken by the mouth, because the faculty of concoction in the guts, is much weaker than that of the stomacke. Oftentimes also the matter of these kinde of Glysters are prepared in wine, where there is no paine of the head or feaver, but more frequently in the decoction of Barley, and in Milke, adding the yelkes of Egges, and some small quantity of white Sugar, lest by the cleansing faculty it move the guts to excretion. And therefore Sugar of Roses is thought better, which is conceived to bee somewhat binding. Here you may have examples of such Glysters. ℞. *Decoctionis Capi perfectè cocti* ℔.i. β. *sachari albi,* ℥β. *misce, fiat Clyster.* ℞. *Decocti Pulli & Galatin. an.* ℔. β. *vini opt.* ℥iv. *fiat Clyster.* ℞. *Decocti hordei mundati, & in cremorem redacti* ℔. β. *lactis boni* ℔.i. *Vitellos ovorum duos, fiat Clyster.* We use these kinde of Glysters to strengthen Nourishing Glysters. Their use.

then children, old and weake men, and bodies which are in a Consumption. But in the use of these there are three things to be observed: First, that the fæculent excrements be taken away, either by strength of nature, or by art, as by a suppository, or an emollient Glyster, lest the alimentary matter, being mingled with them, should so be infected and corrupted. The other is, that there be great quantity given, that so some may ascend to the upper guts. The third is, that the sicke sleep after the taking of it; for so it is more easily converted into nourishment, and the alimentary matter is better kept: for sleep hindereth evacuations. In Glysters of this kinde wee must beware of Salt, Honey, and Oyle; for the two first provoke excretion by their acrimony, and the last by his humidity doth relaxate and lubricate. They, who thinke no kinde of Glyster can nourish or sustaine the body, relye upon this reason: That it is necessary whatsoever nourisheth, should have a triple commutation or concoction in the body: first, in the stomacke; secondly, in the liver: thirdly, in all the members. But this opinion is repugnant to reason and experience: to reason, for that a certaine sense of such things as are defective, is implanted in all and every of the naturall parts of our body. Therefore seeing nutrition is a repletion of that which is empty, without doubt the empty and hungry parts will draw from any place that nourishment which is fit and convenient for them, and in defect thereof, whatsoever they meet with, which by any familiarity may asswage and satisfie their desire. But the alimentary Glysters, by us described, consist of things which agree very well with the nature of our bodies, and such as are boyled and ordered with much art, so to supply the chylification to bee performed in the stomacke. Therefore they may be drawne in by the meseraicke veines of the guts, which, according to *Galen*, have a certaine attractive faculty. And thence they may bee easily carried through the gate veine, liver, and so over the whole body. And experience teacheth, that many sick people, when they could take nothing by the mouth, have bin sustained many daies by the helpe of these kinde of Glysters. What is more to bee said? We have seen those who have taken a Suppository by the fundament, and vomited it at the mouth; by which it also appeareth, that something may flow without danger of the sicke from the guts into the stomacke.

Their Argument that deny Glysters to nourish.

Confuted first by reason.

Secondly, by experience.

Commonly they give Glysters any houre of the day, without any respect of time, but it should not be done unlesse a great while after meales, otherwise the meate, being hindered from digestion, will be drawne out of the stomacke by the Glyster.

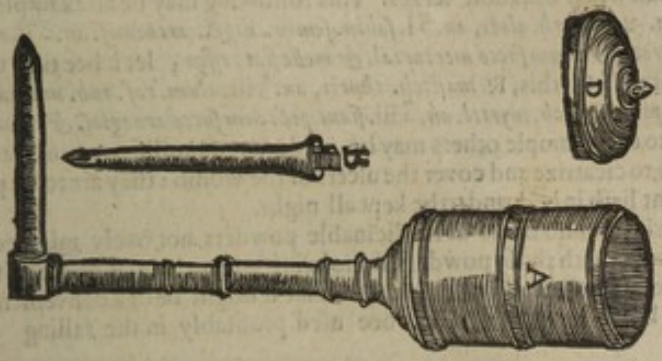
Glysters are used to helpe the weaker expulsive faculty of the guts, and by consequence also of the other parts, both that such as through want of age, and old people, and such as by reason of great imbecility by sickenesse cannot admit of a purging medicine, may by this meanes at least ease themselves of the trouble and burden of hurtfull humours. *Galen* hath attributed to Storkes the invention of Glysters, which with their bils, having drunke Sea water, which from saltnesse hath a purging quality, wash themselves by that part, whereby they use to bring away the excrements of their meates, and of the body. But a Glyster is fitly taken after this maner: whilest the Syrenge is expressed, let the patient hold open his mouth; for by this means all the muscles of the *Abdomen*, which helpe by compression the excretion of the guts, are relaxed. Let him weare nothing that may gird in his belly, let him lye upon his right side, bending in a semicircular figure; and so the Glyster will the more easily passe to the upper guts, and (as it were) by an overflowing, wet and wash all the guts and excrements. It hapneth otherwise to those who lye 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*, becaus in this site these two Intestines are oppressed, and as it were shut up with the weight of the upper guts. A little while he may lye upon his backe after hee have received the Glyster, and presently after hee may turne himselfe on either side. And if there be paine in any part, so long as he is able he may incline to that side. Moreover, becaus there are many, who cannot by any reason bee perswaded to shew their buttockes to him that should administer the Glyster, a foolish shamefastnesse hindering them: therefore I thought good in this place to give the figure of an Instrument, with which one may give a Glyster

The common use of Glysters.

The sicke, having received the Glyster, must turne to the side grieved.

ſter to himſelfe, by putting up the pipe into the fundament, lifting the buttockes a little up. The pipe is marked with this Letter *A*. The body of the Syrenge, whereinto the Glyſter muſt be put, with this Letter *B*.

The figure of a Glyſter pipe and Syrenge, by benefit whereof a man may give himſelfe a Glyſter.



Chap. XXIII.

Of Suppoſitories, Nodules, and Peſſaries.

A Suppoſitory is a certaine medicament, formed like unto a tent, or gobbet of paſte, ſuch as is commonly uſed to fat Fowle. It is put up into the fundament, that it might excite the ſphincter muſcle to ſend forth thoſe excrements which are kept in the guts. Antiently it had the forme of an Acorne, whence it is called to this day *Glans*. The Suppoſitories we now uſually make have the forme of a Peſſary, that is, round and longiſh, in the forme of a waxe Candle. They are either weake, ſtronger, or ſharpe; the weake are made of the ſtalkes or the rootes of Beets, of Lard, boiled Honey with Salt, or of Caſtle-ſope. The ſtronger of purging powders, as, *Hiera* with Salt and Honey. The ſharp with Scammony, *Euphorbium*, *Coloquintida*, and like things powdred, and with Honey, or the juices of ſharpe herbes, or mingled with the gals of Beaſts. It is commonly made thus: as, ℞. *Mellis* ℥i. *Salis aut pulveris alterius irritantis* ℥i. The differences. The forme.

℞. *Mellis cocti* ℥i. *pul. Colocynthidos* ℈ ß. *Salis gemmæ.* ℈i. *fiat Suppoſitorium.* Wee uſe Suppoſitories, when the ſicke by his infirmity is unwilling, or not able to beare or away with a Glyſter, as in burning Feavers: or, when as one being injected, is ſlow, and reſteth in the guts. And we uſe the ſharper Suppoſitories in ſeporiferous affects of the head, that they might provoke the dull faculty of the guts to expulſion. As alſo, when the condition of the diſeaſe is ſuch, that by the uſe of Glyſters there is manifeſt hurt; as, in an *Enterocele*, where the gut ſo ſwels, that over and above it be filled by the glyſter infuſed, it would the more preſſe the *Peritonæum*, ſo that straightwaies by the relaxed or broken part it might eaſily be devolved into the Codde. The uſe.

Nodules have the ſame uſe with Suppoſitories, and are oftentimes ſubſtituted in ſtead of Glyſters. They are made of gentle medicines, as the yelkes of Egges with a little Salt and Butter, or of Gall and Honey tyed up in a cloth in the forme of a Filbert, the ſtring of it may hang forth, whereby the Nodule in the fundament may be drawne forth. This deſcription may be an example of Nodules: ℞. *Vitellum unius ovi, cui addé ſalis modicum, fellis vervecis, mellis an.* ℥ ß. *butyri* ℥iii. *miſce, fiant Noduli filo appenſi.* The forme of a Nodule.

A Peſſary is groſſer than a Suppoſitory, and is appointed for the wombe, being made with Cotton-wooll or Silke ſteeped in ſome medicament, and then put into the necke of the wombe. Peſſaries.

A Peſſary

Their uſe. A peſſary is uſed either to ulcers of the necke of the wombe, or for the procuring, or ſtopping of the *Menſtrua*, or againſt ſordide and hurtfull humours of the wombe cauſing hyſtericall paſſions, and therefore to be waſted away and evacuated. Therefore in the compoſition of peſſaries are uſed gummes, juices, ſeeds of herbes, roots, and many other things, according to the adviſe of the Phiſitian; they are alſo made of a ſolide conſiſtence, the bigneſſe of a finger, that they may enter into the necke of the wombe; theſe being tyed with a ſtring, which muſt hang forth to plucke it out withall when occaſion ſerves. This following may be an example of their deſcription. ℞. *myrrh. aloes, an.* ℥ i. *ſabin. ſemin. nigel. arthemiſ. an.* ℥ ii. *radic. ellebor. nig.* ℥ i. *croci,* ℈ i. *cum ſucco mercurial. & melle fiat peſſus*; let it bee tied to the thigh with a thread. Or this, ℞. *maſtich. thurii, an.* ℥ iii. *alum. roſ. rub. nuc. cupreſ. an.* ℥ ii. *ladan. hypoci. ſumach, myrtil. an.* ℥ iii. *fiant peſſi cum ſucco arnogloſ. & cotoniorum.* According to this example others may be made for to mollifie, to binde, to cleanſe, to incarnate, to cicatrize and cover the ulcers of the womb: they are to be put up when the patient lieth in bed, and to be kept all night.

Peſſaries are alſo made of medicinable powders, not onely mingled with ſome juice, but alſo with thoſe powders alone being put into a little bagge of ſome thinne matter, being ſtuffed with a little cotton that it might be of a convenient ſtiffeneſſe, and this kinde of peſſaries may bee uſed profitably in the falling of the mother.

An example of one mentioned by Rondeletius *in his booke of inward Medicines, is as followeth.*

Againſt the ſuffocation of the Mother. ℞. *Benioini, ſtyracis, caryoph. an.* ℥ i. *gal. moſch.* ℥ ß. *moſchi*, gr. vi. *fiat pulvis*; this being made up with cotton may be put up into the body.

Chap. XXIV.

Of Oyles.

Properly and commonly we call oile that juice which is preſſed forth of Olives; but the word is uſed more largely, for we call every juice of a fluxible, unctuous, and aiery ſubſtance, Oyle. There are three differences of theſe oleaginous juices: The firſt is of thoſe things which yeeld oile by expreſſion, as well fruits as ſeeds being bruiſed, that by beating the oily juice may be preſſed forth; ſome are drawn without fire, as oile of ſweet and bitter almonds, oyle of nuts, of *palma Chriſti*. Others are made to runne by the helpe of fire, by which meanes is gotten oile of baies, linſeed oyle, rape oyle, oile of hempe, and ſuch like: The manner of drawing oile from ſeeds is ſet downe by *Meſue* in his third booke.

The making oiles by infuſion. The ſecond ſort is of thoſe oyles which are made by the infuſion of ſimple medicines in oyle, wherein they leave their qualities: and this is done three ſeverall waies, the firſt is by boyling of roots, leaves, tops of flowers, fruits, ſeeds, gummes, whole beaſtes, with wine, water, or ſome other juice, with common, or any other oile, untill the wine, water, or juice bee conſumed, which you may perceive to bee perfectly done, if you caſt a droppe of the oyle into the fire, and it maketh no noiſe but burneth. It is to be remembred that ſometimes the ſeeds or fruits are for a certaine time to be macerated before they are ſet to the fire; but it muſt bee boiled in a double veſſell, leſt the oyle partake of the fire.

After this manner is made *oleum coſtinum, rutaceum, de croco, cydoniorum, myrtillorum, maſtichinum, de euphorbio, vulpinum, de ſcorpionibus*, and many others. The ſecond is by a certaine time of maceration, ſome upon hot aſhes, others in horſe dung, that by that moderate heat the oile might draw forth the effects of the infuſed medicines into it ſelfe. The third is by inſolation, that is, when theſe or theſe flowers, being infuſed in oile, are expoſed to the ſunne, that by the heat thereof the oile may change

change, and draw into him selfe the faculty of the flowers which are infused: of this kinde are oile of roses, chamomile, dill, lillies, of water lillies, violets, and others, as you may see in *Mesue*.

The third kinde is properly that of the Chimists, and is done by resolution made after divers manners, and of this sort there are divers admirable qualities of divers oleaginous juices, whether they be made by the sunne or fire, or putrefaction, as we shall speake in his place hereafter. The manner of oiles by resolution.

Wee use oiles when wee would have the vertue of the medicament to pierce deepe, or the substance of the medicines mingled with the oile to bee soft and gentle. Moreover, when wee prepare oiles that should be of a cooling quality, the common oile of the unripe Olive is to be used: of that should the oile of roses be made.

Againe, when we would prepare oiles of heating qualities, such as are *Oleum philosophorum*, or of Tiles, sweet and ripe oile is to be chosen.

Chap. XXV.

Of Liniments.

A Liniment is an externall medicine of a meane consistence, between an oile and an ointment, for it is thicker than an oile; for besides oile it is compounded with butter, axungia, and such like, which is the reason why a liniment is more efficacious in ripening and mitigating paine, than simple oile. The varieties of liniments is drawn from their effects, some coole, others heat, some humect, some ripen, others by composition are made for divers uses. The matter whereof they are usually made, is oile, axungia, sewet, butter, all those things which have an oily substance or consistence, as *styrax liquida*, turpentine, the mucilages of fenugreeke, marsh-mallowes, marrow, and other like. To these are sometimes added powders of rootes, seedes, flowers, rindes, metals, but sparingly, that the liniment may be 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.

℞. *ol. amygd. amar. lilior. an.* ℥ i. *axung. anat. gallin. an.* ℥ ß. *butyr. sal. expert.* ℥ i. *mucag. sem. alth. fœnugr. extract. in aq. hyssop. an.* ℥ ß. *pulver. croci, ireos, an.* ʒ i. *fiat linimentum.*

This may be an example of a liniment to humect and mollifie.

℞. *ol. amygd. dulc.* ℥ ii. *axung. human.* ℥ ß. *mucag. semin. malv. extract. in aq. parietar.* ℥ ß. *fiat linimentum*: you may adde a little saffron. There bee many others like these which may be made for divers affects. They are easily applied to every part of the body, because they are not so liquid as oiles: the reason is, they are more agreeable to any of the parts. If they be to enter into any crooked narrow passage, such as the eare, they must be more liquid, and have more oile: if they be to sticke on the part, they will admit of more axungia and sewet.

They are deceived who thinke that the difference betweene liniments and ointments is, that there is no waxe in liniments as there is in unguents; for there be some unguents which admit not any waxe to bee added, as *ægyptiacum*, and all such as are used in gangrenes, and all sorts of putride ulcers; because to these kinds of diseases all fatty things, as oiles, fats, rosines, and waxe, are enemies. Therefore wee substitute in the place of them in *ægyptiacum*, hony and verdigreace; for of these it hath his consistence, and his quality of cleansing.

Chap.

Chap. XXVI.

Of Ointments.

Oyntments & their differences.

Yntments are of a more solid consistence than Liniments, and are therefore of more force. Their differences are partly taken from their effects; for some heate, others coole, some dry, and some humect, some cleanse, some corroborate, some waste dead flesh, and others cicatrize, partly from the variety of colours, partly from the first invertors, as, *Album rhasis*, *Desiccativum rubrum*: partly from the number of the simple medicaments whereof they bee made, as, *Tetrapharmacum*, *Triphar-macum*, or *Nutritum*: partly from that medicament which is principall in the composition, hence are they called, *Unguentum de Lythargyro, de Minio, Diapompholigos*, and such like: They are compounded of herbes, rootes, seedes, fruits, mettals, and parts of Beasts; the juices and other liquid things being consumed away by boyling, as we have said in the Chapter of compound Oyles. Herbes, and the parts of them, if they be dry, must be powdred, and also mettals; but being greene, they are boyled and strained forth, and the juice so pressed is wasted by boyling. Gums and Rosins some are powdred, others being put to some convenient liquor are dissolved by fire: So Waxe is dissolved in the Oyle. In the composition of unguents this proportion is usually observed, that for one ounce of powder, two ounces of Waxe, and eight of Oyle is added: notwithstanding for that Waxe serveth onely to the consistence of the oyntment, it is better to leave the quantity to the will of the Apothecary; but he may be more sparing in adding Waxe to the oyntments in the Summer than in Winter: for the heate of Summer, drying them, addeth to the consistence; by examples propounded, these common preceps will more plainly appeare.

Unguentum adstringens. ℞. *Olei ros.* ℥iv. *pil. lepor. bol. armen. terræ sigil. an.* ℥i. *bal. Gallar. an.* ℥ß. *tritis terendis, & simul mixtis, addita cera quod sufficit, fiat unguentum.* Here wee must observe, that there bee three waies of making Oyntments: The first is of those which are made only by stirring or grinding in the Mortar without any fire, and so is made *Unguentum nutritum.* The second is, when we dissolve Waxe in Oyle, Fat, or some such substance with fire: and being all dissolved, wee mingle the powders according to the proportion we noted before. After which manner are made *Unguentum Aureum, Basilicon, Diapompholigos, Desiccativum rubrum, Enulatum.* The third sort is, when we bruise herbes with a Pestell, and mingle them with Axungy, boyling them together, and then straining them, and the Oyntment is that which is strained. Therefore let us proceed to explaine this by examples.

Unguentum nutritum. ℞. *Lythar. auri triti & loti* ℔ ß. *olei ros.* ℔. i. *aceti ros.* ℥iv. *fiat Unguentum.* First, wee put the Lytharge into the Mortar, powring in a little Oyle, and working it with a Pestell, that it may grow thicke, then with the Oyle we put a little Vinegar, continually working, untill they mingle into one body, now and then betweene whiles adding sometimes a little Oyle, sometimes a little Vinegar, untill the whole bee brought to the consistence of an Oyntment. If of an Oyntment of this kinde thou wouldst make a blacke plaster, by degrees consume all the Vinegar, so shall the plaster shine and grow blacke.

Unguentum aureum. ℞. *Cera citr.* ℥vi. *olei boni* ℔. ii. *tereb.* ℥ii. *resin. & coloph. an.* ℥iß. *olib. mastich. an.* ℥i. *croci*, ℥i. *fiat Unguentum.* Firſt, dissolve the Waxe with a good part of the Oyle, then adde the Rosin and Colophony broken small. These being dissolved, take the composition from the fire, and then adde the Turpentine; when the whole is somewhat cooled, adde the *Olibanum* and Masticke being finely powdred, then the Saffron, which shall be macerated in the rest of the Oyle.

Ung. Tetrapharmacum, seu Basilicum. Tetrapharmacon is so called, because it is made of foure simple medicines, Waxe, Rosin, Pitch, Tallow, of each a like quantity, and so equally mixed.

℞ *Resin. picis nigr. adip. vituli. & cera an.* ℥ii. ß. *Olei veteris olivarum maturarum,* ℔ iß. or if you would have it harder, ℔ i. that oyntment also is called *Basilicon*, the

Waxe

Waxe being cut small and dissolved in Oyle, then adde the rest of the things, which being dissolved, thou shalt have the desired oyntment.

℞.*Olei ros.*℥ix.*cer.alb.*℥iii.*succi solani hortensis,*℥iv.*Ceruss.lot* ℥i. *Pompholygos, plumbi usti & loti, olib.puri, an.*℥ß.*fiat Unguentum.* Dissolve the Waxe in the Oyle with a gentle fire, then you shall take it from the fire, and adde 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. Diapompholygos.*

℞.*Lap.calam.ter.sig.an.*℥ii.*Litharg.auri, ceruss.an.*℥iß.*Camphor.* ℥ß.*ceræ,* ℥iiß.*Olei rosat.viol.an.*℥iii.*fiat Unguentum.* Dissolve the Waxe in the Oyle, then set it to coole, and worke in the powders with a spatter, and at last adde the Camphor dissolved in a little Oyle of Roses, or Rosewater. *Ung. deficcativum rubrum.*

℞.*Rad.enul.campan.cocti.cum aceto & contus.ut decet* ℔ß.*Axung. porci, olei commu. an.*℥iß.*argen. vivi extincti, & tereb. lot.an.*℥i.*sal.commu.pulverati,* ℥ii. incorporate them according to art. The boyled rootes must be drawne through a Sieve, which being boyled by a gentle fire with the *Axungia*, must bee continually stirred, then put to the Salt with Oyle & Waxe: when you set it from the fire to coole, then adde the Quicksilver, being killed with a little *Axungia* and Turpentine. *Ung. Enulatum.*

℞.*Olei rosat.* ℥ix.*ceruss.alb.*℥iii.*cer.alb.*℥ii. make it thus: Let the Ceruse bee finely powdred, and put into the Oyle and Waxe whilst it is hot, and so worke the whole together, untill they shall be brought into a body. *Ung. album Rhasis.*

℞.*Rad.Ath.*℔i.*semi lini, fænugr.an.*℔ß.*Scillæ* ℥iii.*Olei com.*℔ii.*cer.*℔ß.*terebinth.gum.heder.galb.an.*℥i.*coloph.& resin.*℥iii. The rootes and seeds being bruised, are infused for three dayes in five pintes of water; boyle them untill three ounces be consumed, and then draw forth the Mucilage, and boyle it with the Oile, then adde Waxe cut small: these being taken from the fire, the *Galbanum* being dissolved with Vinegar, & mingled with the Turpentine, must be added together with the Gumme *Hederæ*, Colophony, and Rosin. *De Althæa.*

℞.*Ocul.populi arb.*℔iß.*fol.papaveris nigr.Mandrag. hyoscyami, lactucæ, sempervivi parvi & magni, violæ nigræ, solani, umbilici veneris, seu cymbalar. bardanæ, an.*℥ß. (*Cordus, Fernelius, & Nicolaus singulorum* ℥iii.*præscribunt*) *Adipis suilli recentis salis expertis,*℔ii.*vini boni,*℔i.*fiat Unguentum.* The Poplar buds and Violet leaves must be bruised and macerated in the *Axungia* for the space of two moneths, that is, untill the rest of the herbes be ready; for they cannot bee gathered before the Summer time, but the Poplar buds and Violets may be had in March. They must be bruised and mingled very well, and set in a warme place for eight dayes; then adde one pinte of strong Vinegar, and boyle them till it be consumed, which may bee perceived by casting a little of it into the fire, then straine it forth, and put up the Oyntment. *Ung. Populeum.*

℞.*Tereb.cer.alb.res.an.*℥xiv.*Opopanacis, floris, seu viridis æris (nam hic flos æris non propriè accipitur pro granulis, quæ scintillarum instar ab ære exiliunt dum a fabris ferrariis aqua tingitur: sed pro viridi æris usurpatur, cujus contra maligna ulcera notæ sunt vires, contra quæ omninò id Unguentum est comparatum) an.*℥ii.*ammon.*℥xiv.*aristol.lon. thuris masculi an.*℥vi.*myrrhæ & galbani an.*℥iii.*bdellii,* ℥vi. *Litharg.*℥ix.*olei,*℔ii.*fiat Unguentum.* The Litharge is to be mingled with two ounces of Oyle for the space of five houres, and with a gentle fire to be boyled untill it come to the consistence of Honey, and be alwayes stirring, lest it burne: being taken from the fire and warme, the Waxe and the Rosin, being dissolved, with the rest of the Oyle, must be added. Then put to it, when it is cooling, the Gummes dissolved in Vinegar, boyled and incorporated with the Turpentine. Then the *Aristolochia*, Myrrhe, and Frankinsense are to be mingled, and last of all the Verdigrease, being in fine powder, and sprinkled in: and so the unguent is made. *Ung. Apostolorum.*

℞.*Cortic.median.castan. cortic.median.querc.cortic.median. gland. mirtil.equef.cortic. fabar. acinor. uvar. sorbor. siccor. immatur. mespillor. immaturor. rad. cheliden. folior. prunor. silvest. an.*℥iß. *Aquæ plantaginis,*℔viii.*cer.nov.* ℥viiiß.*olei myrtillor.*℔iiß. Then these things which follow, being finely powdred, are to be sprinkled in. *Comitissæ.*

℞.*Pulveris corticis mediani castan. corticis mediani gland. cortic. median. arb. gland. id est, querc. gallar. an.*℥i.*Cineris ossi. cruris bovis, myrtill. acinor. uvar. sorbor. siccor. an.*℥ß.

Trochiscorum de carabe, ℥ii. *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 Plantaine water for the space of two houres, then straine it, and divide the liquor into nine parts, washing the Waxe, dissolved with the Oyle of Myrtils seven times; the liquor being all spent, and the Waxe and Oyle being melted, then insperge the powders, *Cruris bovis, ossium, cortic. median. querc. median. cortic. gland. castan. gallar. sorbor. mespil. seminum myrtil. acinor. uvar.* and at last the Trochisces *carab.* after this manner shall you make this Oyntment.

Ung. prostomachо. ℞. *Olei absinth. mastich. de spic. rosat. an.* ℥ β. *pulver. absinth. ros. major. menth. an.* ℥i. *Caryoph. cinam. mastich. galang. an.* ℥i. Powder those things which are to bee powdred, and with a sufficient quantity of Waxe make a soft oyntment, wherewith let the stomacke be annointed one houre before meales continually.

Ung. ad morsus rubiosos, ex li. 1. Gal. de comp. sec. genera. ℞. *Cer. alb* ℔ ii. *cerus. litharg. auri, an.* ℔ i. *myrrh. medull. cervi, an.* ℥ii. *thuris*, ℥i. *olei*, ℔ β. Boyle the Litharge in the oyle to a meane consistence, then adde to the Waxe & Cerusse, and when it will not sticke to the fingers, take it from the fire, and put in the *Medulla*, when it beginneth to coole, the *Myrrha* and *Thus*, being finely powdred, must be cast in by little and little, and the oyntment may be put up for use. The chops of the fundament, and remollient Pessaries are likewise made of it, and it is very good against the bitings of madde Dogges, and the punctures of nerves and tendons, keeping wounds so that they doe not agglutinate.

3. *De comp. med. sec. gen.* ℞. *Picis pinguis,* ℔ i. *Opopanacis in aceto forti, oleo liliorum, & veteri porci axungia cocti,* ℥iii. *fiat Unguentum. Oleum ex sinapi* is good against those bitings of mad beasts and punctured nerves: for it doth open wounds when they are cicatrized. Oyntments are used to overcome the contumacy of a stubborne evill by their firme and close sticking to, especially if there shall need no medicine to goe further into the body.

Chap. XXVII.

Of Cerats and Emplasters.

What a Cerat is. The differences. Such affinity there is in the composition of a Cerat and Emplaster, that oftentimes the one is taken for the other, as is usually done in Oyntments and Liniments. A Cerat is a composition more solide and hard than an oyntment, and softer than a plaster, having his name from Waxe, which taking away the fluidness of the oyle, bringeth him to his consistence. The differences of Cerats are taken some from the parts by which they are called, as *Ceratum stomachicum*: some from the effects, as *Ceratum refrigerans Galeni*: Others from the simple medicaments which are the chiefe in the composition, as, *Ceratum Santalinum.* The proper matter of Cerats is, new Waxe & Oyles, being appropriated to the griefe of these, or those parts; so that Liniments & Oyntments doe scarce differ from Cerats, if they admit of Waxe: for if oyntment of Roses should have Waxe added to it, it were no longer an oyntment, but a Cerat.

Cerats, which are made with Rosins, Gummes, and Metals, doe rather deserve the names of Emplasters than Cerats. And therefore *Ceratum ad Hernias*, we commonly call *Emplastrum contra Rupturam.* If that paine or inflammation do grieve any part, we make Cerats of plaster, dissolved with Oyle, lest that the more hard and heavie consistence of the Emplaster should be troublesome to the part, and hinder perspiration: and therefore laying aside the composition of Cerats, let us speake of Emplasters.

Emplasters. An Emplaster is a composition which is made up of all kinde of medicines, especially of fat and dry things, agreeing in one grosse, viscous, solid, and hard body sticking to the fingers. The differences of Emplasters are taken from those things, which the variety of oyntments are taken from. Of those things which goe into the composition of an Emplaster, some are only used for their quality and faculty, as

Wine,

Wine, Vinegar, Juices. Others to make the consistence, as Litharge (which, according to *Galen*, is the proper matter of Emplasters) Waxe, Oyle, and Rosin. Others be usefull for both, as, Gums, Metals, parts of beasts, Rosin; as Turpentine to digest, to cleanse, and dry. Of Emplasters, some are made by boyling, some are brought into a forme without boyling; those which bee made without fire, doe so dainly dry, nor are they viscous: they are made with meale and powder, with some juice, or with some humid matter mingled with them. But plasters of this kind may rather bee called hard oyntments, or cataplasmes: for plasters properly so called are boyled, some of them longer, some shorter, according to the nature of those things which make to the composition of the Emplaster: Therefore it will bee worth our labour to know what Emplasters doe aske more, or which lesse boyling. For roots, woods, leaves, stalkes, flowers, seeds, being dryed, and brought into powder, are to be added last, when the plaster is boyled as it were, and taken from the fire, lest the vertue of these things be lost. But if greene things are to be used in a composition, they are to be boyled in some 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 boyled with the other things, that nothing but the quality is to remaine with the mixture, as wee use to doe in *Empl. de Janua, seu Betonica, & Gratia Dei*. The same is to bee done with Mucilages, but that by their clammines se they do more resist the fire. But there doth much of oyle and honey remaine in plasters when they are made. Those juices which are hardned by concretion, as, *Aloes*, *Hypocystis*, *Acacia*, when they are used in the composition of a plaster, and be yet new, they must be macerated and dissolved in some proper liquor, and then they are to bee boyled to the consumption of that liquor. Gums, as, *Opopanax*, *Galbanum*, *Sagapenum*, *Ammoniacum*, must be dissolved in Wine, Vinegar, or *Aqua vitæ*, then strained and boyled to the consumption of the liquor, and then mixed with the rest of the plaster. And that they may have the exact quantity of Gums and Pitch, it is necessary that first they bee dissolved, strained, and boyled, because of the stickes and sordid matter which are mingled with them. You must have respect also to the liquor you use to dissolve them in; for Vinegar of the best Wine doth more powerfully penetrate, than that which is of weake and bad Wine.

Other Gums, which are drier, are to be powdred, and are to bee mingled with plasters last of all. Metals, as, *Æs ustum*, *Chalcitis*, *Magnes*, *Bolus Armenus*, *Sulphur*, *Auripigmentum*, and others, which may bee brought to powder, must bee mingled last, unlesse advice be given by long boyling 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 Waxe, and may not be boyled but very gently; but the fats are mingled whilst the other things are boyling. The Litharge is to be boyled with the oyle to a just consistence, if wee would have the plaster dry without biting. Ceruse may endure as long boyling, but then the plaster shall not bee white, neither will the Litharge of silver make a plaster with so good a colour as Litharge of gold. Moreover, this order must bee observed in boyling up of plasters: the Litharge must bee boyled to his consistence; juices or mucilages are to be boyled away, then adde the fats, then the dry Rosin, Waxe, Gums, Turpentine, and after them the powders: You shall know the plaster is boyled enough by his consistence, grosse, hard, glutinous, and sticking to the fingers, being cooled in the ayre, water, or upon a stone. Also you shall know it by his exact mixtion, if that all the things become one masse hard to be broken. Signes of a plaster perfectly boyled.

The quantity of things which are to be put into a plaster can hardly be described, but an artificiall conjecture may be given, by considering the medicaments, which make the plaster stiffe, and of a consistence, and the just hardnesse and softnesse they make being boyled. Waxe is not put into such plasters wherein is *Labdanum*; for that is in stead of Waxe. For if there shall be in the composition of a plaster some emplasticke medicaments, the Waxe shall be the lesse: Contrariwise, if they shall bee almost all liquid things, the Waxe shall be increased so much as shall be necessary for the consistence of the plaster. The quantity of the Waxe also must bee altered ac- The quantity of things to be put into plasters.

cording to the time, or the aire; therefore it is fit to leave this to the art and judgement of the Apothecarie. Emplasters are sometimes made of ointments by the addition of waxe, or dry rosine, or some other hard or solide matter. Some would that a handfull of medicaments poudred, should be mingled with one ounce, or an ounce and an halfe of oile, or some such liquor, but for this thing nothing can certainely bee determined: Onely in plasters described by the Antients there must bee great care had, wherein hee must bee very well versed, who will not erre in the describing the dose of them; and therefore wee will here give you the more common formes of plasters.

Empl. de Vigo with Mercury. R. *ol. chamæm. aneth. de spica, liliacei, an.* ℥ ii. *ol. de croco,* ℥ i. *pingued. porci,* ℔ i. *pingued. vitul.* ℔ ß. *euphorb.* ℥ v. *thuris,* ℥ x. *ol. lauri,* ℥ i ß. *ranas viv.* nu. vi. *pingued. viper. vel ejus loco human.* ℥ ii ß. *lumbricor. lotor. in vino,* ℥ iii ſß. *succi ebuli, enul. ana,* ℥ ii. *schænanthi, stæchados, matricar. an.* m ii. *vini oderiferi,* ℔ ii. *litharg. auri,* ℔ i. *terebinth. claræ,* ℥ ii. *styracis liquid.* ℥ i ſß. *argenti vivi extincti,* so much as the present occasion shall require, and the sicke shall be able to beare, and make up the plaister. To one pound of the plaster they doe commonly adde foure ounces of quick-silver, yet for the most part they doe encrease the dose, as they desire the plaster should be stronger: the wormes must be washed with faire water, and then with a little wine to cleanse them from their earthie filth, of which they are full, and so the frogs are to be washt and macerated in wine, and so boiled together to the consumption of a third part; then the squinanth must bee bruised, the feverfew and the stæchas cut small, and they being added, to be boiled to the consumption of one pint, and being boiled sufficiently, the decoction being cooled shall bee strained and kept; and the Letharge is to be infused for twelve houres in the oile of chamomile, dill, lillies, saffron, and the axungies above spoken of. Then boile them all with a gentle fire, by and by taking it from the fire, and adde one quart of the decoction above spoken of, then set it to the fire againe that the decoction may bee consumed, and then by degrees adde to the rest of the decoction: the oile of spike shall bee reserved unto the last, which may give the plaster a good smell. Then are added the juices of walwort and enula, which must bee boiled untill they bee wasted away. Afterwards it being taken from the fire, to the composition is added the frankincense and euphorbium, and white wax as much as shall suffice. When the whole masse shall coole, then at last is mingled the quick-silver extinct, turpentine, oile of bitter almonds, baies, spike, oline, styrax and axungia, being continually stirred, and it shall bee made up upon a stone into rolls. Unlesse the quick-silver be well extinguished, it will runne all into one place, and unlesse you tarrie untill the composition coole, it will vapour away in fume.

Ceratum æspi ex Philagrio. R. *croci,* ℥ ii. *bdellii, mastich. ammon. styrac. liquid. an.* ℥ ß. *ceræ alb.* ℔ ſß. *tereb.* ℥ vi. *medul. cruris vaccæ, adipis anserini, an.* ℥ i. *æsypi, vel si desit, axung. gallin.* ℥ ix. *olei nard. quantum satis ad magdaleones formandos, expressionis scillæ,* ℥ i ſß. *olibani, sevi vitul.* ℥ i. The *æsypus, sepum, adeps, medulla, cera,* are to bee dissolved together; when they coole, adde the *ammoniacum* dissolved in the decoction of fænugreeke and chamomile, halfe an ounce, and so much juice of squils, then put to the styrax and turpentine, stirring them continually; then adde the *bdellium, olibanum,* mastich, aloes, brought into fine powder, and when they are perfectly incorporated into a masse, let them bee made up with *oleum nardinum* into rolls.

De gratia Dei. R. *terebinth.* ℔ ſß. *resin.* ℔ i. *cer. alb.* ℥ iv. *mastich.* ℥ i. *fol. verben. betonic. pimpinel. an.* m i. The herbes being greene, the tops are to bee cut and bruised in a stone mortar, and boiled in red wine to the consumption of one third part. To the strained liquor adde waxe cut into small pieces, and being dissolved by the fire; the liquor being consumed put to the rosine, when it shall coole adde the Mastick powdred, working it with your hands, by which it may bee incorporated with the rest of the things.

De jamus seu de Betonica. R. *succi beton. plantag. apii, an.* ℔ i. *ceræ, picis, resin. tereb. an.* ℔ ſß. *fiat empl.* the juices are to bee mingled with the waxe being dissolved, and boiling them untill three parts be consumed, adde the rosine and pitch, which being dissolved and hot, must be strained, and then adde the Turpentine, and make up the plaster.

R.

℞. *croci, picis com.* (or rather *picis navalis*, because this emplaster is used to discusse and draw forth the matter which causeth the paine of the joints) *coloph. ceræ, an.* ℥ ii. *tereb. galb. ammon. thuris, myrrhæ, mastich. an.* ℥ v ß. The *cera, pix*, and *colophonia* are by little and little to bee dissolved, to which adde the gummes dissolved according to art, and mingled with the terebinth; and taking it from the fire adde the *thus, myrrha*, and at last the *crocus* in fine powder, and then make it up into rowles with oyle of wormes. *Emplastrum oxycroceum.*

℞. *ol. com.* ℔ ii. *ceruss. subtilis.* ℔ i. boile them together with a gentle fire, stirring them continually untill they come to the body of an emplaster: if you would have the plaster whiter, take but ℥ ix. of the oile. *De cerussa.*

℞. *lytharg. triti, acet. fortis. an.* ℔ ß. *ol. antiq.* ℔ i. *fiat emplastrum*: let the oile bee mingled with the litharge for the space of twelve houres, then boile them untill they come to a good consistence, putting in the vinegar by little and little; but you shall not take it from the fire untill the vinegar be quite wasted away. *Triphar macum, seu nigrum.*

℞. *ol. vet.* ℔ iii. *axung. vet. sine sale,* ℔ ii. *lytharg. trit.* ℔ iii. *vitriol.* ℥ iv. let the oyle bee mingled with the lytharge for the space of twelve houres, and boile them to a good consistence, then adde to the axungia, stirring them continually with a spatter made of the palme tree, reed, or willow, and being sufficiently boiled, take it from the fire, and adde the vitrioll in fine powder. *Diapalma, seu diachalcitios.*

℞. *picis naval. aloes, an.* ℥ iii. *lytharg. ceræ, coloph. galban. ammoniac. an.* ℥ ii. *visci querni,* ℥ vi. *gypsi ust. utriusque aristoloch. ana,* ℥ iv. *myrrhæ, thuris, an.* ℥ vi. *tereb.* ℥ ii. *pulveris vermium terrestrium, gallar. utriusq. consolid. bol. arm. an.* ℥ iv. *sang. humani,* ℔ i. *fiat emplast.* If you would have it of a very good consistence, you may add of the oile of myrtills or mastich, ℔ ß. you shall make it thus: Take the skinne of a Ramme cut in pieces, and boyle it in an hundred pints of water and vinegar untill it come to a glew or stiffe gelly, in which you shall dissolve the *visc. quer.* then adde the pitch and waxe broken into small pieces, and if you will you may adde the oile with them, afterwards the *galban.* and *ammoniac.* dissolved in vinegar, being mingled with the terebinth, may be added. Then adde the litharge, *gypsum, bol. aristoloch. consolida, vermes, & sang. human.* At last the myrrhe, *thus, colophon*, and *aloe*, stirring them continually; and that they may bee the better mingled, worke the plaster with a hot pestell in a mortar. *Contrarupticum.*

℞. *mucag. sem. lini, rad. alth. fænug. median. corticis ulmi, an.* ℥ iv. *olei liliacei, cham. aneth. an.* ℥ i ß. *ammon. opopanac. sagap. ana* ℥ ß. *croci,* ℥ ii. *ceræ nov.* ℔ ß. *tereb.* ℥ ß. *fiat empl. Fernelius* hath ℥ xx. of wax: the wax being cut small must be mingled with the oiles and the mucilages, stirring them continually with a wooden spatter till the liquor be consumed. Then the gummes dissolved and mingled with the terebinthina must be added, and last of all the saffron finely poudered. *De mucaginibus.*

℞. *ol. ros. myrtil. ung. populeon, ana,* ℥ iv. *pinguedinis gallin.* ℥ ii. *sebi arietis castrati, sepi vaccini, an.* ℥ vi. *pingued. porci,* ℥ x. *lytharg. auri, argenti, an.* ℥ iii. *ceruss.* ℥ iv. *minii,* ℥ iii. *tereb.* ℥ iv. *ceræ, q. s. fiat emplastrum vel ceratum molle.* The *lithargiros, ceruss*, and *minium* are to be brought into fine powder, severally being sprinkled with a little rose water, lest the finest of it should flye away; these being mingled with the oile of roses and myrtles, with a gentle fire may bee boiled untill they come to the consistence of hony; then adde the axungia's, and boile them till the whole grow black, after adde the sebum, and that being dissolved take it from the fire, and then adde the *unguentum populeon*, and some waxe if there be need, and so bring it to the forme of a plaster. *De minio.*

℞. *litharg. puri pul.* ℥ x ii. *ol. irin. chamæm. aneth. an.* ℥ viii. *mucag. sem. lini, fænug. rad. alth. ficuum ping. uvar. passar. succi treos, scillæ, æsipi, ichthyocollæ, an.* ℥ xii ß. *tereb.* ℥ iii. *res. pini, ceræ flavæ, an.* ℥ ii. *fiat emplastrum*: The litharge is to be mingled with the oyle 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 bee put in, which being consumed the juices must bee added and the ichthyocolla, and they being wasted too, then put to the waxe and rosine, then taking the whole from the fire, add the œsipus and terebinthina. *Diachylon magnum.*

We use plasters when wee would have the remedy sticke longer and firmer to the part *The use of plasters.*

part, and would not have the strength of the medicament to flye away or exhale too suddenly.

CHAP. XXVIII.

Of Cataplasmes and Pultisses.

The matter of cataplasmes.

CAtaplasmes are not much unlike to emplasters lesse properly so called, for they may be spred upon linnen cloaths and stoupes like them, and so applied to the grieved parts. They are composed of roots, leaves, fruits, flowers, seeds, herbes, juices, oiles, fats, marrowes, meales, rosines. Of these some must bee boiled, others crude. The boiled are made of herbes boiled tender, and so drawne through an haire searse, adding oiles and axungia's thereto. The crude are made of herbes beaten, or their juices mixed with oile and flower, or other powders appropriate to the part or disease, as the Physitian shall thinke fit. The quantity of medicines entring these compositions can scarce be defined, for that they must be varied as we would have the composition of a softer or harder body. Verily they ought to be more grosse and dense when as we desire to ripen any thing, but more soft and liquid when wee endeavour to discusse.

Their use.

We use cataplasmes to asswage paine, digest, discusse and resolve unnaturall tumors and flatulencies. They ought to be moderately hot and of subtle parts, so to attract and draw forth; yet their use is suspected the body being not yet purged, for thus they draw downe more matter into the affected part. Neither must wee use these when as the matter that is to be discussed is more grosse and earthy, for thus the subtler parts will be onely discussed, and the grosse remaine impact in the part unlesse your cataplasme be made of an equall mixture of things, not only discussing, but also emollient, as it is largely handled by *Galen*.

Lib. 2. ad glauc. ubi de schirrho.

An anodine cataplasme

A ripening cataplasme.

A discussing caplasme.

How pultisses differ from caplasmes.

This shall be largely illustrated by examples. As, ℞. *medul. panis*, ℔ ß. *decoquantur in lacte pingui, adde olei chamam.* ℥ ß. *axung. galin.* ℥ i. *fiat cataplasma.* Or, ℞. *rad. alth.* ℥ iii. *fol. malv. senecionis, an.* m i. *sem. lini, fænug. an.* ʒ ii. *ficus, ping.* nu. vi. *decoquantar in aqua, & per setaceum transmittantur, addendo olei lilior.* ℥ i. *far. hord.* ℥ ii. *axung. porcin.* ℥ i ß. *fiat cataplasma.* Or, ℞. *far. fab. & orob. an.* ℥ ii. *pulv. chamam. & melil. an.* ʒ iii. *ol. irin. & amygd. amar. an.* ℥ i. *succi rut.* ℥ ß. *fiat cataplasma.* Pultisses differ not from cataplasmes, but that they usually consist of meales boiled in oile, water, hony, or axungia. Pultisses for the ripening of tumours are made of the floure of barly, wheat, and milke, especially in the affects of the entralles; or else to dry and binde, of the meale of rice, lentiles, or *Orobus* with vinegar; or to cleanse, and they are made of hony, the floure of beanes and lupines, adding thereto some old oile, or any other oile of hot quality, and so make a discussing pultis. Also anodine pultisses may bee made with milke; as thus for example, ℞. *farin. triticea*, ℥ ii. *mica panis purissimi*, ℥ iii. *decoquantur in lacte, & fiat pulticula.* ℞. *farin. hordei & fab. an.* ℥ ii. *far. orob.* ℥ iii. *decoquantur in hydromelete, addendo mellis* quart. i. *olei amyg. amar.* ℥ ii. *fiat pulticula.* Wee use pultisses for the same purpose as wee doe cataplasmes, to the affects both of the internall and externall parts. Wee sometimes use them for the killing of wormes, and such are made of the meale of lupines boiled in vinegar, with an Oxes gall, or in a decoction of Worme-wood, and other such like bitter things.

A ripening cataplasme.

CHAP.

Chap. XXIX.

Of Fomentations.

A *Fotus* or fomentation is an evaporation or hot lotion, chiefly used to mollifie, relaxe and asswage paine, 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 mallowes, marsh-mallowes, and lillies. The seedes are of mallowes, marsh-mallowes, parsly, smallage, line, fenugreeke. Flowers are of chamomile, melilote, figges, raisons, and the like: all which are to bee boiled in wine, water, or lye, to the consumption of the third part or the halfe: as,

℞. *Rad.alth.& lilil.an.* ℥ii. *sem. lini, fœnug. cumin.an.* ℥iii. *flo.cham.melil.& aneth. an.* p.i. *summit.orig.* m.ß. *bulliant in æquis partibus aquæ & vini, aut in duabus partibus aquæ, & una vini, aut in Lixivio cineris sarmentorum, ad tertiæ partis consumptionem, fiat fotus.* In imitation hereof you may easily describe other fomentations, as occasion and necessity shall require.

Their use. We use fomentations before we apply cataplasmes, oyntments or plasters to the part, that so we may open the breathing places or pores of the skin, relaxe the parts, attenuate the humour, that thus the way may be the more open to the following medicines. The body being first purged, fomentations may be used to what parts you please. They may be applyed with a female spunge, for it is gentler and softer than the male; with felt, woollen clothes, or the like dipped in the warme decoction wrung out, and often renued; otherwise, you may fill a Swines bladder halfe full (especially in paines of the sides) of the decoction, or else a stone bottle, so to keep hot the longer; yet so, that the bottle bee wrapped in cotton, wooll, or the like soft thing, that so it may not by the hardnesse and roughnesse offend the part, according to *Hippocrates*. 2. De victu in acutis.

Chap. XXX.

Of Embrocations.

What an Embrocation is. AN *Embroche*, or Embrocation is a watering, when as from on high wee (as it were) showre downe some moisture upon any part. This kinde of remedy is chiefly used in the parts of the head, and it is used to the cotonall suture, for that the skull is more thin in that part, so that by the *spiracula* or breathing places of this suture, more open than those of the other sutures, the force of the medicine may more easily penetrate unto the *Meninges*, or membranes of the braine. The matter of Embrocations is roots, leaves, flowers, seeds, fruits, and other things, according to the intention and will of the Physitian. They are boyled in water and wine, to the halfe or third part. Embrocations may also be made of Lye or Brine against the cold and humide affects of the braine. Sometimes of oyle and vinegar, otherwhiles of oyle onely. ℞. *fol. plantag.& solan. an.* m.i. *sem. portul.& cucurb.an.* ℥ii. *myrtil.* ℥i. *flor. nymph.& ros.an.* p.ß. *fiat decoct. ad* lbi. *cum aceti* ℥ii. *si altè subeundum sit, ex qua irrigetur pars inflammata.* In affects of the braine, when we would repercusse, we often and with good successe use oyle of Roses, with a fourth part of vinegar.

Their use. We use Embrocations, that together with the ayre drawne into the body by the *Diastole* of the arteries, the subtler part of the humour may penetrate, and so coole the inflamed part: for the chiefe use of embrocations is in hot affects. Also wee use embrocations, when as for feare of an hæmorrhagie, or the flying asunder of a broken or dislocated member, we dare not loose the bandages wherewith the member is bound. For then wee drop downe some decoction or oyle from high upon the bandages;

bandages, that by theſe the force of the medicine may enter into the affected member.

Chap. XXXI.

Of Epithemes.

What an Epitheme is.

Epithema, or an Epitheme, is a compoſition uſed in the diſeaſes of the parts of the lower and middle belly, 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 leſſe penetration, as the condition of the hot or cold affect ſhall ſeeme to require; for if you deſire to heate, more wine muſt bee added, as in ſwouning by the clotting of bloud, by the corruption of ſeed, by drinking ſome cold poyſon: the contrary is to be done in a fainting by diſſipation of the ſpirits by feaveriſh heates, alſo vinegar may bee added. The matter of medicines proper to the entrailes is formerly deſcribed, yet we commonly uſe the *ſpecies* of electuaries, as the *ſpecies elect. triaſantali* the liver being affected, and Diamargariton in affects of the heart. The proportion of the juices or liquors to the powders, uſes to be this, to every pinte of them ℥i. or ℥i ß. of theſe, of wine or elſe of vinegar ℥i. You may gather this by the following example.

In the ſixth Chapter.

A cordiall Epitheme.

℞. *aqu. roſ. bugl. borag. an.* ℥iii. *ſucci ſcabioſ.* ℥ii. *pul. elect. diamarg. frigid.* ℥ii. *cort. citri ſicci* ℥i. *coral. raſ. ebor. an.* ʒß. *ſem. citri & card. ben. an.* ℥iiß. *croci & moſchi an. gra.* 5. *addendo vini albi* ℥ii. *fiat Epithema pro corde.*

Their uſe.

Epithemes are profitably applyed in hecticke and burning feavers to the liver, heart, and cheſt, if ſo be that they be rather applyed to the region of the lungs, than of the heart; for the heate of the lungs being by this meanes tempered, the drawn in ayre becomes leſſe hot in peſtilent and drying feavers. They are prepared of humecting, refrigerating, and cordiall things, ſo to temper the heate, and recreate the vitall faculty. Sometimes alſo we uſe Epithemes to ſtrengthen the heart, and drive there-hence venenate exhalations, lifted or raiſed up from any part which is gangrenate or ſphacelate. Some cotton, or the like, ſteeped or moiſtened with ſuch liquors and powders warmed, is now and then to be applyed to the affected entraile; this kinde of remedy, as alſo all other topick and particular medicines, ought not to be uſed, unleſſe you have firſt premiſed generall things.

Chap. XXXII.

Of potentiall Cauteries.

The uſe of potentiall cauteries.

That kinde of Pyroticke, which is termed a Potentiall Cautery, burnes, and cauſeth an eſchar. The uſe of theſe kindes of Cauteries is to make evacuation, derivation, revulſion, or attraction of the humours by thoſe parts whereto they are applyed. Wherefore they are often and with good ſucceſſe uſed in the punctures and bites of venemous beaſts, in a venenous, as alſo in a peſtilent *Bubo* and Carbuncle, unleſſe the inflammation be great: for the fire doth not only open the part, but alſo retunds the force of the poyſon, cals forth and plentifully evacuates the conjunct matter. Alſo they are good in phlegmaticke and contumacious tumours; for by their heate they take away the force and endeavours of our weake heate. Alſo they are profitably applyed to ſtanch bleeding, to eate or waſte the ſuperfluous fleſh of ulcers and wens, to bring downe the callous lips of ulcers, and other things too long here to inſiſt upon.

The matter of them.

The materials of theſe Cauteries are Oake aſhes, Pot aſhes, the aſhes of Tartar, of Tithymals or ſpurges, the Figge-tree, the ſtalkes of Coleworts and Beanes, cuttings of

of Vines, as also *sal ammoniacum, alkali, axungia vitri, sal nitrum*, Romane Vitrioll, and the like; for of these things there is made a salt, which by its heate is causticke and escharoticke, like to an hot iron and burning coale: Therefore it violently looses the continuity by eating into the skinne, together with the flesh there-under. I have thought good here to give you divers formes of them.

The formes of them.

Take of unquencht Lime extinguished in a bowle of Barbers Lye three pounds: When the Lye is settled, let it be strained, and into the straining put of *Axungia vitri*, or Sandiver, calcined Argol, of each two pounds, of *Sal nitrum & ammoniacum*, of each foure ounces, these things must be beaten into a grosse powder, then must they be boyled over the fire, and after the boyling let them remaine in the Lye for foure and twenty houres space, being often stirred about, and then strained through a thicke and double linnen cloth, lest any of the earthy drosse get thorow together with the liquor. This strained liquor, which is as cleare as water, they call *Capitellum*, and they put it in a brasen Bason, such as Barbers use, and so set it upon the fire, and as soone as it boyles, they keep it with continuall stirring, lest the salt should adhere to the Bason; the *Capitellum* being halfe boyled away, they put in two ounces of powdred vitrioll, so to hasten the falling of the eschar, and so they keep the bason over the fire untill all the liquor be almost wasted away. Then they cut into peeces the salt or that earthy matter, which remains after the boyling away of the *Capitellum*, & with a knife or hot iron spatula forme them into cauteries of such figure and magnitude as they thinke fitting, and so they lay them up, or keep them for use in a violl or glasse closly stopped, that the ayre get not in: Or,

Take a bundle or sufficient quantity of Beane stalkes or huskes, of Colewort stalks two little bundles, of cuttings of Vines foure bundles, burn them all to ashes, which put into a vessell of river water, so let them infuse for a dayes space, being stirred ever now and then; to this adde two pounds of unquencht lime, of *Axungia vitri* halfe a pound, of calcined Tartar two pounds, of *Sal niter* foure ounces, infuse all these, being made into powder, in the foresaid Lye for two or three dayes space, often stirring it, then straine the *Capitellum* or liquor through a thicke cloth untill it become cleare. 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 vitrioll be added, when the moisture is sufficiently evaporated, make cauteries of that which remaines, after the formerly mentioned manner.

Take of the ashes of sound, knotty, old Oake as much as you please, make thereof a Lye; powre this Lye againe upon other fresh ashes of the same wood, let this bee done three or foure times, then quench some lime in this Lye, & 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 becomes fiery and hot to the fourth degree: Verily, I have made cauteries of Oake ashes only, which have wrought quickly and powerfully. The *Capitellum* or Lye is thought sufficiently strong, if that an Egge will swimme therein without sinking.

The signe of good *Capitellum*.

Or, Take of the ashes of Bean stalkes three pounds, of unquencht lime, Argoll, of the ashes of Oake wood, being all well burnt, of each two pounds. Let them for two dayes space be infused in a vessell full of Lye made of the ashes of Oake wood, and be often stirred up and downe. Let this Lye then be put into another vessell, having many holes in the bottome thereof, covered with strums or straw pipes, that the *Capitellum* flowing through these strait passages may become more cleare. Let it be put twice or thrice upon the ashes, that so it may the better extract the heate and causticke quality of the ashes. Then putting it into a Barbers bason, set it over the fire, and when it shall begin to grow thicke, the fire must be increased, and cauteries made of this concreating matter.

The following cauteries are the best that ever I made tryall of, as those that applyed to the arme in the bigneste of a Pease, in the space of halfe an houre without paine, especially if the part of it selfe be painlesse and free from inflammation, eate into the skinne and flesh even to the bone, and make an ulcer of the bigneste of ones fingers end, and they leave an eschar so moyst and humide, that within foure or five dayes

The faculty of the silken Cautery.

dayes ſpace it will fall away of it ſelfe without any ſcarification. I have thought good to call theſe cauteries Silken or Velvet ones, not onely for that they are like Silke, gentle and without paine, but chiefly becauſe I obtained the deſcription of them of a certaine Chymiſt, who kept it as a great ſecret, for ſome Velvet and much entreaty: Their deſcription is this.

The cauſe of the name.

Their deſcription.

Take of the aſhes of Beane ſtalkes, of the aſhes of Oake wood well burnt, of each three pounds, let them bee infuſed in a pretty quantity of river water, and bee often ſtirred up and down, then adde thereto of unquencht lime foure pounds, which being quencht, ſtirre it now and then together for two daies ſpace, that the *Capitellum* may become the ſtronger, then ſtraine it through a thick & ſtrong linnen cloth, & thus ſtrained, put it three or foure times upon the aſhes, that ſo it may draw more of the cauſticke faculties from them, then boyle it in a Barbers baſon, or elſe an earthen one well leaded, upon a good Char-cole fire, untill it become thicke. But a great part of the ſecret or art conſiſts in the manner and limit of this boyling; for this *Capitellum* becomming thicke and concreating into ſalt, muſt not bee kept ſo long upon the fire, untill all the moyſture ſhall bee vaniſhed and ſpent by the heate thereof: for thus alſo the force of the foreſaid medicines, which alſo conſiſts in a ſpirituous ſubſtance, will bee much diſſipated and weakened; therefore before it be come to extreme drineſſe, it ſhall be taken off from the fire, to wit, when as yet there ſhall ſome thicke moyſture remaine, which may not hinder the cauteries from being made up into a forme. The made up cauteries ſhall bee put up into a glaſſe moſt cloſely luted up or ſtopped, that the ayre may not diſſolve them, and ſo they ſhall be laid up and kept in a dry place. Now, becauſe the powder of Mercury is neere to cauteries in the effects and faculty thereof, which therefore is termed *Pulvis Angelicus* for the excellency; therefore I have thought good to give you the deſcription thereof, which is thus:

The deſcription of Mercury, or Angelicall powder.

℞. *Auripigmenti citrini, floris æris, an.* ℥ii. *ſalis nitri,* ℔ i ß. *alumin. rochæ,* ℔ii. *vitrioli rom.* ℔iii. 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 be made firſt with a gentle fire, then increaſed by little and little, ſo that the receiver may waxe a little reddiſh.

℞. *Argenti vivi,* ℔ ß. *aquæ fortis,* ℔ i. *ponantur in phiala, & fiat pulvis, ut ſequitur.*

Take a large earthen pot, whereinto put the violl or bolt head wherein the *Argentum vivum* and *Aqua fortis* are contained, ſetting it in aſhes up to the necke thereof, then ſet the pot over a fornace, or upon hot coales, ſo that it may boyle and evapourate away the *Aqua fortis:* neither in the *interim* will the glaſſe bee in any danger of breaking, when all the water is vaniſhed away, which you may know is done when as it leaves ſmoaking; ſuffer it to become cold, then take it forth of the aſhes, and you ſhall finde calcined Mercury in the bottome, of the colour of red Lead, ſeparated from the white, yellow or blacke excrement; for the white that concretes in the toppe is called Sublimate, which if it ſhould remaine with the calcined Mercury, would make it more painfull in the operation. Wherefore ſeparating this calcined Mercury, you ſhall make it into powder, and put it in a braſſe veſſell upon ſome coales, ſtirring or turning it with a *ſpatula* for the ſpace of an houre or two: for thus it will loſe a great part of the acrimony and biting, whence it will become leſſe painfull in the operation.

Chap.

Chap. XXXIII.

Of Vesicatories.

Vesicatorie and rubrifying ointments, cataplasmes, or plasters are made of acride medicines, which have power to draw forth to the superficies of the body such humours as lye deepe, by exulcerating the skin and causing blisters. Their matter is the same with septicke medicines, as *sinapi, anacardus, cantharides, euphorb. radices scillæ, bryon.* and the like, which with hony, turpentine, leaven, gum, or rosine, may be made into cataplasmes, ointments, or plasters; therefore the composure of vesicatories, or rather their consistence differs not from that of hard or soft unguents. Therefore I will give you one example or description of them, which is thus. What vesicatorie and rubrifiing medicines are.

℞. *cantharid. euphorbii, sinapi, an.* ℥ ß. *mellis anacardini,* ℥ j. *modico aceti, & fermenti quod sit satis excipiantur, & fiat vesicatorium.* Some of the antients thinke it better to make up these medicines with water rather than with vinegar, because experience teacheth that vinegar abates the strength of mustard. Wee use this kinde of medicine in long diseases, when as wee cannot any thing prevaile with other remedies; especially in the head-ache, megrime, epilepsie, *sciatica,* gout, the bites and punctures of venemous creatures, pestilent carbuncles, and other inveterate and contumacious diseases. The description of a vesicatory. Their use.

Also we use them when as wee would restore life and strength to a dead or decayed part, for thus they are drawne backe together with the heat; for which purpose wee must make choice of more gentle vesicatories, as such which onely rubrifie, so that the part may onely become red, and not be burnt: the part must first be strongly rubbed, that the decaied 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 body.

Chap. XXXIV.

of Collyria.

Collyrium is a medicine proper for the eyes, made of powder finely levigated and ground into the forme of *Alcohol*, as the Arabians and our Alchymists terme it: yet the word in a more generall acception is used for any liquide medicine, made with liquors and powders, and applied or used to any part. Wherefore *collyria* are of three kindes, some are moist or liquid, which are properly called *collyria*; others dry, which are of the same consistence with Trochisces; others have the consistence of hony, or a liniment. The liquid serve for the greater and lesser corners of the eyes; those of the consistence of hony are meet for the apple of the eye; but the dry are to be made into powder, and so blowne into the eyes: also sometimes they are to be dissolved in some juice, or other convenient liquor, that so they may be made into moist *collyria*. What a *collyrium* is. The differences of them. Their use.

Therefore *collyria* have divers uses, and are applied to severall parts according to the intention and counsell of the Physitian: for liquid *collyria* put into the corners of the eyes doe more readily mitigate the heate of their inflammation, by reason they enter more easily by the tenuity of their substance, such things as have a more firme consistence adhere more tenaciously, and worke more certainely. Moist *collyria* are made of juices, mucilages, waters of herbes, flowers, seeds, metalline bodies, galles, and other such like medicines, which are repercussives, resolvers, detergents, anodines, and the like, according to the nature of the present disease. Their matter.

Sometimes they are made of juices and distilled waters onely, otherwhiles powders

ders, or dry *collyria* made into powder, are mixed with them, together with the white of an egge. Powders are prescribed to ʒ ii. and liquors to ℥ iv. or ℥ v. in medicines for the eyes; but for other parts, as when it is to be injected into the urenary passage, they may be prescribed to the quantity of a pinte. Dry *Collyria* are made of powders exceeding finely beaten or ground, and incorporated with some juice, whence it is that they differ little from Trochisces. Wherefore the *collyrium album Rhasis* is now usually termed a Trochisce, and kept with them. Cathæreticke powders are not applied in the forme of a moist *collyrium*, but in the forme of a liniment, that is, incorporated with fat or oile. All these things shall be made more plaine by the following examples,

A repercussive *collyrium*. An anodine. A detergent.

℞. *aq. plant. & rosar. an.* ℥ ii. *album. ovi unum, bene agitatum, misce, fiat collyrium.* ℞. *aq. rosar. & viol. an.* ℥ iii. *trochis. alb. Rhas. cum opio,* ʒ ii. *fiat collyrium.* Or, ℞. *decoct. fænug.* ℥ iii. *mucag. sem. lini,* ℥ ii. *sacchar. cand.* ʒ i. *croci,* ϑ i. *fiat collyr.* ℞. *thuris, myrrh. an.* ϑ ii. *tut. prepar. & antimon. lot. an.* ʒ ii. *cum succo chelidon. fiat collyrium in umbra siccand.* ℞. *fellis perdic. aut lepor.* ʒ ß. *succi fœnicul.* ʒ i. *sacchar. cand.* ʒ ii. *syrup. ros. excipiantur, fiat collyrium.*

Wee use *collyria* in wounds, ulcers, fistula's, suffusions, inflammations, and other diseases of the eyes.

Chap. XXXV.

Of Errhines and Sternutatories.

What an errhine is.

Their differences.

Errhines are medicines appointed to bee put into the nose to purge the braine of its excrementitious humours by the nostrills, or to deterge such excrements as are therein, by reason of an *ozæna, polypus*, or the like disease. Errhines are either liquid or dry, 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 herbes, as beets, coleworts, marjoram, pimpernell, hyssope or balme, or of their decoctions taken alone, or mixed with wine, or syrupe, as *oxymel scilliticum*, syrupe of hyssope, roses, or *mel anthosatum*: sometimes powders are mixed with these liquors, as of pepper, *euphorbium*, pellitory of Spaine, hore-hound, *nigella romana, castoreum*, myrrhe, white ellebore, sow-bread, and other like, in a small quantity, to wit, to ʒ i. little more or lesse according to the vehemency of the disease. Wee will make this more plaine by examples.

The forme of one.

℞. *succi betæ, majoran, brassic. an.* ℥ i. *depurentur, & modice bulliant cum vini albi,* ℥ ii. *oxymelit. scillit.* ℥ ß. *fiat errhinum.* When as you desire to attract more powerfully from the braine, you may dissolve in errhines some purging medicines, as agaricke, *diaphœnicon, senna, carthamus*, and the like: hence doth arise the distinction of errhines into such as are meet to purge phlegme, choler, and melancholy. This following example is set downe by *Rondeletius*.

An errhine purging phlegme.

℞. *rad. pyreth. irid. an.* ʒ i. *puleg. calam. origon. an.* m i. *agar. trochisc.* ʒ iii. *flor. anthos & stœchad. an.* p i. *fiat decoctionis colatur,* ℔ i. *dissolve mellis anthosati & scillit. an.* ʒ iii. *fiat caputpurgium.* But it is better to this purpose to make use of purging simples, as agarick, turbeth, coloquintida, and the like, than of compositions, as *diaphœnicon*, for these make the decoction more thick, and lesse fit to enter the passages of the nostrils, and the sieve-like bones, but apt rather there to cause obstruction, and intercept the freedome of respiration.

An errhine with powders.

℞. *succi beta,* ʒ i. *aq. salv. & beton. an.* ʒ ii ß. *pul. castor.* ϑ ß. *piper. & pyreth. an.* ϑ i. *fiat caputpurgium.* Dry errhines that are termed sternutatories, for that they cause sneesing, are made of powders onely, to which purpose the last mentioned things are used; as also aromaticke things in a small quantity, as to ʒ ii. at the most: as,

A sternutatory.

℞. *major. nigel. caryoph. Zinzib. an.* ϑ i. *acor. pyreth. & panis porcin. an.* ϑ ß. *euphorb.* ϑ i. *terantur diligenter, & in nares mittantur, aut insufflentur.* Errhines of the consistence of emplasters, by the Latines vulgarly called *Nasalia*, are made of the described powders or gums dissolved in the juice of some of the forementioned herbs, incorporated

incorporated with turpentine and waxe, that so they may the better be made into a pyramidall forme to bee put into the nostrills. As, ℞. *majoran. salv. nigel.* ℈ ii. *pip. alb. caryoph. galang. an.* ℈ i. *pyreth. euphorb. an.* ℥ ß. *panis porcin. ellebor. alb. an.* ℈ i. *terantur, & in pulverem redigantur.* And then with turpentine and waxe as much as shall be sufficient, make them up into *Nasalia* of a pyramidall or taper fashion. Wee use errhines in inveterate diseases of the braine, as the epilepsie, feare of blindnesse, an apoplexie, lethargie, convulsion, the lost sense of smelling: yet we first use generall remedies and evacuations, lest by sneesing and the like concussion of the brain for the exclusion of that which is offensive thereto, there should be made a greater attraction of impurity from the subjacent parts. Liquid things must be drawn up into the nostrils warme out of the palme of the hand, to the quantity of ℥ ß. the mouth being in the interim filled with water, lest the attracted liquor should fall upon the pallat, and so upon the lungs: dry errhines are to be blown into the nose with a pipe or quill: solid ones must be fastned to a thred, that they may be drawn forth as need requires, when as they are put up into the nostrils. The morning (the belly being empty) is the fittest time for the use of errhines. If by their use the nose shall be troubled with an itching, the paine thereof must bee mitigated with womans milke, or oyle of violets. The use of attractive errhines is hurtfull to such as are troubled with diseases of the eyes, or ulcers in the nose, as it oft times falls out in the *Lues venerea*: wherefore in this case it will bee best to use Apophlegmatismes, which may divert the matter from the nose.

The matter of solid errhines.

Their use.

The manner of using them.

To whom they are hurtfull.

Chap. XXXVI.

Of Apophlegmatismes, or Masticatories.

Apophlegmatismoi in Greeke, and *Masticatoria* in Latine, are medicines which kept or held in the mouth and somewhat chawed, doe draw by the mouth forth of the braine excrementitious humours, especially phlegme: now they are chiefly made foure manner of waies; the first is when as the medicines are received in hony or waxe, 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 cloath, so to be held in the mouth. The third is when as a decoction of acride medicines is kept in the mouth for a pretty space. The fourth is when as some acride medicine, or otherwise drawing flegme, as pellitory of Spaine, mastich, and the like, is taken of it selfe to the quantity of a hasell nut, and so chawed in the mouth for some space. The matter of masticatories is of the kinde of acrid medicines, as of pepper, mustard, hyssope, ginger, pellitory of Spaine, and the like; amongst which you must make choice chiefly of such as are not troublesome by any ingrate taste, that so they may be the longer kept in the mouth with the lesse offence & loathing. Yet masticatories are sometimes made of harsh or acerbe medicines, as of berberies, the stones of prunes or cherries, which held for some space in the mouth, draw no lesse store of flegme than acrid things; for the very motion and rowling them up and down the mouth attracts, because it heats, compresses, & expresses: the quantity of the medicine ought to bee from ℥ ß. to ℥ i ß.: as, ℞. *pyreth. staphisag. an.* ℥ i ß. *mastich.* ℥ ß. *pulverentur & involventur nodulis in masticatoria.* Or, ℞. *Zinzib. sinap. an.* ℥ i. *euphorb.* ℈ ii. *piper.* ℥ ß. *excipiantur melle, & fiant pastilli pro masticatoriis.* ℞. *hyssop. thym. origan. salv. an.* p i. boile them in water to wash the mouth withall. Or, ℞. *Zinzib. caryoph. an.* ℥ i. *pyreth. pip. an.* ℥ ß. *staphisagr.* ℥ ii. *mastiches,* ℥ ß. *excipiantur, fiant pastilli pro masticatoriis.* We use masticatories in old diseases of the braine, dimnesse of the sight, deafnesse, pustles of the head and face, and sometimes to divert the excrements which runne to the nose being ulcerated.

What an apophlegmatism is.

The differences

The use of masticatories.

Masticatories are very hurtfull to such as have their mouths or throats ulcerated, as also to them whose lungs are subject to inflammations, destillations and ulcers; for then errhines are more profitable to derive the matter of the disease by the nostrils.

To whom hurtfull.

For though the humour drawn from the braine into the mouth by the meanes of the maſticatory, may bee thence caſt forth by coughing and ſpitting, yet in the interim nature will bee ſo inured to that paſſage for the humour, ſo that it will run that way when as wee ſleepe, and fall downe upon the parts thereunder, weake either by nature or by accident.

The time fitteſt for the uſe of Apophlegmatiſmes is the morning, the body being firſt purged: if any ingratefull 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 barly.

Chap. XXXVII.

Of Gargariſmes.

What a gargle is.

A Gargle or gargariſme is a liquid compoſition fit for to waſh the mouth and all the parts thereof, to hinder defluxion and inflammation, to heale the ulcers which are in thoſe parts, to aſſwage paine. Their compoſition is twofold, the firſt is of a decoction of roots, leaves, flowers, fruits, and ſeeds fit for the diſeaſe; now the decoction is to be made either in faire water alone, or with the admixture of white or red wine, or in the decoction of liquorice and barly, or of pectorall things, as the intention of the Phyſitian is to repell, coole, or hinder inflammation, as in the tooth-ache cauſed by matter which is yet in motion; to diſcuſſe, as in the tooth-ache already at the height; or to cleanſe, as in the ulcers of the mouth; or to dry and binde, as when it is fit to heale the ulcers already cleanſed.

The differences thereof.

Their matter.

The other way of making of gargariſmes is without decoction, which is, when as wee make them either of diſtilled waters onely, or by mixing them with ſyrupes, mucilages, milke, the whey of Goats milke carefully ſtrained. There are mixed ſometimes with a decoction, diſtilled waters and mucilages, *mel roſatum, oxymel ſimplex, diamoron, dianucum, hiera picra, oxyſacchara, ſyrup. de roſis ſiccis, ſyrupus acetoſus*, and other things, as the preſent caſe ſhall ſeem to require, as alome, *balauſtia*, myrrhe, *olibanum*, ginger, pepper, cinamon, dry roſes, and many ſuch things, even ſo that oft times there enter into gargles ſuch medicines as have force to draw from the braine, as pellitory of Spaine, carthamus, turbith, and ſuch things as have no bitterneſſe, which is the cauſe that neither agrick nor coloquintida ought to enter into gargariſmes.

The quantity of liquor for a gargariſme is commonly from ℔ ß. to ℔ i. mixe therewith ſome ʒ ii. of ſyrupes, but put in powders ſparingly, as ſome ʒ iii. Alome may ſometimes bee put in to ʒ vi. let mucilages be extracted out of ʒ ii. of ſeeds: let theſe ſerve for ſome examples.

An aſtringent gargle.

℞. *plant. polygon. oxalidis, an.* m i. *roſar. rub.* p ß. *hordei,* p i. *fiat decoctio ad* ʒ viii. *in qua diſſolve ſyrupi myrtillorum,* ʒ vi. *dianucum,* ʒ ß. *fiat gargariſma.* Or, ℞. *cham. melil. aneth. an.* p i. *roſ. rub.* p ß. *paſſul. mund. & ficuum, an.* p iii. *decoquantur in æquis partibus vini & aquæ, ad* ʒ vi. *addendo mucag. ſem. lini, & fænugr. an.* ʒ ii. *fiat gargariſma.*

An anodine gargle.

A deterſive.

Or elſe, ℞. *aq. plantag. liguſt. abſinth. an* ʒ ii. *mellis roſati colati,* ʒ vi. *ſyrupi roſar. ſiccar. & de abſinth. an.* ʒ vi. *fiat gargariſma.*

We uſe gargles in the morning faſting after generall purgations; they are ſometimes taken or uſed cold, when as a maligne, acride, and thinne humour fals downe, ſometimes warme, but let theſe things bee done according as the Phyſitian ſhall adviſe.

Chap.

Chap. XXXVIII.

Of Dentifrices.

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 some are dry, othersome moist: of the dry some have the forme of opiats, others of pouders grossely beaten, but the moist are commonly made by distillation: the matter of dry dentifrices is taken from detergent and drying things, such as are corall white and red, harts-horne, scuttle bones, alome, crystall, pumice, sal nitre, myrrhe, frankincense, *balaustia*, acornes, all sorts of shels of fishes: all these are to bee made into powder either by burning, or without it, for scuttle bones burnt cast forth a stinking and unpleasant smell. To these for smell sake are added certaine aromaticke things, as cinamon, cloves, nutmegs, and the like: such powders if mixed with some syrupe, as *oxymel scilliticum*, or with mucilage of gum arabicke and tragacanth, will become opiates, to be made into a pyramidall forme of some fingers length, round or square, and sharpe pointed, that dryed they may serve for dentifrices.

What a dentifrice is.

The differences.

The matter whereof they consist.

Sometimes emollient roots are boiled with salt or alome, that dryed againe they may be used for dentrifices: moist ones are made of drying herbs, distilled together with drying and astringent things.

All the differences shall appeare by the following examples. ℞. *lapidis spong. pumicis, & cornu cervi ust. an.* ʒ ii. *coral. rub. & cryst al. an.* ʒ i. *alum. & sal. ust. an.* ʒ i ß. *cinamom. & caryoph. rosar. rub. pulver. an.* ϑ ii. *fiat pulvis pro dentifricio.* Or, ℞. *ossis sepia,* ʒ ß. *mastiches, coralli rubri usti, an.* ʒ ii. *cornu cervi usti,* ʒ i ß. *aluminis, carbonis, rorismarini, an.* ʒ i. *cinamomi,* ʒ ii. *fiat pulvis pro dentifricio.* Or, ℞. *ossis sepiæ, alum. & salis usti, an.* ʒ i. *crystalli, glandium, myrrhæ, thuris, an.* ϑ ii. *corticis granatorum, macis, cinamomi, an.* ϑ i. *fiat pulvis qui excipiatur mucagine gummi tragacanth. & formentur pyramides longæ, siccand. pro dentifricio.* Or, ℞. *rad. malvæ junioris, & bismalvæ, an.* ℥ ii. *coquantur in aqua salsa aut aluminosa, deinde siccentur in furno pro dentifricio.* ℞. *salis,* ℥ vi. *alumin.* ʒ iii. *thuris, mastiches, sang. dracon. an.* ʒ ß. *aquæ ros.* ℥ vi. *distillentur in alembico vitreo pro dentifricio.*

A powder for a Dentifrice.

Dentrifices are not onely good to polish, cleanse, and strengthen the teeth; but wee also oft times use them for the tooth-ache, the diseases of the mouth, and ulcers of the gummes. You may use them in the morning, before and after meat.

Their use.

The antients, of lentiske wood made themselves tooth-picks, and such devices to strengthen their loose teeth, which also at this day is in use with those of *Languedock*, with whom this wood is plentifull, so that it may be brought thence for the use of Noblemen and Gentlemen; myrrhe may also serve for this same use, and any other astringent wood.

Our people commonly use the stalks of fennell, yet have they no faculty to fasten the teeth, but their smell is gratefull.

Chap. XXXIX.

Of Bagges or Quilts.

DHysitians terme a bagge or *sacculus*, the composition or mixture of dry and powdred medicines put in a bagge, therefore it is as it were a dry fomentation. Their differences are not drawne from any other thing than from the variety of the parts whereto they are applied: such as are for the head must be made into the fashion of a cap, those which bee for the whole ventricle must be made into the forme of a citherne; those for the spleene, like to an oxes tongue: lastly, such as are for the li-

What a bag or quilt is.

Their differences.

ver, heart and other parts must be made according to the figure of those parts. Their matter is usually taken from whole seeds fryed in a frying-pan, or made into powder; there are sometimes added roots, flowers, fruits, rinds, cordiall powders, and other dry medicines, which may bee easily brought into powder, and conduce to the grieved parts; the quantity is different according to the magnitude of the affected parts; In the books of practisers it is commonly found prescribed from ℥iii. to ℥viß. sometimes flowers, and dry herbs are prescribed by handfulls and pugils: and here there is need of an artificiall conjecture to conceive and appoint a fit quantity of powders: but let us give you some examples.

A quilt for the stomacke.

℞. *rosar. rub.* p i. *mastich.* ℥ ß. *coralli rub.* ℥ iii. *sem. anisi, & fanic. an.* ℥ ii. *nucis moschat.* ℥ i. *summitat. absinth. & menth. an.* m i. *tritis omnibus, fiat sacculus consutus & compunctus pro ventriculo.*

A cap for a cold head.

℞. *furfuris macri,* p i. *milii,* ℥ i. *salis,* ℥ ii. *rosar. rub. flor. rorismarini, stachados, caryoph. an.* m ii. *fol. beton. & salv. an.* ℥ iii. *tritis omnibus fiat cucupha, intersuta & calefacta fumo thuris, & sandaracæ exustorum, capiti apponatur.*

A quilt for the heart.

℞. *flor. borag. bugloss. & violar. an.* p ii. *cortic. citri sicci, macis, ligni aloes, rasuræ eboris, an.* ℥ i. *ossis de corde cervi, croci, an.* ℈ ii. *fol. melis.* m ß. *pulveris diambræ,* ℥ ß. *contritis omnibus fiat sacculus è serico pro corde, irrorandus aqua scabiosæ.*

Their use.

Wee use bagges for the strengthening of the noble parts, as the braine, heart, liver, as also for those lesse noble, as the stomacke, spleene, breast; lastly for discussing flatulencies in what part soever, as in the collicke, and in a bastard pleurisie proceeding from flatulencies. The powders must bee strawed upon carded bombast, that they runne not together, and then they must bee sewed up or quilted in a bagge of linnen or taffaty.

Wee often times moisten these bagges in wine or distilled water, and sometimes not with the substance thereof, but by the vapour only of such liquors put into a hot dish: thus oft times the bagges are heated by the vapour onely, and oft times at the fire in a dish by often turning them. These, if intended for the heart, ought to bee of crimson or skarlet silke, because the skarlet berry, called by the Arabians *Kermes*, is said to refresh and recreate the heart. Certainly they must alwaies be made of some fine thing, whether it be linnen or silke.

Chap. XL.

Of Fumigations.

What a fumigation is.

Suffitus or fumigation is an evaporation of medicines having some viscous and fatty moisture: of fumigations some are dry, othersome moist, the dry have the form of trochisces or pills: their matter ought to be fatty and viscous, so that it may send forth a smoake by being burnt: such are *ladanum*, myrrhe, mastick, pitch, waxe, rosine, turpentine, *castoreum*, *styrax*, frankincense, *olibanum*, and other gummes, which may bee mixed with convenient powders: for they yeeld them a body and firme consistence; the fumigations that are made of powders only, yeeld neither so strong nor long a fume.

Their differences and matter.

A cephalicke fume.

The quantity of the powders must bee from ℥ ß. to ℥ i ß. but the gummes to ℥ ii. as, ℞. *sandaracæ, mastiches, rosar. an.* ℥ i. *benioini, galang. an.* ℥ iii. *terebinthina excipiantur, & fiant trochisci, quibus incensis suffumigentur tegumenta capitis.* ℞. *marcasitæ,* ℥ ii. *bdellii, myrrhæ, styracis, an.* ℥ i ß. *ceræ flavæ, & terebinth. quod sufficit, fiant formulæ pro suffumigio.* ℞. *cinnabaris,* ℥ ii. *styracis & benzoini, an.* ℥ ii. *cum terebinth. fiant trochisci pro suffumigio per embotum.*

For the hardnesse of the sinewes.

For the relicks of the *Lues Venerea.*

Wee use fumigations in great obstructions of the braine, ulcers of the lungs, the *asthma*, an old cough, paines of the sides, wombe, and the diseases of some other parts; sometimes the whole body is fumigated, as in the cure of the *Lues venerea* to procure sweat; sometimes onely some one part whereto some reliques of the *Lues* adheres;

adheres; such fumigations are made of *cinnabaris*, wherein there is much *hydrargyrum*. The fume must be received by a funnell, that so it may not bee dispersed, but may all be carried unto the part affected, as is usually done in the affects of the womb and eares. The manner of using them.

In fumigations for the braine and chest, the vapour would be received with open mouth; which thence may passe by the weazon into the chest, by the palate and nostrils into the braine: but in the interim let the head bee vailed, that none of the vapour may flye away. Moist fumigations are made somewhiles of the decoction of herbes, otherwhiles of some one simple medicine boiled in oile, sometimes a hot fire-stone is quencht in vinegar, wine, *aqua vitæ*, or the like liquor, so to raise a humide vapour. We oft times use this kinde of fumigation in overcomming scirrhous affects, when as we would cut, discusse, penetrate deep, and dry: take this as an example thereof.

℞. *laterem unum satis crassum, aut marchasitam ponderis* ℔ i. heat it red hot, and then let it bee quencht in sharpe vinegar, powring thereon in the meane while a little *aqua vitæ*, make a fumigation for the grieved part. The manner of a moist fumigation.

Fumes of the decoction of herbes doe very little differ from fomentations properly so called; for they differ not in the manner of their composure, but onely in the application to the affected parts: therefore let this be an example of a humide fumigation.

℞. *absinth. salv. rut. origan. an.* p i. *rad. bryon. & asar. an.* ℥ β. *sem. sinap. & cumin. an.* ʒ ii. *decoquantur in duabus partibus aquæ, & una vini pro suffitu auris cum emboto:* and oft times such fumigations are made for the whole body, whereof we shall treat hereafter. A moist fume for the eares.

Chap. XLI.

Of a particular, or halfe-Bath.

Semicupium or halfe-bath is a bath for the one halfe of the body, that is, for the parts from the belly downewards; it is called also an *insessio*, because the patient sitteth to bathe in the decoction of herbes: in which forme and respect a *semicupium* differs from a fomentation; for it is composed of the same matter, to wit, a decoction of herbes, roots, seedes, fruits, but in this the quantity of the decoction is the greater, as wee shall teach by the following example. What a semicupium is. The manner.

℞. *malv. bismalv. cum toto, an.* m i β. *beton. saxifrag. pariet. an.* m i. *sem. melon. milii solis, alkekengi, an.* ʒ iii. *cicer. rub.* p ii. *rad. apii, graminis, fœniculi, eryngii, an.* ʒ i. *decoquantur in sufficienti quantitate aquæ pro insessu.* A halfe bath for the stone in the kidneies.

Wee use these halfe-baths in affects of the kidneyes, bladder, wombe, fundament, and lower belly, or otherwise when as the patient by reason of weaknesse and feare of dissipating the spirits, cannot suffer or away with a whole bath. The manner of using it is thus; fill some bagges with the boiled herbes, or other parts of plants, and cause the patient to sit upon them; yet in the interim keepe the vapours from the head, lest they should offend it, by casting over it a linnen cloath, or else let him not enter thereinto untill the vapour be exhaled. The use. The manner of using it.

Chap.

Chap. XLII.

Of Bathes.

The faculties of Bathes.

Bathes are nothing else than as it were a fomentation of the whole body, both for preserving health, and the cure of diseases: this is a very commodious form of medicine, and among other externall medicines much celebrated by the Greeke, Arabian, and Latine Physitians. For a bath, besides that it digests the acrid humors, and sooty excrements lying under the skin, mitigates paines and wearinesse, and corrects all excesse of distemper: moreover, in the cure of feavers, and many other contumacious and inveterate discases it is the chiefe and last remedy, and as it were the refuge of health, stored with pleasing delight. Bathes are of two sorts, some naturall, others artificiall: naturall, are those which of their owne accord, without the operation or help of art, prevaile or excell in any medicinall quality. For the water which of it selfe is devoide of all quality that is perceivable by the taste, if it chance to be strained through the veines of metals, it furnishes and impregnates it selfe with their qualities and effects: hence it is that all such water excells in a drying faculty, sometimes with cooling and astriction, and otherwhiles with heate and a discussing quality. The bathes whose waters being hot or warm, doe boile 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 many yeeres, and keep it from being extinct. Some Philosophers would have it kindled by the beames of the sunne, others by the force of lightnings penetrating the bowels of the earth, others by the violence of the aire vehemently or violently agitated, no otherwise than fire is strucke by the collision of a flint and steele. Yet it is better to referre the cause of so great an effect unto God the maker of the Universe, whose providence piercing every way into all parts of the World, enters and governes the secret parts and passages thereof. Notwithstanding they seeme to have come neerest the truth, who referre the cause of heat in waters unto the store of brimstone conteined in certaine places of the earth, because amongst 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 mountaine *Ætna* continually sends forth. Hence also it is that the most part of such waters smell of Sulphur, yet others smell of Alom, others of nitre, others of Tarre, and some of Coprosse.

Their differences.

Naturall Baths.

How to know whence the Bathes have their efficacy.

Now you may know from the admixture of what metalline bodies the waters acquire their faculties by their taste, sent, colour, mud, which adheres to the channels through which the water runnes, as also by an artificiall separation of the more terrestriall parts from the more subtle. For the earthy drosse which subsides or remaines by the boiling of such waters, will retaine the faculties and substance of Brimstone, Alume, 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 kinds of waters by their effects, beginning first with the sulphureous.

The condition of naturall sulphureous waters.

Sulphureous waters powerfully heat, dry, resolve, open, and draw from the center unto the surface of the body; they cleanse the skin troubled with scabs & tettars; they cease the itching of ulcers, and digest & exhaust the causes of the gout, they help paines of the collicke and hardened spleenes. But they are not good to be drunk, not onely by reason of their ungratefull smell and taste, but also by reason of the malitiousnesse of their substance, offensive to the inner parts of the body, but chiefly to the liver.

Of aluminous waters.

Aluminous waters taste very astrictively, therefore they dry powerfully, they have no such manifest heat, yet drunke, they loose the belly: I believe by reason of their heat and nitrous quality they cleanse and stay defluxions, and the courses flowing too immoderately; they also are good against the tooth-ache, eating ulcers, and the hidden abscesses of the other parts of the mouth.

Salt

Salt and nitrous waters shew themselves sufficiently by their heat: they heat, dry, bind, cleanse, discusse, attenuate, resist putrefaction, take away the blackenesse comming of bruises, heale scabby and maligne ulcers, and helpe all œdematous tumors. Of salt and nitrous.

Bituminous waters heate, digest, and by long continuance soften the hardened sinewes; they are different according to the various conditions of the bitumen that they wash, and partake of the qualities thereof. Of bituminous.

Brasen waters, that is, such as retaine the qualities of brasse, heat, dry, cleanse, digest, cut, binde, are good against eating ulcers, fistula's, the hardnesse of the eyelids, and they waste and eat away the fleshy excrescences of the nose and fundament. Of brasen.

Iron waters coole, dry, and bind powerfully, therefore they helpe abscesses, hardened milts, the weaknesses of the stomacke and ventricle, the unvoluntary shedding of the urine, and the too much flowing termes, as also the hot distemper of the liver and kidneyes. Some such are in the Lucan territory in *Italy*. Of iron.

Leaden waters refrigerate, dry, and performe such other operations as lead doth: the like may bee said of those waters that flow by chalke, plaster, and other such mineralls, as which all of them take and performe the qualities of the bodies by which they passe. Of leaden.

Hot waters or bathes helpe cold and moist diseases, as the Palsie, convulsion, the stiffenesse and attraction of the nerves, trembling palpitations, cold distillations upon the joints, the inflation of the members by a dropsie, the jaundise by obstruction of a grosse, tough, and cold humour, the paines of the sides, collick, and kidneies, barrennesse in women, the suppression of their courses, the suffocation of the womb, causelesse wearinesse, those diseases that spoile the skinne, as tetters, the leprosie of both sorts, the scabbe, and other diseases arising from a grosse, cold and obstructing humour, for they provoke sweats. Of hot baths.

Yet such must shunne them as are of a cholericke nature, and have a hot liver, for they would cause a *cachexia* and dropsie by overheating the liver. Cold waters or baths heale the hot distemper of the whole body & each of the parts therof, and they are more frequently taken inwardly than applied outwardly; they help the laxnesse of the bowels, as the resolution of the retentive faculty of the stomacke, entralls, kidneies, bladder, and they also adde strength to them. Wherefore they both temper the heat of the liver, and also strengthen it, they stay the *Diarrhœa*, Dysentery, Courses, unvoluntary shedding of urine, the *Gonnorrhœa*, Sweats, and Bleedings. In this kinde are chiefly commendable the waters of the Spaw in the country of *Liege*, which inwardly and outwardly have almost the same faculty, and bring much benefit without any inconvenience, as those that are commonly used in the drinks and broaths of the inhabitants. To whom hurtfull. The faculties of cold baths. The Spaw.

In imitation of naturall baths, there may in want of them be made artificiall ones, by the infusing and mixing the powders of the formerly described mineralls; as, Brimstone, Alume, Nitre, *Bitumen*: also you may many times quench in common or raine water, iron, brasse, silver and gold heated red hot, and so give them to be drunk by the patient, for such waters doe oft times retain the qualities and faculties of the metals quenched in them, as you may perceive by the happy successe of such as have used them against the Dysentery. Of artificiall baths.

Besides these there are also other bathes made by art of simple water, sometimes without the admixture of any other thing, but otherwhiles with medicinall things mixed therewith, and boiled therein. But after what manner soever these bee made, they ought to be warme, for warm water humects, relaxes, mollifies the solid parts, if at any time they bee too dry, hard, and tense; by the adscititious heat it opens the pores of the skinne, digests, attracts, and discusses fuliginous and acrid excrements remaining betweene the flesh and the skin. It is good against sun-burning and wearinesse, whereby the similar parts are dried more than is fit. To conclude, whether we be too hot or cold, or too dry, or be nauseous, we find manifest profit by baths made of sweet or warme water, as those that may supply the defect of frictions and exercises: for they bring the body to a mediocrity of temper, they encrease and strengthen the native colour, and by procuring sweat discusse flatulencies: therefore they are The faculty of a bath of warme water.

very

very uſefull in hecticke feavers, and in the declenſion of all feavers, and againſt raving and talking idely, for they procure ſleep. But becauſe water alone cannot long adhere to the body, let oile bee mixed or put in them, which may hold in the water, and keep it longer to the skinne.

Why we put oile into baths.

Theſe bathes are good againſt the inflammations of the lungs and ſides, for they mitigate pain, and help forward that which is ſuppurated to excluſion, when as generall remedies according to art have preceded, for otherwiſe they will cauſe a greater defluxion on the afflicted parts: for a bath (in *Galens* 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 be not muddy, and then fountaine water; the water of ſtanding lakes and fennes is not approved of, for it is fit that the water which is made choice of for a bath of ſweet water, ſhould bee light and of ſubtle parts, for baths of waters which are more than moderately hot or cold yeeld no ſuch commodity; but verily they hurt in this, that they ſhut up or cloſe the pores of the body, and keepe in the fuliginous excrements under the skinne; other bathes of ſweet or freſh water conſiſt of the ſame matter as fomentations doe, whence it is that ſome of them relaxe, others mitigate paine, others cleanſe, and otherſome 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 oile, ſometimes freſh butter or milke, as when the urine is ſtopped, when nephriticke paines are violent, when the nerves are contracted, when the habite of the body waſtes and wrinkles with a hecticke dryneſſe, for this corrugation is amended by relaxing things, but it is watred, and as it were fatted by humecting things, which may penetrate & tranſfuſe the oily or fatty humidity into the body thus rarified and opened by the warmneſſe of a bath.

Anodine bathes are made of a decoction of medicines of a middle nature, ſuch as are temperate and relaxing things, with which wee may alſo ſometimes mixe reſolving things; they are boiled in water and wine, eſpecially in paines of the collicke proceeding from vitreous phlegme, or groſſe and thicke flatulencies conteined or ſhut up in the belly, kidneyes, or wombe. In ſuch bathes it is not fit to ſweat, but onely to ſit in them ſo long untill the bitterneſſe of the paine be aſſwaged or mitigated, leſt the powers weakened by paine, ſhould bee more reſolved by the breaking forth of ſweat: emollients are ſometimes mixed with gentle detergents, when as the skin is rough and cold, or when the ſcailes or cruſt of ſcabs is more hard than uſuall, then in concluſion we muſt come to ſtrong deterſives and driers, laſtly to drying and ſomewhat aſtrictive medicines, ſo to ſtrengthen the skinne, that it may not yeeld it ſelfe ſo eaſie and open to receive defluxions. By giving you one example the whole manner of preſcribing a bath may apppeare.

Why we muſt not continue in the bath till we ſweat.

A mollifying & anodine bath.

℞. *rad. lilior. alber. bifmalv. an.* ℔ ii. *malv. pariet. violar. an.* m ß. *ſem. lini, fænug. bifmalv. an.* ℔ i. *flor. cham. melil. aneth. an.* p vi. *fiat decoctio in ſufficienti aqua quantitate, cui permiſcito olei liliorum & lini, ana,* ℔ ii. *fiat balneum in quo diutius natet æger.*

Bathes though noble remedies approved by uſe and reaſon, yet unleſſe they bee fitly and diſcreetly uſed in time, plenty, and quality, they doe much harme; for they cauſe ſhakings and chilneſſe, paines, denſity of the skinne, or too much rarefaction thereof, and oft times a reſolution of all the faculties. Wherefore a man muſt bee mindfull of theſe cautions before he enter a bath: firſt, that there be no weakneſſe of any noble and principall bowell, for the weak parts eaſily receive the humors which the bath hath diffuſed and rarified, the waies lying open which tend from the whole body to the principall parts. Neither muſt there be any plenty of crude humours in the firſt region, for ſo they ſhould be attracted and diffuſed over all the body: therefore it is not onely fit that generall purgations ſhould precede, but alſo particular by the belly and urine: beſides, the patient ſhould bee ſtrong that can faſting endure a bath as long as it is needfull. Laſtly, the bath ought to be in a warme and ſilent place, leſt any cold aire by its blowing, or the water by its cold appulſe, cauſe a ſhivering or ſhaking of the body, whence a feaver may enſue.

Cautions to be obſerved in the uſe of baths.

The morning is a fit time for bathing, the ſtomacke being faſting and empty, or

fixe

sixe hours after meat, if it be requisite that the patient should bath twice a day, otherwise the meat yet crude would bee snatched by the heate of the bath out of the stomacke into the veines and habite of the body. Many, of all the seasons of the yeere make choice of the spring and end of summer, and in these times they chuse a cleare day, neither troubled with stormy windes, nor too sharpe an aire. As long as the patient is in the bath, it is fit that he take no meate, unlesse peradventure to comfort him hee take a little bread moistened in wine, or the juice of an orange, or some damaske prunes to quench his thirst: his strength will shew how long it is fit that he should stay in, for he must not stay there to the resolution of his powers, for in baths the humide and spirituous substance is much dissipated. Comming forth of the bath, they must presently get them to bed, and be well covered, that by sweating, the excrements, drawne unto the skinne by the heat of the bath, may breake out: the sweat cleansed, let him use gentle frictions, or walking, then let him feede upon meat of good juice and easie digestion, by reason that the stomacke cannot but be weakened in some sort by the bath.

The fittest time for bathing.

How to order the patient comming forth of the bath.

That quantity of meat is judged moderate, the weight whereof shall not oppresse the stomacke: venery after bathing must not bee used, because to the resolution of the spirits by the bath, it addes another new cause of further spending or dissipating them. Some wish those that use the bath by reason of some contraction, paine, or other affects of the nerves, presently after bathing, to dawbe or besmeare the affected nervous parts with the clay or mudde of the bathe, that by making it up as it were in this paste, the vertue of the bath may worke more effectually, and may more throughly enter into the affected part.

These cautions being diligently observed, there is no doubt but the profit by bathes will be great & wonderfull: the same things are to be 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 turne, so that comming forth of the bath they entred a stove, and called it also by the name of a bath, as you may gather from sundry places of *Galen* in his *Methodus med.* wherefore I thinke it fit in the next to speake of them.

Chap. XLIII.

Of Stoves or Hot-houses.

Stoves are either dry or moist: Dry, by raising a hot and dry aëry exhalation, so to imprint their faculties in the body, that it thereby waxeth hot, and the pores being opened, runnes down with swear. There are sundry waies to raise such an exhalation: at *Paris*, and wheresoever there are stoves or publicke hot-houses, they are raised by a cleere fire put under a vaulted fornace, whence it being presently diffused, heats the whole roome. Yet every one may make himselfe such a stove as he shall judge best and fittest.

The differences of stoves.

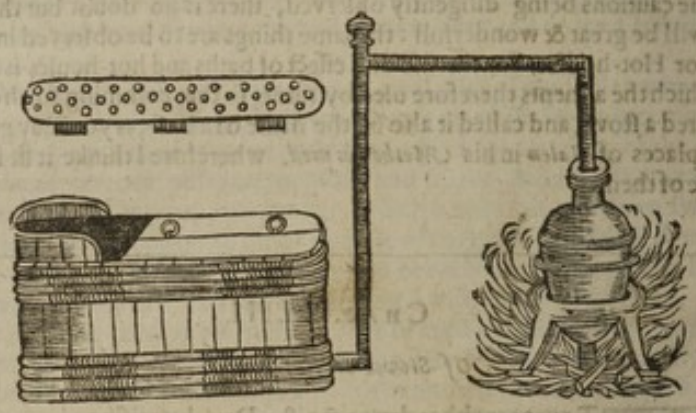
How made.

Also you may put red hot cogle stones or bricks into a tubbe, having first laid the bottome thereof with brickes or iron plates, and so set a seat in the midst thereof, wherein the patient sitting, well covered with a canopy drawne over him, may receive the exhalation arising from the stones that are about him, & so have the benefit sweating: but in this case we must oft looke to and see the patient, for it sometimes happens that some, neglected by their keepers otherwise employed, becomming faint, and their sense failing them by the dissipation of their sprits by the force of the hot exhalation, have sunke down with all their bodies upon the stones lying under them, and so have beene carried halfe dead and burnt into their beds. Some also take the benefit of sweating in a fornace or oven, as soone as bread is drawne out thereof. But I doe not much approve of this kinde of sweating, because the patient cannot as he will, much lesse as he pleaseth, lye or turne himselfe therein.

A vaporous stove or bath.

Humid stoves or sudatories are those wherein sweat is caused by a vapour or moist heat: this vapour must be raised from a decoction of roots, leaves, 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 vessell well luted, from the top of whose cover iron or tinne pipes may come into the bathing tub standing neere thereto, betweene the two bottomes thereof, by meanes whereof the hot vapour may enter thereinto, and diffuse it selfe therein. Now it is fit the bathing tub should bee furnished with a double bottome, the one below and whole, the other somewhat higher and perforated with many holes, whereupon the patient sitting may receive a sudorificke vapour over all his body: now this vapour, if at any time it become too hot, must bee 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 bee closely covered wherein the patient sits, hee putting forth onely his head, that so hee may draw in the coole aire. In defect of such pipes, the herbs shall bee boiled by themselves in a caldron or kettle, and this shall bee set thus hot into the bathing tubbe at the patients feet, and so by casting into it heated stones, a great and sudorificke vapour shall be raised.

The delineation of a bathing Tubbe, having a double bottome, with a vessell neare thereto, with pipes comming therefrom, and entring betweene the two bottomes of the Tubbe.



Chap. XLIV.

Of Fuci, *that is, washes, and such things for the smoothing and beautifying of the skinne.*

THis following discourse 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 restraine the wandring lusts of their husbands, may endevour by art to take away those spots and deformities which have happened to fall on their faces either by accident or age.

As the colour of the skin is, such is the humour that is therevnder.

The colour that appeares in the face, either laudible or illaudible, abundantly shewes the temper both of the body, as also of those humours that have the chiefe dominion therein: for every humour dyes the skinne of the whole body, but chiefly of the face, with the colour thereof: for choler bearing sway in the body, the face lookes yellowish; phlegme ruling, it lookes whitish or pale; if melancholy exceed, then blackish or swart; but if blood have the dominion, the colour is fresh and red. Yet there are other things happening externally which change the native colour of the

the face, as sun-burning, cold, pleasure, sorrow, feare, watching, fasting, paine, old diseases, the corruption of meats and drinks: for the flourishing colour of the cheeks is not onely extinguished by the too immoderate use of vinegar, but by the drinking of corrupt waters the face becomes swolne and pale.

On the contrary, laudible meats and drinks make the body to bee well coloured and comely, for that they yeeld good juice, and consequently a good habite. Therefore if the spots of the face proceed from the plenitude and ill disposition of humours, the body shall bee evacuated by blood-letting: if from the infirmity of any principall bowell, that must first of all bee strengthened; but the care of all these things belongs to the Physitian: we here onely seek after particular remedies which may smooth the face, and take away the spots, and other defects thereof, and give it a laudible colour.

Waters wherewith to wash the face.

First the face shall be washed with the water of lilly flowers, of bean flowers, water lillies, of distilled milke, or else with the water wherein some barly or starch hath bin steeped. The dryed face shall be anointed with the ointments presently to be described; for such washing cleanseth and prepareth the face to receive the force of the ointments, no otherwise than an alumed lye prepares the haires to drinke up and retaine the colour that wee desire. Therefore the face being thus cleansed and prepared, you may use the following medicines, as those that have a faculty to beautifie, extend, and smooth the skinne: as,

Compound liquors wherewith to wash the face. Virgins milke.

℞. *gum. tragacanth. conquass.* ℥ ii. *distemperentur in vase vitrio cum* ℔ ii. *aquæ communis, sic gummi dissolventur, inde albescet aqua.* Or else, ℞. *lithargyri auri,* ℥ ii. *ceruss. & salis com. an.* ℥ ß. *aceti, aquæ plantag. an.* ℥ ii. *caphur.* ℥ β. *macerentur lithargyros & ceruſa in aceto seorsim per tres aut quatuor horas, sal vero & camphora in aqua quam instituto tuo aptam delegeris:* then filter them both severall, and mixe them together being so filtred, when as you would use them.

℞. *lactis vaccini,* ℔ ii. *aranciorum & limon. an.* nu. iv. *sacchari albissimi, & alum. roch. an.* ℥ i. *distillentur omnia simul:* let the lemmons and oranges bee cut into slices, and then be infused in milk, adding thereto the sugar and alome; then let the mall be distilled together in *balneo Mariæ*; the water that comes thereof will make the face smooth and lovely. Therefore about bed time it will be good to cover the face with linnen cloaths dipped therein. A water also distilled of snailes gathered in a vineyard, juice of lemmons, the flowres of white mullaine, mixed together in equall proportion, with a like quantity of the liquor contained in the bladders of elme leaves, is very good for the same purpose. Also this,

℞. *micæ panis albi,* ℔ iv. *flor. fabar. rosar. alb. flor. nænuph. lilior. & ireos, an.* ℔ ii. *lactis vaccini,* ℔ vi. *ova.* nu. viii. *aceti opt.* ℔ i. *distillentur omnia simul in alembico vitreo, & fiat aqua ad faciei & manuum lotionem.* Or, ℞. *olei de tartaro,* ℥ iii. *mucag. sem. psilii,* ℥ i. *ceruss. in oleo ros. dissolut.* ℥ i ß. *borac. sal. gem. an.* ℥ i. *fiat linimentum pro facie.* Or. ℞. *caponem vivum, & caseum ex lacte caprino recenter confectum, limon.* nu. iv. *ovor.* nu. vi. *ceruss. lot. in aq. rosar.* ℥ ii. *boracis,* ℥ i ß. *camph.* ℥ ii. *aq. flor. 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 sheepes bones, which smooths the roughnesse of the skinne, beautifies the face; now it must be thus extracted. Take the bones, severed from the flesh by boyling, beat them, and so boyle them in water, when they are well boyled, take them from the fire, and when the water is cold, gather the fat that swimmes upon it, and therewith anoint your face when as you goe to bed, and wash it in the morning with the formerly prescribed water.

How to make Salcerusse.

℞. *salis ceruss.* ℥ ii. *ung. citrin. vel spermat. ceti,* ℥ i. *malaxentur simul, & fiat linimentum, addendo olei ovor.* ℥ ii. The *Sal ceruſſæ* is thus made, grinde Ceruſſe into very fine powder, and infuse ℔ i. thereof in a pottle of distilled vinegar for foure or five dayes, then filter it, then set that you have filtred in a glased earthen vessell over a gentle fire untill it concrete into salt, just as you doe the *capitellum* in making of Cauteries.

℞. *excrementi lacert. ossis sepiæ, tartari, vini albi, rasur. corn. cerv. farin. oriz. an. partes æquales, fiat pulvis, infundatur in aqua distillata amygdalarum dulcium, limacum*

vinealium, flor. nenuph. huic addito mellis albi par pondus: let them be all incorporated in a marble mortar, and kept in a glasse or silver vessell, and at night anoint the face herewith; it wonderfully prevailes against the redneſſe of the face, if after the anointing it you ſhall cover the face with a linnen cloath moiſtened in the formerly deſcribed water.

℞. *ſublim.* ℥ i. *argent. viv. ſaliv. extinct.* ℥ ii. *margarit. non perforat.* ℥ i. *caph.* ℥ ß. *incorporentur ſimul in mortario marmoreo, cum piſtillo ligneo, per tres horas ducantur & fricentur, reducanturque in tenuiſsimum pulverem, confectus pulvis abluatur aqua myrti & deſiccetur, ſerveturq; ad uſum, adde foliorum auri & argenti,* nu. x. When as you would uſe this powder, put into the palme of your hand a little oile of maſtick, or of ſweet almonds, then preſently in that oyle diſſolve a little of the deſcribed powder, and ſo work it into an ointment, wherewith let the face be anointed at bed-time: but it is fit firſt to waſh the face with the formerly deſcribed waters, and againe 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 cheekes with a roſie and flouriſhing colour; for of the commixture of white and red ariſeth a native and beautifull colour: for this purpoſe take as much as you ſhall thinke fit of braſill, and alchunet; ſteep them in alume water, and therewith touch the cheeks and lips, and ſo ſuffer it to dry in: there is alſo ſpaniſh red made for this purpoſe; others rub the mentioned parts with a ſheeps skinne died red: moreover the friction that is made by the hand onely, cauſeth a pleaſing redneſſe in the face, by drawing thither the blood and ſpirits.

Chap. XLV.

Of the Gutta Roſacea, *or a fiery face.*

THis treatiſe of *Fuci* puts me in minde to ſay ſomething in this place of helping the preternaturall redneſſe which poſſeſſeth the noſe and cheekes, and oft times all the face beſides, one while with a tumour, other whiles without, ſometimes with puſtles and ſcabs, by reaſon of the admixtion of a nitrous and aduſt humor. Practitioners have termed it *Gutta roſacea.* This ſhewes both more and more ugly in winter than in ſummer, becauſe the cold cloſeth the pores of the skinne, ſo that the matter contained thereunder is pent up for want of tranſpiration, whence it becomes acrid and biting, ſo that as it were boiling up, it lifts or raiſeth the skinne into puſtles and ſcabs; it is a contumacious diſeaſe, and oft times not to be helped by medicine.

Why worſe in winter than in ſummer.

Diet.

For the generall method of curing this diſeaſe, it is fit that the patient abſtaine from wine, and from all things in generall that by their heat inflame the blood, and diffuſe it by their vaporous ſubſtance: he ſhall ſhunne hot and very cold places, and ſhall procure that his belly may be ſoluble, either by nature or art. Let blood firſt be drawn out of the *baſilica*, then from the *vena frontis*, and laſtly from the vein of the noſe. Let leaches be applied to ſundry places of the face, and cupping glaſſes with ſcarification to the ſhoulders.

Remedies.

For particular or proper remedies, if the diſeaſe be inveterate, the hardneſſe ſhall firſt be ſoftned with emolſient things, then aſſaulted with the following ointments, which ſhall be uſed or changed by the Chirurgian as the Phyſitian ſhall thinke fit.

An approved ointment.

℞. *ſucci citri,* ℥ iii. *ceruſ. quantum ſufficit ad eum inſpiſſandum, argenti vivi cum ſaliva & ſulphure vivo extincti,* ℥ ß. *incorporentur ſimul, & fiat unguentum.*

℞. *boracis,* ℥ ii. *farin. cicer. & fabar. an.* ℥ i ß. *caph.* ℥ i. *cum melle & ſucco cepæ fiant trochiſci:* when you would uſe them, diſſolve them in roſe and plantaine water, and ſpread them upon linnen cloaths, and ſo apply them on the night time to the affected parts, and ſo let them be oft times renued.

℞. *unguenti citrini recenter diſpenſati,* ℨ ii. *ſulphuris vivi,* ℨ ß. *cum modico olei ſem. cucurb. & ſucci limonum, fiat unguentum;* with this let the face be anointed when you

goe

goe to bed, in the morning let it bee washed away with rose water, being white by reason of bran infused therein: moreover, sharp vinegar boyled with branne and rose water, and applied as before, powerfully takes away the redness of the face.

℞. *cerus. & litharg. auri, sulphuris vivi pulverisati, an.* ℥ ß. *ponantur in phiala cum aceto & aqua rosarum*: linnen cloaths dipped herein shall be applied to the face on the night, and it shall bee washed in the morning with the water of the infusion of bran: this kinde of medicine shall be continued for a moneth.

℞. *sanguinis tauri,* ℔ i. *butyri recentis,* ℔ ß. *fiat distillatio, utatur.* The liquor which is distilled for the first daies is troubled and stinking, but these passed, it becommeth cleare and well smelling. Some boile bran in vinegar and the water of water lillies, and in this decoction they dissolve of *sulphur* and camphire a fit proportion to the quantity of the decoction, and they apply cloaths moistened in this medicine to the face in the evening.

℣. *album. ovor.* nu. ii. *aquæ ros.* ℥ i ß. *succi plantag. & lapath. acut. an.* ℥ i ß. *sublimati,* ℈ i. *incorporentur in mortario marmoreo.* ℞. *axung. porci decies in aceto lotæ,* ℥iv. *argenti vivi,* ℥ i. *aluminis, sulphuris vivi, an.* ʒ i. *pistentur omnia diu in mortario plumbeo, & fiat unguentum; argentum vivum non debet nisi extremo loco affundi.* ℞. *rad. lapath. acut. & asphodel. an.* ℥ ii. *coquantur in aceto scillitico, postea tundantur, & setaceo trajiciantur, addendo auripigmenti,* ʒ ii. *sulphuris vivi,* ʒ x. let them be incorporated and make an ointment to be used to dry up the pustles. To dry up the pustles.

℣. *rad. liliorum sub cineribus coctorum,* ʒ iv. *pistillo tusis, & setaceo trajectis, adde butyri recentis, & axung. porci, lotæ in aceto, an.* ℥ i. *sulphuris vivi,* ʒ iii. *camphor.* ℈ iii. *succi limonum quantum sufficit, malaxentur simul & fiat unguentum.* ℞. *lactis virginalis,* ℔ ß. *aluminis,* ℥ ß. *sulphuris vivi,* ℥ i. *succi limonum,* ℥ vi. *salis com.* ʒ ß. let them all be distilled in a glasse alembicke, and the water kept for the forementioned uses.

℞. *lapath. acut. plantagin. & asphodel. an.* ℥ i ß. *olei vitel. ovor.* ℥ i. *terebinth. venet.* ℥ ß. *succi limonum,* ʒ iii. *aluminis combust.* ʒ i. *argenti vivi extinct.* ℥ i. *olei liliorum,* ℥ ß. *tundantur omnia in mortario plumbeo, addendo sub finem argent. viv. ne mortario adhæreseat.* The juice of onions beaten with salt, or the yelkes of egges are good for the same purpose.

For staying and killing of Ring-wormes and Tettars, the leaves of hellebore beaten with vinegar are good, the milke of the fig-tree is good of it selfe, as also that of the spurges, or mustard dissolved in strong vinegar with a little sulphur. Or, To kill tettars.

℣. *sulphuris, calcanthi, & aluminis, an.* ʒ i. *macerentur in aceto forti, trajiciantur per linteum,* apply the expressed juice. Others macerate an egge in sharpe vinegar, with coporose and *sulphur vivum* beaten into fine powder, then they straine or presse it through a linnen cloath.

But seeing the forementioned medicines are acride, and for the most part eating and corroding, it cannot bee but that they must make the skinne harsh and rough, therefore to smooth and levigate it againe, you shall make use of the following ointment.

℞. *tereb. ven. tam diu lotæ, ut acrimoniam nullam habeat, butyri salis expertis, an.* ℥ i ß. *olei vitel. ovor.* ℥ i. *axung. porci in aqua rosarum lotæ,* ℥ ß. *ceræ parum, fiat linimentum ad usum.* To the same purpose you may also make use of some of the forementioned medicines. To smooth the skinne.

Chap. XLVI.

To blacke the haire.

AT first the haires, (to take the *fucus* or tincture, and to retaine it) must be prepared with Lye, wherein a little roche Alome is dissolved. Thus the fatty scales may be washed and taken away, which hinder, and (as it were) keep away the *fucus*, that it cannot adhere or penetrate into the body of the haire. Then must we come to particular or proper & fitting medicines, for

What things are fit to dy the haire.

for this purpose. These ought to be aromaticke and cephalicke, and somewhat stiptick, that by their odoriferous and astringent power they may strengthen the animal faculty: Furthermore, they must be of subtle parts, that they may enter even into the inner rootes of the haires.

℞. *Sulphuris, vitrioli, gallarum, calcis vivæ, lithargyri, an.* ℥ii. *scoriæ ferri,* ℥6. *in pollinem reducantur, & cum aq. communi incorporentur, ut inde fiat massa*: with this at bed time let the haires bee rubbed, and in the morning let them bee smoothed with the same.

℞. *calcis lotæ,* ℥i. *lithargyri utriusq;* ℥ β. *cum decocto gallarum, corticum, nucum, fiat massa, addendo olei chamem.* ℥ ii. ℞. *lytharg. auri,* ℥ ii. *ciner. clavellat.* ℥ i ß. *calcis viv.* ℥i. *dissolve omnia cum urena hominis donec acquirant consistentiam unguenti pro unctione capillorum.* ℣. *calcis lotæ,* ℥ iv. *lithargyri utriusq; an.* ℥ ii. *cum decoct. salv. & cort. granat. fiat pasta ad formam pultis satis liquidæ*: let the haire at bed time bee died herewith, 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 twelve pints of faire water one pound of lime, then poure out the water by stooping the vessell, putting more in the stead thereof; the third time in stead of common water powre thereon the water of the decoction of sage and galls, let the lime lye therein for so many houres, then in like manner powre it off by stooping the vessell; and thus you shall have your lime well washed. There is also found a way how to die or black the haire by only powring of some liquor thereon: as, ℣. *argenti purissimi,* ℥ ii. *reducantur in tenuissimas laminas, ponantur in ampulla vitrea cum* ℥ii. *aquæ separationis auri & argenti, & aquæ rosar.* ℥ vi. The preparing of this water is thus, put into a violl the water of separation and the silver, and set it upon hot coales so to dissolve the silver, which being done then take it from the fire, and when it is cold, adde thereto the rose water. But if you would black it more deeply, adde more silver thereto, if lesse, then a smaller quantity; to use it, you must steepe the combe wherewith you combe your head in this water.

A water to black the haire.

℞. *plumbi usti,* ℥ ii. *gallarum non perforat. cortic. nucum, an.* ℥ iii. *terræ sigil. ferret. hispan. an.* ℥ ii. *vitriol. rom.* ℥ vi. *salis gem.* ℥ i β. *caryoph. nucis mosch. an.* ℥ i. *salis ammon. aloes, an.* ℥ β. *fiat pulvis subtilissimus*: let this powder be macerated in vinegar for three daies space, then distill it all in an alembick, the water that comes therefrom is good for the foresaid use. The following medicine is good to make the haires of a flaxen colour. ℣. *flor. genist. stachad. & cardamom. an.* ℥ i. *lupinor. conquassat. rasur. buxi, corticis citri, rad. gentian. & berber. an.* ℥ i β. *cum aqua vitri fiat lenta decoctio*: herewith bathe and moisten the haires for many dayes.

To make the haire of a flaxen colour.

Chap. XLVII.

Of Psilothra, *or Depilatories: and also of Sweet waters.*

A depilatory.

MEdicines to fetch off haire, which by the Greeks are termed *Psilothra*, and *Depilatoria* in latine vulgarly, are made as you may learn by these following examples. ℞. *calcis vivæ,* ℥ iii. *auripigmenti,* ℥i. let the lime bee quencht in faire water, and then the orpiment added with some aromaticke thing: have a care that the medicine lye not too long upon the part, otherwise it will burne; and this medicine must bee made to the consistence of a pultis and applied warme, first fomenting the part with warme water; for then the haire will fall off by gentle rubbing or washing it with warme water: but if there happen any excoriation thereupon, you may helpe it by the use of *unguentum rosatum*, or some other of the like faculty.

Another.

℞. *calcis viv. aurip. citrin. an.* ℥i. *amyl. spumæ argent. an.* ℥ ß. *terantur & incorporentur cum aq. com. & bulliant simul*: you shall certainly know that it is sufficiently boiled, if putting thereinto a gooses quill, the feathers come presently off: some make into powder equall parts of unquencht lime and orpiment, they tye them up in a cloath, with which being steeped in water they besmear the part, and within a while after

after by gently stroaking the head, the haire falls away of it selfe. The following waters are very fitting for to wash the hands, face, and whole body, as also linnen, because they yeeld a gratefull smell: the first is lavander water thus to be made. ♃ *flor. lavend.* ℔ iv. *aq. rosar. & vini alb. an.* ℔ ii. *aq. vitæ*, ℥ iv. *misceantur omnia simul, & fiat distillatio in balneo Mariæ*: this same water may also bee had without distillation, if you put some lavander flowers in faire water, and so set them to sunne in a glasse, or put them in *balneo*, adding a little oile of spike and muske. Clove water is thus made: ℞. *caryoph.* ℥ ii. *aq. rosar.* ℔ ii. *macerentur spatio* xxiv. *horarum, & distillentur in balneo Mariæ.* Sweet water commonly so called, is made of divers odoriferous things put together; as thus, ℞. *menthæ, majoranæ, hyssopi, salviæ, rorismarini, lavendulæ, an.* m ii. *radicis ireos*, ℥ ii. *caryophylorum, cinamomi, nucis moschatæ, ana*, ℥ β. *limonum*, num. iv. *macerentur omnia in aqua rosarum, spatio viginti quatuor horarum, distillentur in balneo Mariæ, addendo Moschi,* ℈ β.

Sweet waters.

Lavander water.

Clove water

Sweet water.

The End of the Twenty sixt Booke.



OF DISTILLATIONS.

THE TVVENTIEIGHTH BOOKE.

CHAP. I.

What Distillation is, and how many kinds thereof there be.

HAving finisht the Treatise of the faculties of medicines, it now seemes requisite that we speake somewhat of Chymistry and such medicines as are extracted by fire. These are such as consist of a certaine fift essence separated from their earthy inpurity by Distillation, in which there is a singular, and almost divine efficacy in the cure of diseases. So that of so great an aboundance of the medicines there is scarse any which at this day Chymists doe not distill, or otherwise make them more strong and effectuall than they were before. Now Distillation is a certaine art or way by which the liquor or humid part of things, by the vertue and force of fire or some semblable heate (as the matter shall seeme to require) is extracted and drawne, being first resolved into vapour and then condens'd againe by cold. Some call this art *Sublimation* or subliming, which signifies nothing else but to separate the pure from the unpure; the parts that are more subtle and delicate, from those that are more corpulent, grosse and excrementitious; as also to make those matters whose substance is more grosse, to become more pure and sincere, eyther for that the terrestriall parts are ill united and conjoyned, or otherwise confused into the whole and dispersed by the heate and so carried up, the other grosser parts remaining together in the bottome of the vessell. Or a distillation is the extraction or effusion of moisture distilling drop by drop from the nose of the Alembecke or any such like vessells. Before this effusion or falling downe of the liquor there goes a certaine concoction performed by the vertue of heate; which separates the substances of one kind from those of another that were confusedly mixed together in one body, and so brings them into one certaine forme or body, which may be good and profitable for divers diseases. Some things require the heate of a cleare fire, others a flame, others the heate of the Sunne, others of Ashes or sand or the filings of Iron; others horse dung, or boyling water or the oiely vapour or steame thereof. In all these kinds of fires, there are foure considerable degrees of heate. The first is conteined in the limits of warmth, and such is warme water, or the vapour of hot water. The second is a little hotter, but yet so as the hand may abide it without any harme, such is the heate of Ashes. The third exceeds the vehemency of the second, wherefore the hand cannot long endure this without hurt, and such is the heate of sand. The fourth is so violent, that it burneth any thing that commeth neare, and such are the filings of Iron.

What distillation is.

Foure degrees of heate.

The first degree is most convenient to distill such things as are subtle and moist as flowers. The second such as are subtle and dry as those things which are odoriferous and aromaticall, as Cinnamon, Ginger, Cloves. The third is fittest to distill such things are of a more dense substance and fuller of juice; such as are some Roots, and

What heate fittest for what things.

gummes. The fourth is fit for mettalls and mineralls as, Allum, Vitrioll, Amber, Iet, &c. In like manner you may also distill without heate; as wee use to doe in those things which are distilled by straining, as when the more pure is drawne and separated from that which is most unpure and earthy, as wee doe in *Lac Virginale*, and other things which are strained through an hypocras bag, or with a peece of cloath cut in the forme of a tongue, or by setling, or by a vessell made of Ivy wood: sometimes also somethings may bee distilled, by coldnesse and humidity, and so we make the oile of Tartar, Myrrhe and Vitriolls, by laying them upon a marble in a cold and moist place.

Chap. II.

Of the matter and forme of Fornaces.

The matter the best for Fornaces.

THe matter and forme of Fornaces uses to bee divers. For some Fornaces use to bee made of brickes and clay, othersome of clay onely, which are the better and more lasting, it so bee the clay bee fat and well tempered with whites of Egges and haire. Yet in suddaine occasions when there is present necessity of distillation, fornaces may be made of bricks, so laid together that the joynts may not agree, but be unequall, for so the structure will be the stronger. The best and fittest forme of a Fornace for distillation is round; for so the heate of the fire carried up equally diffuses it selfe every way, which happens not in a Fornace of another figure, as square or triangular, for the corners disperse and separate the force of the fire. Their magnitude must bee such as shall bee fit for the receiving of the vessell. For their thicknesse, so great as necessity shall seeme to require. They must be made with two bottomes, distinguisht as it were into two forges, one below which may receive the ashes of the coales or the like other fuell, the other above to containe the burning coales or fire. The bottome of this upper must eyther bee an iron grate, or else it must bee perforated with many holes, that so the ashes may the more easily fall downe into the bottome, which otherwise would extinguish the fire; yet some Fornaces have three partitions, as the Fornace for reverberation. In the first and loweſt the ashes are received, in the second the coales are put, & in the third the matter which is calcin'd or else distilled. The third ought to have a semicircular cover, that so the heate or flame may bee reflected upon the contained matter. The lower partition shall have one or more dores, by which the fallen downe ashes may bee taken forth. But the upper must have but one, whereby the coales or wood may be put in. But in the top or upper pare of the Fornace where it shall seeme most fit, there shall be two or three holes made, that by them you may blow the fire and that the smoake may more freely passe out. But these forementioned dores must have their shutters, just like an ovens mouth. But in defect of a fornace or fit matter to build one withall, wee may use a kettle, set upon a trefoote after the manner that wee shall presently declare when wee come to speake of that distillation which is to bee made by *Balneum Marie*.

A round forme the best for Fornaces.

Chap. III.

Of vessells fit for Distillation.

VEssells for Distillation consist of different matter and forme, for they are eyther of Lead, Tinne or Brasse, or else earthen vessells and these are sometimes leaded, sometimes not: or else they are of Gold, silver,

silver or glasse. Now for leaden vessells they are worse than the rest, and utterly to be refused, especially when as the liquors which are drawne by them are to bee taken into the body by the mouth, by reason of the maligne qualities which are said to be in Lead; by which occasion, *Galen* condemnes those waters which runne, and are contained in Leaden pipes, which by reason of their saltishnesse and acrimony which savours of quicksilver, they cause dysenteries. Therefore you may perceive such waters as are distilled through a leaden head to bee endued with a more acrid and violent piercing vapour, by reason the portion of that saltishnesse dissolved in them, & as it were shaved from the top of the Alembecke or head, defiles the distilled liquors, and whitens and turnes them into a milky substance: but copper or brasse heads are more hurtfull than Lead, for they make the waters that come through them to savour or participate of brasse. Those that are of gold and silver are lesse hurtfull; but the greatnesse of the cost hinders us from making heads of such mettalls; therefore we must have a care that our vessells for distillation be eyther of potters mettall leaded, or else of brasse, or of that jugge mettall which is commonly called *terra betovacensis*, and these rather than of Lead or any other mettall. Verily glasses are thought the best; and next to them, earthen vessells leaded, then of jugge mettall, and lastly those of tinne. There is great variety of vessells for distillation in forme and figure; for some are of an ovall or cilindricall figure, that is, of a round and longish; others are twined and crooked, others of other shapes, as you may see in the beakes of the Chimicks. Of this almost infinite variety of figures I will in fit place give you the delineation and use of such as shall seeme to bee most necessary.

Leaden vessells ill.

Brasse worse.

The best vessells for distillation.

Chap. IIII.

What things are to be considered in distillation.

First make choyse of a fit place in your house for the fornace, so that it may neither hinder any thing, nor be in danger of the falling of any thing that shall lye over it. When you shall distill any thing of a maligne or venenate quality, ye shall stand by it as little as you may, least the vapour should doe you any harme: when you provide glasse vessells for distillation, make choice of such, as are exquisitely baked, without flawes or crackes, and such as are every where smooth. Let not the fire at first be very violent, not onely for feare of breaking the vessells, 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, least they should rise up or fly over. Hot things, that they may be more effectuall must bee twice or thrise distilled, by powring upon them their owne distilled water or other fresh materialls, or else by distilling them severally and by themselves: of this kind are gummes, waxe, fatts, or oyles.

Hot things must bee 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 indure so great heate: but aromaticke things, as Cloves, Cinnamon, &c. as also the chimicall oyles of Sage, Rosemary, Time, &c. ought not to bee distilled or rectified over againe, for that we must presently after the first distillation have a diligent care to separate them from the phlegme, 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 first send over their phlegme as Vinegar, others, wherein it comes last, as * *aqua vitæ*.

* By *Aqua vitæ* in this and most other places is meant none thing but the spirit of wine.

If you would give to things to bee distilled another taste or smell than that which they have naturally, you may mixe with them some odoriferous thing,

thing, as Cinnamon, Camphire, or Muske, or the like, as you please, and so distill them together. The distilled liquors which are drawne by the heate of ashes or sand, savour of and retaine a certaine *empyreuma*, or smatch of the fire; for the helping of which, you shall put them into glasses very close stopt, and so expose them to the sunne, and now and then open the glasses that this fiery impression may exhale, and the *phlegmon* be consumed, if that there shall be any. But though in all distillation, three are many things to be observed, yet are there two things, chiefly worthy of note. The first is, the matter that is to be distilled and wrought upon, that is, of what kind it is, and what the nature thereof may doe and suffer. The other is the Fornace, which ought to bee provided of a convenient matter and figure for that which is to be distilled: for you cannot draw any thing of any matter, neither of every mixture being distilled can you rightly expect oyle or water. For mixt bodies doe not consist of an equall portion of the foure Elements, but some are more aiery, others more fiery, some participate more of the water, others more of the earth, and that presently from their first originall. Therefore as watry things, yeeld more water, so aiery and fiery things yeeld more oyle when they are distilled; neither are all instruments fit for the extracting of every liquor. Moreover you must note, that the watery liquor sometimes comes forth in the first place, and presently after by the helpe of a stronger fire followes the oilely, which we finde happens as often as the plant or parts of the plants which are distilled, are of a cold temperament; for in hot things it happens otherwise, for the first liquor which comes forth is oilely, and the following wateriſh.

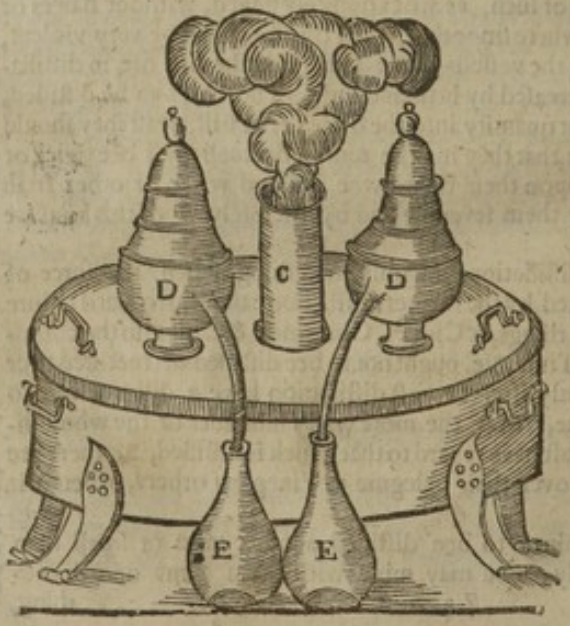
Chap. V.

Of what fashion the vessells for the distilling of waters ought to be.

The parts of an Alembecke.

For the distilling of any kind of waters, two kind of vessells are necessary, which are comprehended under this one generall name of an Alembecke. They call one of them the body, or containing vessell, the other the head, that is, the cap or top wherein the ascending vapours are condensated or turned into water. It is called the head, because it stands over the body, like as an head; from the head there comes out a pipe or nose whereby the distilled liquor flowes drop by drop into the receiver, as you may see by the following figure.

The Fornace for a Balneum Mariæ *with the Alembeck, and their receivers.*



A. *Shewes a brasse kettle full of water.*

B. *The cover of the kettle perforated in two places, to give passage forth to the Vessells.*

C. *A pipe or Chimney added to the kettle, wherein the fire is contained to heate the water.*

D. *The Alembecke consisting of his body and head.*

E. *The receiver whereinto the distilled liquor runs.*

The

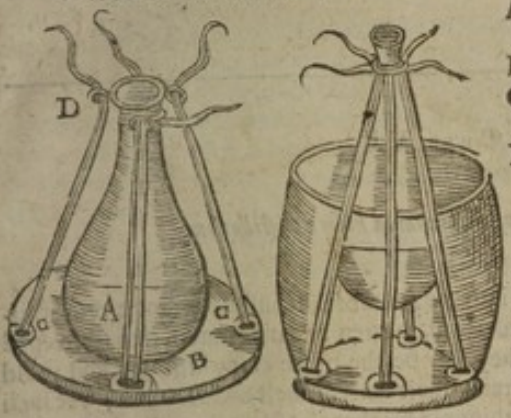
The effigies of another balneum Mariæ, *not so easy to be removed as the former.*



A. *Shewes the vessell or Copper that containes the water.*

B. *The Alembecke set in water.*

But least the bottome of the Alembicke being halfe full, should floate up and downe in the water, and so sticke against the sides of the Kettle; I have thought good to shew you the way and meanes to prevent that danger.



A. *Shewes the Vessell or glasse Alembecke.*
B. *A plate of Lead whereon it stands.*
C. *Strings that bind the Alembecke to the plate.*
D. *Rings through which the strings are put, to fasten the Alembecke.*

You may also distill the liquors of things by the vapour or steame of boyling water, if so be that you bee provided of Vessells and formes made after this following manner.

A Fornace with his vessells to distill liquors with the steme of boyling water.



A. Shewes the head of the Alembecke.
B *The body thereof, placed in a brasse vessell made for that purpose.*
C. *A brasse vessell perforated in many places to receive the vapour of the water. This vessell shall conteine th' Alembecke compassed about with sawdust, not onely that it may the better and longer retaine the heate of the vapour, but also least it should be broken by the hard touch of the brasen vessell.*
D. *Shewes the brasse vessell containing the water as it is plac't in the Fornace.*
E. *The Fornace containing the vessell.*
F. *A Funnell by which you may now and then powre in water, in stead of that which is vanisht and dissipated by the heate of the fire.*
G. *The Receiver.*

Now for the faculties of distilled waters it is certaine, that those which are drawne in *balne Mariæ* or a double vessell, are farre better and efficacious, because, they

Why those things that are distilled in *Balneo* retaine more of the strength of things.

doe not onely reteine the smell of the things which are distilled, but also the taste, as acidity, harshnesse, sweetnesse, bitternesse, and other qualities, so that they will neither savour of smoake nor burning; for the milde and gentle heate of a bath containes by his humidity, the more subtle parts of the plants that are distilled, that they be not dissipated and exhaled, contrary to which it usually happens in things which are distilled by the burning heate of wood or coales. For these have a certaine nitrous and acrid taste, savouring of the smoake of fire. Besides, they acquire a maligne quality from the vessells out of which they are distilled, especially if they bee of Lead, whence they contract qualities hurtfull to the principall, vitall, and naturall parts.

Therefore the plants which are thus distilled, if they be bitter by nature, presently become insipid, as you may perceive by wormewood water thus distilled. Those things which are distill'd in *Balneo Mariæ* are contained in a glasse vessell, from which they can borrow no maligne quality. Therefore the waters so drawne are more effectuall and pleasing in taste, smell, and sight. You may draw waters not onely from one kind of plant, but also from many compounded and mixed together: Of these some are alimentary, others medicinall, yea and purging; others acquir'd for smell, others for washing or smoothing of womens faces, as wee shall shew hereafter.

Chap. VI.

How the materialls must be prepared before Distillation.

THings before they be put into the Alembecke must undergoe a preparation, that is, they must be cut small, beaten and macerated, that is, steeped in some liquor, that so they may be the more easily distilled and yeeld the more water, and retaine their native smell and faculties; yet such preparation is not convenient for all things; for there be some things, which neede no infusion or maceration, but must rather bee dryed before they bee distilled, as Sage, Time, Rosemary, and the like, by reason of their too much humidity; it will be sufficient to sprinkle other things with some 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 variety of the matter to be macerated; for things that are hard, solid, dry or whole, must be longer macerated, than such as are tender, freshly gathered or beaten: whence it is that rootes and seedes require a longer time of infusion, flowers and leaves a shorter, and the like of other things. The liquors wherein infusion must be made, ought to bee agreeable to the things infused. For hot ingredients require hot liquors, and cold such as are cold wherein they may be infused.

What things needs not to be macerated before they bee dissolved.

Such things as have not much juice, as Betonie, wormewood and the like, or which are very odoriferous, as all aromaticke things, would be infused in wine, so to preserve their smell, which otherwise by the force of the fire, by reason of the tenuity of the substance, easily vanishes. But if wee desire that the distilled liquor should more exactly reteine and have the faculty of the things whereof it is distilled, then must you infuse it in the juice thereof, or some such appropriate liquor, that it may swimme in it whilest it is distilled, or at least let it bee sprinckled therewith.

The maceration of plants in their owne juice.

Chap. VII.

Of the art of distilling of waters.

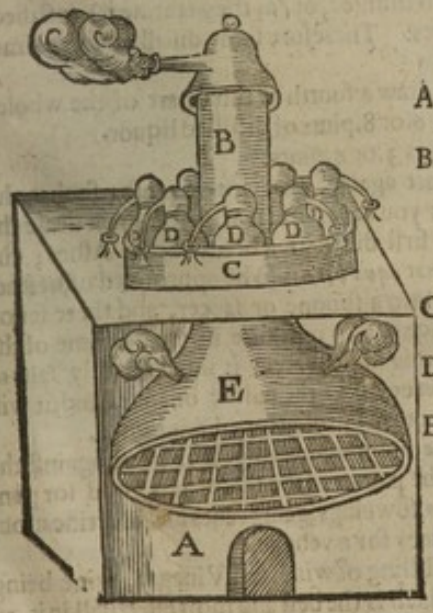
BEfore I describe the manner how to distill waters, I thinke it not amisse briefly to reckon up how many sorts of distilled waters there bee, and what the faculties of them are. Therefore of distilled waters some are medicinall, as the waters of Roses, Plantaine, Sorrell, Sage, and the like: others are alimentary, as those waters that we call Restauratives; othersome are composed of both, such as are these restaurative waters which are also mixed with medicinall things; others are purging, as the distilled water of greene and fresh Rubarbe; othersome serve for smoothing the skinne, and others for smell; of which sort are those that are destilled of aromaticke things. The varieties of stilled waters.

To distill Rose water, it will be good to macerate the Roses before you distill them for the space of two or three dayes, in some formerly distilled Rosewater, or their pressed out juice, luting the vessell close; then put them into an Alembecke closely luted to his head and his receiver, and so put into a *Balneum Mariæ*, as wee have formerly described. Rose water.

The distilled Alimentary liquors are nothing else than those that wee vulgarly call Restauratives; this is the manner and art of preparing them. Take of Veale, Mutton, Kid, Capon, Pullet, Cocke, Partridge, Pheasant, as much as shall seeme fit for your purpose: cut it small, and least it should acquire heate, or *empyreuma* from the fire, mixe therewith a handfull of French Barley, and of red Rose leaves dry and fresh, but first steeped in the juice of Pomegranats, or citrons and Rosewater with a little Cinnamon, as much. Restauratives.

But if you desire that this restaurative should not onely bee alimentary but also medicinall, you shall adde thereto such things as shall resist the disease, such as are Cordiall pouders as of *El Diamargarit. frigid. De Gemmis, Aromaticum Rosat.* Conserve of Bugloss, Borrage, roots hearbes, seeds and other things of that kind. But if it be in a pestiferous season, Treacle, Mithridate and other Antidotes shall be added; each of these shall be laid in rankes or orders one over another, which is vulgarly termed *stratum super stratum*, in a glasse Alembeck, and distilled in *balneo Mariæ* with the heate of Ashes, or else of warme sand, as the following figure shewes.

The delineation of a Balneum Mariæ, *which may also serve for to distill with Ashes.*



A. *Shewes the Fornace with the hole to take forth the Ashes.*

B. *Shewes another Fornace, as it were set in the other: now it is of Brasse, and runs through the midst of the kettle made also of brasse, that so the conteined water or ashes may bee the more easily heated.*

C. *The kettle wherein the water, ashes, or sand are conteined.*

D. *The Alembecke set in the water, ashes, or sand, with the mouthes of the receivers.*

E. *The bottome of the second brasse Fornace, whose top is marked with* B. *which containes the fire.*

There

Another way of making restorative Liquors.

There may be made other restrauratives in shorter time with lesse labour and cost. To this purpose the flesh must be beaten and cut thinne, and so thrust through with a double thred, so that the peices 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, Cotton, or Towe, and lute it up with paste made of meale and the whites of egges; then set it up to the necke in a kettle of water, but so that it touch not the bottome, but let it be kept upright by the formerly described meanes; then make a gentle fire thereunder, untill the contained flesh by long boyling shall bee dissolved into juyce, and that will commonly be in some foure houres space. This being done, let the fire be taken from under the kettle, but take not forth the glasse before the water be cold, least it being hot should be broken by the suddaine appulse of the cold aire. Wherefore when as it is cold, let it be opened, and the thred with the peeces of flesh be drawne forth, so that onely the juyce may be left remaining; then straine it through a bagge, and aromatize it with Sugar and Cinnamon, adding a little juyce of Citron, Verjuice or Vinegar, as it shall best like the patients palate.

After this manner you may quickely, easily and without great cost have and prepare all sorts of restauratives aswell medicated as simple. But the force and faculty of purging medicines is extracted after a cleane contrary manner than the oyles and waters are drawne of Aromaticke things, as Sage, Rosemary, Time, Aniseedes, Fennell, Cloves, Cinnamon, Nutmegs, and the like. For the strength of these, as that which is subtile and ayery, flies upwards in distillation; but the strength of purging things, as Turbith, Agaricke, Rubarbe and the like, subside in the bottome. For the purgative faculty of these purgers inseparably adheres to the bodies and substances.

Now for sweet waters and such as serve to smooth the skinne of the face, they may be distilled in *Balneo Mariæ* like as Rose water.

Chap. VIII.

How to distill Aqua vitæ, or the spirit of wine.

TAke of good White or Clarret wine or Sacke which is not sowre nor mustie, nor otherwise corrupt, or of the Lees that quantity which may serve to fill the vessell 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 ofter it is distilled, or (as they tearme it) rectified, the more noble and effectuall it becomes. Therefore some distill it seven times over.

Spirit of wine seaven times rectified.

At the first distillation it may suffice to draw a fourth or third part of the whole; to wit, of 24. pints of Wine or Lees, draw 6. or 8. pints of distilled liquor.

At the second time the halfe part of that is 3. or 4. pints.

At the third distillation the halfe part againe, that is, two pints; so that the ofter you distill it over, the lesse liquor you have, but it will be a great deale the more efficacious. I doe well like that the first distillation bee made in Ashes; the second in *Balneum Mariæ*. To conclude, that *aqua vitæ* is to be approoved of, neither is it any ofter to be distilled, which put into a spoone or saucer, and there set on fire, burnes wholly away and leaves no liquor, or moisture in the bottome of the vessell; if you drop a drop of oyle into this same water, it incontinently falls to the bottome; or if you drop a drop thereof into the palme of your hand, it will quickly vanish away, which are two other notes of probation of this liquor.

The faculties of the spirit of wine.

The faculties and effects of *aqua vitæ* are innumerable, it is good against the epilepsie and all cold diseases, it asswages the paines of the teeth, it is good for punctures and wounds of the Nerves, faintings, sownings, gangreenes and mortification, both of its flesh, as also put to other medicines for a vehicle.

There is this difference betweene the distilling of wine and Vinegar, wine being of an ayery and vaporous substance, that which is the best and most effectuall in it, to wit,

wit, the aiery and fiery liquor, comes from it presently at the first distillation. Therefore the residue that remaines in the bottome of the vessell, is of a cold, dry and acrid nature; on the contrary, the water that comes first from Vinegar being distilled, is insipide and flegmaticke. For Vinegar is made by the corruption of wine, and the segregation of the fiery and aiery parts; wherefore the wine becomming towre, there remaines nothing almost of the former substance but phlegme; wherefore seeing phlegme is chiefly predominant in Vinegar, it first rises in distillation. Wherefore he that hopes to distill the spirit of Vinegar, hee must cast away the phlegmaticke substance that first rises, and when by his taste he shall perceive the spirit of the Vinegar, he shall keepe the fire there under, untill the flowing liquor shall become as thicke as honey; then must the fire be taken away, otherwise the burning of it will cause a great stinch.

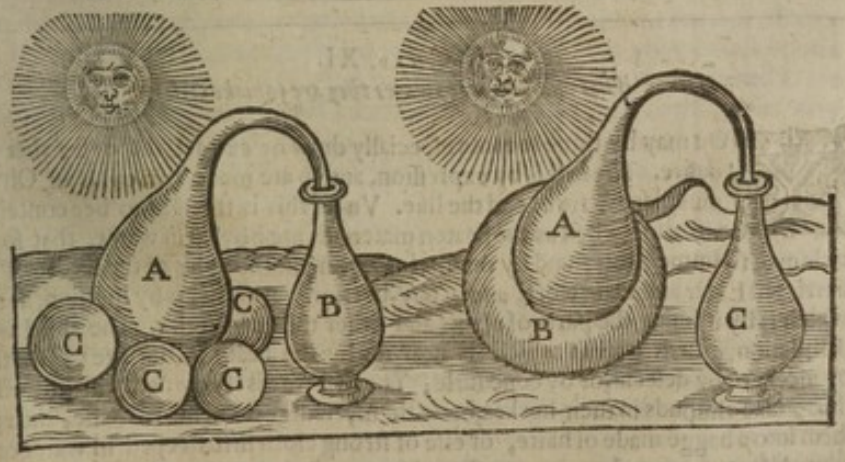
The vessells fit to distill *aqua vitæ* and Vinegar are diverse, as an Alembicke or Retort set in sand or Ashes; a Coppar or brasse bottome of a still, with a head thereto, having a pipe comming forth thereof which runs into a worme, or pipe fastned in a barrell or vessell filled with cold water, and having the lower end comming forth thereof, whose figure wee shall give you when as wee come to speake of the drawing of oyles out of vegetables. The distilling of Wine and Vinegar is different.

CHAP. IX.

Of the manner of rectifying, that is, how to encrease the strength of waters, that have beene once distilled.

TO rectifie the waters that have beene distilled in *Balneo Mariæ*, you must set them in the Sunne in glasses well stopped and halfe filled, being set in sand to the third part of their height, that the water waxing hot by the heate of the Sun may separate it selfe from the phlegme mixed therewith, which will be performed in 12. or 15. dayes. There is another better way to doe this, which is to distill them againe in *Balneo* with a gentle fire, or if you will put them into a retort furnished with his receiver, and set them upon crystall or iron bowles, or in an iron mortar directly opposite to the beames of the Sun, as you may learne by these ensuing signes. The first way. The second.

A Retort with his receiver standing upon Crystall bowles, just opposite to the Sunne beames.



A. *Shewes the Retort.*
B. *The receiver.*
C. *The Crystall bowles.*

Another Retort with his receiver standing in a Marble or Iron mortar, directly opposite to the Sun.

A. *Shewes the Retort.*
B. *The Marble, or Iron mortar.*
C. *The receiver.*

CHAP.

Chap. X.

Of distillation by filtring.

YOu shall set three basons or vessells of convenient matter in that site and order that each may be higher than other; that which stands in the highest place, shall conteine the liquor to bee distilled, and that which stands lowest shall receive the distilled liquor. Out of the first and second vessell shall hang shreds or peeces of cloth or cotton, with their broader ends in the liquor or upper vessell, and the other sharper ends hanging downe, whereby the more subtle and defæcate liquor may fall downe by drops into the vessell that stands under it, but the grosser and more feculent part may subside in the first and second vessell. You by this meanes may at the same time distill the same liquor divers times, if you place many vessells one under another after the forementioned manner, and so put shreds into each of them, so that the lowest vessell may receive the purified liquor. In stead of this distillation Apothecaries oft times use bagges.

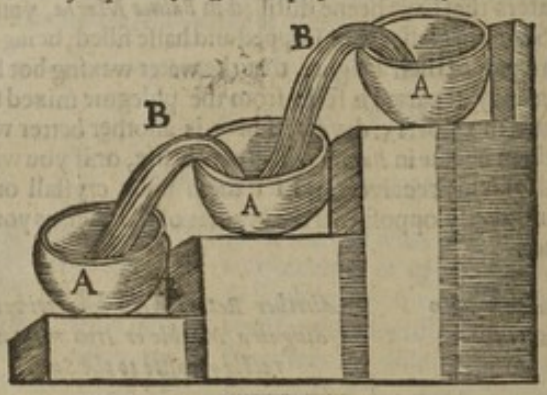
This manner of distillation was invented to make more cleare and pure waters, and all juices and compositions, which are of such a liquid consistence. You may take an example of this from *Lac Virginis*, or Virgins milke, of which this is the description.

Lac Virginis.

℞. *litharg. auri diligenter pulveris.* ℥iij. *macerentur in aceti boni* ℥vj. *trium horarum spatio, seorsim etiam in aqua plantaginis, solani, rosarum, aut communi sal infundatur*; then distill them both by shreads, then mixe the distilled liquors, and you shall have that which for the milkie whitenesse is termed Virgins milke, being good against the redneſſe and pimples in the face, as we have noted in our Antidotary.

Ch. 44. of sect.

The description of vessells to performe the distillation or filtration by shreds.



A, *Shewes the vessell:*
B, *The Clothes or shreds:*

Chap. XI.

What and how many wayes they are to make Oyles.

YOu may by three meanes especially draw or extract the oyles that you desire. The first is by expression, and so are made the oyles of Olives, nuts, seeds, fruits and the like. Vnder this is thought to bee conteined elixation, when as the beaten materialls are boyled in water, that so the oyle may swimme aloft, and by this meanes are made the oyles of the seedes of the berries of Elder and Danewort, and of bay-berries. Another is by infusion, as that which is by infusing the parts of plants and other things in oyles. The third is by distillation, such is that which is drawne by the heate of the fire, whether by ascent or by descent, or by concourse; The first way is knowne by all; now it is thus, take almonds in their huskes, beate them, worke them into a masse, then put them into a bagge made of haire, or else of strong cloth first steeped in water or in white Wine, then put them into presse and so extract their oyle. You may doe the same in pine apple kernells, Hazell nuts, Coco nuts, nutmegs, peach kernells, the seeds of gourds & cucumbers, pisticke nuts, and all such oiely things. Oyle of bayes may be made of ripe bay-berries newly gathered, let them be beaten in a morter and so boiled in a double vessell, and then forthwith put into presse, so to extract oyle as you

Oiles by expression.

By infusion.

By distillation.

Oyle of Bayberries.

you doe from Almonds, unlesse you had rather get it by boyling as we have formerly noted. Oyle of Egges is made of the yoalkes of Egges boiled very hard; when they are so, rub them to peeces with your fingers, then frie them in a panne over a gentle fire, continually stirring them with a spoone untill they become red, and the oyle be resolved and flow from them; then put them into a haire cloth, and so presse forth the oile. The oyles prepared by infusion are thus made, make choise of good oyle wherein let plants, or creatures, or the parts of them bee macerated for some convenient time, that is, untill they may seeme to have transfused their faculties into the oyle, then let them be boiled, so strained or pressed out. But if any aquosity remaine, let it be evaporated by boyling. Some in compounding of oyles adde gums to them, of which though we have formerly spoken in our Antidotary, yet have I thought good to give you this one example. R. *flor. hyper* lb ß. *immittantur in phialam cum flo. cent. & gum. elemi, an.* ℥ij. *oles com.* lb. ij. Let them be exposed all the heate of Summer to the Sunne. If any will adde *aqua vitæ* wherein some Benzoin is dissolved, he shall have a most excellent oyle in this kind. Oyle of Mastick is made *Ex oles rosati* ℥xij. *mastich.* ℥iij. *vini optimi* ℥viij. Let them all bee boiled together to the consumption of the wine, then straine the Oyle and reserve it in a vessell.

Of Egges.

Oyle of S. Johns wort.

Of Mastick.

CHAP. XII.

Of extracting Oiles of vegetables by Distillation.

ALmost all hearbes that carry their flowres and seeds in an umbell, have seeeds of a hot, subtle and aiery substanc, and consequently oyly. Now becausethe oyly substance that is conteined in simple bodyes is of two kindes, therefore the manner also of extracting is twofold. For some is grosse, earthy, viscous, and wholy confused and mixt with the bodyes out of which they ought to be drawne, as that which wee have sayd is usually extracted by expression; this becausse it most tenaciously adheres to the grosser substance, and part of the body, therefore it cannot by reason of this naturall grossenesse, bee lifted up, or ascend. Othersome are of a slender, and aiery substance, which is easily severed from their body, wherefore being put to distillation it easily rises: such is the oyly substance of aromaticke things, as of Iuniper, Aniseeds, Cloves, Nutmegs, Cinnamon, Pepper, Ginger, and the like odoriferous and spicy things. This is the manner of extracting oyles out of them; let your matter be well beaten and infused in water to that proportion, that for every pound of the materiall, there may bee ten pints of water; infuse it in a copper bottome, having a head thereto either tinned or silvered over, and furnished with a couller filled with cold water. Set your vessell upon a furnace having a fire in it, or else in sand, or ashes. When as the water contained in the head shall waxe hot, you must draw it forth, and put in cold, that so the spirits may the better be condensed, and may not fly away: you shall put a long neckt receiver to the nose of the Alembecke, and you shall increase the fire, untill the things conteined in the Alembecke boyle.

What oyles are to be drawne by expression.

The first manner of drawing oiles by distillation.

There is also another manner of performing this distillation, the matter preserved and infused as we have formerly declared, shall be put in a brasse or copper bottome covered with his head, to which shall be fitted, and well luted, a worme of Tinne, this worme shall runne through a barrell filled with cold water, that the liquor which flowes forth with the oyle, may be cooled in the passage forth; at the lower end of this worme you shall set your receiver. The fire gentle at the first, shall be encreased by little and little, untill the conteined matter, as wee formerly sayd, do boyle; but take heede that you make not too quicke or vehement a fire, for so the matter swelling up by boyling may exceede the bounds of the containing vessell, and so violently fly over.

Another way.

Observing these things, you shall presently at the very first see an oiely moisture flowing forth together with the watrish. When the oyle hath done owing which you may know by the colour of the distilled liquor, as also by the consistence

and

and taste, then put out the fire; and you may separate the oyle from the water by a little vessell made like a Thimble and tyed to the end of a sticke; [or, which is better, with a glasse funnell, or instrument made of glasse for the same purpose.] Here you must also note that there be some oiles that swimme upon the top of the water, as oile of aniseedes; othersome on the contrary, which fall to the bottome, as oile of Cinnamon, Mace, and Cloves.

What oiles fall to the bottome.

Moreover you must note, that the watrish moisture, or water that is distilled with oile of Aniseede and Cinnamon, is whitish, and in succesſe of time, will in some small proportion turne into oile. Also these waters must bee kept severall, for they are farre more excellent than those that are distilled by *Balneum Mariæ*, especially those that first come forth together with the oyle. Oiles are of the same faculties with the bodies from whence they are extracted, but much more effectuall; for the force which formerly was diffused in many pounds of this, or that medicine, is after distillation contracted in a few drams. For example, the faculte that was dispersed over j. pound of Cloves, will be contracted into two ounces of oyle at the most; and that which was in a pound of Cinnamon will be drawne into 3 ß. or 3ij. at the most of oile. But to draw the greater quantity with the lesser charge, and without feare of breaking the vessells, whereto glasses are subject, I like that you distill them in copper vessells, for you neede not feare that the oyle which is distilled by them will contract an ill quality from the copper, for the watrish moisture that flowes 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 vessells to extract the Chymicall oiles, or spirits of Sage, Rosemary, Time, Lavender, Aniseeds, Fennell seeds, Cloves, Nutmegs, Cinnamon, Pepper, Ginger, and the like; as also to distill the spirit of wine, of Vinegar and aqua vitæ. *In stead of the barrell and worme, you may use a head with a bucket or rowler about it.*



A. *Shewes the bottome, which ought to be of Copper and tinned on the inside.*

B. *The head.*

C. *The Barrell filled with cold water to refrigerate and condensate the water and oyle that run through the pipe or worme that is put through it.*

D. *A pipe of brasse or latin, or rather a worme of Tinne running through the Barrell.*

E. *The Alembecke set in the fornace with the fire under it.*

Now because we have made mention of Cinnamon, Pepper, and other spices, which grew not here with us, I have thought good to describe these out of *Thevets* Cosmography, he having seene them growing. Pepper growes on shrubs in *India*, these shrubs send forth little branches whereon hang clusters of berries, like to Ivy berries, or bunches of small blacke grapes, or currance. The leaves 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 soone as they come to perfect maturity. Wherefore it oft times happens, that there are more than 100. shippes upon the coast of the lesser *Iava* an Island

of

of that country, to carry thence Pepper and other spices. Pepper is used in Antidotes against poysons, it provokes urine, digests, attracts, resolves, and cures the bites of Serpents. It is properly applyed and taken inwardly against a cold stomacke; in sauces it helpes concoction and procures appetite; you must make choyse of such as is blacke, heavie, and not flaccide. The trees which beare white, and those that beare blacke pepper, are so like each other, that the natives themselves know not which, is which, unlesse when they have their fruite hanging upon them, as the like happens upon our Vines which beare white and blacke grapes. The uses thereof.

The tree that yeelds Cinnamon growes in the mountaines of *India*, and hath leaves very like to bay leaves; branches and shootes at certaine times of the yeere are cut from this tree, by the appointment of the King of that province, the barke of which is that we terme Cinnamon. This is sold to no stranger unlesse at the Kings pleasure and he setting the price thereof, it is not lawfull for others to cut any thereof. The Cinnamon tree.

Galen writes that Cinnamon is of very subtle parts, hot in the third degree, and partaking of some astriction; therefore it cuts and dissolves the excrements of the body, strengthens the parts, provokes the courses when as they stoppe by reason of the admixture of grosse humors; it sweetens the breath, and yeelds a fine taste and smell to medicines, hippocras, and sauces. Of Cinnamon there is made an excellent water against all cold diseases, and also against swoonings, the plague and poysons. The composition thereof is this. Take of the choysest and best Cinnamon one pound, beate it grossely, and put thereto of Rose water 4 pints, of white wine halfe a pint, being thus mixed, put them into a glasse and so let them stand in infusion 24 houres, often stirring of them. Then distill them in *Balneo Mariæ*, closely luting the receiver and vessels least the spirit should fly away. *7. simp.* An excellent Cinnamon tree.

Chap. XIII.

Another manner how to draw the essence and spirits of herbes, flowers, seedes, and spices; as also of Rubarbe, Agaricke, Turbith, Hermodactiles, and other Purgers.

YOu may extract the essences and spirits of the things mentioned in the title of this chapter, as thus. Take Sugar, Rubarbe, Cinnamon, or any other materiall you please; cut it small, or else beate it, then put it into a glasse with a long necke, and poure thereupon as much *aqua vitæ* as shall be sufficient to cover the materials or ingredients, & to overtop them some fingers bredth, then stop up the glasse very close that no ayre enter thereinto; Thus suffer it to infuse for 8 dayes in *balneo* with a very gentle heate; for thus the *aqua vitæ* will extract the faculties of the ingredients, which you shall know that it hath done, when as you shall see it perfectly tinctured with the colour of the ingredients. The eight dayes ended, you shall put this same *aqua vitæ* into another vessell filled with the like quantity of the same materialls prepared after the same manner, that it may also take forth the tincture thereof, and doe thus three or foure times, untill the *aqua vitæ* be deepely tinctured with the colour of the infused Ingredients. A signe that the spirit of wine hath fetcht out the strength of the ingredients.

But if the materialls from whence you desire to extract this spirit or essence, bee of great price, as *Lignum Aloes*, *Rubarbe*, *&c.* You must not thinke it sufficient to infuse it once only, but you must goe over it twise, or thrise, untill all the efficacie be extracted out thereof; you may know that it is all wholy insipide.

These things thus done, as is fitting, put all the liquor tinctured and furnished with the colour and strength of the ingredients, into an Alembecke, fitted and closely luted to its head, and so put into *Balneum Mariæ*, that so you may extract or draw off the *aqua vitæ*, to keepe for the like purpose, and so you shall have the spirit, and essence remaining in the bottome. A signe that the ingredients have lost their strength.

Now if you desire to bring this extract to the height of honey, set it in an earthen pot well leaded, upon hot ashes, so that the thinne part thereof may be evaporated, for thus at length, you shall have a most noble and effectuall essence of that thing which

which you have distilled, whereof one scruple will be more powerfull in purging, than two or three drammes of the thing its selfe.

Chap. XIIII.

How to extract oyle out of Gums, condensed juices, and rosines, as also out of some woods.

What a Retort is.

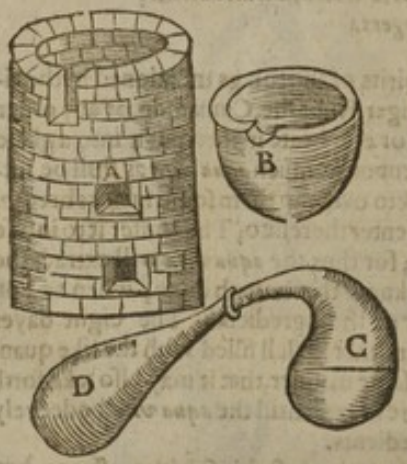
ALL oyles that are drawne out of Gummes, oyely woods and mettalls, are extracted by that vessell which we vulgarly terme a Retort. It must bee made of glasse, or jugges mettall well Leaded, and of such bignesse as shall be convenient for the operation you intend, though commonly it should be made to hold some gallon and an halfe of water; the necke thereof must be a foote and an halfe, or at least a foote long. The receiver is commonly a viall whereinto the necke 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.

The differences of Gummes.

Of gummes some are liquid, some solide; and of the solide, some are more solide than othersome; those that are solide are more troublesome to distill than the liquide, for they are not so easily dissolved or melted, neither doe they yeeld so well to the fire, so that oft times they are burnt before they bee dissolved; whence it is that some for every pound of solide gumme, adde two or three pounds of most cleare and liquide oyle of Turpentine. Besides, liquide things are also hard to be distilled, because when as they come to be throughly hot at the fire, they swell up so much, that they exceed, or runne out of the Retort, and so fall into the receiver, as they were put into the Retort, especially if so be that the fire be too hot at the first. Many to shunne this inconvenience, adde to the things put into the Retort, some sand, as it were, to balast it withall.

Cautions in distilling of gummes.

The figure of a furnace, with his earthen pan and receiver.



A. *Shewes the furnace.*

B. *The earthen pan, or vessell to set the Retort in.*

C. *The Retort or Cucurbite.*

D. *The receiver.*

How to make oyle of Turpentine.

Oyle of Rosin and Turpentine is thus made; take two or three pounds of Turpentine, and put it into a Retort of such largenesse, that three parts thereof might remaine empty, and for every pound of Turpentine adde three or foure 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 necke thereof fit and closely lute a receiver. Lastly, kindle thereunder a soft fire at the first, least the contained materialls should runne over; encrease this fire by little, and little, and take heed that the things become not too hot on a suddaine. At the first a cleare and acide liquor will drop out, wherein a certaine sediment uses to concreat; then will flow forth a most cleere oyle, somewhat resembling the watry and phlegmaticke liquor; then must the fire be somewhat encreased, that the third oyly, cleare, thinne and very golden coloured liquor may rise and distill; but then also a clearer and more violent fire must be raysed, that so you

may

may extract an oyle that will be red like a carbuncle, and of a consistence indifferently thicke. Thus therefore you may extract, foure kinds of liquors out of Turpentine, and receive them being different in severall receivers; yet I judge it better to receive them all in one, that so by distilling them againe afterwards you may separate your desired oyle; now there will ten or twelve ounces of oyle, flow from an ounce of Turpentine. This kind of oyle is effectuall against the Palsie, Convulsions, punctures of the nerves, and wounds of all the nervous parts.

But you shall thus extract oyle out of waxe; take one pound of waxe, melt it, and put it into a glasse Retort set in sand, or ashes, as wee mentioned a little before in drawing of oyle of Turpentine, then destill it, by encreasing the fire by degrees. There distills nothing forth of waxe, besides an oyly substance and a little *Phlegma*, yet portion of this oyly substance, presently concreats into a certaine butter-like matter, which therefore would be distilled over againe; you may draw ℥vj, or viij. of oyle, from one pound of waxe. How to make oyle of waxe.

This oyle is effectuall against Contusions, and also very good against cold affects. The faculties thereof.

Chap. XV.

Of extracting of oyles out of the harder sorts of Gummes, as myrrhe, mastich, frankincense and the like.

Some there be who extract these kinds of oyles with the Retort set in ashes or sand, as we mentioned in the former Chapter of oyles of more liquid gums, adding for every pound of gumme two pints of *Aqua vitæ*, and two or three ounces of oyle of Turpentine, then let them infuse for eight or ten dayes in *Balneo Mariæ*, or else in horse dung; then they set it to distill in a Retort. Now this is the true manner of making of oyles of Myrrhe; Take Myrrhe made into fine pouder, and therewith fill hard Egges in stead of their yoalkes being taken out; then place the Egges upon a gridiron, or such like grate in some moist place as a cellar, and set under them a Leaden earthen panne; the Myrrhe will dissolve into an oilely water, which being presently put into a glasse and well stopped, with an equall quantitie of rectified *aqua vitæ*, and so set for three or foure monthes in hot horse dung, which past the vessell shall be taken forth, and so stopped that the conteined liquor may be poured into an Alembecke, for there will certaine grosse setling by this meanes remaine in the bottome, then set your Alembecke in *Balneo* and so draw off the *aqua vitæ* & phlegmaticke liquor, and there will remaine in the bottome a pure & cleare oile, whereto you may give a curious colour by mixing therewith some Alkanet, and a smell by droping thereinto a little oyle of Sage, Cinnamon or cloves How to make oyle of myrrhe. How to give it a pleasing colour and smell.

Now let us shew the composition and manner of making of balsames by giving you one or two examples; the first of which is taken out of *Vesalius* his Chirurgery; and is this.

℞. *terebinth. opt.* ℔. j. *ol. laurini* ℥iiij. *galbani*, ℥ij. *gum. elem.* ℥iij ß. *thuris, Myrrhæ, gum. hederæ, centaur. majoris, ligni aloes, an.* ℥ij. *galangæ, caryophyll. consolidæ majoris, Cinamoni, nucis moschat. zedoariæ, zinzib. dictamni albi, an.* ℥j. *olei vermium terrestrium*, ℥ij. *aq. vitæ* ℔. vj. *Vesalius* his balsame.

The manner of making it is this, let all these things be beaten and made small, and so infused for three dayes space in *aqua vitæ*, then distilled in a Retort just as wee said, you must distill oyle of Turpentine and waxe. There will flow hence three sorts of liquors, the first watrish and cleare, the other thinne, and of pure golden colour; the third of the colour of a Carbuncle, which is the true Balsame. The first liquor is effectuall against the weakenesse of the stomacke comming of a cold cause, for that it cuts flegme and discusses flatulencies; the second helpes fresh and hot bleeeing wounds, as also the palsie. The third is chiefly effectuall against these same effects. The composition of the following *Balsamum* is out of *Fallopius*; and is this. ℞. *terebinth. claræ*, ℔. ij. *olei de semine lini* ℔. j. *resinæ pini*, ℥vj, *thuris, myrrhæ, aloes, mastiches, sarcocollæ, an.* ℥iij. *macis, ligni Aloes, an.* ℥ij. *croci*, *Fallopius* his balsame.

croci, ʒß. Let them all be put in a glasse Retort, set in ashes and so distilled. First there will come forth a cleere water, then presently after, a reddish oyle, most profitable for wounds.

Now you must know that by this meanes, we may easily distill all Axungia's, fatts, parts of creatures, woods, all kinds of barkes and seeds, if so bee that they be first macerated as they ought to bee, yet so that there will come forth more watry than oyly humidity. Now for that wee have formerly frequently mentioned *Thus* or frankinsense, I have heere thought good out of *Thevets* Cosmography to give you the description of the tree from which it flowes. The frankincense tree (saith hee) growes naturally in *Arabia*, resembles a pine, yeelding a moisture that is presently hardened, and it concreates into whitish cleare graines, fatty within, which cast into the fire, take flame. Now frankincense is adulterated with pine-rosin and Gumme, which is the cause that you shall seldome finde that with us, as it is here described; you may finde out the deceit as thus, for that neither Rosin nor any other gumme takes flame, for Rosin goes away in smoake, but frankincense presently burnes. The smell also bewrayes the counterfeite, for it yeelds no gratefull smell as frankincense doth. The *Arabians* wound the tree that so the liquor may the more readily flow forth, whereof they make great gaine. It fills up hollow Vlcers and cicatrizes them; wherefore it enters as a cheese ingredient into artificiall balsame; frankincense alone made into powder and applyed, stanches the blood that flowes out of wounds.

What frankinsense is.

The faculties thereof.

Mathiolus saith, that it being mixed with Fullers earth, and oyle of Roses, is a singular remedy against the inflammation of the breasts of women, lately delivered of childe.

Chap. XVI.

The making of oyle of Vitriall.

TAke ten pounds of Vitriol, which being made into powder, put it into an earthen pot, and set it upon hot coales, untill it be calcined, which is when as it becomes reddish; after some five, or sixe houres, when as it shall bee throughly cold, breake the pot, and let the vitriol be againe made into powder, that so it may be calcined againe, and you shall doe thus so often and long untill it shall be perfectly calcined, which is when as it shall be exactly red; then let it be made into powder, and put into an earthen Retort, like that wherein *aqua fortis* is usually drawne, adding for every pound of your calcined vitriol of tile shreds, or powdered bricke 1 quarter; then put the Retort furnished with its receiver into a fornace of Reverberation, alwayes keeping a strong fire, and that for the space of 48 houres, more or lesse according to the manner and plenty of the distilling liquor. You shall know the distillation is finished when as the receiver shall begin to recover his native perspicuity, being not now filled with vaporouse spirits, wherewith as long as the humor distills it is repleniſhed and lookes white.

The signe of perfectly calcined vitriol.

Now for the receiver there are 2 things to be observed. The first is, that it bee great and very capacious, that it may not be 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 vessell filled with cold water, least it should be broken by being over hot; you may easily perceive all this by the ensuing figure.

A Fornace or Reverberation furnished with his Retort and Receiver.



A. *Shewes the Fornace.*

B. *The Retort.*

C. *The Receiver.*

D. *The vessell filled with cold water.*

Chap. XVII.

A table or Catalogue of medicines and instruments serving for the cure of Diseases.

MEdicines and medicinall meates fit for the cure of diseases, are taken from living Creatures, plants and mineralls. From living creatures are taken,

Hornes.
Hooves.
Haires.
Feathers.
Shells.
Sculles.
Scailes.
Sweates.
Skinnes.
Fatts.
Flesh.
Blood.
Entrailes.
Vrine.
Smells whether they be stincking or sweete, as also poysons: whole creatures themselves, as,
Foxes.
Whelpes.
Hedgehogs.
Frogs.
Wormes.
Crabs.
Cray-fishes.
Scorpions.
Horseleaches.
Swallowes.
Dungs.
Bones.
Extreame parts.
Hearts.
Liver.
Lungs.
Braine.
Wombe.
Secundine.
Testicles.
Pizle.
Bladder.
Sperme.
Taile.
Coats of the Ventricle.
Expirations.
Bristles.
Silke.
Webbes.
Teares.
Spittle.
Honey.
Waxe.
Egges.
Milke.
Butter.
Cheese.
Marrow.
Rennet.

From Plants, that is, Trees, shrubs, and hearbes are taken,

Roots.
Mosse.
Pith.
Sions.
Buds.
Stalkes.
Leaves.
Floures.

Cops.
Fibers, or hairy threds.
Eares.
Seeds.
Barke.
Wood.
Meale.
Iuices.
Teares.
Oyles.
Gums.
Rosins.
Rottennesse
Masse or spissament. Manna, which falling downe like dew upon plants, presently concreates.
Whole plants, as
Mallowes.
Onions, &c.

Mettalls, or mineralls, are taken either from the water, or earth, and are either kinds of earth, stones, or mettalls, &c.

The kinds of earth are,
Bole Armenicke.
Terra sigillata.
Fullers earth.
Chaulke.
Okar.
Plaister.
Lime.
Now the kinds of stone are,
Flints.
Lapis judaicus.
Lapis Lyncis.
The Pumice.
Lap. Hæmatites.
Amiantus.
Galactites.
Spunge stones.
Diamonds.
Saphire.
Chrysolite.
Topace.
Loadstone.
The Pyrites or fire-stone.
Alablaster.
Marble.
Cristall, and many other precious stones.
The kinds of Salts as well naturall as artificiare,
Common salt.
Sal nitrum.
Sal Alkali.
Sal Ammoniacum.
Salt of Vrine.
Salt of tartar and generally all salts that may be made of any kind of plants.

Those that are commonly called mineralls are,

Marchasite.
Antimony.
Muscovy Glasse.
Tutty.
Arsnicke,
Orpiment,
Lazure, or blew,
Rose agar.
Brimstone.
Quicke silver,
White Coprose,
Chalcitis,
Psory.
Roman Vitriol
Colcothar, vitriol, or greene Coprose.
Alumen sciffile, Common Alome,
Alumen rotundum. Round Alome.
Alumen liquidum.
Alumen plumosum.
Boraxe, or Burrace,
Bitumen,
Naphtha.
Cinnabaris, or Vermillion.
Litharge of Gold.
Litharge of Silver
Chrysocolla.
Scandaracha.
Red Lead.
White Lead, and divers other

Now the Mettals themselves are,

Gold,
Silver,
Iron,
Lead,
Tinne,
Brasse,
Copper,
Steele.
Lattin and such as arise from these, as the scailes, verdegreace, rust, &c.

Now from the waters, as the Sea, Rivers, Lakes and Fountaines, and the mud of these waters, are taken divers medicines, as white and red Corrall, Pearles and infinite

finite other things which nature the handmayd of the great Architect of this world, hath produced for the cure of diseases; so that into what part soever you turne your eyes, whether to the surface of the earth, or the bowels thereof, a great multitude of remedies present themselves to your view. The choyse of all which is taken from their substance, or quantity, quality, action, place, season, smell, taste, site, figure, and weight, other circumstances, as *Sylvius* hath abundantly shewed in his booke written upon this subject. Of these simples are made diverse compositions, as,

Collyria.
Caputpurgia.
Eclegmata.
Dentifrices.
Dentiscalpia.
Apophlegmatismi.
Gargarismes.
Pills.
Boles.
Potions.
Emplaisters.
Vngnents.
Cerates.
Linaments.
Embrocations.
Fomentations.
Epithemes.
Attractives:
Resolvers:
Suppuratives:
Emollients.
Mundificatives:
Incarnatives.
Cicatrisers.
Putrifiers.
Corrosives.
Agglutinatives.
Anodynes.
Apozemes.
Juleps.
Syrupes.
Powders.
Tablets.
Opiates.
Conserves.
Preserves.
Confections.
Rowles.
Vomits.
Sternutatoryes.
Sudorifickes.
Glysters.
Pessaries.
Suppositoryes:
Fumigations.
Trochisces.
Frontalls.
Cappes.
Stomichers.
Bagges.
Bathes.
Halfe-bathes.
Virgins-milke.
Fuci.
Pications.
Depilatoryes.
Vesicatoryes.
Potentiall cauteries.
Nose-gayes.
Fannes.
Cannopyes, or extended cloathes to make winde.
Artificiall fountaines, to distill or droppe downe liquors.

Now these that are thought to be nourishing medicines are,

Restauratives
Cullisses
Expressions
Gellyes
Ptisans
Barly-creames
Ponadoes
Almond-milkes
Marchpaines
Wafers
Hydro sacchar
Hydromel *and such other drinkes.*
Mucilages
Oxymel
Oxycrate
Rose Vinegar
Hydrælium
Metheglin
Cider
Drinke of Servisses
Ale
Beere
Vinegar
Verjuice
Oyle
Steeled water
Water brewed with bread crummes
Hippocras
Perry, and such like.

Waters

Waters and distilled oyles, and divers other Chymicall extractions.

As the waters and oyles of hot, dry and aromaticke things, drawne in a copper Alembecke, with a cooler, with ten times as much water in weight as of hearbes; now the hearbes must be dry, that the distillation may the better succeede.

Waters are extracted out of flowres put in a Retort, by the heate of the Sunne, or of dung, or of an heape of pressed out Grapes, or by *Balneo*, if there bee a receiver put and closely lated thereto. All kindes of salt of things calcined, dissolved in water, and twise or thrise filtred, that so they may become more pure and fit to yeeld oyle.

Other distillations are made either in Cellars by the coldnesse or moysture of the place, the things being layd either upon a marble, or else hangd up in a bagge; and thus is made oyle of Tartar, and of salts, and other things of An aluminous nature.

Bones must bee distilled by descent, or by the joyning together of vessels. All woods, rootes, barkes, shells of fishes, and seedes, or graines, as of corne, broome, beanes, and other things whose juice cannot be got out by expression, must bee distilled by descent, or by the joyning together of vessells in a Reverberatory fornace.

Mettalls calcined and having acquired the nature of salt, ought to bee dissolved and filtred, and then evaporated till they bee dry; then let them bee dissolved in distilled vinegar, and then evaporated and dryed againe; for so they will easily distill in a Cellar upon a Marble, or in a bagge. Or else by putting them into a glassie retort, and setting it in sand, and so giving fire thereto by degrees untill all the watery humidity be distilled; then change the receiver and lute another close to the Retort, then encrease the fire above and below, and thus there will flow forth an oyle very red coloured; Thus are all metalline things distilled, as Alomes, salts, &c.

Gummes, *axungia*, and generally all rosins are distilled by retort set in an earthen vessell filled with Ashes upon a fornace; now the fire must be encreased by little and little according to the different condition of the distilled matters.

The vessels and Instruments serving for distillations are commonly these.

Bottomes of Alembeckes.
The heads of them, from whence the liquors droppe.
Refrigeratories.
Vessels for sublimation.
For Reverberation.
For distilling by descent.
Crucibiles and other such.
Vessells for Calcination.
Haire strainers.
Bagges.
Earthen platters.
Vessells for circulation, as
Pellicanes.
Earthen Basons for filtring:
Fornaces.
The secret fornaces of Philosophers:
The Philosophers egge:
Cucurbites
Retorts
Bolt heads
Vrinalls
Receivers
Vessells so fitted together that the lowermost receives the mouth of the uppermost, whence they may bee termed conjoyned Vessells: They are used in distilling *per descensum*.
Marbes exquisitly smooth for distillations to be made in Cellars.
Pots to dissolve calcined mettalls in.

4

A CATALOGVE OF THE Chirurgions Instuments mentioned in this whole worke.

RIngs wherein little Lancets lye hid, to open Impostumes.
Trunkes or hollow Instruments going with springs.
A vent, or cooler for the wombe made like a pessary.
Hollow tents.
Sundry Cauteries, as flat, round, sharpe pointed, cutting, &c.
Constrictory rings to twitch or binde the Columella.
Speculum { Oris. Ocul. Ani. Uteri.
A trunke or pipe with an actuall Cautery in it.
Crooked Knives.
A pipe in forme of a quill:
Divers trusses with one, or more boulsters.
A shoulder-band to bee put about the necke, to hold up a trusse.
A needle to draw through a golden wire, &c.
Pipes with feneſtells, and needles fit for sutures.
Cutting mullets.
Mullets onely to hold and not to cut.
Mullets to take forth splinters of bones.
Mullets to draw teeth.
An incision knife.
Scrapers to plaine or smooth the bones, or else to cut them.
Cutting or hollow Scrapers.
A Leaden mallet to drive the scrapers or Chissels into the scull.
A Gimblet in shape and use resembling that which Coopers use to lift up the sunke staves of their caske withall.
Levatories, of which kind is the three footed one.
Other Levatories, which taken by their handles, and their tongues put under the depreſt bones, lift them up.
Sawes.
A desquamatory Trepan.
Plyers to take forth splinters of bones.
A Gimblet to perforate the scull.
A Trepan fit to divide the scull, with the screw, point or peircer, brace, and cover or cap that keepes it from running in too farre.
A plate to set one foote of the compasse upon.
A cutting paire of Compasses both open and shut.
A fit instrument to depresse the *Dura Mater* without hurting thereof.
A syring to make injection withall.
A paire of Pincers with holes through them to take up the skinne for making a Seton.
Setons as well dry, as moystened with oyntments.
Crowes, Parrots, Swans, Duckes, Lizards, Cranes, } Beakes, and these either { straight, crooked, toothed, or smooth.
Catch-bullets, and Plyers to draw forth peices of maile, and splinters of bones that lye deepe in.
Hollow and smooth Dilaters, diversly made for the different wounds of the parts.
Probes fit for to put flamulaes into wounds; and these either straight, or crooked, perforated, or unperforated.
Screwed mullets to draw forth barbed heads of Arrowes and the like.
Lancets to let blood, and scarrifie as well straight, as crooked.
A *Pyulcos*, or Matter-drawer.
Ligatures, bands, swathes, thongs of Leather, woollen, linnen, round, slit, sowne together; againe some are upper binders, others under binders.
Againe these are either expreising, or else conteining, and that either the applyed medicines, or the lips of wounds, or members put in a fit posture, which therefore they call a sarcoticke Ligature.
Thred.
Bottomes, or clewes of thred, or yarne.
Pledgets, compresses, boulsters, doubled cloathes.
Ferula, or Splints.
Cases.
Boxes.

Juncke

Iunckes.
Glossocomies.
Ambi, a kinde of Glossocomie.
A pully, with its wheeles, and wooden and Iron pinnes, whereon the wheeles may runne:
Ropes aswell to draw and extend, as hold up the member, &c.
Screw pins.
A hand-vice.
Hookes.
Buttons or stayes to fasten to the skinne to hold together the lippes of the wounds.
Linte.
Cushions, pillowes, linnen cloathes.
Files.
Dentiscalpia, Dentifricia, Dentispicia.
Catheters, guiders of the worke.
A bathing chaire or seat, bathing tubbes, halfe tubs, caldrons, funnells, with all other circumstances belonging to a bath.
Stoves, or hot houses to sweate in.
Cockes to turne and let out water.
A Gimblet to breake the stone.
Hookes.
Hollow probes slit on their upper sides.
Winged Instruments to draw forth stones.
An instrument to cleanse the bladder.
Spathulaes straight and crooked.
Cupping-glasses.
Hornes.
Pipes or catheters to weare Caruncles.
Artificiall members, as eyes of gold enamelled, &c.
An Vrinall, or case to save the water in.
An artificiall yard.
Crutches.
Niples, or leaden covers for sore breasts.
Griffins tallents to draw forth a *Mola*, out of the wombe.
A sucking glasse to draw a breast withall.
Pessaries, both long and ovall.
Syrings to give glisters, as also to make injection into the eares, and wombe.

THE

THE EFFIGIES OF HIPPOCRATES OF COOS, THE PRINCE OF PHYSITIONS.



INVICTVM (Hippocrates) quòd te potuere superbæ
Eoi unquam 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

SELECT APHORISMES CONCERNING CHIRVRGERIE, collected out of the Aphorismes of the great *Hippocrates*.

Aph. 27. sect. 6.

WHosoever being suppurate or hydropicall, are burnt, or cut therefore, if all the matter, or water flow forth at once, they certainely dye.

31. 6.

The drinking of wine, or a bath, fomentation, blood-letting, or purging, helpe the paines of the eyes.

38. 6.

Such as have hidden, or not ulcerated Cancers, had better not to cure them. For healed they quickely dye, not cured they live the longer.

55. 6.

Gouty paines usually stirre in the Spring and Fall.

28. 6.

Eunuches are not troubled with the Goute, neither doe they become bald.

49. 6.

Whosoever are troubled with the Goute, have ease in forty dayes, the inflammation ceasing.

66. 5.

In great and dangerous wounds if no swelling appeare, it is ill.

67. 5.

Soft tumors are good, but crude ones ill.

25. 6.

For an *Erysipelas*, or inflammation to returne from without inwards, it is not good; but to come from within outwards, is very good.

19. 7.

An *Erysipelas* comming upon the baring of a bone, is evill.

20. 7.

Putrefaction, or suppuration comming upon an *Erisipelas*, is ill.

21. 6.

If *Varices* or Hæmorrhoides happen to such as are mad, their madnesse ceases.

21. 7.

A fluxe of blood ensuing upon a great pulsation in Vlcers is ill.

26. 2.

It is better that a feaver happen upon a convulsion, than a convulsion upon a feaver.

4. 6.

Those Vlcers that have the skinne smooth or shining about them, are evill.

18. 6.

The wound is deadly whereby the bladder, braine, heart, midriffe, any of the small Guts, stomacke or Liver are hurt.

45. 6.

Whatsoever Vlcers are of a yeares continuance or more, the bone must necessarily scaile, and the scarres become hollow.

2. 7.

The bone being affected, if the flesh be livide, it is ill.

14. 7.

Stupidity and lacke of reason, upon a blow of the head, is evill.

24. 7.

A *Delirium* happens if a bone (to wit, the scull) bee cut even to the hollownesse thereof.

Whilest

Whilst *Pus*, or matter is in generating, paines and feavers happen rather than when it is already made.

18. 5.

Cold things are hurtfull to the bones, teeth, nerves, braine, spinall marrow, but hot things are good.

46. 2.

Two paines infesting together, but not the same place, the more vehement obscures the other.

74. 7.

A corruption and abscesse of the bone is caused by the corruption of the flesh.

506. *Coacar. prænot.*

A livid or dry Vlcer, or yellowish, is deadly.

19. 6.

When as a bone, or gristle, or nerve, or small portion of the cheeke, or the prepuce is cut asunder, it neither encreases, nor growes together.

24. 6. *Aph. & 513. Coacar.*

If any of the small guts be cut, it knits not againe.

50. 7.

Those that have the braine sphacelate, that is, corrupt, they dye within three dayes; if they escape these, they recover.

9. 7.

Bleeding at a wound causing a Convulsion, is the foreteller of death.

20. 5.

Cold is biting to Vlcers, hardens the skin, causes paine, not easily comming to suppuration; blackness, aguish shakings, convulsions, crampes.

508. *Coac.*

Those who have the temples cut, have a Convulsion upon the parts contrary to the section.

44. 7.

Whosoever being suppurate are burnt or cut, if pure and white quitture shall flow forth they escape; but if that which is bloody, feculent, and stinking, then they dye.

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 leave them, onely foretelling the end of the disease.

Celsus, Cap. 10. *Lib.* 2.

It is better to try a doubtfull remedy than none at all.

FINIS.

THE EFFIGIES OF GALEN THE PRINCE OF PHYSITIONS NEXT TO HIPPOCRATES.



AEQVVM *erat Hippocratem divino è semine Divûm,*
Orbem muneribus conciliare sibi:
Scripta sed involuit tam multo ænigmate, verum
Vt quamuis solers nullus habere queat;
Pergamei auxilio nisi sint monimenta Galeni,
Qui docta 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 quoq; temporibus.

BON. GRA. PARIS. MEDIC.

RVLES OF CHIRVRGERY BY THE AVTHOR.

1
PRactise is an operation agreeable to the rules and lawes of the Theory.

2
Health is not received by words, but by remedies fitly used.

3
Remedies knowne and approved by use and reason, are to be preferred before such as are unknowne, or but lately found out.

4
Science without experience gets the Physition no great credit with the patient.

5
Hee that would performe any great and notable worke, must diligently apply himselfe to the knowledge of his subject.

6
It is the part of a good Physition to heale the disease, or certainly to bring it to a better passe, as nature shall give leave.

7
The Chirurgion must be active, industrious, and well handed, and not trust too much to bookes.

8
He that hath not beene versed in the operations of the Art, nor a frequent auditor of the Lectures of such as are learned therein, and sets forth himselfe for a brave Chirurgion for that hee hath read much, he is either much deceived or impudent.

9
He shall never doe any thing praise-worthy, that hath got his mastery in Chirurgery by gold, not by use.

10
You shall comfort the patient with hope of recovery, even when as there is danger of death.

11
To change Physitions and Chirurgions is troublesome, but not good for the Patient.

12
Though the disease prove long, yet it is not fit that the Physition give over the patient.

13
Great wounds of large vessells, are to be judged deadly.

14
Every contusion must be brought to suppuration.

15
As the nature or kind of the disease must bee knowne, so also must the remedy.

16
An Abscesse of the bone of the pallate, is in danger to cause a stinking breath.

17
Bleeding caused by heate must be represt by cold.

18
Wounds of nervous parts require medicines which by the subtlety of the parts may enter in and draw from farre.

19
It is not fit for such as have Vlcers in their Legges, neither to walke, stand nor sit, but to rest themselves in bed.

20
All biting and acrid medicines are offensive to cleane Vlcers.

21
For restoring of dislocations you must hold them fast, stretch them out, and force them in.

22
A great Gangreene admits no cure, but cutting.

23
A monster is a thing dissenting from the lawes of nature.

24
Wounds of the Chest presently become sanious and purulent.

25
The wounds made by all venemous creatures are dangerous.

26
The south wind blowing, wounded members easily become mortifyed.

27
Such as are wounded, and desire to bee quickly whole, must keepe a spare diet.

28
Vntemperate bodies doe not easily recover of diseases.

29
Round Vlcers unlesse they be drawne into another figure, doe not easily heale up.

30
An Erysipelatous Vlcer requires purgation by stoole.

31
Crying is good for an infant, for it serves in stead of exercise and evacuation.

32
Greese is good for none but such as are very fat.

33
Idleneſſe weakens and extinguisheth the native heate.

34
An ill natured Vlcer yeelds not unlesse to a powerfull remedy.

35
A bath resolves and discusses humors, and gently procures sweate.

36
Cold diseases are troublesome to old people, and hard to be helped; but in young bodies they are neither so troublesome, nor contumacious.

37
Exercised bodies are lesse subject to diseases.

38
Moist bodies though they neede small nourishment, yet stand they in neede of large evacuation.

39
Sicke people dye sooner of an hot distemper than of a cold, by reason of the quicke and active operation of fire.

40
The quitture that flowes from an Vlcer is laudible, which is white, smooth and equall.

The end of the twentiseaventh Booke.

HOVV TO MAKE REPORTS, AND TO EMBALME THE DEAD.

The Tvventieighth Booke.

NOw it onely remaines that wee instruct the Chirurgion in making or framing his reporte, or opinion, eyther of the death of any person, or of the weakenesse, or deprivation of any member in the function or execution of its proper office and dury. Herein it is meete that hee be very considerate, that is to say, ingenious or wise in making his report, because the events of diseases are oftentimes doubtfull and uncertaine, neither can any man foretell them certainly, whether they will be for life or death, by reason of the manifold nature of the subject of which we speake, and also the uncertaine condition of the humors both in their kind and motion. Which was the cause why *Hippocrates* even in the first of his Aphorismes pronounceth, that judgement is difficult. But first of all, it is very expedient that a Chirurgion be of an honest mind, that hee may alwayes have before his eyes a carefull regard of true piety, that is to say, the feare of God and faith in Christ, and love toward his neighbours with hope of life everlasting, least that hee being carried away by favour, or corrupted with money or rewards, should affirme or testifie these wounds to bee small that are great, and these great that are small; for the report of the wound is received of the Chirurgion according to the civill Law.

Why a Chirurgion must be carefull in making of Reports.

Why judgement is difficult.

It is recorded in the workes of ancient Physitions that wounds may bee called great for three respects.

Wounds termed great for three respects.

The first is by reason of the greatnesse of the dissolved unitie or resolution of Continuity, and such are these wounds which made by a violent stroake with a backe-sword, have cut off the arme, or legge, or overthwart the breast. The second is by reason of the dignitie or worthinesse of the part; now this dignity dependeth on the excellencie of the action; therefore thus any little wound made with a bodkin, knife, in any part whose substance is noble, as in the Braine, Heart, Liver or

or any other part whose action and function is necessary to preserve life, as in the Weasant, Lungs or Bladder, is judged great. The third is, by reason of the greatnesse and ill habit, or the abundance of ill humors or debility of all the wounded body; so those woundes that are made in nervous parts, and old decayed people, are sayd to be great. But in searching of wounds let the Chirurgion take heede that he be not deceived by his probe. For many times it cannot goe into the bottome of the wound but stoppeth, and sticketh in the way, either because he hath not placed the patient, in the same posture, wherein he was when he received his hurt; or else for that the stroake being made downe right, slipt aside to the right or left hand, or else from below upwards, or from above downewards, and therefore hee may expect that the wound is but little and will be cured in a short time, when it is like to bee long in curing, or else mortall. Therefore from the first day it behooveth him to suspend his judgement of the wound untill the ninth, for in that time the accidents will shew themselves manifestly, whether they be small or great, according to the condition of the wound, or wounded bodyes, and the state of the ayre according to his primitive qualities, or venomous corruption.

How long a Chirurgion must suspend his judgement in some cases.

But generally the signes, whereby we may judge of diseases, whether they bee great or small, of long or short continuance, mortall or not mortall, are foure. For they are drawne either from the nature, and essence of the disease, or from the cause or effects thereof, or else from the similitude, proportion and comparison, of those diseases with the season or present constitution of the times. Therefore it wee are called to the cure of a greene wound, whose nature and danger, is no other but a simple solution of Continuity in the musculous flesh, we may presently pronounce that wound to be of no danger, and that it will soone be cured. But if it have an Vlcer annexed unto it, that is, if it be sanious, then we may say it will be more difficult and long in the curing; and so we may pronounce of all diseases, taking a signe of their essence and nature. But of the signes that are taken of the causes, let this bee an example. A wound that is made with a sharpe pointed and heavie weapon, as with an halbeard being stricken with great violence, must be accounted great, yea and also mortall if the accidents be correspondent.

Generall signes wherby we judge of diseases.

But if the patient fall to the ground through the violence of the stroake, if a cholericke vomiting follow thereon, if his sight faile him, together with a giddinesse, if blood come forth at his eyes and nosthrills, if distraction follow with losse of memory and sense of feeling, we may say; that all the hope of life, remaineth in one small signe which is to be deduced from the effects of the wound. But by the comparing it unto the season that then is, and diseases that then assault mans body, wee may say, that all those that are wounded with gunshot are in danger of death, as it happened in the schirmishes at the seige of *Roan*, and at the battall of Saint *Denis*. For at that time, whether it were by reason of the fault of the heavens, or ayre, through the evill humors of mans body, and the disturbance of them; all wounds that were made by gunshot, were for the most part mortall. So likewise at certaine seasons of the yeare, we see the small pockes and measels breake forth in children, as it were by a certaine pestilent contagion to the destruction of children onely, inferring a most cruell vomit and laske, and in such a season the judgement of those diseases is not difficult. But you by the following signes may know what parts are wounded. If the patient fall downe with the stroake, if he lye senseleese, as it were asleepe, if he voyde his excrements unwittingly, if he be taken with giddinesse, if blood come out at his eares, mouth, and nose, and if he vomit choller, you may understand that the scull is fractured, or pearced through, by the defect in his understanding and discourse. You also may know when the scull is fractured, by the judgement of your externall senses, as if by feeling it with your finger you finde it elevated or depressed beyond the naturall limits, if by striking it with the end of a probe, when the *Pericranium* or nervous filme that invesleth the scull is cut crosse wise; and so divided there from it, yeeld a base 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.

Wounds deadly by the fault of the ayre.

Signes of a fractured scull.

But we may say, that death is at hand if his reason and understanding faile him, if he be speechlesse, if his sight forsake him, if he would tumble headlong out of his bed

Signes of death by a wound on the head.

bed, being not at all able to moove the other parts of his body; if he have a continuall feaver, if his tongue be blacke with drieneſſe, if the edges of the wound bee blacke or dry, and caſt forth no ſanious matter, if they reſemble the colour of ſalted fleſh, if he have an apoplexie, phrenſie, convulſion or palſie with an involuntarie excretion, or abſolute ſuppreſſion of the Vrine and excrements. You may know that a man hath his throate, 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 wayes, for the patient can neither ſpeake nor ſwallow any meate or drinke; and the parts that are cut aſunder, divide themſelves by retraction upwards or downewards one from another, whereof commeth ſodaine or preſent death. You may know that a wound hath peirced into the breſt or concavity, of the body, if the ayre come forth at the wound, making a certaine whizzing noyſe, if the patient breathe with great difficulty, if he feele a great heavineſſe or weight, on or about the midriffe, whereby it may be gathered that a great quantity of blood, lyeth on the place or midriffe, and ſo cauſeth him to feele a weight or heavineſſe, which by little and little, will bee caſt up by vomiting. But a little after a feaver commeth, and the breath is unſavory, and ſtinking, by reaſon that the putrefying blood is turned into *ſanies*: the patient cannot lye but on his backe, and he 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.

Signes that the throate is cut.

Signes that a wound hath pierced in the capteity of the cheſt.

We 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 greevous ſhortneſſe of breath and with a paine in his ſides. We may perceive the Heart to be wounded by the aboundance of blood that commeth out at the wound, by the trembling of all the whole body, by the faint and ſmall pulſe, paleneſſe of the face, cold ſweate, with often ſwounding, coldneſſe of the extreame parts, and ſuddaine death.

Signes that the Lungs are wounded.

That the heart is wounded.

When the midriffe (which the Latines call *Diaphragma*) is wounded, the patient feeleth a great weight in that place, he raveth and talketh idlely, he is troubled with ſhortneſſe of winde, a cough, and fit of greevous paine, and drawing of the entralls upwards. Wherefore when all theſe accidents appeare, we may certainely pronounce that death is at hand.

The midriffe.

Death appeareth ſodainely, by a wound of the hollow Veine, 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 hindred.

The *Vena Cava* and great Artery.

The marrow of the back bone being pierced, the patient is aſſaulted with a Palſie or convulſion very ſudda[illegible], and ſence and motion faileth in the parts beneath it, the excrements of the bladder, are either evacuated againſt the patients will, or elſe are altogether ſtopped.

The ſpinall marrow.

When the Liver is wounded, much blood commeth out at the wound, and pricking paine diſperſeth it ſelfe even unto the ſword-like griſtle, which hath its ſituation at the Lower end of the breſt bone called *Sternon*: the blood that falleth from thence downe into the inteſtines doth oftentimes inferre moſt maligne accidents, yea and ſometimes death.

The Liver.

When the ſtomacke is wounded, the meate and drink come out at the wound, there followeth a vomiting of pure choler, then commeth ſweating and coldneſſe, of the extreame parts, and therefore we ought to prognoſticate death to follow ſuch a wound.

The ſtomacke

When the milt or ſpleene is wounded, blacke and groſſe blood cometh out at the wound, the patient will be very thirſty, with paine on the left ſide, and the blood breakes forth into the belly, and there putrifying cauſeth moſt maligne and greevous accidents and often times death to follow.

The ſpleene

When the guts are wounded, the whole body is griped and pained, the excrements come out at the wound, whereat alſo often times the guts breake forth with great violence.

The guts.

When the reines or Kidnyes are wounded, the patient will have great paine in making his Vrine, and the blood commeth out together therewith, the paine commeth downe even unto the groine, yard, and teſticles.

The kidneyes.

When

The bladder. When the bladder and Vreters are wounded, the paine goeth even unto the entralls; the parts all about, and belonging to the groine are distended, the Vrine is bloody that is made, and the same also commeth often times out at the wound.

The womb. When the wombe is wounded, the blood commeth out at the privities, and all other accidents appeare, like as when the bladder is wounded.

The Nerves. When the sinewes are pricked or cut halfe asunder, there is great paine in the affected place, and there followeth a suddaine inflammation, fluxe, abscesse, feaver, convulsion, and oftentimes a gangreene or mortification of the part, whereof commeth death, unlesse it be speedily prevented.

Having declared the signes and tokens of wounded parts, it now remaineth that we set downe other signes of certaine kindes of death that are not common, or naturall, whereabout when there is great strife and contention made, it oftentimes is determined and ended by the judgement of the discreete Physition or Chirurgion.

Signes that an infant is smothered, or overlayd. Therefore if it chance that a nurse either through drunkennesse, or negligence, lyes upon her infant lying in bed with her, and so stifles or smothers it to death. If your judgement be required, whether the infant dyed through the default, or negligence of the nurse? or through some violent or suddaine diseases that lay hidden and lurking in the body thereof? You shall finde out the truth of the matter by these signes following.

For if the infant were in good health before, if he were not froward or crying, if his mouth and nosethrills now being dead, be moystned or bedewed with a certaine foame, if his face be not pale but of a Violet or purple colour; if, when the body is opened the Lungs be found swolne and puffed up, as it were with a certaine vaporous foame and all the other entralls sound, it is a token that the infant was stifled, smothered or strangled by some outward violence.

If the body or dead corpes of a man be found lying in a field, or house alone, and you be called by a magistrate to deliver your opinion, whether the man were slaine by lightning or some other violent death? you may by the following signes finde out the certainety hereof.

Signes of such as are slaine by Lightning. For every body that is blasted, or striken with lightning, doth cast forth or breathe out an unholsome, stinking or sulphureous smell, so that the birdes or fowles of the ayre, nor dogges will not once touch it, much lesse prey or feede on it: the part that was stricken often times sound, and without any wound, but if you search it well, you shall finde the bones under the skinne to be bruised, broken or shivered in peeces.

But if the lightening hath pierced into the body, which making a wound therein (according to the judgement of *Pliny*) the wounded part is farre colder than all the rest of the body. For lightning driveth the most thinne and fiery ayre before it, and striketh it into the body with great violence, by the force whereof the heate that was in the part is soone dispersed, wasted and consumed. Lightening doth alwayes leave some impression or signe of some fire either by ustion or blackenesse: for no lightning is without fire. *Lib. 2. cap. 54.*

Moreover whereas all other living creatures when they are striken with lightening fall on the contrary side, onely man falleth on the affected side, if hee be not turned with violence toward the coast or region from whence the lightening came.

If a man bee striken with lightening while he is asleepe, hee will be found with eyes open; contrarywise, if hee be striken while hee is awake, his eyes will be closed (as *Plinie* writeth.) *Philip Commines* writeth that those bodyes that are stricken with lightning are not subject to corruption as others are.

Therefore in ancient time it was their custome neither to burne, nor bury them, for the brimstone which the lightning bringeth with it, was unto them in stead of salt, for that by the dryenesse and fiery heate thereof it did preserve them from putrefaction.

Also it may be enquired in judgement, Whether any that is dead and wounded, recei-

receiued theſe wounds alive or dead. Truely the wounds that are made on a liuing man, if he dye of them, after his death will appeare red and bloody, with the ſides or edges ſwolne, or pale round about: contrary wiſe, thoſe that are made in a dead man, will bee neither red, bloody, ſwolne, nor puffed up. For all the faculties and functions of life in the body doe ceaſe and fall together by death; ſo that thenceforth no ſpirits nor blood can be ſent, or flow unto the wounded place. Therefore by theſe ſignes which ſhall appeare, it may be declared that hee was wounded dead or alive. Signes of wounds giuen to a liuing and dead man.

The like queſtion may come in judgement when a man is found hanged, whether he were dead, or alive. Therefore if he were hanged alive, the impreſſion or print of the rope will appeare red, pale, or blacke, and the skinne round about it will be contracted or wrinkled, by reaſon of the compreſſion which the cord hath made; alſo often times the head of the *aſpera arteria* is rent and torne, and the ſecond ſpondile, and the necke luxated or mooued out of his place. Alſo the armes and legges will be pale, by reaſon of the violent and ſodaine ſuffocation of the ſpirits: moreouer there will be a foame about his mouth, and a foamie and filthy matter hanging out at his noſethrills, being ſent thither both by reaſon that the Lungs are ſodainely heated and ſuffocated, as alſo by the conuulſiue concuſſion of the braine like as it were in the falling ſickneſſe. Contrariwiſe, if he be hanged dead, none of theſe ſignes appeare: for neither the print of the rope appeares red or pale, but of the ſame colour as the other parts of the body are, becauſe in dead men the blood and ſpirits doe not flow to the greeued parts. Signes when ther one be hanged aliue or dead.

Whoſoeuer is found dead in the waters, you ſhall know whether they were throwne into the water alive or dead. For all the belly of him that was throwne in alive, will be ſwollen, and puffed up by reaſon of the water that is contained therein; certaine clammie excrements come out at his mouth and noſethrills, the ends of his fingers will be worne and excoriated, becauſe that hee dyed ſtriuing and digging or ſcraping in the ſand or bottome of the riuer, ſeeking ſomewhat whereon hee might take hold to ſaue himſelfe from drowning. Contrariwiſe if he be throwne into the waters being dead before, his belly will not be ſwolne, becauſe that in a dead man all the paſſages and conduites of the body doe fall together, and are ſtopped and cloſed, and for that a dead man breathes not, there appeareth no foame nor filthy matter about his mouth and noſe, and much leſſe can the toppes of his fingers be worne and excoriated, for when a man is already dead, he cannot ſtriue againſt death. Whether one found dead in the water came therein a liue or dead.

But as concerning the bodies of thoſe that are drowned, thoſe that ſwimme on the upper part of the water being ſwolne or puffed up, they are not ſo by reaſon of the water that is contained in the belly, but by reaſon of a certaine vapour, into which a great portion of the humors of the body are conuerted by the efficacy of the purryfying heate. Therefore this ſwelling appeareth not in all men which doe 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 are caſt on the ſhore.

But now I will declare the accidents that come to thoſe that are ſuffocated and ſtifled or ſmoothered with the vapour of kindled or burning charcoales, and how you may foretell the cauſes thereof by the hiſtory following. In the yeere of our Lord God 1575. the tenth day of May, I with *Robert Greualine* Doctor of Phyſicke, was ſent for by Maſter *Hamell* an aduocate of the Court of Parlament of *Perth*, to ſee and ſhew my opinion on two of his ſeruants, of whom the one was his Clarke, and the other his Horſe-keeper. All his family ſuppoſed them dead, becauſe they could not perceiue or feele their Arteries to beate, all the extreame parts of their bodyes were cold, they could neither ſpeake nor moue, their faces were pale and wanne, neither could they bee raiſed up with any violent beating or plucking by the haire. Therefore all men accounted them dead, and the queſtion was onely of what kind of death they dyed, for their maſter ſuſpected that ſome body had ſtrangled them, others thought that each of them had ſtopped one anothers winde with their hands: and others judged that they were taken with a ſodaine apoplexie. But I preſently enquired whether there had beene any fire made with Coales in the houſe lately, where- Of ſuch as are ſmothered by Charcoale.

whereunto their maſter giving eare, ſought about all the corners of the chamber (for the chamber was very little and cloſe) and at laſt found an earthen panne with charcoale halfe burned; which when we once ſaw, we all affirmed with one voyce, that it was the cauſe of all this misfortune, and that it was the maligne fume and venemous vapour, 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 perceive that there was ſome life remaining by the heat and pulſation that I felt though it were very little, wherefore we thought it convenient to augment and encreaſe it. Therefore firſt of all, artificially opened their mouthes, which were very faſt cloſed, and ſticking obſtinately together; and thereinto both with a ſpoone and alſo with a ſilver pipe, we put *aqua vita* often diſtilled with diſſolved *hiera* and treacle; when we had injected theſe medicines often into their mouthes, they began to moove and to ſtretch themſelves, and to caſt up and expell many viſcous excrementall and filthy humors at their mouth and noſtrells, and their Lungs ſeemed to be hot, as it were in their throates.

Therefore then we gave them vomitories of a great quantity of *Oxymel*, and beate them often violently on the laſt ſpondill of the backe, and firſt of the loynes, both with the hand and knee (for unto this place the orifice of the ſtomacke is turned) that by the power of the vomitory medicine, and concuſſion of the ſtomacke, they might be conſtrained to vomit. Neither did our purpoſe faile us, for preſently they voided clammie, yellow and ſpumous fleame and blood.

But wee not being content with all this, blowed up into their noſtrells out of a Gooſe quill, the powder of *Euphorbium*, that the expulſive faculty of the braine might be ſtirred up to the expulſion of that which oppreſſed it; therefore preſently the braine being ſhaken, or mooved with ſneeſing and inſtimulated thereunto by rubbing the chymicall oyle of mints on the pallate and on the cheekes, they expelled much viſcous and clammie matter at their noſtrells.

Then we uſed frictions of their armes, legges, and backe-bones; and miniſtered ſharpe gliſters, by whoſe efficacie the belly being abundantly looſened, they beganne preſently to ſpeake and to take things that were miniſtered unto them of their owne accord, and ſo came to themſelves againe.

In the doing of all theſe things, *Iames Guillemeau* Chirurgion unto the King, and of *Paris*, and *Iohn* of Saint *Germanes* the Apothecary, did much helpe and further us.

In the afternoone that the matter being well begunne might have good ſucceſſe, *Iohn Hautie*, and *Lewis Thibaut*, both moſt learned Phiſitions, were ſent for unto us, with whom we might conſult on other things that were to be done. They highly commending all things that we had done already, thought it very convenient that cordialls ſhould be miniſtered unto them, which by ingendering of laudable humors, might not onely generate new ſpirits, but alſo attenuate and purifie thoſe that were groſſe and cloudy in their bodies. The reſt of our conſultation was ſpent in the enquirie of the cauſe of ſo dire a miſchance. For they ſayd that it was no new or ſtrange thing, that men may be ſmothered with the fume and cloudy vapour of burning coales.

Lib. 9. cap. 12. lib. 22. A hiſtory.

For we reade in the workes of *Fulgoſius*, *Volaterranus* and *Egnatius*, that as the Emperour *Iovinian*, travelled in winter time toward Rome, he being weary in his journey, reſted at a Village called *Didaſtanes*, which divideth *Bithynia* from *Galatia*, where he lay in a chamber that was newly made, and plaiſtered with lime, wherein they burnt many coales, for to dry the worke or plaiſtering, that was but as yet greene on the walls or roofe of the chamber. Now he dyed the very ſame night being ſmothered or ſtrangled with the deadly and poyſonous vapour of the burned charcoale, in the midſt of the night; this happened to him in the eighth moneth of his reigne, the thirtyeth yeere of his age, and on the twentyeth day of Auguſt. But what needs we to exemplifie this matter by the ancient hiſtories, ſeeing that not many yeeres ſince three ſervants dyed in the houſe of *Iohn Bigine* goldſmith, who dwelleth at the turning of the bridge of the Change, by reaſon of a fire made of coales in a cloſe chamber, without a chimney where they lay. And as concerning the cauſes,

theſe

theſe were alleaged. Many were of opinion that it happened by the default of the vapour proceeding from the burned coales, which being in a place voyd of all ayre or wind, inferres ſuch like accidents as the vapour of muſte or new wine doth, that is to ſay, paine, and giddineſſe of the head. For both theſe kindes of vapour beſides that they are crude, like unto thoſe things whereof they come, can alſo very ſuddainely obſtruct the originall of the Nerves, and ſo cauſe a convulſion, by reaſon of the groſſneſſe of their ſubſtance.

For ſo *Hippocrates* writing of thoſe accidents that happen by the vapour of new wine, ſpeaketh. If any man being drunken doe ſuddainely become ſpeechleſſe and hath a convulſion, he dyeth unleſſe he have a feaver therewithall; or if he recover not his ſpeech againe when his drunkenneſſe is over. *Sect. 5. Aph. 5.*

Even on the ſame manner the vapour of the coales aſſaulting the braine cauſed them to be ſpeechleſſe, unmoveable and voyde of all ſenſe, and had dyed ſhortly unleſſe by miniſtring and applying warme medicines into the mouth and to the noſethrells, the groſſneſſe of the vapour had beene attenuated, and the expulſive faculties mooved or provoked to expell all thoſe things that were noyſome: and alſo although at the firſt ſight the Lungs appeared to be greeved more than all the other parts, by reaſon that they drew the maligne vapour into the body, yet when you conſider them well, it will manifeſtly appeare that they are not greeved, unleſſe it be by the ſimpathy or affinity that they have with the braine when it is very greevouſly afflicted.

The proofe hereof is, becauſe preſently after, there followeth an interception or defect of the voyce, ſenſe and motion: which accidents could not bee unleſſe the beginning or originall of the nerves were intercepted or letted from performing its function, being burthened by ſome matter contrary to nature.

And even as thoſe that have an apoplexie doe not dye but for want of reſpiration, yet without any offence of the Lungs, even ſo theſe two young mens deathes were at hand, by reaſon that their reſpiration or breathing was in a manner altogether intercepted, not through any default of the Lungs, but of the braine and nerves diſtributing ſence and motion to the whole body and eſpecially to the inſtruments of reſpiration. Others contrariwiſe contended and ſayd, that there was no default in the braine, but conjectured the interception of the vitall ſpirits letted or hindered from going up unto the braine from the heart, by reaſon that the paſſages of the Lungs were ſtopped, to be the occaſion that ſufficient matter could not be afforded for to perſerve and feed the animall ſpirit. Which was the cauſe that thoſe young men were in danger of death, for want of reſpiration, without the which there can be no life. The occaſion of the death of ſuch as have the apoplexie.

For the heart being in ſuch a caſe, cannot deliver it ſelfe from the fuliginous vapour that encompaſſeth it, by reaſon that the Lungs are obſtructed by the groſſeneſſe of the vapour of the coales, whereby inſpiration cannot well bee made, for it is made by the compaſſing ayre drawne into our bodyes: but the ayre that compaſſeth us doth that which nature endeavoureth to doe by inſpiration, for it moderateth the heate of the heart, and therefore it ought to bee endued with foure qualities. The firſt is, that the quantity that is drawne into the body bee ſufficient. The ſecond is, that it be cold, or temperate in quantity. The third is, that it be of a thinne and meane conſiſtence. The fourth is, that it be of a gentle and benigne ſubſtance,

But theſe foure conditions were wanting in the ayre which theſe two young men drew into their bodyes being in a cloſe chamber,

For firſt, it was little in quantity, by reaſon that ſmall quantity that was contained in that little cloſe chamber, was partly conſumed by the fire of coales, no otherwiſe than the ayre that is conteined in a cupping glaſſe is conſumed in a moment by the flame ſo ſoone as it is kindled. Conditions of the ayre good to breath in.

Furthermore it was neither cold nor temperate, but as it were enflamed with the burning fire of coales.

Thirdly, it was more groſſe in conſiſtence than it ſhould bee by reaſon of the admixtion of the groſſer vapour of the coales: for the nature of the ayre is ſo that it

may bee soone altered, and will very quickly receive the formes and impressions of those substances that are about it.

Lastly, it was noysome and hurtfull in substance, and altogether offensive to the aiery substance of our bodies. For Charcoale are made of greene wood burnt in pits under ground, and then extinguished with their owne fume or smoake, 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 breast and braine, were then stopped with the grossenesse of the vapour of the coales: 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 body is so great, that they cannot long abide sound and perfect without their mutuall helpe by reason of the loving and friendly sympathy and affinitie that is betweene all the parts of the body one with another.

Wherefore the ventricles of the braine, the passages of the lungs and the sleepie Arteries being stopped, the vitall spirit was prohibited from entring into the braine, and consequently the animall spirit retained and kept in, so that it could not come or disperse its selfe through the whole body, whence happened the defect of two of the faculties necessary for life.

Of the signes of virginitie.

It many times happeneth and is a question too frequently handled concerning womens madenheads; whereof the judgement is very difficult. Yet some ancient women and Midwives will bragge that they assuredly know it by certaine and infallible signes. For (say they) in such as are virgins there is a certaine membrane or parchment-like skin in the necke of the womb, which will hinder the thrusting in of the finger if it be put in any thing deepe, which membraine is broken when first they have carnall copulation, as may afterwards be perceived by the free entrance of the finger. Besides, such as are defloured have the necke of their womb more large and wide; as on the contrary, it is more contracted, straite and narrow in virgins. But how deceitfull and untrue these signes and tokens are, shall appeare by that which followeth; for this membraine is a thing preternaturall, and which is scarce found to be in one of a thousand from the first conformation. Now the necke of the womb will be more open or straite according to the bignesse and age of the party. For all the parts of the body have a certaine mutuall proportion and commensuration in a well made body.

Lib. de error. popul.

Joubertus hath written, that at *Lectoure* in *Gascony*, a woman was delivered of a child in the ninth yeare of her age, and that she is yet alive and called *Ioane du Perié* being wife to *Videau Beche* the receiver of the amercements of the King of *Navare*: which is a most evident argument, that there are some women more able to accompany with a man at nine yeares old, than many other at fifteene, by reason of the ample capacity of their wombe and the necke thereof; Besides also, this passage is enlarged in many by some accident, as by thrusting their owne fingers more strongly thereinto by reason of some itching, or by the putting up of a Nodule, or Pessarie of the bignesse of a mans yard, for to bring downe the courses. Neither to

Aph. 39. sect. 5.

have milke in their breasts is any certaine signe of lost virginity; For *Hippocrates* thus writes; But if a woman which is neyther with child, nor hath had one, have milke in her breasts, then her courses have failed her.

Lib. 4. de hist. animal. cap. 20.

Moreover, *Aristotle* reports that there be men who have such plenty of milke in their breasts, that it may be sucked or milked out.

Lib. 12. de subtiles.

Cardan writes, that he saw at *Venice* one *Antony Bussey* some 30. yeares old, who had milke in his breasts in such plenty, as sufficed to suckle a child, so that it did not onely drop, but spring out with violence like a womans milke. Wherefore let Magistrates beware least thus admonished, they too rashly assent to the reports of women. Let Physitions and Chirurgions have a care least they doe too impudently bring magistrates into an errour, which will not redound so much to the judges disgrace, as to theirs.

But if any desire to know, whether one be poysoned, let him search for the Symptomes and signes in the foregoing and particular treatise of poysons. But that this doctrine

doctrine of making Reports may be the easier, I thinke it fit, to give presidents, in imitation whereof the young Chirurgion may frame others. The first president shall be of death to ensue; a second of a doubtfull judgement of life and death; the third of an impotency of a member; the fourth of the hurting of many members.

A certificate of death.

I *A. P.* Chirurgion of *Paris*, this twentieth day of May by the command of the Counsell, entred into the house 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, scailes and *meninges* into the substance of the braine, by meanes whereof, his pulse was weake, he was troubled with raving, convulsion, cold sweate, and his appetite was dejected. Whereby may bee gathered that certaine and speedy death is at hand. In witnesse whereof I have signed this Report with my owne hand.

Another in a doubtfull case

By the Coroners command I have visited *Peter Lucey*, whom I found sicke in bed, being wounded with a Halbard on his right thigh. Now the wound is of the bredth of three fingers, and so deepe that it pierces quite through his thigh with the cutting also of a veine and Artery, whence ensued much effusion of blood, which hath exceedingly weakned him, and caused him to swound often; now all his thigh is wollne, livide, and gives occasion to feare worse symptomes, which is the cause that the health and safety of the party is to be doubted of.

In the losse of a member.

By the Iustices command I entred into the house of *Iames Bertey*, to visite his owne brother; I found him wounded in his right harme, with a wound of some foure fingers bignesse, with the cutting of the tendons bending the legge, and of the Veines, Arteries, and Nerves. Wherefore I affirme that he is in danger of his life, by reason of the maligne symptomes that usually happen upon such wounds, such as are great paine, a feaver, inflammation, abscesse, convulsion, gangreene and the like. Wherefore he stands in neede of provident and carefull dressing, by benefit wherof if he escape death, without doubt he will continue lame, during the remainder of his life, by reason of the impotency of the wounded part. And this I affirme under my hand.

Another in the hurts of divers parts.

We the Chirurgions of *Paris*, by the command of the Senate, this twentieth day of March, have visited Master *Lewis Vertoman*, whom wee found hurt with five wounds. The first inflicted on his head, in the middle of his forehead bone, to the bignesse of three fingers, and it penetrates even to the second table, so that we were forced to plucke away three splinters of the same bone. The other was athwart his right cheeke, and reacheth from his eare, to the midst of his nose, wherefore wee stitched it with foure stitches. The third is on the midst of his belly, of the bignesse of two fingers, but so deepe that it ascends into the capacity of the belly, so that we were forced to cut away portion of the Kall, comming out thereat, to the bignesse of a wallnut, because having lost its naturall colour, it grew blacke and putrified. The fourth was upon the backe of his left hand, the bignesse almost of foure fingers, with the cutting of the Veines, Arteries Nerves and part of the bones of that part; whence it is, that he will be lame of that hand, howsoever carefully and diligently healed.

Now because by hurting the spinall marrow, men become lame, sometimes of a legge; it is fit you know that the spinall marrow descends from the braine like a rivelet for the distribution of the Nerves, who might distribute sense and motion to all the parts under the head; wherefore if by hurting the spinall marrow, the patients armes or hands are resolved or numme, or wholy without sense, it is a signe these Nerves are hurt which come forth of the fifth, sixth, seaventh *vertebræ* of the necke. But if the same accidents happen to the thigh, legge or foote with refrigeration, so that the excrements flow unvoluntarily, without the patients knowledge, or else are totally suppresst, it is a signe that the linewes which proceed from the *vertebræ* of the loynes and holy-bone are hurt or in fault; so that the animall faculty bestowing sense and motion upon the whole body, and the benefit of opening and shutting to the sphincter muscle of the bladder and fundament, cannot shew its self in these parts, by which meanes suddaine death happens, especially if there be difficulty of breathing therewith.

A caution in making report of a woman with child being killed.

Being to make report of a child killed with the mother, have a care that you make a discreete report, whether the childe were perfect in all the parts and members thereof, that the judge may equally punish the author thereof. For he merriteth farre greater punishment, who hath killed a child perfectly shaped and made in all the members; that is, he which hath killed a live childe, than he which hath killed an *Embryon*, that is, a certaine concretion of the spermaticke body. For *Moses* punisheth the former with death, as that he should give life for life, but the other with a pecuniary mulct. But I judge it fit to explifie this report by a president.

I *A. P.* by the Iudges command visited Mistris *Margaret Vimary*, whom I found sicke in bed, having a strong feaver upon her, with a convulsion and effluxe of blood out of her wombe, by reason of a wound in her lower belly, below her navill on the right side, penetrating into the capacity of her belly, and the wombe therein; whence it hath come to passe, that she was delivered before her time, of a male childe, perfect in all his members but dead, being killed by the same wound piercing through his scull, into the marrow of the braine. Which in a short time will be the death of the mother also. In testimony whereof I have put my hand and seale.

The manner how to Embalme the dead.

I Had determined to finish this my tedious worke with the precedent treatise of Reports; but a better thought came in 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 be heere defective which the Chirurgion might by his profession, performe about mans body either alive, or dead. Verily there hath scarse ever beene a nation so barbarous, which hath not onely beene carefull for the buriall, but also for the Embalming or preserving of their dead bodyes. For

The care of the *Scythians* in the Embalming their dead.

the very *Scythians*, who have seemed to exceede other nations in barbarousnesse, and inhumanity, have done this; for (according to *Herodotus*) the *Scythians* bury not the corpes of their King, before that being embowelled and stuffed full of beaten Cypresse, frankincense, the seedes of Persly, and Annise, hee be also wrapped in cearcloathes.

The like care of the *Ethiopians*.

The like care hath also possessed the mindes of the *Ethiopians*; for having disburdened the corpes of their friends, of their entrails and flesh, they plaistered them over, and then having thus rough cast them, they painted them with colours so to expresse the dead to the life; they inclosed them thus adorned in a hollow pillar of glasse, that thus inclosed they might be seene and yet not anoy the spectators with their smell. Then were they kept the space of a yeere, in the hands of their next kindred; who during this space offered and sacrifized to them. The yeare ended, they carryed them forth of the Citty and placed them about the walls each in his proper vault, as *Herodotus* affirmes. But this pious care of the dead, did farre otherwise affect the *Ægyptians*, than it did other nations. For they were so studious to preserve the memory of their ancestors, that they embalmed their whole body with aromaticke oyntments, and set them in transluccent Vrnes, or glasse Cells in the more eminent and honoured part of their houses, that so they might have them dayly in their sight, and might be as monuments, and inciters to stirre them up to imitate their fathers and Grandsires vertues. Besides also the bodyes thus embalmed with aromatick & balsamick oyntments were in steed of a most sure pawn, so that if any *Ægyptian* had neede of a great sum of money, they might easily procure it, of such as knew them & their neighbours, by pawning the bodye of some of their dead parents. For by this meanes the creditour was certaine, that he which pawned it would sooner loose his life, than break his promise: But if all things so unhappily succeeded with any, so that through poverty he could not fetch home his pawne againe, but was forced to forgoe it, he was so infamous amongst all men, during the rest of his life, as one banished, or forlorne; and loosing his freedome he shall become a servant, yea scorned and reviled of all men, he should be accounted unworthy to enjoy the light and society of men. And certainely the *Ægyptians* understanding the life, which we heere lead, to be of short continuance, comparison being made with that which wee are to live after

Lib. 3.

Of the *Egyptians*.

after the ſeparation of the ſoule from the body, they were more negligent in building their houſes they dwelt in, but in raring the pyramides which ſhould ſerve them in ſteed of ſepulchers, 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 every 3 moneths, for twenty yeeres ſpace there kept at worke: it was five furlongs, and being ſquare, each ſide was 800. foot long, and ſo much in height. Almoſt all the peeces of marble went to the building thereof, were thirty foote long, engraven and carved with various workemanſhip, as *Herodotus* reports. But before the bodyes were committed to theſe magnificent Sepulchers, they were carryed to the Salters and Embalmers, who for that purpoſe had allowance out of the publicke ſtocke. Theſe beſmeared them with Aromaticke, and balſamicke oyntments, and ſowed up the inciſions they made, then ſtrewed them over with ſalt, and then covered them with brine, for 70. dayes; which being expired, they waſhed them, being taken thence, and all the filth being taken off, they wrapped them in Cotton cloathes, glewed together with a certaine gumme; then their kinſemen placed them thus ordered in a wooden Coffinne carved like to a man. This was the ſacred and accuſtomed rite of embalming and burying dead bodyes amongſt the *Ægyptians* which were of the richer ſort. Our Countriemen the *French* ſtirred up with the like deſire, embalme the bodyes of their Kings and Nobles, with ſpices and ſweete oyntments. Which cuſtome they may ſeeme piouſly and chriſtianly to have taken from the Old and New Teſtament, and the ancient and laudible cuſtome of the Iewes; for you may reade in the New Teſtament that *Ioſeph* bought a fine linnen cloath, and *Nicodemus* brought a mixture of myrrhe and Aloes about 100. pound weight, that they might embalme and bury the body of *Ieſus Chriſt* our Saviour, for a ſigne and argument of the renovation and future integrity which they hoped for by the reſurrection of the dead. Which thing the Iewes had received by tradition from their anceſtors. For *Ioſeph* in the old Teſtament commaunded his Phyſitions, they ſhould embalme the dead body of his father with ſpices.

The reaſon of building the *Egyptian* Pyramides.

Lib. 2.

Iohn 19, 39.

Gen 50, 2.

But the body which is to be embalmed with ſpices for very long continuance, muſt firſt of all be embowelled, keeping the heart apart, that it may bee embalmed and kept as the kinſfolkes ſhall thinke fit. Alſo the braine, the ſcull being divided with a ſaw, ſhall be taken out. Then ſhall you make deepe inciſions alongſt the armes, thighes, legges, backe, loynes and buttockes, eſpecially where the greater Veines and Arteries runne, firſt that by this meanes the blood may be preſſed forth, which otherwiſe would putrifie and give occaſion and beginning to putrefaction to the reſt of the body; and then that there may be ſpace to put in the aromaticke powders; the whole body ſhall be waſhed over with a ſpunge dipped in *Aqua vitæ*, and ſtrong vinegar, wherein ſhall be boyled wormewood, aloes, coloquintida, common ſalt and Alume. Then theſe inciſions, and all the paſſages and open places of the body, and the three bellyes ſhall be ſtuffed with the following ſpices groſſely powdered. R. *pul. roſar. chamam. melil. balſami, menthæ, anethi, ſalviæ, lavend. roriſmar. majoran. thymi, abſinthij, cyperi, calami aromat. gentianæ, ireos florent. aſſæ odoratæ, caryophyll. nucis moſchat. cinamomi, ſtyracis, calamitæ. benjoini, myrrhæ, aloes. ſantal. omnium quod ſufficit.* Let the inciſions be ſowed up and the open ſpaces that nothing fall out; then forthwith let the whole body be anointed with Turpentine diſſolved with oyle of roſes and Chamomile, adding if you ſhall thinke it fit, ſome Chymicall oyles of ſpices, and then let it be againe ſtrewed over with the forementioned powder; then wrap it in a linnen cloath, and then in ceare-cloathes.

The manner of embalming for the long continuance.

Laſtly, let it be put in a Coffin of Lead, ſure ſoudred and filled up with dry ſweete hearbes. But if there be no plenty of the forementioned ſpices, as it uſuall happens in beſeiged townes, the Chirurgion ſhall be contented with the powder of quenched lime, common aſhes made of Oake wood.

How to embalme bodyes when as we want ſpices.

For thus the body being over and above waſhed in ſtrong vinegar, or Lie, ſhall be kept a long time, if ſo be that a great and diſſolving heate doe not beare ſway, or if it be not put in a hot and moyſt place. And this condition of time and place is the cauſe why the dead bodyes of Princes and Kings, though embalmed with Art and coſt, within

Why the bodyes of our Princes, how well ſoever embalmed, corrupt in a few dayes.

within the ſpace of ſixe or ſeaven dayes, in which they are kept to bee ſhewed to the people after their embalming, doe caſt forth ſo greevous a ſent, that none can endure it; ſo that they are forced to be put in a leaden Coffinne. For the ayre which encompaſſeth them groweth ſo hot by reaſon of the multitude of people flowing to the ſpectacle, and the burning of lights night and day, that the ſmall portion of the native heate which remaineth being diſſipated, they eaſily putrefie, eſpecially when as they are not firſt moyſtened & macerated in the liquor of aromaticke things, as the *Aegyptians* anciently uſed to doe, ſteeping them in brine for 70 dayes, as I formerly told you out of *Herodotus*. I put in minde hereby, uſe, that ſo the embalming may become the more dureable, to ſteepe the bodyes (being embowelled, and pricked all over with ſharpe bodkinnes, that ſo the liquor hindring putrefaction may penetrate the deeper into them) in a woodden tubbe filled with ſtrong vinegar of the decoction of aromaticke and bitter things, as Aloes, Rue, Wormewood, and Coloquintida; and there keepe them for twenty dayes, pouring thereinto eleven or twelve pints of *Aqua vitæ*. Then taking it forth, and ſetting it on the feete, I keepe it in a cleare and dry place. I have at home the body of one that was hanged, which I begged of the Shriffe, embalmed after this manner, which remaines ſound for more than 25 yeeres, 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 diſtinctions ſake, that ſo I may view them with my eyes, and handle them with my hands as often as I pleaſe, that by renuing my memory I may worke more certainely and ſurely, when as I have any more curious operation to be performed) the left ſide remaines whole, and the Lungs, Heart, *Diaphragma*, ſtomacke, ſpleene, kidneyes, beard, haires, yea and the nailes, which being pared, I have often obſerved to grow againe to their former bigneſſe.

And let this be the bound of this our immenſe labour, and by Gods favour out reſt; to whom Almighty, all-powerfull, immortall and inviſible, be aſcribed all honour and glory for ever, and ever, *Amen.*

Labor improbus omnia vincit.

The end of the Treatiſe of reports, and embalming the dead.

THE APOLOGIE AND TREATISE, CONTAINING THE VOYAGES MADE INTO DIVERS PLACES.

BY

AMBROSE PARE of *Laval* in *Maine*, Counsellor and cheefe Chirurgion to the King.

THE TVVENTI NINTH BOOKE.

TRuely I had not put my hand to the penne, to write on such a thing, were it not that some have impudently injured, taxed, and more through particular hatred, disgraced me, than for zeale or love they beare to the publicke good; which was, concerning my manner of tying the Veines and Arteries, writing thus as followeth. Of what the Adversary accuseth the Author.

Malè igitur & nimiùm arroganter inconsultus & temerarius quidam, vasorum ustionem post emortui membri resectionem a veteribus omnibus plurimùm commendatam & semper probatam damnare ausus est, novum quendam deligandi vasa modum, contra veteres omnes medicos sine ratione, experientia & judicio docere cupiens, nec animadvertit majora multo pericula ex ipsa vasorum deligatione quam acu partem sanam profunde transfigendo administrari vult, imminere quàm 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, a qua Convulsio & a convulsione cita mors. Quorum symptomatum metu Galenus non ante transversa vulnera suere audebat (quod tamen minus erat periculosum) quàm musculorum aponeuroses denudasset. Adde quòd forcipes quibus post sectionem iterum carnem dilacerat, cum retracta versus originem vasa se posse extrahere somniat, non minorem adferant dolorem quàm ignita ferramenta admota. Quod si quis laniatum expertus incolumis evaserit, is Deo optimo maximo cuius Beneficentia crudelitate ista & carnificina liberatus est, maximas gratias habere & semper agere debet; which is thus: Ill then, and too arrogantly a certaine indiscreet and rash person would blame and condemne the cauterizing of vessells after the amputation of a rotten and corrupted member, much praised and commended and alwayes approved by the Ancients; desiring to shew and teach us without reason, judgement, and experience, a new way to tye the vessells, against the opinion of the Ancient Physitions, taking no heede, nor being well advised, that there happens farre greater perills, and accidents, through this new way of tying The words of the Adversary.

tying the vessells (which he will have to be made with a needle, piercing deepely the sound part) than by the burning and ustion of the sayd vessells; for if the needle shall pricke any nervous part, yea the nerve it selfe, when he shall by this new and unaccustomed way absurdly constraine the veine by binding it, there must necessarily follow a new inflammation; from an inflammation a convulsion, from a convulsion death: for feare of which accidents, *Galen* never durst stitch transversall wounds, (which notwithstanding were lesse dangerous) before he had discovered the Aponeuroses of the muscles. Moreover the pincers with which after the section, the flesh is againe dilacerated, while he thinkes to draw the vessells out which are drawne in toward their originall, bring no lesse paine than the cautering irons doe. And if any one having experimented this new manner of cruelty have escaped danger, he ought to render thankes to almighty God for ever, through whose goodnesse he hath beene freed from such tyrannie, feeling rather his executioner than his methodicall Chirurgion.

The Authors antwere. O what sweete words are heere for one, who is sayd to be a wise and learned Doctor? he remembers not that his white beard admonisheth him, not to speake any thing unworthy of his age, and that he ought to put off and drive out of him all envie and rancor conceived against his neighbour. So now I will proove by authority, reason and experience, that the sayd Veines and Arteryes ought to be tyed.

Authorities.

In the booke of Fistulaes of the fundament in the 3 chap. 5. booke 4. leafe. 2. Treatise chap. 17. Treatise 3. doct. 1. chap. 3

AS for Authorities, I will come to that of that worthy man *Hippocrates*, who wils and commands the cure of Fistula's in the fundament by ligature, as well to consume the callosity, as to avoyd hemorragie.

Galen in his method, speaking of a fluxe of blood made by an outward cause, of whom see heere the words, It is (saith he) most sure to tye the roote of the vessell, which I understand to be that which is most neere to the Liver, or the heart.

Avicen commands to tye the veine and the Arterie, after it is discovered, towards his originall.

Guido of *Caulias*, speaking of the wounds of the Veines and Arteries, injoyneth the Chirurgion to make the ligature in the vessell.

In the 3 book chap. 4. of the matter of Chirurgery. Wounds chip. 12.

Master *Hollier* speaking of a fluxe of blood, commands expressely, to tye the vessells.

In the 26 chap. of the 5 book.

Calmetheus in the chapter of the wounds in the Veines and Arteries, tells a most sure way to stay a fluxe of blood, by ligature of the vessell.

Celsus from whom the sayd Physition hath snatched the most part of his booke, chargeth expressely, to tye the vessells in a fluxe of blood happening to wounds, as a remedy most easie and most sure.

In the 4 ch. of the 3 booke. In the 1 book 1 treatise.

Vesalius in his Chirurgery, willeth that the vessells be tyed in a fluxe of blood.

Iohn de Vigo treating of a hemorragie in bleeding wounds, commands to tye the Veine, and the Artery.

In the 12. chap. of the 2. booke.

Tagaultius treating of the meanes to stay a fluxe of blood, commands to pinch the Veine or Artery with a Crow or Parrots bill, then to tye it with a very strong thred.

In the 4 treat. 11 chap. 1. booke.

Peter of *Argillata* of *Bullongne*, discourfing of a fluxe of blood, and the meanes to stoppe it, giveth a fourth way expressely, which is made by ligature of the vessells.

In the first booke 1 section 3. chap. 16. page 5 upon the 68. ch. of the booke of *Paul.*

Iohn Andreas a Cruce, a *Venetian*, makes mention of a method, to stay a fluxe of blood by the ligature of the vessells.

D'Alechamp commands to tye the Veines, and Arteries.

See then (my little good man) the authorities which command you to tye the vessells. As for the reasons, I will debate of them.

In the book 2. ch. of Angealogie, leafe 76. In the booke 1 ch. of Sticches.

The hemorragie (say you) is not so much to be feared in the section of the Call, as that of the Varices, and the incision of the temporall Arteries, as after the amputation of a member. Now you your selfe command, that in cutting the Varices, the fluxe of blood be stopped by the ligature of the vessells. You command the same,

speaking

ſpeaking of the ſtitch, with the amputation and ſection of the Call, changed by the outward ayre, ſee heere your owne words: After that muſt bee conſidered concerning the Call: for if there be any part corrupted, putrified, withered, or blackiſh: Firſt having tyed, for feare of a fluxe of blood, you doe not bid afterward to have it cauterized; but to ſay the truth, you have your eyes ſhut, and all your ſenſes dulled, when you would ſpeake 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 ſeate, than choler and anger. Moreover when one comes to cauterize the diſmembred parts, oftentimes when the eſcar comes to fall off, there happens a new flux of blood: As I have ſeene divers times, not having yet beene inſpired by God, with ſo ſure a meanes then, when I uſed the heate of fire. Which if you have not found, or underſtood this method in the bookes of the Ancients, you ought not thus to tread it under your feete, and ſpeake unluckely of one who all his life hath preferred the profit of the Common-wealth before his owne particular. Is it not more than reaſonable to bee founded upon the ſaying of *Hippocrates*; upon whoſe authority you ſerve your ſelfe, 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 ſavours not of a Chriſtian, to fall to burning at the firſt dath without ſtaying for any more gentle remedies. As you your ſelfe write, ſpeaking of the conditions required in a Chirurgion to cure well; which paſſage you borrow from ſome other place: for that which may bee done gently without fire, is much more commended than otherwiſe. Is it not a thing which all ſchooles hold as a Maxime, that we muſt alwaies begin with moſt eaſie remedies, which if they be not ſufficient, we muſt then come to extreame, following the doctrine of *Hippocrates*? *Galen* commands in the place before alledged, to treate or dreſſe the diſeaſed quickly, ſafely, and with the leaſt of paine that is poſſible.

In the chapter of burning, 2 booke leafe 206.

In the firſt booke leafe the 5.

Galen in 3. booke of the *Meth.* and in the booke of Art of *Hippocrates Aphe.* the 6. booke 1. In the booke of *arte parva.*

Let us come now to Reaſon.

NOw ſo it is, that one cannot apply hot irons but with extreame and vehement paine in a ſenſible part, void of a Gangreene, which would be cauſe of a Convulſion, Feaver, yea oft times of death. Moreover, it would bee a long while afterwards before the poore patients were cured, becauſe that by the action of the fire there is made an eſchar, which proceeds from the ſubject fleſh, which being fallen, nature muſt regenerate a new fleſh in ſtead of that which hath beene burned, as alſo the bone remaines diſcovered and bare; and by this meanes, for the moſt part there remaines an Vlcer incurable. Moreover there is yet another accident. It happeneth that oftentimes the cruſt being fallen off, the fleſh not being well renewed, the blood iſſueth out as much as it did before. But when they ſhall be tyed, the ligature falls not off untill firſt the fleſh have very well covered them againe: which is prooved by *Galen*, ſaying, that eſcharoticke medicines which cauſe a cruſt or eſchar, whenſoever they fall off, leave the part more bare than the naturall habit requires. For the generation of a cruſt proceeds from the parts ſubject, and which are ſcituate round about it, being alſo burned, as I may ſay: wherefore by how much the part is burnt, by ſo much it looſeth the naturall heate. Then tell me when it is neceſſary to uſe eſcharoticke medicines, or cautering irons? Tis when the flux of blood is cauſed by eroſion, or ſome Gangreene or putrifaction. Now is it thus? In freſh bleeding wounds there is neither Gangreene nor putrifaction. Therefore, the cauteries ought not to be there applyed. And when the Ancients commanded to apply hot irons to the mouthes of the veſſells, it hath not beene onely to ſtay the flux of blood, but cheefely to correct the malignitie, or gangreenous putrifaction which might ſpoile the neighbouring parts. And it muſt be here noted, that if I had knowne ſuch accidents to happen, which you have declared in your booke, in drawing and tying the veſſells, I had never beene twice deceived; nor would I ever have left by my writings to poſteritie, ſuch a way of ſtopping a flux of blood: But I writ it after I had ſeene it done and did it very often, with happy ſucceſſe. See then what may happen through your inconſiderate counſell, with-

Of what the eſchar is made.

In the 5 book of his *Meth.*

Words of the adverſary.

out

Proposition of the Adversary.

out examining, or standing upon the facility of tying the sayd vessells. For see, heere's your scope and proposition, to tye the vessells after amputation is a new remedy, say you; then it must not be used, it is an ill argument for a Doctor.

But as for that (say you) one must use fire after the amputation of members, to consume, and drie the putrifaction, which is a common thing in Gangreenes, and mortifications, that indeed hath no place here, because the practise is to amputate the part above that which is mortified, and corrupted; as *Celsus* writes and commands, to make the amputation upon the sound part, rather than to leave any whit of the corrupted. I would willingly aske you, if when a veine is cut transverse, and that it is very much retracted towards the originall, whether you would make no conscience to burne till that you had found the orifice of the veine, or artery; and if it be not more easie onely with a Crow bill to pinch and draw the vessell, and so tie it? In which you may openly shew your ignorance, and that you have your minde seised with much rancor and choler. We daily see the ligature of the vessells practised with happy succesle after the amputation of a part, which I will now verifie by experiences and histories, of those to whom the said ligature hath beene made, and persons yet living.

In the 5. booke ch. 26. and in the 7 booke ch. 33.

In the ch. of cutting booke the 2.

Experiences.

A notable history.

THe 16. day of *June* 1582. in the presence of Master *John Liebaud* doctor in the faculty of Physicke at *Paris*, *Claud Viard* sworne Chirurgion, Master *Mathurin Huron*, Chirurgion of Monsieur *de Souvray*, and I, *John Charbonell* master Barber Chirurgion of *Paris*, well understanding the *Theoricke*, and *Practicke* of Chirurgery, did with good dexterity amputate the left legge of a woman tormented the space of three yeares with extreame paine, by reason of a great *Caries* which was in the bone *Astragal*, *Cyboides*, great and little *focile*, and through all the nervous parts, through which she felt extreame and intollerable paines night and day: she is called *Mary* of *Hostel*, aged 28 yeares, or thereabouts, wife of *Peter Herve*, Esquire of the Kitchin to the Lady *Duchesse* of *Vzez*, dwelling in the streete of *Verbois* on the other side Saint *Martin* in the fields, dwelling at the signe of the Saint *Johns* head; where the sayd *Charbonell* cut off the sayd legge, the breadth of foure large fingers below the Knee, and after that he had incised the flesh, and sawed the bone, hee griped the Veine with the Crow bill, then the Artery, then tyed them; from whence I protest to God (which the company that were there, can witnesse) that in all the operation which was sodainely done, there was not spilt one porrenger of blood; and I bid the sayd *Charbonell* to let it bleed more, following the precept of *Hippocrates*, that it is good in all wounds and also in inveterate ulcers, so let the blood runne; by this meanes, the part is lesse subject to inflammation. The sayd *Charbonell* continued the dressing of her, who was cured in two moneths, without any fluxe of blood happening unto her, or other ill accident; and she went to see you at your lodging being perfectly cured.

The operation of *Charbonell*.

In the 7. sentence of the booke of Vlcers.

Another history.

Another history of late memory, of a singing man of our Ladyes Church named master *Colt*, who broke both the bones of his legge which were crusht in divers peeces, insomuch that there was no hope of cure: to withstand a gangreene and mortification, and by consequence death. Monsieur *Helin* Doctor, Regent in the faculty of Physicke, a man of honour and of good knowledge, *Claud Viard*, and *Simon Peter*, sworne Chirurgions of *Paris*, men well exercised in Chirurgery; and *Balthazar* of *Lestre*, and *Leonard de Leschenal*, Master Barber Chirurgions, well experimented in the operations of Chirurgery, were all of opinion to withstand the accidents aforesayd, to make entire amputation of the whole legge, a little above the broken & shivered bones & the torne nerves, veines, arteries; the operation was nimbly done, by the sayd *Viard*, and the blood stancht by the ligature of the vessells in the presence of the sayd *Helin*, and master *Tonsard* great Vicar of our Ladyes Church, and was continually dresst by the sayd *Leschenal*, and I went to see him other whiles; he was happily cured without the application of hot irons, and walketh lustily on a woodden legge.

Operation done by Viard.

Another

Another Hiſtory.

IN the yeare 1583. the 10. day of *December*, *Touſſaint Poſſon* borne at *Renieville*, at this preſent dwelling at *Beauvais* neare *Dourdan*, having his Legge all ulcered, and all the bones cariez'd and rotten, prayed me for the honor of God to cut off his Legge by reaſon of the great paine which he could no longer endure. After his body was prepared I cauſed his legge to be cut off, fowre fingers below the *rotula* of the knee, by *Daniel Powlet* one of my ſervants, to teach him and to imbolden him in ſuch workes; and there he readily tyed the veſſells to ſtay the bleeding, without application of hot irons, in the preſence of *Iames Guillemeau* ordinary Chirurgion to the King, and *Iohn Charbonell* maſter Barber Chirurgion of *Paris*: and during the cure was viſited by Maſter *Laſſile* and Maſter *Courtin* Doctors, Regents in the faculty of Medicine at *Paris*. The ſaid operation was made in the houſe of *Iohn Gobell* Inkeeper, dwelling at the ſigne of the white horſe in the Greve. I will not here forget to ſay, that the Lady Princeſſe of *Montpenſier*, knowing that he was poore, and in my hands, gave him money to pay for his chamber and diet. He was well cured, God be prayſed, and is returned home to his houſe with a woodden Leg.

Another Hiſtory.

A Gangreene happened to halfe of the Legge to one named *Nicholas Meſnager* aged threeſcore and ſixteene yeares, dwelling in S. *Honores* ſtreet, at the ſigne of the Basket; which happened to him through an inward cauſe, ſo that wee were conſtrained to cut off his Legge to ſave his life: and it was taken off by *Anthony Renand*, maſter Barber Chirurgion of *Paris* the 16. day of *December* 1583. in the preſence of Maſter *Le Fort*, and Maſter *La Noüe* ſworne Chirurgions of *Paris*; and the blood was ſtanched by the Ligature of the veſſells, and hee is at this preſent cured and in health, walking with a woodden Leg. Gangreene happening by an antecedens cauſe.

Another Hiſtory.

A Waterman at the Port of *Neſle*, dwelling neare *Monſieur de Mas*, Poſtmaſter, named *Iohn Bouſſereau*, 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 needfull and neceſſary to make amputation of the hand two fingers above the wriſt: which was done by *Iames Guillemeau* then Chirurgion in ordinary to the king, who dwelt at that time with me. The operation likewiſe being redily done, and the blood ſtancht by the Ligature of the veſſells without burning irons: hee is at this preſent living. Operation done *Guillemeau*.

Another Hiſtory.

A Merchant Grocer dwelling in S^t. *Denis* ſtreet at the ſigne of the great *Tournois* named the Iudge, who fell upon his head, where was made a wound neare the temporall muſcle, where he had an artery opened, from whence iſſued forth blood with great impetuoſity, in ſo much that common remedies would not ſerve the turne; I was called thither, where I found Maſter *Roſſe*, Maſter *Coinieret*, Maſter *Viard*, ſworne Chirurgions of *Paris*, to ſtay the blood; where preſently I tooke a needle and thread, and tyed the arterie, and it bled no more after that, and was quickly cured. Maſter *Rouſſelet* can witneſſe it, not long ſince Deacon of your Faculty, who was in the cure with us. Operation done by the Author.

Another Hiſtory.

A Sergeant of the Chaſtlet dwelling neare S. *Andrew des Arts*, who had a ſtroake of a ſword upon the throate in the Clackes medow, which cut aſunder the jugular Another operation.

gular veine externe, as soone as he was hurt he put his handkercher upon the wound, and came to looke mee at my house, and when hee tooke away his handkercher the blood leaped out with great impetuosity: I suddainly tyed the veine toward the roote; he by this meanes was stanched and cured thankes be to God. And if one had followed your manner of stanching blood by cauteries, I leave it to be supposed whether he had beene cured; I thinke hee had beene dead in the hands of the operator. If I would recite all those whose vessells were tyed to stay the blood which have beene cured, I should not have ended this long time; so that me thinkes there are Histories enough recited to make you beleeve the blood of veines and arteries is surely stanched without applying any actuall cauteries.

DV BARTVS.

He that doth strive against experience,
Daignes not to talke of any learned science.

NOw my little Master, seeing that you reproach me, that I have not written all the operations of Chirurgery in my workes which the Ancients writ of, I should be very sorry for it: for then indeede might you justly call me *Carnifex*. I have left them because they are too cruell, and am willing to follow the modernes, who have moderated such cruelty: which notwithstanding you have followed step by step, as appeareth by the operations here written, extracted from your booke, which you have drawne here and there from certaine ancient Authors, such as follow: and such as you have never practised nor seene.

Booke the 6. Chap. 4 and 5 booke 2. chap. 4. booke 3, ch. 9, section 7.

The first operation.

TO inveterate fluxions of the eyes, & Migrimes, *Paulus Ægineta* as also *Albucasis* command to make *Arteriotomie*, see here the words of the same *Æginete*. You marke the Arteries which are behind the eares, then divide them in cutting to the very bone, and make a great incision the breadth of two fingers; which is the will also of *Aetius* that the incision be made tranverse, cutting or inciding the length of two fingers, even till that the Artery be found, as you command to bee done in your booke; but I holding the opinion of *Galen*, who commands to dresse the diseased quickly, safely and with the least paine that is possible, I teach the young Chirurgion the meanes to remedy such evills in opening the Arteries behind the eares, and those of the Temples, with one onely incision, as a letting blood, and not to make a great incision and cut out worke for a long time.

In the 2. booke of the chap. of *Hyposarisme*, booke 14. ch. last, of the Meth. In the 4. chap. of the 16. booke of my worke. Booke 6. chap. 7, Booke 2, chap. 5.

The second operation.

TO fluxions which are made a long time upon the eyes, *Paul Æginete* and *Albucasis* command to make incision which they call *Periscythismes* or *Augiologie* of the Greekes; and see heere the words of *Paul*, In this operation first the head is shaved, then taking heede of touching the temporall muscles, a transverse incision must bee made, beginning at the left Temple and finishing at the right, which you have put in your booke word for word, without changing any thing: which sheweth openly you are a right wound-maker; as may be seene in the Chapter which you call the Crowne cut, which is made halfe round under the Coronall suture from one temple to the another even to the bone. Now I doe not teach such a cruell kind of remedy, but instruct the operator by reason, authority and notable proofe of a sure and certaine way to remedy such affections without butchering men in this kind.

In the 2, book chap. of *Periscythisme*.

In the 26. ch. of the 9. book of my works.

The third.

IN the cure of the *Empyema*, *Paul Æginete*, *Albucasis* and *Celsus* commanded to apply some 13. others 15. Cauteries to give issue to the matter contained in the breast, as the said *Celsus* in the aforesaid place appointeth for Asthmatick people,

Book 6. chap. 44. booke 2, chap. 7 booke 3. chap. 22.

which

which is a thing out of all reaſon (with reſpect to their honour be it ſpoken) that ſince the Chirurgions ſcope is to give iſſue to the matter therein contained, there is no other queſtion than to make apertion, to evacuate the matter in the moſt inferior part, I have ſhewed the young Chirurgion the meanes to doe it ſafely, without tormenting the patients for nothing.

The fourth.

IN Paps that are too great, *Paul Æginet* and *Albucraſis* commands to make a croſſe inciſion, to take out all the fat, and then joyne together the wound by ſtitch: In briefe, it is to flea a man alive, which I have never practiſed, nor counſell it to bee done by the young Chirurgion.

Guido of *Cauliac* the 2, treatiſe. Doct. 1. chap. 1. Booke 7. chap 10. booke 6. chap 46. book 2. chap. 47.

The fifth.

Albucraſis and *Paul Æginet* will cauterize the Liver and the Spleene with hot irons, which the modernes have never practiſed, for indeede reaſon is manifeſtly repugnant thereunto.

In the firſt booke, chap. 29. & 30. alſo in booke 2. chap. 32. Booke 6. chap. 47. and 48.

The Sixth.

IN the *Paracenteſis* which is made in the third kind of Dropſie called *Aſcites*, *Celius Aurelianus* commandeth divers apertions to be made in the belly. *Albucraſis* applies nine actuall cauteries, that is to ſay, foure about the Navell, one upon the Stomacke, one upon the Spleene, one upon the Liver, two behind the backe upon the ſpondills, one of them neare the breaſt, the laſt neare the Stomacke. *Ætius* is likewiſe of the ſame opinion, to open the belly with divers cauteries. *Paul Æginet* commands to apply five actual cauteries to make the ſaid *Paracenteſis*. But abhorring ſuch a kind of burning of which you ſpeake much in your third booke, I ſhew another kind of practiſe, the which is done in making a ſimple inciſion in the ſayd belly, as may be ſeene in my workes, with happy ſucceſſe. I doe not teach yong men in my workes the manner of burning, which the Ancients have called *infibulare*, that is not in practiſe though *Celſus* writeth of it.

In the 5. book chap. 1. *De internis morbis*. Booke 1. chap. 33. book 3. ſect. 2. chap. 89. booke the 6. chap. 50. In the 3. book 12. chap. 6, 7.

The Seaventh.

IN the Sciaticke proceeding from an internall cauſe, and becauſe the viſcous humors diſplace the bones, *Paul* commands to burne or cauterize the ſaid joynt to the bone: *Diaſcorides* commands the ſame, Which I doe not finde expedient, taking indication from the ſubjacent parts: for there where one would burne, tis in the place of the foure twin muſcles, under which paſſeth the great Nerve deſcending from the holy bone; which being burnt, I leave it to your cenſure what might happen, as *Galen* remarketh ſpeaking of the *Vſtion* which muſt be made in the ſhoulder called *humerus*.

In the 7. book chap. 25. book 6. chap. 76. book 2. chap. 72. upon the ſentence 49. of the 1 ſection of the book of Arts.

The Eighth.

IN the outward Laxation of the Spondills, *Hippocrates* commands to bind the man right upon a Ladder, the Armes and Legges tyed and bound: then afterwards having raiſed the Ladder to the top of a tower, or the ridge of an houſe, with a great rope in a pully, then to let the patient fall plumbe downe upon the hard pavement; which *Hippocrates* ſayes was done in his time. But I doe not ſhew any ſuch way of giving the ſtrapado to men, but I ſhew the Chirurgion in my workes, the way to reduce them ſurely, and without great paine. Moreover I ſhould be ſorry to follow the ſaying of the ſayd *Hippocrates*, in the third booke *De morbis*, who commands in the diſeaſe called *Volvulus* to cauſe the belly to bee blowne with a paire of Bellowes, putting the noſell of them into the *inteſtinum rectum*, and then blow there till

Sentence the 22. and 23. of the 3 ſection of the booke of the joynts. chap. 16. of the 15. booke.

till the belly be much stretcht, afterwards to give an emollient glister, and to stop the fundament with a sponge. Such practise as this is not made now a dayes, therefore wonder not if I have not spoken of it. And you not being contented to patch together the operations of the above said Authors, you have also taken divers in my workes, as every man may know: which sheweth manifestly that there is nothing of your owne in your Chirurgions Guide. I leave out divers other unprofitable operations which you quote in your booke, without knowing what beasts they are, in never having seene them practised; but because you have found them written in the bookes of the Ancients, you have put them into your booke.

Moreover you say that you will teach me my lesson in the operations of Chirurgery, which I thinke you cannot doe: because I have not onely learned them in my Study, and by the hearing for many yeares the lessons of Doctors of Physicke: but as I have sayd before in my Epistle to the Reader, I was resident the space of three yeares in the Hospitall of *Paris*, where I had the meanes to see and learne divers workes of Chirurgery, upon divers diseases, together with the Anatomy, upon a great number of dead bodies, as oftentimes I have sufficiently made triall publickly in the Physitions schoole at *Paris*, and my good lucke hath made mee seene much more. For being called to the service of the Kings of France (foure of which I have served) I have beene in company at Battells, Skirmishes, assaults, and beseiging of Citties and Fortresses; as also I have beene shut up in Citties with those that have beene beseiged, having charge to dresse those that were hurt. Also I have dwelt many yeares in this great and famous Citty of *Paris*, where, thankes bee to God, I have lived in very good reputation amongst all men, and have not beene esteemed the least in rancke of men of my profession, seeing there was not any cure, were it never so difficult and great, where my hand and my counsell have not beene required, as I make it appeare in this my worke. Now dare you (these things being understood) say you will teach mee to performe the workes of Chirurgery, since you never went further than your study? The operations of the same are foure in generall (as we have declared heretofore) where you make but three, that is to say, joyne that which is separated, separate that which was conjoyned, and to take away that which is superfluous, and the fourth which I make, is as much necessary as industrious invention, to adde to Nature that which is wanting, as I have shewed heere above. Also it is your will that the Chirurgion make but the three operations above sayd without medling to ordaine a simple Cataplasme, saying it is that which comes to your part belonging to the Physition: And that the Ancients (in the discourse which you have made to the Reader) have divided the practise of Physick into three kinds, that is to say, Diet, Medicine, and Chirurgery. But I would willingly demand of you, who hath made the partition, and where any thing should be done, who are those which are content with their part, without any enterprize upon the other? For *Hippocrates*, *Galen*, *Aëtius*, *Avicen*, in briefe, all the Phisitions, as well Greekes and Latins as Arabians, have never so treated of the one, that they have not treated of the other, for the great affinitie and tye that there is betweene them two, and it should bee very difficult to doe otherwise. Now when you will vilifie Chirurgery so much, you speake against your selfe; for in your Epistle which you have dedicated to Monsieur of *Martigues*, you say, that Chirurgery is the most noble part of Physicke, as well by reason of the originall, antiquity, necessity, as certainty in her actions; for shee workes *Luce aperta*, as learnedly writeth *Celsus* in the beginning of his seaventh booke; therefore it is to be beleeved you never went out of your study, but to teach the *Theorick* (if you have beene able to doe it.)

A faire similitude.

The operations of Chirurgery are learn't by the eye, & by the touch. I will say that you much resemble a yong Lad of Low *Britany*, of plump buttocks, where was stuffe sufficient; who demanded leave of his father to come to *Paris*, to take *France*; being arrived the Organist of our Ladys Church, met with him at the Pallace gate, who took him to blow the Organs, where hee was remaining three yeeres: hee saw hee could somewhat speake *French*, he returnes to his father, and told him that he spake good *French*, and moreover he knew well, to play on the Organs: his father received him very

very joyfully, for that hee was so wise and learned in so short a time. Hee went to the Organist of their great Church, and prayed him to permit his sonne to play on the Organs, to the end he might know whether his sonne was become so skilfull a master, as he sayd he was; which the Organist agreed to very willingly. Being entred to the Organs, he cast himselfe with a full leape to the bellowes, the master Organist bid him play, and that he would blow; then this good master answeares, Let him play himselfe on the Organs if he would for him, hee could doe nothing but play on the bellowes. I thinke also my little master, that you know nothing else, but to prattle in a chaire; but I will play upon the keyes, and make the Organs sound (that is to say) I will doe the operations of Chirurgery, that which you cannot in any wise doe, because you have not gone from your study or the schooles, as I have sayd before. But also, as I have sayd already in the Epistle to the Reader, that the labourer doth little profit by talking of the seasons, discourse of the manner of tilling the earth, to shew what seedes are proper to each soyle; all which is nothing if he put not his hand to the Plough, and couple the Oxen together. So likewise is it no great matter if you doe not know the *Practicke*, for a man may execute Chirurgery well, although he have no tongue at all. As *Cornelius Celsus* hath very well remarked in his first booke when he saith, *Morbos non eloquentia, sed remedijs curari: quæ si quis elinguis, usu discretus bene norit, hunc aliquanto majorem medicum futurum, quam si sine usu linguam suam excoluerit*; that is to say; Diseases are not to bee cured by eloquence, but by remedies well and duely applyed, which if any wise and discreete man though he have no tongue know well the use thereof, this man in time shall become the greater Physition, than if without practise his tongue were dipt with oratory; the which you your selfe confesse in your sayd booke by a Terrasticke which is thus:

To talke's not all in Chirurgions Art,
But working with the hands.
Aptly to dresse each greeved part,
And guide, fire, knife, and bands.

Aristotle in the first booke of his Metaphysicks the first chapter saith, Experience is almost like unto science, and by the same, Art and science have beene invented. And indeed we see those which are experimented, attaine sooner to that which they intend, than those which have reason and not experience, because that the sayd experience is a knowledge of singular and particular things, and science on the contrary is a knowledge of things universall. Now that which is particular is more healeable than that which is universall, therefore those which have experience are more wise and more esteemed, than those which want it, by reason they know what they doe. Moreover I say, that science without experience, bringeth no great assurance.

Alciat a Doctor of *Milan*, boasted one day of himselfe, that his glory was greater and more famous than that of Counsellors, *Presidents*, masters of Request: because that it was by his science, and his instructions that they became such: but he was answeared by a Counsellor, that he was like unto a whetstone, which made the knife sharpe and ready to cut, not being able so to doe it selfe, 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 calumniations, and pray you, if you beare a good minde (to the publicke good) to review and correct your booke, as soone as you can, and not to hold young Chirurgion in this errour by the reading of the same, where you teach them to use hot irons after the amputation of members, to stay a fluxe of blood, seeing there is another meanes, and not so cruell and more sure and easie. Moreover if to day after an assault of a Citty, where di-

verſe Souldiers have had armes and legges broken, and ſhot off by Cannon Bullets, Cutlas or other inſtruments of warre; to ſtay the fluxe of blood, if you ſhould uſe hot irons, it would be needfull to have a forge, and much coales to heate them: and alſo the ſouldiers would hold you in ſuch horror for this cruelty, that they would kill you like a Calfe, even as in times paſt they did to one of the chiefeſt Chirurgions of *Rome*, which may be found written before in the third chapter of the Introduction of Chirurgery, the 1 booke. Now leaſt the Sectators of your writings ſhould fall into ſuch inconveniencie, I pray them to follow the methode aforeſayd, the which I have ſhewed to be true and certaine, and approved by authority, reaſon and experience.

The Voyage of Thurin, 1536.

MOreover, I will heere ſhew to the readers the places where I have had meanes to learne the Art of Chirurgery, for the better inſtructing of the young Chirurgion: and firſt in the yeere 1536, the great King *Francis* ſent a great Army to *Thurin*, to recover the Cittyes and Caſtles, which the Marqueſſe of *Guaſt*, Lievtenant generall of the Emperor had taken: where the high Conſtable of *France* the great maſter, was Lievtenant generall of the Army, and Monſieur *de Montian* Colonel generall of the foote, of which I was then Chirurgion. A great part of the Army arrived in the Country of *Suze*; we found the enemy which ſtopt the paſſage, and had made certaine Forts, and trenches, inſomuch that to hunt them out and make them leave the place, we were forced to fight, where there were divers hurt and ſlaine, as well of the one ſide as of the other: but the enemies were conſtrayned to retire, and get into the Caſtle, which was cauſed partly by one Captaine *Ratt*, who climed with divers of the ſouldiers of his company upon a little Mountaine; there where he ſhot directly upon the enemies, hee received a ſhot upon the ancle of his right foote, wherewith preſently he fell to the ground; and ſayd then, Now is the *Rat* taken. I dreſſed him, and God healed him. We entred the throng in the Citty, and paſſed over the dead bodyes, and ſome which were not yet dead, we heard them cry under our horſes feete, which made my heart relent to heare them. And truely I repented to have forſaken *Paris* to ſee ſo pittifull a ſpectacle. Being in the Citty, I entred into a ſtable thinking to lodge my owne, and my mans horſe, where I found foure dead ſouldiers, and three which were leaning againſt the wall, their faces wholly disfigured, and neither ſaw nor heard, nor ſpoake; and their cloathes did yet flame with the gunpowder which had burnt them. Beholding them with pitty, there happened to come an old ſouldier, who asked me if there were any poſſible meanes to cure them, I told him no: he preſently approached to them, and gently cut their throates without choler. Seeing this great cruelty, I told him he was a wicked man, he anſwered me that he prayed to God, that whenſoever he ſhould be in ſuch a caſe, that he might finde ſome one that would doe as much to him, to the end he might not miſerably languiſh. And to returne to our former diſcourſe, the enemie was ſõmoned to render, which they ſoon did, & went out, their lives onely ſaved, with a white ſtaffe in their hands; the greateſt part whereof went and got to the Caſtle of *Villane*, where there was about 200. Spaniards; Monſieur the Conſtable would not leave them behind, to the end that the way might be made free. This Caſtle is ſeated upon a little mountaine, which gave great aſſurance to them within, that one could not plant the Ordinance to beare upon it, and were ſommoned to render, or that they ſhould be cut in peeces; which they flatly refuſed, making anſwere that they were as good and faithfull ſervants to the Emperor, as Monſieur the Conſtable could bee to the King his maſter. Their anſwere heard, they made by force of arme, two great Cannons to be mounted in the night with cords and ropes, by the Swiſſers and Lanſquenets; when as the ill lucke would have it, the two Cannons being ſeated, a Gunner by great negligence ſet on fire a great bagge of Gunpowder; wherewith he was burned together with ten or twelve ſouldiers; and moreover the flame of the powder was a cauſe of diſcovering the Artillery, which made them that all night, they of the Caſtle did nothing but

The retiring of the enemies.

Hiſtory.

Brave anſwere of the Souldiers.

ſhoot

shoote at that place where they discovered the two peeces of Ordinance, wherewith they kild and hurt a great number of our people.

The next day early in the morning a Battery was made, which in a few houres made a breach, which being made they demanded to parly with us; but twas too late for them; For in the meane time our French foote, seeing them amazed, mounted to the breach, and cut them all in peeces, except a faire young lusty mayd of *Piedmount*, which a great Lord would have kept and preserved for him to keepe him company in the night, for feare of the greedy wolfe. The Captaine and Ensigne were taken alive, but soone after were hanged upon the gate of the Citty, to the end they might give example and feare to the Imperiall souldiers not to bee so rash and foolish, to be willing to hold such places against so great a Army. Now all the sayd souldiers of the Castle, seeing our people comming with a most violent fury, did all their endeavour to defend themselves, they kild and hurt a great company of our souldiers, with Pikes, Muskets, and stones, where the Chirurgions had good store of worke cut out. Now at that time I was a fresh water Souldier, I had not yet seene wounds made by gun-shot at the first dressing. It is true, I had read in *John de Vigo*, in the first booke of wounds in generall, the eighth chapter, that wounds made by weapons of fire did participate of Venenosity, by reason of the pouder, and for their cure commands to cauterize them with oyle of Elders scalding hot, in which should be mingled a little Treackle; and not to faile, before I would apply of the sayd oyle, knowing that such a thing might bring to the Patient great paine, I was willing to know first, before I applyed it, how the other Chirurgions did for the first dressing, which was to apply the sayd oyle the hottest that was possible into the wounds, with tents and setons; insomuch that I tooke courage to doe as they did. At last I wanted oyle, and was constrained in steed thereof, to apply a disgestive of yolkes of egges, oyle of Roses, and Turpentine. In the night I could not sleepe in quiet, fearing some default in not cauterizing, that I should finde those to whom I had not used the burning oyle dead impoysoned; which made me rise very early to visit them, where beyond my expectation I found those to whom I had applyed my digestive medicine, to feele little paine, and their wounds without inflammation or tumor, having rested reasonable well in the night: the other to whom was used the sayd burning oyle, I found them feverish, with great paine and tumour about the edges of their wounds. And then I resolved with my selfe never so cruelly, to burne poore men wounded with gunshot. Being at *Thurin* I found a Chirurgion, who had the fame above all others, for the curing of wounds of Gunshot, into whose favour I found meanes to insinuate my selfe, to have the receipt of his balme, as he called it wherewith he dressed wounds of that kind, and hee held me off the space of two yeeres, before I could possible draw the receipt from him. In the end by gifts and presents he gave it me, which was this, to boyle young whelpes new pupped, in oyle of Lillies, prepared earth wormes, with Turpentine of *Venice*. Then was I joyfull and my heart made glad, that I had understood his remedy, 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 bookes. My Lord Marshall of *Montian* remained Lievtenant generall for the King in *Piedmont*, having ten or twelve thousand men in garrison through the Cittyes and Castles, who often combated with swords and other weapons, as also with muskets; and if there were foure hurt, I had alwayes three of them, and if there were question of cutting off an arme or a legge, or to trepan, or to reduce a fracture or dislocation, I brought it well to passe. The sayd Lord Marshall sent me one while this way, another while that way, for to dresse the appointed Souldiers which were beaten aswell in other Cities as that of *Thurin*, insomuch that I was alwayes in the Countrey one way or other. Monsieur the Marshall sent for a Physition to *Milan*, who had no lesse reputation in the medicinall Art (than the deceased Monsieur *le Grand*) to take him in hand for an hepaticall flux, whereof at last he dyed. This Physitian was a certaine while at *Thurin* to deale with him, and was often called to visite the hurt people, where he alwayes found me, and I consulted with him, and some other Chirurgions, and when wee had resolved to doe any serious worke of Chirurgery, twas *Ambrose Pare* that put his hand thereto,

Exemplary punishment.

Counsell of *Devgo*.

Experience of a bold man happy successe

Receipt of an excellent balme for wounds with Gunshot.

where I did it promptly and with dexterity, and with a great assurance, in so much that the sayd Physition admired me, to see me so ready in the operation of Chirurgery, seeing the small age which I had. One day discoursing with the sayd Lord Marshall, he sayd to him, *Signor, tu hai un Chirurgico giovane di anni, ma egli è vecchio di sapere e di esperientia. Guarda lo bene, perche egli ti fara servicio & honore.* That is to say, Thou hast a young Chirurgion of age, but he is old in knowledg and experience, preserve him well; for he will doe thee service, and honour. But the old man knew not that I had dwelt three yeares in the Hospitall of *Paris*, there to dresse the diseased. In the end Monsieur *Marshall* dyed with his hepaticall fluxe. Being dead, the King sent Monsieur the Marshall of *Annebaut* to be in his place, who did me this honour to pray me to dwell with him, and that he would use me as well or better, than Monsieur the Marshall *Mountian*; which I would not doe for the greefe I had for the losse of my master who loved me intimately, and I him in the like manner; and so I came backe to *Paris*.

Witnesse of the dexterity of the Author.

The death of Marshall *Montian.*

The Voyage of Marolle *and of low* Brritany, 1543.

I Went to the Camp of *Marolle*, with the deceased Monsieur *de Rohan*, where King *Francis* was in person, and I was Chirurgion of the company of the sayd Monsieur *de Rohan*. Now the King was advertized by Monsieur *de Estampes*, governour of *Brittany*, that the *English* had hoyste Sayle to land in Low *Brittany*, and prayed him that he would send Monsieur *de Rohan*, and Monsieur *de Laval* for succour, because they were the Lords of that Countrey, and for their sakes those of that Country would beate backe the enemy and keepe them from landing. Having received this advertisement, his Majesty dispatched to send the sayd Lords for the releefe of their Countrey, and to each was given as much power as to the Governour; in so much that they were all three the Kings Lievetenants. They tooke willingly this charge upon them, and speedily went away in Poste, and lead me with them to *Landreneau*, there where we found every one in armes, the Alarum bells sounding on every side, yea five or sixe leagues about the *Harbors*, that is to say, *Brest*, *Conquet*, *Crozon*, *Le Fou Doulac*, *Laudanec*, each of them well furnisht with Artillery, as Cannons, Demy-cannons, Culverins, Sakers, Serpentines, Falcons, Harque buzes, in breefe there was nothing wanting in Artillery, or souldiers afwell *Brittanes* as *French*, to hinder that the English made no landing, as they had resolved at their parting from *England*. The enemies Army came unto the very mouth of the Cannon, and when we perceived them that they would land, they were saluted with Cannon shot, and we discovered our men of warre, together with our Artillery: they fled to Sea againe, where I was glad to see their vessells hoise saile againe, which was in a great number and in good order, and seemed like a Forest which marched upon the Sea. I saw a thing also whereat I marveiled much, which was that the bullets of great peeces made great rebounds, and grazed upon the water as upon the ground. Now to make the matter short, the English did us no harme, and returned whole and sound into England, and left us in peace. We stayd in that Countrey in garrison, till we were assured that their army was dispersed. In the meane time our horsemen exercised their feates of activity, as to run at the ring, fight in duell, and others, so that there was still something to imploy me withall. Monsieur *de Estampes*, to make sport and pleasure to the sayd Monsieur *de Rohan*, and *Laval*, and other gentlemen, caused diverse Countrey wenches, to come to the feasts, to sing songs in the Low *Brittan* tongue, where their harmony was like the croaking of Frogges, while they are in love. Moreover made them dance the *Brittany Trory*, without mooving feete or buttockes, hee made them heare and see much good. Otherwhiles they caused the Wrastlers of the Cittyes, and Townes, to come where there was a Prize for the best, and the sport was seldome ended, but that one or other had a legge or an arme broken, or the shoulder or hippe displaced: there was a little man of Low *Britany* of a square body and well set, who held a long time the credit of the field, and by hisskill, and strength, threw five or sixe to the ground; there came to him a great

The Englisth retire.

Dances of the Countrey Wenches.

Wrastlers; little *Brittan* a good wrastler.

great schoolemaster, who was sayd to be one of the best wrastlers of all *Brittany*: he entred into the lists, having taken off his long jacket, in hose and doublet, and being neere the little man, he seemed as if he had beene tyed to his girdle. Notwithstanding when each of them tooke hold of the collar, they were a long time without doing any thing, and they thought they would remaine equall in force and skill: but the little man cast himselfe with an ambling leape under this great Pedant, and tooke him on his shoulder, and cast him on his Kidneyes spread abroad like a frogge, and then all the company laught at the skill and strength of this little fellow. This great *Dativo* had a great spight, for being cast by so little a man: he rose againe in choler, and would have his revenge. They tooke hold againe of each others collar, and were againe a good while at their hold without falling to ground: in the end this great man let himselfe fall upon the little, and in falling put his elbow upon the pitch of his stomacke, and burst his heart, and kild him starke dead. And knowing he had given him his deathes blow, tooke againe his long cassocke, and went away with his tayle betweene his legges and hid himselfe, seeing that the little man came not againe to himselfe, either for Wine, Vinegar or any other thing that was presented unto him; I drew neere to him, and felt his pulse which did not beate at all, then I sayd he was dead; then the *Brittanes* who assisted the wrastling sayd aloud in their jabbering, that is not in the sport. And some sayd that the sayd Pedagoge was accustomed to doe so, and that but a yeere passed he had done the like in a wrastling. I would needes open the body to know the cause of this sodaine death, where I found much blood in the *Thorax* and in the inferiour belly, and I strived to finde out any apertion in the place, from whence might issue so great a quantity of blood, which I could not doe for all the dilligence I could make. Now I beleeve it was *per Dispedesin* or *Anastomosin*, that is to say by, the apertion of the mouthes of the vessells, or by their porosities; the poore little wrastler was buryed. I tooke leave of *Messieurs de Rohan, de Laval*, and *Estamps*. Monsieur *de Rohan*, gave mee a present of fifty double duckets, and an ambling horse, and Monsieur *de Laval* another for my man, and Monsieur *de Estamps*, a Diamond of thirty Crownes, and so I returned to my house at *Paris*.

The little *Brittan* kild.

The body opened by the Author.

The Voyage of Parpignan, 1543.

A Little while after Monsieur *de Rohan* tooke me with him poste, to the campe of *Parpignan*; being there, the enemy made a Sally forth, and came and incloſed three peeces of our Artillery, where they were beaten back, to the gates of the Citty: which was not done without hurting and killing many, and amongst the rest *de Brissac*, (who was then chiefe master of the Artillery) received a musket shot upon the shoulder: returning to his Tent, all the others that were hurt followed him, hoping to be dresst by the Chirurgions, that ought to dresse them. Being come to his Tent and layd on his bed, the bullet was searched for by three or foure the most expert Chirurgions of the Army, who could not finde it, but sayd it was entred into his body.

In the end hee called for me, to see if I were more skilfull than them, because he had knowne me before in *Piedmount*: by and by I made him rise from his bed, and prayed him to put his body into that posture as it was then when hee received his hurt; which he did taking a javelin betweene his hands as he 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 *Nicholas Lavernaut* Chirurgion to Monsieur the *Dolphin*, who was the Kings Lievtenant in that army, yet notwithstanding the honour remained to me for finding of it.

Addresse of the Author.

I saw one thing of great remark, which is this: that a souldier in my presence gave to one of his fellowes a stroake with an Halbard upon the head, penetrating even to the left ventricle of the braine, without falling to the ground. Hee that

History.

ſtrooke him ſaid, he had heard that he had cheated at Dice, and that he had drawne a great ſumme of money, and that it was his cuſtome to cheate; I was called to dreſſe him, which I did as it were for the laſt, knowing well that he would quickly die: having dreſt him he 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 affaires of his ſoule; he helpt him to one who ſtayd with him to the laſt gaſpe. The next day the patient ſent for mee by his ſhee friend in a boyes apparell to come to dreſſe him, which I would not doe, fearing hee ſhould die under my hands; and to put it off, I ſayd I muſt not take off the dreſſing till the third day, by reaſon hee would die though hee were never touched. The third day hee came ſtaggering, and found me in my Tent accompanied with his wench, and prayed mee moſt affectionately to dreſſe him: And ſhewed me a purſe wherein he had an hundred or ſixſcore peeces of Gold, and that he would content me to my deſire; for all that, yet notwithſtanding I left not off to deferre the taking off his dreſſing, fearing leaſt hee ſhould die at the ſame inſtant. Certaine Gentlemen deſired me to goe dreſſe him, which I did at their requeſt, but in dreſſing him he died under my hands in a Convulſion. Now this Prieſt accompanied him untill death, who ſeazed upon the purſe for feare leaſt another ſhould take it, ſaying, hee would ſay Maſſes for his ſoule. Moreover hee furniſht himſelfe with his cloathes, and with all the reſt of his things. I have recited this Hiſtory as a monſtrous thing, that the Souldier fell not to ground when he had received this great ſtroake, and was in good ſenſes even till death. Soone after, the Campe was broken for divers cauſes; the one becauſe we were advertized that foure companies of *Spaniards* were entred into *Parpignam*; the other, that the Plague begun much in our Campe, and it was told us by the people of the countrey that ſhortly there would bee a great overflowing of the Sea, which might drowne us all; and the preſage which they had, was a very great winde from Sea, which aroſe in ſuch manner that there remained not one Tent which was not broken and overthrowne, for all the ſtrength and dilligence that could be given; and the Kitchins being all uncovered, the winde raiſed ſo the duſt and ſand which ſalted and poudred our meate, in ſuch ſort that wee could not eate it, ſo that wee were conſtrained to boile it in pots and other veſſells well covered.

Now we did not uncampe our ſelves in ſo good time, but that there were many Carts and Carters Mules, and Mule drivers drowned in the Sea, with great loſſe of baggage. The Campe broken, I returned to *Paris*.

The voyage to Landreſy. 1544.

KIng *Francis* raiſed a great Army to victuall *Landreſy*: on the other ſide the Emperour had no leſſe people, yea much more; that is to ſay, eighteene thouſand *Germans*, tenne thouſand *Spaniards*, ſixe thouſand *Wallons*, tenne thouſand *Engliſh*, and a matter of thirteene or foureteene thouſand Horſe. I ſaw the two Armies neare one another, within Canon ſhot, and it was thought they would never part without giving battaile. There were ſome certaine fooliſh Gentlemen who would approach the enemies Campe; certaine ſhot was made at them, and ſome dyed at the place, others had their Legges or Armes carried away. The King having done what hee deſired, which was to revictuall *Landreſy*, retired himſelfe with his Army to *Guiſe*, which was the day after All Saints, one thouſand five hundred forty foure, and from thence I returned to *Paris*.

The Voyage of Boulogne. 1545.

A Little while after we went to *Boulogne*, where the *Engliſh* ſeeing our Army, left the Forts which they had, that is to ſay, *Moulambert*; the little Paradiſe, *Monplaiſir*, the fort of *Shatillon*, the *Portet*, the Fort *Dardelot*. One day going through the Campe to dreſſe my hurt people, the enemies who were in the Tower of *Order*, ſhot off a peece of Ordinance, thinking to kill two horſemen which ſtayd to talke

talke one with another. It happened that the Bullet passed very neare one of them, which threw him to the ground, and t'was thought the said Bullet had toucht him, which it did not at all, but onely the winde of the said Bullet in the midst of his coate, which went with such a force that all the outward part of the Thigh became blacke and blew, and had much adoe to stand. I dresst him, and made him divers Scarifications to evacuate the contused blood, which the winde of the said Bullet had made; and the rebounds that it made on the ground, kild foure souldiers which remained dead in the place. I was not farre from this stroake, so that I felt somewhat the mooved aire, without doing mee any harme, than a little feare which made mee stoope my head very low, but the Bullet was already passed farre beyond mee.

The Souldiers mock't me to be affraid of a Bullet already gone. (My little Master) I thinke if you had beene there, that I had not beene affraid alone, and that you would have had your share of it. What shall I say more? Monsieur the Duke of *Guise*, *Francis* of *Lorraine*, was hurt before *Bullogne* with a stroake of a Lance, which above the right eye, declining towards the nose, entred and pass'd quite through on the other side betweene the *nucha* and the eare, 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 drawne out but with great force, yea with Smithes pincers. Notwithstanding all this violence which was not done without breaking of bones, nerves, and arteries, and other parts; my said Lord, by the helpe of God was cured: the said Lord went alwayes with open face, which was the cause that the Lance went through on the other side. The hurt of Monsieur *de Guise*.

The voyage of Germany. 1552.

I Went the voyage to *Germany* in the yeare 1552. with Monsieur *De Rohan* Captaine of 50. horse, where I was Chirurgion of his company, which I have said already. In this voyage Monsieur the high Constable of *France* was Generall of the Army: Monsieur *de Chastillon*, since Admirall, was chiefe Colonell of the foote, having foure Regiments of Lansquenets, under the conduct of these Captaines, *Reered* and *Ringrave*, having each of them two Regiments, each Regiment was of tenne Ensignes, and each Ensigne of five hundred men. And besides these, was Captaine *Chartel*, who conducted the troopes that the Protestant Princes had sent to the King. This was a very faire company on foote, accompanied with fifteene hundred Horse, with the following of each one two Archers, which might make foure thousand five hundred Horse, besides two thousand Light horse, and as many Muskettieres on horsebacke, of whom Monsieur *de Aumalle* was Generall, besides the great number of Nobility who came for their pleasure. Moreover, the King was accompanied with two hundred Gentlemen of his house, & likewise with divers Princes; there was also for his troope that served him, the *French*, *Scottish*, and *Swissers* Guards, amounting to sixe hundred men on foote, and the companies of Monsieur the *Dolphin*, *Mesieres de Guise*, *de Aumalle*, and of the Marshall S. *Andrew*, which amounted to foure hundred Lances, which was a mervelous thing to see such a faire Company; and in this equipage the King entred into *Thou* and *Mets*. I will not omit to tell that it was ordained, that the Companions of *Mesieres de Rohan*, of the Count of *Sancerr*, of *Iarnac*, which was each of them of fifty horse, went by the Wings of the Campe; and God knowes we had scarcitie of victualls, and I protest to God that at three divers times I had thought I should have beene famisht, and it was not for want of money for I had enough, and we could not have victualls but by force, by reason that the *Pesants* withdrew it all into the Cities and Castles.

One of the servants of a Captaine of the company of Monsieur *de Rohan*, went with others thinking to enter into a Church where the *Pesants* were retired, thinking to finde victualls by force or love: but amongst the rest this man was well beaten, and returned with seaven wounds, with a sword in the head; the least of which penetrated the second table of the scull, and he had foure other upon the armes, and upon the right shoulder, which cut more than one halfe of the blade-bone, or *Omoplate*. History.

He

He was brought backe to his masters lodging, who seeing of him so wounded, and that they were to depart thence the morrow after at the breake of day, and not thinking ever he could be cured, made him a grave, and would have cast him therein, saying that, or else the *Pesants* would massacre and kill him; I mov'd with pitty told him that he might yet be cured if he were well dresst: divers Gentlemen of the company prayd him that he would cause him to bee brought along with the Baggage, seeing I had the willingnesse to dresse him; to which he agreed, and after that I had cloth'd him, he was but put into a Cart upon a bed well covered and well accommodated, which one horse did draw. I did the office of a Physition, Apothecary, Chirurgion, and Cooke; I dresst 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 horsemen of the company of Monsieur *de Rohan*, the first muster that was made, gave me each one, one Crowne, and the Archers halfe a Crowne.

Charity of the Author.

The voyage of Danvilliers. 1552.

AT the returne from the *German* Campe, King *Henry* beseiged *Danvilliers*, those within would not render. They were well beaten and our pouder failed us, in the meane time they shot much at our people. There was a Culverin shot pass'd a traverse the Tent of Monsieur *de Rohan*, which hit a Gentlemans Leg, which was of his traine; which I was faine to finish the cutting off, the which was done without applying hot irons.

Another History.

The King sent for pouder to *Sedan*, which being come they began a greater battery than before, in such sort that they made a breach. *Messiers de Guise*, and the high Constable being in the Kings Chamber, told him they concluded the next day to make assault, & that they were assured they should enter into it, & that they should keep it secret lest the enemy were advertized. And all of them promised not to speake of it to any one. Now there was a Groome of the Kings chamber who lay under the Kings bed in the Camp to sleep, understood that they resolved the next day to give an assault, he presently revealed it to a certaine Captaine and told him that for certaine the day following assault should be given, & that he had heard it of the King, & praid the said Captaine that he would not speake 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 Captaine, & this Captaine to another Captaine, and from the Captaines to some of the Souldiers, saying alwayes, say nothing. It was so well hid that the next day early in the morning there was seene the greatest part of the Souldiers with their round hose and their breeches cut at knee for the better mounting at the breach. The King was advertiz'd of the rumor which runne through the Campe, that the assault must be given, whereof hee much mervailed, seeing there was but three of that advise, which had promised one to another, not to tell it to any one. The King sent for Monsieur *de Guise*, to know if hee had not talked of this assault; hee 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 expressely know who had declared this secret counsell; seeing they were but three. Inquisition was made from Captaine to Captaine, in the end the truth was found; for one sayd twas such a one told me, another sayd as much, till at length they came to the first, who declared he had learnd it of a Groome of the Kings chamber, named *Guyard*, borne at *Blois*, the sonne 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 bee 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 downe under his bed thinking to sleepe, and so having heard it, he declared it to a Captaine who was a friend of his, to the end hee might prepare himselfe with his Souldiers the first for the assault. After the King knew the truth; he told him, he should never serve him againe, and that he deserved to be hanged, and forbid him ever to come againe to the Court. My Groome of the Chamber went away with this sad newes, and lay with one of the Kings Chirurgions

What it is to reveale the secrets of Princes.

Chirurgions in ordinary, named Master *Lewis*, and in the night gave himselfe six wounds with a knife, and cut his throate; yet the said Chirurgion perceived nothing till morning, till hee saw the bed bloody, and the dead body by him: hee much mervailed at this spectacle upon his waking, and was afraid least they should say he was the cause of this murther; but was soone freed, knowing the cause to bee 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 Souldies prepared for the assault, yeelded themselves to the mercy of the King. The chiefe of them were prisoners, and the Souldiers sent away without armes. The Campe being broken up I returned to *Paris* with my Gentleman whose Leg I had cut off, I dresst him and God cured him; I sent him to his house merry with a woodden Leg, and was content saying that he scaped good cheape, not to have beene miserably burnt, as you write in your booke, my little Master.

The Voyage of Castle the Compt. 1552.

A Little while after King *Henry* levied an Army of thirty thousand men, to goe make spoile about *Hedin*. The King of *Navarre* who was then called Monsieur *de Vendosme*, was chiefe of the Army, and the Kings Lievtenant. 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 prayed me, and his request was a command, that I would follow him this voyage; and I about to make my excuse told him him my wife was sicke in her bed, he made me answer, that there were Phisitions at *Paris* for to cure her; and that he as well left his owne, who was as well descended as mine; promising me that hee would use me well, and forthwith gave command that I should be lodged as one of his Traine. Seeing this great affection, which he had to leade me with him, I durst not to refuse him. I went and met with him at the Castale of *Compt*, within 3. or 4. leagues of *Hedin*, there where there was the Emperors Souldiers in garrison with a number of *Pessants* round about: hee caused them to be summond to render themselves; and they made answer they should never have them but by peeces, and let them doe their worst, and they would doe their best to defend themselves. They put confidence in their ditches full of water, and in two houres with a great number of Bavins, and certaine empty Caskes, way was made to passe over the foote: when they must goe to the assault and were beaten with five peeces of Cannon, till a breach was made large enough to enter in, where they within received the assault very 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 pouder and munition, which was the cause of burning many of our people, and of theirs likewise, and they were all almost put to the edge of the sword. Notwithstanding some of our Souldiers had taken twentie or thirtie, hoping to have ransome for them. That was knowne, and ordered by the Counsell that it should be proclaimed by the Trumper through the Campe, that all Souldiers who had any *Spaniards* prisoners were to kill them, upon paine to be hanged and strangled, which was done upon cold blood. From thence we went and burnt diver Villages, whose barnes were full of all kind of graine, to my great greefe. Wee went along even to *Tournahan*, where there was a very great Tower where the Enemies retired, but there was no man found in it, all was pillaged, and the Tower was made to leape by a Mine, and then with Gunpouder turned topsy turvy. After that, the Campe was broken up, and I returned to *Paris*. I will not yet forget to write that the day after the Castle of *Compt* was taken, Monsieur *de Vendosme* sent a Gentleman to the King to make report to him of all which had pass'd, and amongst other things, told the King that I had greatly done my duty in dressing those that were wounded, and that I had shewed him eighteene Bullets which I had taken or drawne 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 than there was by halfe. Then the King said hee would have mee into his service, and

The King of *Navarre* prayed the Author to follow him.

History of desperate people.

The taking of Castle of *Compt*.

and commanded Monsieur *de Gognier* his chiefe Physition to write me downe as entertained one of his Chirurgions in ordinary, and that I should goe meete with him at *Rheimes* within ten or twelve dayes; which I did, where he did me the honour to command me that I would dwell neare him, and that he would doe me good. Then I thankt him most humbly for the honour it pleased him to doe me, in calling me to his service.

The Voyage of Mets. 1552.

The names of the Princes who were at the seige of *Mets.*

THe Emperour having beseiged *Mets*, and in the hardest time of winter, as each one knowes of fresh memory: and that there was in the Citty five or sixe thousand men, and amongst the rest seaven Princes; that is to say, Monsieur the Duke of *Guise* the Kings Lievtenant, *Messieurs d'Anguien, de Conde, de Montpensier, de La Roch upon Yon*, Monsieur *de Nemours*, and divers other Gentlemen, with a number of old Captaines of warre, who often made sallies forth upon the enemies, (as wee shall speake of hereafter) which was not done without slaying many, as well on the one side as the other. For the most part all our wounded people dyed, and it was thought the medicaments wherewith they were dressed were poysoned; which caused Monsieur *de Guise* and other Princes to send to the King for mee, and that hee would send me with Drogues to them, for they beleeved theirs were poysoned, seeing that of their hurt people few escaped. I doe not beleeve there was any poyson, but the great stroakes of the Cutlasses, Musket shot, and the extremity of cold were the cause. The King caused one to write to Monsieur the Marshall of S. *Andrew* which was his Lievtenant at *Verdun*, that hee found some meanes to make me enter into *Mets*. The said Lord Marshall of S. *Andrew* and Monsieur the Marshall of old *Ville*, got an *Italian* Captaine, who promised them to make me enter in, which he did, and for which hee had fifteene hundred Crownes: the King having heard of the promise which the *Italian* Captaine had made, sent for mee and commanded me to take of his Apothecary named *Daigue* such, and as many Drogues as I should thinke fit for the hurt who were beseiged, which I did, as much as a post-horse could carry. The King gave me charge to speake to Monsieur *de Guise* and to the Princes, and Captaines who were at *Mets*. Being arrived at *Verdun*, a few dayes after Monsieur the Marshall of S. *Andrew*, caused horses to be given to mee, and my man and for the *Italian*, who spake very good high *Dutch*, *Spanish* and *Walon* with his owne naturall tongue: When we were within eight or tenne Leagues of *Mets*, wee went not but in the night, and being neare the Campe, I saw a league and a halfe off bright fires round about the Citty, which seemed as if all the earth were on fire, and I thought wee could never passe through those fires without being discovered, and by consequent be hanged and strangled, or cut in peeces, or pay a great ransome. To speake truth, I wished my selfe at *Paris*, for the eminent danger which I foresaw. God guided so well our affaires that wee entred into the Citty at midnight with a certaine Token, which the Captaine had with another Captaine of the company of Monsieur *de Guise*: which Lord I went to, and found him in bed, who received me with great thankes, being joyfull of my comming. I did my message to him of all that the King had commanded me to say to him; I told him I had a little letter to give him, and that the next day I would not faile to deliver it him. That done he commanded mee a good lodging, and that I should be well used, and bid mee I should not faile to be the next day upon the Breach, where I should meete with all the Princes, and divers Captaines, which I did; who receaved me with great joy, who did mee the honour to imbrace me, and tell me I was very welcome, adding withall they did not feare to dye if they should chance to be hurt. Monsieur *de La Roch upon Yon* was the first that feasted me, and inquired of me what they sayd at the Court concerning the Citty of *Mets*; I told him what I thought good. Then presently he desired mee to goe see one of his Gentlemen, named Monsieur *de Magnane* at this present Knight of the Kings order, and Lievtenant of his Majesties Guard; who had his Leg broken by a Cannon shot. I found him in his bed, his Leg bended and crooked, without any

Note.

Commission of the Author.

dressing

dreſſing upon it; becauſe a Gentleman promiſed him cure, having his name, and his girdle, with certaine words. The poore Gentleman wept, and cryed with paine which he felt, not ſleeping either night or day, in foure dayes: then I mock't at this impoſture and falſe promiſe. Preſently I did ſo nimbly reſtore and dreſſe his Legge, that he was without paine and ſlept all night, and ſince (thanks be to God) was cured, and is yet at this preſent living, doing ſervice to the King. The ſaid Lord of the *Roch upon Yon* ſent me a Tunne of wine to my lodging, and bid tell me, when it was dronken hee would ſend mee another. That done, Monſieur *de Guiſe* gave me a liſt of certaine Captaines and Lords, and commanded me to tell them what the King had given me in charge; which I did, which was to doe his commendations and a thankſgivng for the duty they had done, and did in the keeping of the Citty of *Mets*, and that he would acknowledge it. I was more than eight daies in acquitting my charge, becauſe they were many; 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 Marſhall of *France*, Monſieur *de La Chapel*, *Bonnivet Caroug* now Governour of *Rohan*, the *Vidaſme* of *Chartres*, the Count of *Lude*, Mouſieur *de Biron* now Marſhall of *France*, Monſieur *de Randan* the *Rochfoucaut*, *Boxdaille d'Etrez*, the yonger, Monſieur *de S. Iohn* in *Dolphiny*, & many others which it would bee too long to recite; and chiefely to divers Captaines who had very well done their duty in defence of their lives, and Citty. I demanded afterwards of Monſieur *de Guiſe*, what it pleaſed I ſhould doe with the Drogues which I had brought, he bid me impart them to the Chirurgions and Apothecaries, and chiefely to the poore hurt Souldiers in the Hoſpitall which were in great number; which I did, and can aſſure you, I could not doe ſo much as goe ſee them, but they ſent for mee to viſit and dreſſe them. All the beſeiged Lords prayed mee carefully to ſollicite above all others Monſieur *de Pienne* who was hurt at the breach by a ſtone raiſed by a Cannon ſhot in the Temple with a fracture, and depreſſion of the bone. They told mee that preſently when hee received the ſtroake, hee fell to the earth as dead, and caſt blood out of his mouth, noſe, and eares with great vomitings, and was foureteene dayes without ſpeaking one word, or having any 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 temporll muſcle upon the *Os Coronale*. I dreſt him with other Chirurgions, and God cured him, and is at this day living, God be thanked. The Emperour cauſed battery to be made with forty double Cannons, where they ſpared no pouder night nor day. Preſently when Monſieur *de Guiſe* ſaw the Artillery ſeated to make a breach, hee made the neareſt houſes to be pulled downe to make Ramparts, and the poſts and beames were ranged, end to end, and betweene two clods of earth, beds and packs of wooll, and then other poſts and beames were put againe upon them as before. Now much wood of the houſes of the ſuburbs which had beene put to the ground (for feare leaſt the enemie ſhould be lodged, cloſe covered, and that they ſhould not helpe themſelves with any wood) ſerved well to repaire the breach. Every one was buſied to carry earth to make the Ramparts night and day. *Meſſieres* the Princes, Lords and Captaines, Lievtenants, Enſignes, did all carry the basket, to give example to the Souldiers, and Cittizens to doe the like, which they did; yea both Ladies and Gentlewomen, and thoſe which had not baskets, helpt themſelves with kettles, panniers, ſackes, ſheets, and with what elſe they could to carry earth; in ſo much that the enemy had no ſooner beaten downe the wall, but hee found behind a Rampart more ſtrong. The wall being fallen our Souldiers cryed to thoſe without, the Fox, the Fox, the Fox, and ſpake a thouſand injuries one to another. Monſieur *de Guiſe* commanded upon paine of death that no man ſhould ſpeake to them without, for feare leaſt there ſhould be ſome Traitor who would give them intelligence what was done in the Citty; the command made, they tyed living Cats at the end of their Pikes, and put them upon the Wall and cryed with the Cats miau, miau.

History.

The hurt of Monſieur *de Pienne*, trepand and cured.

Princes carried the Baskets.

Truely the Emperialiſts were very much vexed to have beene ſo long making a breach, and at ſo great expence, which was the breach of foureſcore ſteps, to enter fifty men in front, where they found a Rampart more ſtrong than the wall; they

Breach.

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fell upon the poore Catts, and ſhot at them with their muskets as they uſe to doe at birds. Our people did oftentimes make ſallies by the command of Monſieur *de Guiſe*. The day before there was a great preſſe, to make themſelves enrowled, who muſt make the ſally chiefely of the young Nobility, led by well experimented Captaines. Inſomuch that it was a great favour, to permit them to ſally forth, and runne upon the enemy: and they ſallied forth alwayes the number of one hundred, or ſixe-ſcore armed men with Cutlaſſes, Muskets, Piſtolls, Pikes, Partiſans and Halberds, which went even to their trenches to awaken them. Where they preſently made an alarum throughout all their Campe, and their Drummes ſounded, plan, plan, ta, ti, ta, ta, ta, ti, ta, tou, touf, touf: likewiſe their Trumpets and Cornets, ſounded, to the ſaddle, to the ſaddle, to the ſaddle, to horſe, to horſe, to horſe, to the ſaddle, to horſe. And all their ſouldiers cry'd Arme, arme, arme, to armes, to armes, to armes, arme, to armes, arme, to armes, like the cry after Wolves, and all divers tongues, according to their nations: and they were ſeene to goe out from their tents, and little lodgings, as thicke as little Bees, when their Hive is diſcovered; to ſuccour their fellowes, who had their throates cut like ſheepe. The horſemen likewiſe came from all parts, a great gallop, patati, patata, patati, patapa, ta, ta, patata, patata, and tarried well that they might not bee in the throng, where ſtroakes were imparted to give and receive. And when our men ſaw they were forced, they returned into the Citty, ſtill fighting, and thoſe who runne after were beaten backe with the Artillery which they had charged with flint ſtones, and foure-ſquare peeces of iron; and our ſouldiers who were upon the ſayd wall made a volley of ſhot, and ſhowred downe their bullets upon them like haile, to ſend them backe to their lodging, where divers remained in the place of the combate, and alſo our men did not all come with whole skinnes, and there ſtill remained ſome for the Tythe, who were joyfull to dye in the bed of honour. And where there was a horſe hurt he was flayed, and eaten by the Souldiers in ſteed of beefe and bacon, and it was fit I muſt runne, to dreſſe our hurt men. A few dayes after, other ſallyes were made, which did much anger the enemies, becauſe they did not let them ſleepe but little in ſafety. Monſieur *de Guiſe*, made a warlike ſtratagem which was, he ſent a Peſant who was none of the wiſeſt with two paire of Letters toward the King, to whom he gave ten Crownes, and promiſed the King ſhould give him an hundred, provided he gave him the letters. In the one he ſent word that the enemy made no ſigne of retiring himſelfe, and by all force made a great breach which he hop't to defend, yea to the loſing of his life, and of all thoſe that were within, and that the enemy had ſo well placed his Artillery in a certaine place which he named, that with great difficulty was it kept that they had not entred into it, ſeeing it was a place the moſt weake of all the Citty: but he hoped quickely to fill it up againe in ſuch ſort, that they cannot be able to enter. One of theſe letters was ſowed in the lining of his doublet, and he was bid to take heede that he told it not to any man. And there was alſo another given to him: wherein the ſayd Monſieur *de Guiſe* ſent word to the King, that he & all the beſeiged did hope well to keepe the Citty, and other matters, which I ceaſe to ſpeake of. They made the Peſant goe forth in the night, and preſently after, he was taken by one that ſtood Sentinell, and carryed to the Duke of *Albe*, to underſtand what was done in the Citty, and they asked him if he had any letters, he ſayd yes, and gave them one; and having ſeene it he was put to his oath, whether he had any other, and he ſwore, not; then they felt and ſearch't him, and found that which was ſowed to his doublet, and the poore meſſenger was hanged.

The ſayd letters were communicated to the Emperor, who cauſed his counſell to be called there, where it was reſolved ſince they could doe nothing at the firſt breach, that preſently the Artillery ſhould be drawne to the place which they thought the moſt weake, 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 come to the aſſault. The Duke of *Albe* declared to the Emperor that the ſouldiers dyed dayly, yet, more than the number of two hundred, and that there was but little hope to enter into the Citty, ſeeing the ſeaſon, and the great quantity of ſouldiers that there were. The Emperor demanded what people they were that dyed,

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and if that they were gentlemen of remarke or quality: answeare was made, that they were all poore souldiers; then sayd he, it makes no matter if they dye, comparing them to caterpillers and grashoppers, which eate the buddes of the earth: And if they were of any fashion, they would not bee in the campe for twelve shillings the month, and therefore no great harme if th y d/ed. Moreover he sayd he would neuer part from before that Citty, till he had taken it by force, or famine, although he should loose all his army: by reason of the great number of Princes which were therein, with the most part of the Nobility of *France*. From whom hee hoped to draw double his expence, and that he would goe once againe to *Paris*, to visite the Parisiens, and make himselfe King of all the kingdome of *France*. Monsieur *de Guise* with the Princes, Captaines, and Souldiers, and generally all the Cittizens of the Citty, having understood the intention of the Emperor, which was to extirpate us all, they advised of all they had to doe: And since it was not permitted to the souldiers, nor Cittizens, no nor to the Princes, nor Lords themselves to eate either fresh fish, or Venison, as likewise some Partridges, Woodcockes, Larkes, Plovers, for feare least they had gathered some pestilentiall ayre which might give us any contagion; but that they should content themselves with the ammunition fare, that is to say, with Bisquite, Beefe, poudered Cowes, Lard, and gammons of Bacon: Likewise fish, as Greene fish, Salmon, Sturgeon, Anchovies, Pilchers and Herrings, also Pease, Beanes, Rise, Garlike, Onions, Prunes, Cheese, Butter, Oyle, Salt, Pepper, Ginger, Nutmegges, and other Spiceries to put into pyes, cheesely to horseflesh, which without that would have had a very ill taste; divers Citizens having gardens in the Citty sowed therein great Raddishes, Turnippes, Carrots, and Leekes, which they kept well and full deare, against the extremity of hunger. Now all these ammunition victualls were distributed by weight, measure, and justice, according to the quality of the person, because we knew not how long the seige would last. For having understood from the mouth of the Emperor, that he would never part from before *Mets*, till he had taken it by force, or famine; the victualls were lessened, for that which was wont to be distributed to three, was now shared amongst foure, and defence made they should not sell what remained after their dinner, but twas permitted to give it to the wenches that followed the Campe. And rose alwayes from table with an appetite, for feare they should be subject to take Physicke. And before we would yeeld our selves to the mercy of our enemies; had resolved to eate our Asses, Mules, Horses, Dogges, Cats, and Ratts, yea our bootes and other skinnes which we could soften and frie. All the beseiged did generally resolve to defend themselves with all sorts of instruments of warre, that is to say, to ranke, and charge the Artillery, at the entry of the breach with bullets, stones, Cart nayles, barres, and chaines of iron. Also all kinds and differences of artificiall fire; as Boettes, Bariquadoes, Granadoes, Potts, Lances, torches, squibbes, burning faggots. Moreover scalding water, melted lead, powder of unquenched lime to blind their eyes. Also they were resolved to have made holes through, and through their houses, there to lodge musketiers, there to batter in the flanke and hasten them to goe, or else make them lye for altogether. Also there was order given to the women to unpave the streetes, and to cast them out at their winddowes, billets, tables, tressles, formes, and stooles, which would have troubled their braines: moreover there was a little further, a strong Court of Guard, fild with carts and pallisadoes, pipes and hogs heads, fild with earth, for barriquadoes to serve to interlay with faulcons, faulconets, field peeces, harquibuzes, muskets, and pistolls and wilde fire, which would have broken legges and thighes, in so much that they had beene beaten in head, in flancke, and in tayle; and where they had forced this Court of Guard, there was others at the crossing of the streets, each distant an hundred paces, who have beene as bad companions as the first, and would not have beene without making a great many Widdowes, and Orphans. And if fortune would have beene so much against us, as to have broken our Courts of gard, there was yet seaven great Battallions ordered in square, and triangle, to combate altogether, each one accompanied with a Prince to give them boldnesse, and encourage them to fight, even till the last gaspe, and to dye altogether. Moreover it was resolved, that each one should carry his treasure, rings, and jewells, and their household stuffe of the best, to

to burne them in the great place, and to put them into ashes rather than the enemy should prevaile and make tropheyes of their spoyles; likewise there was people appointed to put fire to the munition, and to beate out the heads of the Wine caskes, others to put the fire in each house, to burne our enemies and us together: the Citizens had accorded it thus, rather than to see the bloody knife upon their throate, and their Wives and Daughters violated, and to be taken by force, by the cruell and inhumane *Spaniards*. Now we had certaine prisoners which Monsieur *de Guise* sent away upon their faith, to whom was secretly imparted our last resolution, wil and desperate mindes; who being arrived in their Campe, I doe not deferre the publishing; which bridled the great impetuosity, and will of the souldiers to enter any more into the Citty to cut our throates, and to enrich themselves of our pillage. The Emperor having understood this deliberation of the great warriour, the Duke of *Guise*, put water in his wine, and restrained his great choller and furie, saying, He could not enter into the Citty without making a great slaughter, and butchery, and spill much blood, aswell of the defendants, as of the assaillants, and that they should be dead together, and in the end could have nothing else but a few ashes, and that afterward it might be spoken of that, as of the destruction of *Ierusalem* already made by *Titus* and *Vespasian*. The Emperor then having understood our last resolution, and seeing their little prevailing by their battery, and undermining, and the great plague which was in his whole army, and the indisposition of the time; and the want of victualls and money, and that his souldiers forsooke him, and went away in great companies; concluded in the end to retire themselves accompanied with the Cavallery of his Vantgard, with the greatest part of his Artillery, and the Battalia; The Marquesse of *Brandeborg* was the last which uncampt, maintained by certaine bands of *Spaniards*, *Bohemians*, and his *Germane* companies, and there remained one day and a halfe after, to the great greefe of Monsieur *de Guise*, who caused foure peeces of Artillery to be brought out of the Citty, which he caused to be discharged at him on one side; and the other to hasten them to be gone, which he did full quickely, with all his Troopes. He being a quarter of a league from *Mets* was taken with a feare least our Cavallery should fall upon him in the Rere, which caused him to put fire to his munition powder, and leave certaine peeces of Artillery and much baggage which hee could not carry because the Vantgard, and the Battalia, and great Cannons had too much broken the way. Our horsemen would by all meanes have gone out of the Citty to have fallen upon their breech. But Monsieur *de Guise* would never permit them, but on the contrary we should rather make plaine their way, and make them bridges of gold and silver, and let them goe, being like to a good shepheard, who will not loose one of his sheepe. See now how our wellbeloved Imperialists went away from before the Citty of *Mets*, which was the day after *Christmas* day, to the great contentment of the beseiged, and honour of Princes, Captaines and Souldiers who had endured the travells of this seige the space of two monthes. Notwithstanding they did not all goe, there wanted twenty thousand who were dead aswell by Artillery, by the sword, as also by the plague, cold, and hunger, and for spight they could not enter into the Citty to cut our throates, and have the pillage: and also a great number of their horses dyed, of which they had eaten a great part in steed of Beefe and Bacon. They went where they had beene encamped, where they found divers dead bodyes not yet buried, and the earth all dihged like Saint *Innocents* Churchyard, in the time of the plague. They did likewise leave in their lodgings, pavillions and tents, divers sick people: also bullets, armes, Carts, Waggons, & other baggage with a great many of Munition loaves spoyled and rotten by the raine and snow, yet the souldiers had it not but by weight and measure; & likewise they left great provision of wood, of the remainders of the houses of the Villages which they had pluckt downe 2 or 3 miles compasse, likewise divers other houses of pleasur. belonging to the Cittizens accompanied with faire gardens, grasse plotts fild with fruite trees, for without that they had beene sterv'd with cold, and had beene constrained to have rais'd the seige sooner. The sayd Monsieur *de Guise* caused the dead to be buried, and dresse their sicke people: likewise the enemies left in the Abby of S. *Arnoul* divers of their hurt souldiers which they could not leade with them: the sayd Monsieur *de Guise* lent them all Victualls enough, and commanded me and other Chirurgions to goe dresse them

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and give them medicines; which we willingly did, and thinke they would not have done the like toward others (becauſe the *Spaniard* is moſt cruell, perfidious and inhumane, & therefore enimy to all nations) which is proved by *Lopez* a *Spaniard* & *Benzo* of *Milan* & others who have written the hiſtory of *America*, & the Weſt *Indies*, who have beene conſtrayned to confeſſe, that the cruelty, avarice, blaſphemy, and wickedneſſe of the *Spaniards*, have altogether alienated the poore *Indians*, from the religion which the ſayd *Spaniards* are ſayd to hold. And all write they are leſſe worth than the Idolatrous *Indians*, by the cruell uſage done to the ſayd *Indians*.

And a few dayes after we ſent a Trompet to *Thionville* toward the enemy, that they ſhould ſend backe for their wounded men in ſafety, which they did with Carts and Waggons, but not enough. Monſieur *de Guiſe*, cauſed them to have Carts and Carters, to helpe to carry them to the ſayd *Thionville*. Our ſayd Carters being returned backe, brought us word that the way was paved with dead bodyes, and that they never lead backe the halfe, for they dyed in their Carts, and the *Spaniards* ſeeing them at the point of death, before they had caſt out their laſt gaſpe, caſt them out of their Carts, and buryed them in the mudde, and mire, ſaying they had no order to bring backe the dead. Moreover our ſayd Carters ſayd, they met by the way divers Carts loaden with baggage ſticking in the mire, which they durſt not ſend for backe, for feare leaſt thoſe of *Mets* ſhould fall upon them. I will againe returne to the cauſe of their mortality, which was principally through honger, plague, and cold; for the ſnow was two foote thicke 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 ſtarres, more bright than fine gold, and every day had white ſheetes, and lodg'd at the ſigne of the Moone, and made good cheere when they had it, and payd their hoſte ſo well over night, that in the morning they went away quitte, ſhaking their eares, and they needed no combe, to take away the doune out of their haires, either of head or beard, and found alwayes a white table cloath, loſing good meales for want of Victualls. Alſo the greateſt part of them had neither bootes, nor buskinnes, ſlippers, hoſe, or ſhooes, and divers had rather have none than have them, becauſe they were alwayes in mudde, halfe way of the legge; and becauſe they went bare leg'd, we called them the Emperors Apoſtles. After the Campe was wholly broaken, I diſtributed my patients into the hands of the Chirurgions of the Citty, to finiſh their cure: then I tooke leave of Monſieur *de Guiſe*, and came backe toward the King, who received me with a loving countenance, and demanded of me how I did enter into the Citty of *Mets*. I recounted to him, all that I had done, he cauſed two hundred crownes to be given me, and one hundred I had at my going out, and told me he would not leave me poore; then I thanked him moſt humbly of the good and the honour which he pleaſed to doe me.

The Voyage of Hedin, 1553.

CHarles the Emperor cauſed the Citty of *Theroüenne* to be beſeiged, where Monſieur the Duke of *Savoy*, was Generall of the whole army: it was taken by aſſault where there was a great number of our men ſlaine and priſoners. The King willing to prevent that the enemy ſhould not alſo come to beſeige the Citty & Caſtle of *Hedin*, ſent *Meſſiers* the Duke *Bouillion*, the Duke *Horace*, the Marqueſſe of *Villars*, a number of Captaines, and about eight hundred ſouldiers, & during the ſeige of *Theroüenne*, the ſayd Lords fortified the ſayd Caſtle of *Hedin*, in ſuch ſort that it ſeemed impregnable. The King ſent me to the ſayd Lords to helpe them with my Art, if there were any neede. Now ſoone after the taking of *Theroüenne*, we were beſeiged with the army: there was a quicke cleare fountaine or Spring, within Cannon ſhot, where there was about foureſcore whores, and weneches of the enemies, who were round about it to draw water. I was upon a Rampart beholding the Campe, and ſeeing ſo many idlers about the ſayd fountaine, I prayed Monſieur *de Pont* Commiſſary of the Artillery, to make one Cannon ſhot, at that roguiſh company, he made me much deniall, anſwearing me that ſuch kind of people were not worth the powder they ſhould waſte.

waste. Againe I prayed him to levell the Cannon, telling of him, the more dead the fewer enemies; which he did through my request, and at that shot fifteene or sixteene were kild and many hurt. Our souldiers sallied forth upon the enemies, where there was many kild, and slaine with musket shot and swords, as well on the one side, as of the other, and our souldiers did often make sallyes forth upon the enemies before their trenches were made; where I had much worke cut out, so that I had no rest night nor day for dressing the wounded. And I will tell this by the way, that we had put many of them in a great Tower, layd upon a little straw, and their pillowes were stones, their coverlets were their cloakes, of those that had any. Whilst the battery was making, as many shot as the Cannons made, the patients sayd they felt paine in their woundes, as if one had given them blowes with a staffe, the one cry'd his head, the other his arme, and so of other parts; divers of their wounds bled afresh yea in greater quantity than first when they were wounded, and then it was I must runne to stay their bleeding. My little master, if you had beene there, you had beene much troubled with your hot irons, you had neede to have had much charcoale to make them red hot, and believe they would have slaine you like a Calfe for this cruelty. Now through this diabolicall tempest of the Eccho from these thundring Instruments, and by the great and vehement agitation of the collision of the ayre resounding and reverberating in the wounds of the hurt people, divers dyed, and others because they could not rest by reason of the groanes and cryes that they made, night and day; and also for want of good nourishment and other good usage necessary to wounded people. Now my little master, if you had beene there, you would hardly have given them gelly, restauratives, cullises, pressures, panado, cleansed barly, white meate, almond milke, Prunes, Raisons, and other proper meates for sicke people: your ordinance would onely have beene accomplisht in paper, but in effect they could have had nothing but old Cow beefe, which was taken about *Hedin* for our munition, salted and halfe boyled, insomuch that who would have eate it he must pull it with the force of his teeth, as birds of Prey doe carrion. I will not forget their linnen wherewith they were dresst, which was onely rewashed every day, and dryed at the fire, and therefore dry & stubborne like Parchment, I leave you to thinke how their wounds could heale well. There was foure lusty whores to whom charge was given to wash their linnen, who discharged their duty under penalty of the batoone, and also they wanted both soape and water. See then how the sicke people dyed for want of nourishments, and other necessary things. One day our enemies fained to give us a generall assault, to draw our Souldiers upon the breach, to the end to know our countenance and behaviour: every one ranne thither, we had made great provision of artificiall fire, to defend the breach; a Priest belonging to Monsieur *du Bouillon* tooke a granado, thinking to throw it on the enemies, and set it on fire sooner then he ought to have done: it brake asunder, and the fire fell amongst our fire workes, which were put into a house neere the breach; which was to us a mervelous disastre, because it burned diverse poore souldiers: it also tooke hold on the house it selfe, and we had beene all burned had not great helpe beene used for to quench it; there was but one Well there wherein was water in our Castle, which was almost quite dryed up, and in steede of water, we tooke beere and quenched it: then afterwards we had great scarcity of water; and to drinke the rest that remained which we must straine through napkins.

Now the enemy seeing this smoake and tempest of the fire workes which cast a very great flame and clashing noyse, beleeved wee had put the fire on purpose for the defence of our breach, to burne them, and that wee had great store of others. That made them to be of another opinion, than to take us by assault; they did undermine, and digge into the greatest part of our walls, so that it was the way to overthrow wholly the Castle topsie turvie, and when the mines were finisht, and that their Artillery shot, the whole Castle did shake under us, like an earthquake, which did much astonish us. Moreover he had levelled five peeces of Artillery which they had seated upon a little hill, to play upon our backes when wee should goe to defend the breach.

The Duke *Horace* had a Cannon shot upon one shoulder, which caried away his

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arme on one side, and the body on the other, without being able to speake one onely word. His death was to us a great disasture for the ranke which hee held in this place.

Likewise Monsieur *de Martigues* had a stroake with a Bullet which peirc't through his Lungs; I dreſt him, as I will declare hereafter. Then we demanded Parle, and a Trumpet was sent toward the Prince of *Piedmont*, to know what composition it pleased him to make us: His answer was, that all the chiefe, as Gentlemen, Captaines, Lievtenants, and Ensignes, should be taken for ransome, and the Souldiers should goe out without Armes; and if they refused this faire and honest proffer, the next day we ought to be assured they would have us by assault or otherwise. Counsell was held, where I was called to know if I would signe as divers Captaines, Gentlemen and others, that the place should bee rendred up. I made answer it was not possible to be held, and that I would signe it with my proper blood, for the little hope that I had, that wee could resist the enemies force, and also for the great desire which I had to be out of this torment, and hell; for I slept not eyther night or day, by reason of the great number of hurt people, which were about two hundred. The dead bodies yeelded a great putrifaction, being heaped one upon the other like Fagots, and not being covered with earth because we had it not; and when I entred into one lodging, Souldiers attended me at the dore to goe dresse others at another; when I went forth, there was striving who should have me, and they carried me like a holy body not touching the ground with my foote in spight one of another, nor could I satisfie so great a number of hurt people. Moreover I had not what was necessary to dresse them withall; for it is not sufficient that the Chirurgion doe his duty towards the patients, but the patient must also doe his, and the assistance, and all exterior things; witnesse *Hippocrates* in his first *Aphorisme*. Now having understood the resolution of the yeelding up of our place, I knew our affaires went not well; and for feare of being knowne I gave a veluet Coate, a Satin doublet, a very fine cloth cloak lin'd with velvet, to a Souldier, who gave me a scurvy old torne doublet cut and slasht with using, and a leather jerkin well examined, and an ill favoured hat, and a little cloake; I smutcht the collar of my shirt with water in which I had mingled a little soote; likewise I wore out my stockings with a stone at the knees and the heeles as if they had beene worne a long time, and I did as much to my shooes, in so much that they would rather take me for a Chimney sweeper, than a Kings Chirurgion. I went in this equipage towards Monsieur *de Martigues*, where I pray'd him that he would take order that I might remaine neare him to dresse him, which he agreed to most willingly, and had as much desire I should remaine with him as I my selfe. Soone after, the Commissioners who had charge to elect the prisoners, entred into the Castle, the seaventeenth day of *July* one thousand five hundred fifty three, where they made *Messieurs* the Duke of *Bouillon*, the Marquesse of *Villars*, the Baron of *Culan*, Monsieur *du Pont* commissary of the Artillery, and Monsieur *de Martigues* and I to be taken through the request that he made to them; and all other Gentlemen which they could perceive were able to pay any ransome; and the most part of the Souldiers and the cheese of the Companies, having such, and so many prisoners as they would.

Afterward the *Spanish* Souldiers entred by the Breach without any resistance, for ours esteemed they would hold their faith and composition that they should have their lives saved. They entred in with a great fury to kill, pillage, and rifle all they retained: some hoping to have ransome, they tyed their stones with Arquebuse 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 ransome, and tell of what houses they were; and if they saw they could have no profit, made them cruelly dye betweene their hands, or presently after their genitall parts would have falne into a Gangreene, and totall mortification; but they kild them all with their Daggers, and cut their throats. See now their great cruelty and perfidiousnesse, let him trust to it that will. Now to returne to my purpose being lead from the Castle to the Citty with Monsieur *de Martigues*, there was a Gentleman of the Duke of *Savoyes*, who asked mee if

if Monsieur *de Martigues* wound was curable, I answered, not; who presently went and told the Duke of *Savoy*; now I thought he would send Physitions and Chirurgions to visit and dresse my said Monsieur *de Martigues*: in the meane time I thought with my selfe whether I ought to make it nice and not to acknowledge my selfe a Chirurgion for feare least they should retaine mee to dresse their wounded, and in the end they would know I was the Kings Chirurgion, and that they would make me pay a great ransome. On the other side I feared, if I should not make my selfe knowne to bee a Chirurgion, and to have carefully dressed Monsieur *de Martigues*, they would cut my throate, so that I tooke a resolution to make it appeare to them he would not dye for want of good dressing and looking to. Soone after, see, their arrives divers gentlemen accompanied with the Physition and Chirurgion to the Emperour, and those of the said Duke of *Savoy*, with sixe other Chirurgions following the Army, 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 Emperours Physition bid me declare the essence of the wound, and how I had dreſt it. Now all the assistance had a very attentive care to know if the wound were mortall or not: I began to make a discourse that Monsieur *de Martigues* looking over the wall to perceive them that did undermine it, received a shot from an Arquebuse quite through the body; presently I was called to dresse him, I saw hee cast blood out of his mouth, and his wounds. Moreover he 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 he said he had a most sharpe pricking paine at the entrance of the Bullet. I doe beleeve and thinke it might bee some little peeces of bones which prickt the Lungs. When they made their Systole and Diastole, 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 outgoing of it had likewise broken the fift Rib with peeces of bones which had beene driven from within outward; I drew out some but not all, because they were very deepe and adherent. I put in each wound a Tent, having the head very large, tyed with a thread, least by the inspiration it might bee drawne into the capacity of the *Thorax*, which hath beene knowne by experience to the detriment of the poore wounded; for being fallen in, it cannot be taken out, which is the cause that engenders putrifaction, a thing contrary to nature. The said Tents were annointed with a medicine compos'd of yolks of Egges, *Venice* Turpentine, with a little oyle of Roses: My intention for putting the Tents was to stay the flux of blood, and to hinder that the outward ayre did not enter into the breast, 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 oyle of Roses and Vinigar to the avoyding of inflammation, then I put great stupes of *Oxycrate*, and bound him up, but not hard, to the end he might have easie respiration; that done I drew from him five porrengers of blood from the Basilicke veine of the right arme, to the end to make revulsion of the blood which runs from the wounds into the *Thorax*, having first taken indication from the wounded part, and cheefely his forces, considering his youth and his sanguine temper; Hee presently after went to stoole, and by his urine and seege cast great quantity of blood. And as for the paine which he said he felt at the entrance of the Bullet which was as if he had beene pricked with a bodkin, that was because the Lungs by their motion beate against the splinters of the broken Rib. Now the Lungs are covered with a coate comming from the membrane called *Pleura*, interweaved with nerves of the sixt conjugation from the braine, which was cause of the extreame paine he felt; likewise he he had a great difficultie of breathing, which proceeded from the blood which was spilt in the capacitie of the *Thorax*, and upon the *Diaphragme*, the principall instrument of respiration, and from the dilaceration of the muscles which are betweene each Rib, which helpe also to make the expiration and the inspiration; and likewise because the Lungs were torne and wounded by the Bullet, which hath caused him ever since to spit blacke and putrid blood in coughing. The Feaver seazed him soone after he was hurt, with faintings and swoonings.

nings. It seemed to mee that the said feaver proceeded from the putredinous vapours arising from the blood which is out of his proper vessells, which hath fallen downe, and will yet flow downe. The wound of the Lungs is growne great and will grow more great, because it is in perpetuall motion, both sleeping and waking, and is dilated and compresst to let in the aire to the heart, and cast suliginous vapours out: by the unnaturall heate is made inflammation, then the expulsive vertue is constrained to cast out by cough whatsoever is obnoxious unto it: for the Lungs cannot bee purged by coughing, and by coughing the wound is dilated, and growes greater, from whence the blood issues out in great aboundance, which blood is drawne from the heart by the veine arteriall to give them nourishment, and to the heart by the *vena cava*; his meate was barly broth, stewed prunes; sometimes *panado*; his drinke was Stisan: He could not lye but upon his backe which shewed he had a great quantity of blood spilt within the capacity of the *Thorax*, and being spread or spilled along the spondills, doth not so much presse the Lungs as it doth being laid on the sides or sitting.

What shall I say more, but that the said Lord *Martigues* since the time hee was hurt hath not reposed one houre onely, and hath alwayes cast out bloody urines and stooles. These things then *Messieres* considered, one can make no other prognosticke but that he will dye in a few dayes, which is to my great greefe. Having ended my discourse I dresst him as I was wont; having discovered his wounds, the Physitions and other assistants presently knew the truth of what I had said.

The said Physitions having felt his pulse and knowne his forces to be almost spent, and abolished, concluded with mee that in a few dayes he would dye; and at the same instant went all toward the Lord of *Savoy*, where they all said, that the said Lord *Martigues* would dye in a short time; he answered, it were possible if hee were well dresst he might escape: Then they all with one voyce said, hee had beene very well dresst, and sollicited with all things necessary for the curing of his wounds, and could not be better, and that it was impossible to cure him, and that his wound was mortall of necessity. The Monsieur *de Savoy* shewed himselfe to bee very much discontented and wept, and asked them againe if for certaine they all held him deplored and remediless, they all answered, yes. Then a certaine *Spanish* impostor offered himselfe, who promised on his life that he would cure him, and if he failed to cure him, they should cut him in an hundred peeces; but he would not have any Physitions, Chirurgions or Apothecaries with him. And at the same instant the sayd Lord of *Savoy* told the Physitions and Chirurgions they should not in any wise goe any more to see the sayd Lord of *Martigues* Also he sent a Gentleman to me to forbid me upon paine of life not to touch any more the said Lord of *Martigues*, which I promised not to doe; wherefore I was very glad, seeing he should not dye in my hands, and commanded the said impostor to dresse the said Lord of *Martigues*. And that he should have no other Physitions nor Chirurgions but him; he came presently to the said Lord of *Martigues*, who told him,

Senor Cavallero el senor Dugue me ha mandado que viniesse a curar vostra herida, yo os juro á Dios que antes de acho dias yo os haga subir a Cavallo con la lansa en puno contalque no ago que yo quos togue, Comereis y bibereis todas comidas que fueren de vostro gusto y yo hare la dieta pro V. m. y desto os de veu asegurar sobre de mi, yo he sanado muu hos que tenian magores heridas que la Vostra. That is to say, Lord *Cavalleere*, Monsieur the Duke of *Savoy* hath commanded me to come dresse thy wound; I sweare to thee by God, that before eight dayes I will make thee mount on horsebacke with thy Lance in thy hand, provided, that no man may touch thee but my selfe; thou shalt eate and drinke any thing thou hast a minde to, I will performe thy diet for thee, and of this thou maist be assured upon my promise, I have cured divers who have had greater wounds than thine: and the Lord replyed, God give you the grace to doe it.

He demanded of the sayd Lord a shirt and tore it in little ragges, which hee put a crosse, muttering, and murmuring certaine words over the wound; and having dresst him, permitted him to eate and drinke what he would, telling him hee would observe a dyet for him, which he did, eating but six prunes and sixe bits of bread at a meale

meale, and drinking but beere. Notwithstanding, two dayes after, the sayd Lord of *Martigues* dyed; and my *Spaniard*, seeing of him in the agony, eclipst himselfe and got away without bidding, farewell to any body; and I beleeve if he had beene taken he had bin hang'd for his false promises, which he had made to Monsieur the Duke of *Savoy*, and to divers other gentlemen.

He dyed about tenne of the clocke in the morning, and after dinner, the sayd Lord of *Savoy*, sent Physitions and Chirurgions and his Apothecary, with a great quantity of Drogues, to embalme him; they came accompanied with divers gentlemen and Captaines of the Army.

The Emperors Chirurgion came neere to me, and prayed me kindly to open the body; which I refused, telling him I was not worthy to carry his plaster boxe after him: he prayed me againe, which then I did for his sake, if it so liked him. I would yet againe have excused my selfe, that seeing he was not willing to embalme him, that he would give this charge to another Chirurgion of the company; he made me yet answere, that he would it should be I, and if I would not doe it, I might hereafter repent it: knowing this his affection, for feare he should not doe me any displeasure, I tooke the rasor and presented it to all in particular, telling them I was not well practised to doe such operations which they all refused.

The body being placed upon a table, truely I purposed to shew them that I was an Anatomist, declaring to them diverse things, which should be heere too long to recite. I began to tell all the company that I was sure the bullet had broken two ribs, and that it had past through the Lungs, and that they should finde the wound much enlarged, because they are in perpetuall motion, sleeping or waking, and by this motion the wound was the more dilacerated. Also that there was great quantity of blood spilt in the capacity of the brest, and upon the midriffe, and splinters of the broken ribbes 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 body.

One of the Physitions asked me, which way the blood might passe to be cast out by Vrine, being contained in the *Thorax*. I answeared him that there was a manifest conduit, which is the *Vena Azygos*, who having nourisht the ribbes, the rest of the blood descends under the *Diaphragme*, and on the left side is conjoyned to the emulgent veine, which is the way by which the matter in *pleureſies* and in *Empiema*, doe manifestly empty themselves by urine and stoole. As it is likewise seene, the pure milke of the brests of women newly brought to bed, to descend by the *Mammillary* Veines, and to be evacuated downewards by the necke of the wombe without being mixt with the blood. And such a thing is done (as it were by a miracle of nature) by her expulsive and sequesting vertue, which is seene by experience of two glasse vessells called Mount-wine; let the one be filled with water, and the other with Claret wine, and let them be put the one upon the other, that is to say, that which shall bee filled with water, upon that which shall be filled with wine; and you shall apparently see the wine mount up to the top of the vessell quite through the water, and the water descend atraverse the wine, and goe to the bottome of the vessell without mixture of both; and if such a thing be done so exteriorly and openly to the sense of our eye, by things without life: you must beleeve the same in our understanding. That nature can make matter and blood to passe, having beene out of their vessells yea through the bones without being mingled with the good blood.

Our discourse ended, I embalmed the body, and put it into a Coffinne; after that the Emperors Chirurgion tooke me apart, and told me if I would remaine with him that he would use me very well, and that he would cloath me anew, also that I should ride on horseback. I thanked him very kindly for the honour he did me, and told him that I had no desire to doe service to strangers, and enemies to my Countrey; then he told mee I was a foole, and if he were prisoner as I, hee would serve the divell to get his liberty. In the end I told him flat that I would not dwell at all with him.

The Emperors Physition returned toward the sayd Lord of *Savoy*, where he declared the cause of the death of the sayd Lord of *Martigues*, and told him that it was

impossible

impossible for all the men in the would to have cured him; and confirmed againe, that I had done what was necessary to be done, and prayed him to winne mee to his service, and spoke better of me than I deserved.

Having beene perswaded to take me to his service, he gave charge to one of his stewards named Monsieur *du Bouchet*, to tell me, if I would dwell in his service that he would use me kindly: I answered him, that I thank't him most humbly, and that I had resolved not to dwell with any stranger. This my answer being heard by the Duke of *Savoy*, he was somewhat in choller, and sayd, hee would send mee to the Gallies.

Monsieur *de Vaudeville*, Governour of *Gravelin*, and Colonell of seaventeene Ensignes of foote, prayed him, to give me to him, to dresse him of an Vlcer which he had in his Leg this six or seaven yeares; Monsieur *de Savoy* told him because I was of worth, that he was content, and if I ranckled his Leg it would be well done; Hee answered that if hee perceaved any thing, that hee would cause my throate to be cut.

Soone after, the said Lord of *Vaudeville* sent for me by fowre Germane Halberdiers, which affrighted me much, not knowing whither they led mee, they spake no more *French* than I high *Dutch*; being arrived at his lodging, he told mee I was welcome, and that I was his; and as soone as I should have cured him of that Vlcer in his Leg, that he would give me leave to be gone without taking any ransome of me. I told him I was not able to pay any ransome.

Then he made his Physition and Chirurgions in ordinary to shew mee his ulcerated Leg; having seene and considered it, we went apart into a Chamber where I began to tell them, that the said Vlcer was annuall, not being simple but complicated: that is to say, of a round figure, and scaly, having the lips hard and callous, hollow and sordid, accompanied with a great varicous veine which did perpetually feede it; besides a great tumor, and a phlegmonous distemper very painefull through the whole Leg, in a body of cholericke complexion; as the haire of his face and beard demonstrated. The method to cure it (if cured it could be) was to begin with universall things, that is, with purgation and bleeding, and with this order of dyet, that hee should not use any wine at all, nor any salt meates, or of great nourishment, chiefely these which did heat the blood: afterward the cure must begun with making divers scarifications about the Vlcer, and totally cutting away the callous edges or lips, and giving a long or a triangular figure, for the round will very hardly cure, as the Ancients have left it in writing, which is seene by experience. That done, the filth must be mundified, as also the corrupted flesh, which should be done with *Vnguentum Ægyptiacum*, and upon it a bolster dipt in juice of Plantaine and Nightshade and *Oxycrate*, and roule the Leg beginning at the foote, and finishing at the knee, not forgetting a little bolster upon the *Varicous* veine, to the end no superfluities should flow to the Vlcer. Moreover that he should take rest in his bed, which is commanded by *Hippocrates*, who saith, that those who have soare Legs should not use much standing or sitting, but lying along. And after these things done and the Vlcer well mundified, a plate of Lead rubbed with quickesilver should be applyed. See then the meanes, by which the said Lord *Vaudeville* might be cured of the said Vlcer; all which they found good. Then the Physition left mee with the Chirurgion, and went to the Lord *Vaudeville*, to tell him that he did assure him I would cure him, and told him all that I had resolved to doe, for the cure of his Vlcer: whereof hee was very joyfull. He made mee to bee called to him, and asked me if I was of the opinion that his Vlcer could be cured, and I told him, yes, provided he would be obedient to doe what he ought. He made me a promise hee would performe all things which I would appoint; and as soone as his Vlcer should be cured, he would give me liberty to returne without paying any ransome. Then I beseech't him to come to a better composition with me, telling him that the time would be too long to bee in liberty, if I stayd till hee was perfectly well, and that I hoped within fifteene dayes the Vlcer should bee diminished more than one halfe, and it should bee without paine, and that his Physitions and Chirurgions would finish the rest of the cure very easily. To which hee agreed, and then I tooke a peece

of

of paper, and cut it the largeneſſe of the Vlcer, which I gave him, and kept as much my ſelfe. I prayd him to keepe promiſe, when he ſhould finde his buſineſſe done: He ſwore by the faith of a Gentleman he would doe it; then I reſolved to dreſſe him well, according to the method of *Galen*, which was, that after all ſtrange things were taken out of the Vlcer, and that there wanted nothing but filling up with fleſh, I dreſt him but once a day, and he found that very ſtrange. And likewiſe his phyſition which was but a freſh man in thoſe affaires, who would perſwade mee with the Patient, to dreſſe him two or three times a day, I prayd him to let me doe what I thought good; and that it was not to prolong the cure, but on the contrary to haſten it, for the great deſire I had to be in liberty. And that he would looke in *Galen* in the fourth book of the compoſition of medicaments *ſecundum genera*, who ſaith, that if a medicine doe not remaine long upon the part it profits not ſo much, as when it doth continue long, a thing which many Phyſitions have beene ignorant of, and have thought it hath beene better to change the Plaſter often. And this ill cuſtome is ſo inveterate and rooted, that the Patients themſelves accuſe oftentimes the Chirurgions of negligence, becauſe they doe not oftner remove their emplaſters; but they are deceived. For as you have underſtood and read in my workes in divers places: The qualities of all bodies which mutually touch, operate one againſt another, and both of them ſuffer ſomething, where one of them is much ſtronger than the other, by meanes whereof the ſaid qualities are united, they familiariſe with the time, although they are very much differing from the manner, that the quality of the medicament doth unite, and ſometimes becomes like to that of the body, which is a very profitable thing. Therefore they ſay, he is to be praiſed much who firſt invented not to change the Plaſters ſo often, becauſe it is knowne by experience, this is a good invention.

Moreover it is ſaid, great fault is committed to dreſſe Vlcers often in wiping of them hard, for one takes not away onely the unprofitable excrement, which is the *pus* or *Sanies* of the Vlcer, but the matter whereof the fleſh is engendred; wherefore for the reaſons aforeſaid it is not needefull to dreſſe Vlcers ſo often.

The ſaid Lord *Vaudeville*, would ſee whether that which I alledged out of *Galen* were true, and commanded the ſaid Phyſition to looke there, for that hee would know it; he cauſed the booke to be brought upon the table, where my ſaying was found true, and then the Phyſition was aſhamed, and I very joyfull. So that the ſaid Lord of *Vaudeville* deſired not to bee dreſſed but once a day, in ſo much that within fifteene dayes the Vlcer was almoſt cicatrized; the compoſition being made betweene us, I began to be merry. He made me eate and drinke at his Table, when there was not men of more great ranke with him.

He gave me a great red ſcarfe, which hee commanded me to weare. I may ſay I was as glad of it as a dog that hath a clog, for feare he ſhould goe into the vineyard and eate the grapes. The Phyſition and Chirurgion led mee through the Campe to viſit their hurt people, where I tooke notice what our enemies did; I perceived they had no more peeces of Cannon, but onely twenty five or thirty peeces for the field.

Monſieur *de Vaudeville* held Monſieur *de Bauge* priſoner, the brother of Monſieur *de Martigues* who dyed at *Hedin*. The ſaid Lord of *Bauge* was priſoner in the Caſtle of the heape of wood belonging to the Emperour, who had beene taken at *Therouenne* by two *Spaniſh* Souldiers. Now the ſaid Lord of *Vaudeville* having looked well upon him, conceived he muſt be a Gentleman of ſome good houſe, and to be the better aſſured, he cauſed him to have his ſtockings pulled off, & ſeeing his ſtockings and his feete cleare and neate, together with his white fine ſocke, it confirmed him the better in his opinion, that it was a man was able to pay ſome good ranſome. He demands of the Souldiers if they would take thirty Crownes for their priſoner, and that he would give it to them preſently, to which they agreed willingly, becauſe they had neither meanes to keepe him, nor feede 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 heape of wood with a guard of foure Souldiers with other Gentlemen priſoners of ours. The ſaid Lord *Bauge*

would

would not discover himselfe, who hee was, and endured very much, being kept but with bread and water, and lay upon a little straw. The said Lord of *Vandeville* 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 beene slaine, 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*, he began much to weepe and lament; his keeper demanded of him, why he made so many & so great lamentations? He declared unto them that it was for Monsieur *de Martigues* his brothers sake. Having understood that, the Captaine of the Castle dispatcht a man away quickly, to tell it to Monsieur *de Vandeville* that he had a good prisoner; who having received this good newes rejoyced greatly, and the next day sent me with his Physition and foure Souldiers to the wood Castle to know if his prisoner would give him fifteene thousand Crownes for a ransome; he would send him free to his owne house, and for the present he desired but the security of two Merchants of *Antwerp*, that hee would name. The said Lord *Vandeville* perswaded me that I would make his agreement with his prisoner. See then why he sent me to the woodden Castle, and commanded the Captaine of the Castle to use him well, and to put him into a Chamber hung with Tapestrie, and that they should make his guard more strong, and from that time they made him good cheare at his expence.

The answer of the said Lord of *Bauge* was, that to put himselfe to ransome hee was not able; and that, that depended upon Monsieur *d'Estamps* his Vnckle, and of Mistresse *de Bressure* his Aunt, and that he had not any meanes to pay such a ransome. I returned with my keepers to the said Lord *Vandeville*, and told him the answer of his said prisoner, who told me, Perhaps he should not out at so good a rate, which was true, for he was discovered. And forthwith the Queene of *Hungary*, and the Duke of *Savoy* sent word to the Lord *Vandeville*, that this morsell was too great for him, and that he must send him to them, (which he did) and that he had enough prisoners besides him: he was put to forty thousand Crownes ransome besides other expenses.

Returning toward the said Lord *Vandeville* I passed by S. *Omer*, where I saw their great peeces of battery, whereof the greatest part was flawed and broken. I came backe also by *Therouenne*, where I did not see so much as stone upon stone, unlesse the marke of a great Church. For the Emperour gave commandement to the country people within five or six leagues about, that they should empty and carry away the stones; in so much, that now one may drive a Cart over the Citty, as is likewise done at *Hedin*, without any appearance of Castle or Fortresse. See then the mischeefe which comes by the warres.

And to returne to my purpose, presently after my said Lord *Vandeville* was very well of his Vlcer and little wanted of the entire cure, which was the cause hee gave me my leave, and made me be conducted with a Passeport by a Trumpet to *Abbeville*, where I tooke post, and went and found the King *Henry* my Master at *Ausimon*, who received me with joy, and a good countenance.

He sent for the Duke of *Guise* the high Constable of *France*, and Monsieur *d'Estrez*, to understand by me what had past at the taking of *Hedin*; and I made them a faithfull report, and assured them I had seene the great peeces of Battery, which they had carried to S. *Omer*. Whereof the King was very joyfull, because hee feared least the enemy should come further into *France*. He gave me two hundred Crownes to retire my selfe to my owne house, and I was very glad to bee in liberty and out of this great torment and noise of Thunder from the Diabolicke artillery, and farre 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 slaine, but that I was a prisoner, which his Majestie caused to be written to my wife by Monsieur *du Goguier* his cheefe Physition, and that shee should not be in any trouble of mind for me, for that I was safe and well, and that he would pay my ransome.

The

The Battell of S. Quintin. 1557.

AFter the battell of S. *Quintin*, the King sent me to the Fere in *Tartenois* toward Monsieur the Marshall of *Bourdillon*, to have a Passeport by the Duke of *Savoy* to goe to dresse Monsieur the Constable, who was grievously hurt with a Pistoll shot in the backe, whereof hee was like to dye, and remained a prisoner in his enemies hands. But the Duke of *Savoy* would never give consent that I should goe to the said Lord Constable, saying hee should not remaine without a Chirurgion, and that he doubted I was not sent onely to dresse him, but to give him some advertisement, and that he knew I understood something else besides Chirurgery, and that he knew me to have beene his prisoner at *Hedin*. Monsieur the Marshall of *Bourdillon* advertized the King of the Dukes deniall, by which meanes the King writ to the said Lord of *Bourdillon*, that if my Lady, the Lord high Constables wife, did send any body 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 Cardinall of *Lorraine* had given me in charge. Two dayes after there arrives a servant of the Lord Constables Chamber, who brought him shirts, and other linnen, for which the sayd Lord Marshall gave Passe-port, to goe to the sayd Lord Constable; I was very glad thereof, and gave him my letter, and gave him his lesson, of that which his Master should doe, being prisoner. I had thought being discharged of my embassage to returne toward the King. But the sayd Lord of *Bourdillon* pray'd me to stay with him at the Fere to dresse a great number of people who were hurt, and were thither retired after the battell; and that he would send word to the King, the cause of my stay; which I did. The wounds of the hurt people were greatly stinc-king, and full of wormes with Gangreene and putrifaction; so that I was constrayned to come to my knife to amputate that which was spoyld, which was not without cutting off armes and legges, as also to Trepan diverse. Now there were not any medicines to be had at the Fere, because the Chirurgions of our Campe had carried all with them; I found out that the Chariot of the Artillery tarried behind at the Fere, nor had it yet beene touched; I prayd the sayd Lord Marshall that he would cause some of the drogues to be delivered unto me which were in it; which he did, and there was given to me, one halfe onely at a time; and five or sixe dayes after I way constrayned to take the rest, neither was there halfe enough to dresse so great a number of the people, and to correct and stay the putrifaction, and to kill the wormes which were entred into their wounds; I washed them with *Ægyptiacum* dissolved in wine and *Aqua vitæ*, and did for them, all which I could possible, yet notwithstanding all my diligence, very many of them dyed.

There were Gentlemen at the Fere who had charge to finde out the dead body of Monsieur *de Bois-Dolphin* the elder, who had beene slaine in the battell; they prayed me to accompany them to the Campe to finde him out amongst the dead, if it were possible, which indeed was impossible; seeing that the bodyes were all disfavoured and overwhelmed with putrefaction. We saw more than halfe a league about us the earth covered with dead bodyes; neither could we abide long there, for the cadaverous sents, which did arise from the dead bodyes, aswell of men, as of horses. And I thinke we were the cause, that so great a number of flyes, rose from the dead bodees, which were procreated by their humidity and the heate of the Sunne, having their tayles greene and blew; that being up in the ayre made a shaddow in the Sunne We heard them buzze, or humme, which was much mervaile to us. And I thinke it was enough to cause the Plague, where they alighted. (My little master) I would you had beene there as I was, to distinguish the ordures and also to make report to them which were never there. Now being cloyed and annoyed in that Countrey, I prayd Monsieur the Lord Marshall, to give me my leave to be gone, and that I was affrayd I should be sicke, by reason of my too great paines, and the stinckes which did arise from the wounded bodyes, which did almost all dye, for what diligence soever was used unto them. He made other Chirurgions, to come

finish

finish the dressing of the sayd hurt people, and I went away with his good grace and favour. He wrote a letter to the King, of the paines I had taken with the poore wounded. Then I returned to *Paris*, where I found yet many Gentlemen who had beene hurt, and were there retired after the battell.

The Voyage of the Campe of Amiens, 1558.

THe King sent me to *Dourlan*, and made me to be conducted by Captaine *Govast* with fifty men in armes, for feare I should be taken by the enemies. And seeing that in the way we were alwayes in alarums, I caused my man to alight, making him to be my master for that time, and I got upon his horse, which carryed my male, and tooke his cloake and hat, and gave him my ambling Mare. My man being upon her backe, one would have taken him for the master, and I for the servant. Those of *Dourlan* seeing us farre off, thought we were enemies, and let flye their Cannon shot at us. Captaine *Govast* my conductor, made signe with his hat, that we were not enemies, so that they left shooting, and we entred into *Dourlan* with great joy. Those of *Dourlan* made a sally forth, upon the enemies five or sixe dayes before, who kild and hurt diverse of our Captaines, and good souldiers; and amongst the rest Captaine S^t. *Aubin* valiant at the sword, whom Monsieur *de Guise* loved very well, and for whom chiefely the King sent me thither, who being in the fit of a quartaine feaver, would needes goe out to command the greatest part of his company: a *Spaniard* seeing him that he commanded, perceived hee was a Captaine, and shot a musket bullet quite through his necke; my Captaine Saint *Aubin* thought with this stroake he was dead, and with the feare (I protest to God) he lost his quartane ague, and was altogether freed from it. I dressed him with *Anthony Portall* Chirurgion in ordinary to the King, and divers other Souldiers: some dyed, others escaped quit with the losse of a legge, or an arme, or the losse of an eye, and they sayd they escaped good cheape, escape that can. When the enemie had broke their Campe, I returned to *Paris*. Heere I hold my peace of my little master, who was more at ease in his house than I at the Warres.

The voyage of Harbor *of Grace*, 1563.

YEt I will not omit to speake of the voyage of the *Harbor* of Grace; then when they made the approaches to plant the Artillery, the English who were within it kild some of our Souldiers, & divers Pioners, who undermined, who when they were seene to be so hurt that there was no hope of curing, their fellowes stript them & put them yet alive, in the mines, which served them for so much filling earth. The *English* seeing they could not withstand an assault, because they were very much attainted with diseases, and chiefely with the Plague, they yeelded, their lives and jewells saved. The King caused them to have shippes to returne to *England*, being glad to be out of this place infected with the Plague: the greatest part dyed, and carryed the Plague into *England*, and since have not yet beene exempted. Captaine *Sarlabous* master of the Campe, was left there in garrison, with sixe Ensignes on foote, who had no feare of the Plague, and were very joyfull to enter therein, hoping there to make good cheere. My little master had you beene there you had done as they.

The Voyage to Roüen, 1562.

NOw for the taking of *Roüen* they kild divers of ours before the assault, and at the assault: the day after they entred into the Citty, I Trepaned eight or nine, who were hurt at the breach with the stroakes of stones. There was so malignant an ayre, that divers dyed, yea of very small hurts, insomuch that some thought they had poysoned their bullets: those within sayd the like by us, for although they were well treated in their necessities within the Citty, yet they dyed also aswell as those without. The King of *Navar* was hurt in the shoulder with a bullet some few dayes before the assault; I visited and helpt to dresse him, with his owne Chirurgion, named

med Master *Gilbert* one of the chiefe of *Montpelier*, and others. They could not finde the bullet, I searcht for it very exactly, I perceived by conjecture, that it was entred by the head of the *Adiutorium*, and that it had runne into the cavity of the sayd bone, which was the cause we could not finde it. The most part of them sayd it was entred and lost within the cavity of the body. Monsieur the Prince of the *Rocke upon Yon*, who intimately loved the King of *Navarre*, drew me to one side, and askt me if the wound was mortall. I told him yea, because all wounds made in great joynts, and principally contused wounds, were mortall according to all Authors who have written of them. He enquired of the others what they thought, and cheefely of the sayd *Gilbert*, who told him that hee had great hope that the King his master, would be cured, and the sayd Prince was very joyfull. Foure dayes after the King and the Queene mother, Monsieur the Cardinall of *Bourbon* his brother, Monsieur the Prince of *Rocke upon Yon*, Monsieur *de Guise*, and other great personages, after we had dressed the King of *Navarre*, caused a consultation to be made in their presences, where there was diverse Physitions and Chirurgions: each man sayd what seemed good unto him, and there was not one of them, who had not good hope of him; saying that the King would be cured, and I persisted alwayes on the contrary.

Monsieur the Prince of the *Rocke upon Yon* who loved me, withdrew me aside, and sayd I was onely against the opinion of all the rest, and prayd me not to be obstinate against so many worthy men. I answered him, that when I saw any good signes of cure, I would change my advise. Divers consultations were made, where I never changed my word, and prognosticke, such as I had made at the first dressing, and alwayes sayd that the arme would fall into a Gangreene, which it did, what diligence soever could be had to the contrary; and gave up his soule to God the eighteenth day of his hurt. Monsieur the Prince *Vpon Yon*, having heard of the death of the sayd King, sent his Physition and Chirurgion toward me, named *Feure* now in ordinary to the King, and to the Queene Mother, to tell me, that he would have the bullet taken out, and that it should be lookt for in what place so ever it could be found: then I was very joyfull, and told them that I was well assured to finde it quickely, which I did in their presences, and divers gentlemen. It was lodged in the very midst of the cavity of the Adiutory bone. My sayd Prince having it, shewed it to the King and the Queene, who all sayd, my prognosticke was found true. The body was layd to rest in the Castle Galliard, and I returned to *Paris*, where I found divers hurt men who were hurt at the breach at *Roüen*, and cheefely *Italians*, who desired me very much to dresse them, which I did willingly; there were divers that recovered; and others dyed. I beleeve (my little master) you were called to dresse some of them, for the great number there was of them.

The Voyage of the battell of Dreux 1562.

THe day after the battell given at *Dreux*, the King commanded me, to goe dresse Monsieur the Count of *Eu*, who had beene hurt with a Pistoll shot in the right thigh, neere the joynt of the hippe; which fractured and broke the *Os femoris* in divers places, from whence divers accidents did arise, and then death, which was to my great greefe. The day after my arrivall I would goe to the field, where the battell was given, to see the dead bodyes; I saw a league about, all the earth covered, where there was by estimation five and twenty thousand men, or more. All which were dispatcht in the space of two houres. I would (my little master) for the love I beare you, that you had beene there to recount it to your schollers and to your children. Now in the meane time while I was at *Dreux* I visited and dresst a great number of gentlemen and poore Souldiers, & amongst the rest many *Swisser* Captaines, I dressed 14 in one chamber, onely all hurt with Pistoll shot, and other instruments of Diabolicall fire, and not one of the foureteene dyed. Monsieur the Count of *Eu* being dead, I made no long tarrying at *Dreux*: there came Chirurgions from *Paris* who performed well their duty toward the hurt people, as *Pigray*, *Cointeret*, *Hubert*, and others; and I returned to *Paris*, where I found diverse gentlemen wounded, who had retired themselves thither after the battell to be dresst of their hurts.

The

The Voyage of the battell of Moncontor. 1569.

DVring the battell of *Moncontour* King *Charles* was at *Plessis* the Towers, where he neard they had wonne it; a great number of hurt gentlemen and Souldiers with drew themselves into the Citty and suburbes of Towers, to be dresst and helpt, where the King and Queene Mother commanded me to shew my duty with the other Chirurgions, who were then in quarter, as *Pigray*, *du Bois*, *Portail*, and one named *Siret*, a Chirurgion of *Towers*, a man very skilfull in Chirurgery, and at that time Chirurgion to the Kings brother; and for the multitude of the wounded wee were but little in repose, nor the Physitions likewise. Count *Mansfield* Governer of the *Duchy* of *Luxembourge*, Knight of the King of *Spaines* order, was greatly hurt in the battell, in the left arme, with a Pistoll shot, which broke a great part of the joynt of the elbow, and had retired himselfe to *Bourgueil* neere *Towers*; being there he sent a gentlemen to the King, affectionately to beseech him to send one of his Chirurgions to helpe him in his hurt. Counsell was held what Chirurgion should be sent. Monsieur the Marshall of *Montmorency* told the King and the Queene, that it were best to send him his cheefe Chirurgion, and declared to them that the sayd Lord *Mansfield* was one part of the cause of winning the battell. The King sayd flat he would not that I should goe, but would have me remaine close to him. Then the Queene Mother sayd, I should but goe and come, and that he must consider it was a strange Lord, who was come from the King of *Spaines* side, to help and succour him. And upon this he permitted me to goe, provided that I should returne quickly. After this resolution he sent for me, and likewise the Queene Mother, and commanded me to goe finde the sayd Lord *Mansfield* in the place, where I was to serve him in all I could, for the cure of his hurt; I went and found him, having with me a letter from their Majesties: having seene it, he received me with a good will, and from thenceforth discharged three other Chirurgions that dresst him; which was to my great greefe, because his hurt seemed to me uncureable. Now at *Bourgueil* there were retired divers gentlmen, who had beene hurt at the sayd battell, knowing that Mounsieur *de Guise* was there, who had beene also very much hurt with a Pistoll shot through one legge, well assured that he would have good Chirurgions to dresse him, and also that hee being kind and liberall, would assist them with a great part of their necessities. And for my part, I did helpe and ayd them in my Art as much as it was possible; some dyed, some recovered, according to their hurts. The Count *Ringrave* died, who had such a shot in the shoulder, as the King of *Navarre* before *Roüen*, Monsieure *de Bassompiere* Colonell of twelve hundred horse, was hurt also in such a like place as Count *Mansfield*, whom I dresst and God cured. God so well blessed my worke that within three weekes I led him back to *Paris*, where I must yet make some incisions in the arme of the sayd Lord *Mansfield*, to draw out the bones which were greatly broken and caries'd: he was cured by the grace of God, and gave me an honest reward, so that I was well contented with him and he with me, as he hath since made it appeare: he writ a letter to the Duke of *Ascot* how that he was cured of his hurt, and also Monsieur *de Bassompiere* of his, and divers others, which I had dress't after the battell of *Montcontour*, and counselled him to beseech the King of *France* my good master, to give me leave to goe see Monsieur the Marqueese of *Auret* his brother.

Voyage of Flanders.

MOnsieur the Duke of *Ascot* did not faile to send a Gentleman to the King with a letter, humbly to beseech him to doe him so much good and honour, as to permit and command his cheefe Chirurgion to come see the Marquesse of *Auret* his brother; who had received a Musket shot neare the knee, with fracture of the bone, about seaven monthes since, with the Physitions and Chirurgions in those parts were much troubled to cure. The King sent for me, and commanded me to goe see the said Lord *Auret*, and to helpe him in all that I could for the cure of his hurt; I told him I would imploy all that little knowledge which it had pleased God to give me. I went then conducted by two Gentlemen to the Castle of *Auret*, which is a league and a halfe from *Mounts* in *Hainaut*, where the said Marquesse was: as soone as I arrived I visited him, and told him the King had commanded me to come see him, and to dresse him of his hurt; he told me he was glad of my comming, and was much bound to the King to have done him the honour, to have sent me to him. I found him in a great Feaver, his eyes very much sunke, with a countenance gastly and yellow, his tongue drie and rough, and all the body emaciated and leane, his speech low like that of a dying man: then I found his thigh much swelled, apostemated, ulcerated, and casting out a greene stinking matter; I searcht it with a silver probe, and by the same I found a cavity neare the groyne, ending in the middle of the thigh, and others about the knee, sanious and cuniculous; also certaine scales of bones some separated, others not. The Legge was much tumified, and soaked with a pituitous humor, cold, moist, and flatulent; in so much that the naturall heate was in the way to be suffocated, and extinguished, and the said Legge crooked and retracted toward the buttockes, his rumpe ulcerated the breadth of the palme of an hand, and he said he felt there a great paine and smarting, and likewise in his reines, in so much that hee could not take any rest night or day; neither had hee any appetite to eate, but to drinke enough; it was told mee hee fell often into faintings and swoonings, and sometimes as it were into an Epilepsie, and had oftentimes desire to vomit, with such a trembling that hee could not carry his hands to his mouth. Seeing and considering all these great accidents, and the forces much abated; truly I was much grieved to have gone to him, because me thought there was little appearance that he could escape. Notwithstanding to give him courage and good hope, I told him, that I would quickly set him on foote by the grace of God, and the Physitions and Chirurgions helpe. Having seene him, I went a walking into a Garden, where I prayed to God that hee would give me the grace to cure him, and that hee would give a blessing to our hands, and medicaments, to combate against so many complicated maladies. I bethought in my minde the wayes I must keepe to doe it. They called mee to dinner, I entred into the kitchin where I saw taken out of a great pot, halfe a Mutton, a quarter of Veale, three great peeces of Beefe, and two Pullets, and a great peece of Bacon, with great store of good Hearbes. Then I said to my selfe this broth was full of juice, and of good nourishment; After dinner all the Physitions and Chirurgions assembled, we entred into conference in the presence of Monsieur the Duke of *Ascot*, and some Gentlemen that did accompany him; I began to tell the Chirurgions that I mervailed much they had made no apertions in the Marquesses thigh, which was all apostemated, and the matter which issued out was very foule 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 monthes since they could winne him to put on cleane sheets on his bed, neither dust one scarce touch the coverlet, he feelt so great paine. Then said I, for to cure him, we must touch other things than the coverlet of the bed. Each one said what hee thought best of the Lords greefe, and for conclusion held it altogether deplorable. I told them there was yet some hope, because of his youth, and that God and nature doe sometime such things which seeme to Physitions and Chirurgions to bee impossible. My consultation

was

was, that all these accidents were come by reason of the bullet hitting neare the joynt of the knee, which had broken the Ligaments, tendons, and *aponeuroses* of the muscles which tye the sayd joynt together with the *Os femoris*; also nerves, veines, and arteries from whence had followed paine, inflammation, aposteme and ulcer: and that wee must begin the cure by the disease, which was the cause of all the sayd accidents, that is to say, 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 carryed to the heart, which caused the sincope, and the feaver; and the feaver an universall heate through the whole body; and by consequent, depravation of the whole *Oeconomie*; Likewise that the said vapours were communicated to the braine, which caused the Epilipsie, and trembling, and to the stomacke disdaine and loathing, and hindred it from doing his functions, which are cheefely to concoct and disgest the meate, and to convert it into *Chylus*; which not being well concocted, they ingender crudities and obstructions, which makes that the parts are not nourished, and by consequent the body dryes, and growes leane; and because also it did not doe any exercise, for every part which hath not his motion remaineth languid, and *atrophiated*, because the heate & spirits are not sent or drawne thither, from whence followes mortification. And to nourish and fatten the body, frictions must be made universally through the whole body, with warme linnen cloathes, 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 resolve any fuliginous vapours retained betweene the skinne, and the flesh; thereby the parts shall be nourished and restored, (as I have heretofore sayd in the tenth booke treating of wounds of Gunshot) and wee must then cease when we see heate and rednesse in the skinne, for feare of resolving that wee have already drawne, and by consequent make it become more leane. As for the Vlcer which he had upon his rumpe, which came through too long lying upon it without being remooved, which was the cause that the spirits conld not florish or shine in it; by the meanes of which there should bee inflammation, aposteme and then ulcer, yea with losse of substance of the subject flesh, with a very great paine; because of the nerves which are disseminated in this part. That wee must likewise put him into another soft bed, and give him a cleane shirt, and sheets; otherwise all that wee could doe would serve for nothing, because that those excrements and vapors of the matter retained so long in his bed, are drawne in by the Systole and Diastole of the Arteries which are disseminated through the skin, and cause the spirits to change and acquire an ill quality and corruption, which is seene in some that shall lye in a bed where one hath sweate for the Pox, who will get the Pox by the putrid vapours which shall remaine soaked in the sheets and coverlets. Now the cause why he could in no wise sleepe, and was as it were in a consumption, t'was because he eate little, and did not doe any exercise, and because hee was grieved with extreame paine. For there is nothing that abateth so much the strength as paine. The cause why his tongue was dry and fowle, was through the vehemence of the heate of the feaver, by the vapors which ascended through the whole body to the mouth. For as we say in a common proverbe, when an Oven is well heate, the throate feeles it. Having discoursed of the causes and accidents, I sayd they must be cured by their contraries, and first we must appease the paine, making apertions in the thigh to evacuate the matter retained, not evacuating all at a time for feare least by a sodaine great evacuation there might happen a great decay of spirits, which might much weaken the patient and shorten his dayes. Secondly, to looke unto the great swelling and cold in his Legge, fearing least it should fall into a Gangreene; and that actuall heate must bee applyed unto him because the potentiall could not reduce the intemperature, *de potentia ad actum*; for this cause hot brickes must bee applyed round about, on which should bee cast a decoction of nervall hearbes boyled in wine and Vinegar, then wrapt up in some napkin, and to the feete an earthen bottle filled with the sayd decoction, stopt and wrapt up with some linnen clothes; also that fomentations much be made upon the thigh, and the whole

Legge,

Legge, of a decoction made of Sage, Rosemary, Time, Lavender, flowers of Camomile, melilot, and red Roses boyled in white wine, and a *Lixivium* made with oake ashes with a little Vinegar, and halfe an handfull of salt. This decoction hath vertue to attenuate, incise, resolve and drye the grosse viscous humor. The sayd fomentations must bee used a long while, to the end there may bee a greater resolution; for being so done a long time together, more is resolved than 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 applyed upon the rumpe a great emplaster made of the red desiccative and *Vnguentum Comitissæ* of each equall parts incorporated together, to the end to appease his paine and dry up the Vlcer, also to make him a little downe pillow which might beare his rumpe aloft without leaning upon it. Fourthly to refresh the heate of his kidneys one should apply the unguent called *Refrigerans Galeni* freshly made, and upon that the leaves of water Lillies. Then a napkin dipt in *Oxycrate*, wrung out and often renewed: and for the corroboration and strengthning of his heart a refreshing medicine should bee applyed made with oyle of *nenuphar*, and unguent of Roses and a little saffron dissolved in Rose Vinegar, and Treakle spread upon a peece of Scarlet: For the *Sincope* which proceded from the debilitation of the naturall strength troubling the braine. Also he must use good nourishment full of juice, as rere egges, Damaske prunes stewed in wine and sugar, also *Panado* made with the brothrot the great pot (of which I have already spoken) with the white fleshy parts of Capons, and Partridge wings minced small, and other rostmeate easie of disgestion, as Veale, Goate, Pigeon, Partridge, and the like. The sauce should be Orenges, Verjuice, Sorrell, sharpe Pomegranets; and that he should likewise eate of them boyled with good hearbes; as Sorrell, Lettice, Purslan, Succory, Bugloss, Marygolds, and other the like. At night hee might use cleansed barley with juice of *Nennphar* and Sorrell, of each two ounces, with five or six graines of *Opium* and of the foure cold seedes bruised, of each halfe an ounce, which is a remedy nourishing and medicinall, which will provoke him to sleepe: that his bread should be of Meslin, neither too new nor too stale; and for the great paine of his head, his haire must be cut, and rub his head with *Oxirrhodsnum* luke warme, and leave a double cloth wet therein upon it; likewise should be made for him a frontall of oyle of Roses, *Nenuphar*, Poppies, and a little *opium* and Rose Vinegar, and a little Campher and to renew it sometimes. Moreover one should cause him to smell to the flowers of Henbane and *Nenuphar* bruised with Viniger Rosewater, and a little campher 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 braine, and these things to be continned till that the great inflammation and paine be past, for feare of cooling the braine too much. Besides, one may cause it to raine artificially in powring downe from some high place into a kettle, and that it make such a noyse that the patient may heare it, by these meanes sleepe shall bee provoked on him. And as for the retraction of his Legge that there was hope to redresse it, when evacuation was made of the matter and other humors contained in the thigh, which by their extention (made by repletion) have drawne backe the Leg, which might be remedied in rubbing the whole joynt of the knee with *Vnguentum Dialthæa* and oyle of Lillies, and a little *aqua vitæ*, and upon it to be laid, blacke wooll with the grease thereof. Likewise putting in the hamme a feather-pillow foulded in double, and by little and little to make his Leg to stretch out. All which my discourse was well approoved of by the Physitions and Chirurgions: the consultation ended wee went to the sicke patient, and I made him three apertions in his thigh, from whence issued out great quantity of matter and *Sanies*; and at the same time I drew out some scales of bones, nor would I let out too much aboundance of the said matter for feare of too much decaying his strength: Then two or three houres after I caused a bed to bee made neare his owne, where there were cleane white sheets then a strong man lifted him into it, and rejoyced much in that hee was taken out of his foule stinking bed. Soone after hee demanded to sleepe, which hee did almost foure houres, where all the people of the house began to rejoyce, cheesely Monsieur the Duke of *Ascot* his brother.

The

The dayes following I made injections into the bottome and cavities of the Vlcer, made with *Ægyptiacum*, dissolved sometimes in *aqua vitæ*, and sometimes in wine. I applyed to mundifie and dry the spongie and loose flesh, bolsters, at the bottome of the sinuosityes hollow tents of Lead, that the *Sanies* might have passage out; and upon it a great Emplaster of *Diacalcitheos* dissolved in wine: likewise I did rowle it with such dexterity, that he had no paine, which being appeased the fever began much to diminish. Then I made him drinke wine moderately allayed with water, knowing that it restores and quickens the spirits: and all the things which we rested on in the consultation were accomplisht, according to time, and order; and his paines and fever ceased, he began to grow better, and discharged two of his Chirurgions, and one of his Physitions, so that we were but three with him. Now I remained thereabout two monethes, which was not without seeing divers sicke people, as well rich as poore which came to me three or foure leagues about. They gave meate and drinke to the needy, all which he recommended to me, and prayed me also for his sake to helpe them. I protest I did not refuse any one, and did to them what I possibly could, whereof he was joyfull. Then when I saw he began to mend, I told him hee must have a consort of Violons & a jester to make him merry, which he did: in one moneth we so wrought, that he could hold himselfe up in a chaire, and made himselfe to be carried and walke in his garden, and at the gate of his Castle to see the people passe by. The Countrey people of two or three leagues about, knowing they could see him, came the feast day male and female, to sing and dance pell mell, in joy of his amendment, all being very glad to see him, which was not done without good laughing and drinking. He caus'd still a barrell of beere to be given them, and they dranke all merrily to his good health. And the Cittizens of *Mont Hainaut* and other gentlemen neighbours came to see him in admiration, as a man coming from the tombe. And as soone as he began to mend, he was not without company, and as one went out another came in, to visite him: his table was alwayes well covered. Hee was greatly loved of the Nobility, and of the common people, as well for his liberality as by reason of his beauty, and honesty, having a pleasant looke and a gracious speech, insomuch that those that beheld his face were constrained to love him. The cheefe of the Citty of *Monts* came on Saturday to beseech him to permit mee to goe to *Monts*, where they had a great desire to feast, and make me good cheere for his sake. He told them he would pray me to goe there, which he did. But I made them answere that they should not doe me so much honour, as also that they could not give me better cheere than I had with him. And he prayed mee againe affectionately to goe thither, and that I should doe that for his sake, to which I agreed. The day after they fetcht me with two Coaches, and being arrived at *Monts* we found the dinner ready, and the cheefe of the Citty with their wives, stayed for mee with a good will. We went to the Table and they placed me at the upper end, and dranke all to me, and to the health of Monsieur *D'auret*, saying that he was very happy, and they likewise to have obtained me to take him in hand, for that they knew that in this company, he was greatly honoured and loved. After dinner they led mee backe to the Castle of *Auret*, where Monsieur the Marquesse stayd for me with great expectation to recount unto him, what we had done in our banquet, I told him that all the company had dranke divers times to his health: in 6 weekes he began to uphold himselfe a little with crutches, and to grow very fat and get a lively naturall colour. Now he had a desire to goe to *Beaumont* which is the dwelling place of Monsieur the Duke of *Ascot*, and made himselfe be carried in a great chaire with eight men by turnes, and the Country folkes where we passed along, knowing 'twas Monsieur the Marquesse fought and strove together who should carry him, and constrained us to drinke, but it was but Beere, but I beleeve had it beene Wine or Hippocras they would have given it us with a very good will, so much did they shew themselves joyfull to see the sayd Marquesse, and prayd all to God for him. Being arrived at *Beaumont* all the people came before us to doe him reverence, and prayed God to blesse him, and keepe him in good health. We entred into the Castle where there was more than 50 gentlemen which the Duke of *Ascot* had sent for to come make good cheere with his brother, who kept his table furnisht three dayes together. After dinner the gentle-

gentlemen runne at the Ring, playd at Foyles, and rejoyced greatly to ſee Monſieur *Auret*, becauſe they had heard he would never come out of his bed againe, or be cured of his hurt. I was alwayes at the upper end of the table, where every one dranke carouſes to him, & me, thinking to make me foxt, which they could not do: for I drank but according to my old cuſtome. A few dayes after wee returned backe and tooke leave of Madam the Dutcheſſe of *Aſcot*, who tooke a Diamond ring from her finger which ſhe gave me, acknowledging I had very well dreſt her brother; which Diamond was more worth than fifty Crownes. Monſieur *Auret* grew ſtill better and better, and walked all alone round about his garden with crutches. I beg'd leave of him divers times, to come away to *Paris*, declaring that his Phyſition, and Chirurgion, would well doe the reſt that remained, for the cure of his greeſe. And now to begin a little to eſtrange my ſelfe from him, I prayd him to give me leave to goe ſee the Citty of *Antwerp*, which he willingly accorded to: and commanded his Steward to conduct me thither accompanied with two Pages: we paſſed through *Malignes* and *Bruxelle*, where the cheefe of the Citty prayed the ſayd Steward, that at our returne they might heare of it; and that they had a great deſire to feaſt me, as they of *Mons* had done. I thank't them moſt kindly, and told them that I was not worthy of ſuch honour; I was two dayes and a halfe to ſee the Citty of *Antwerp*, where ſome Merchants knowing the Steward, prayd him to doe them the honour, that they might beſtow a dinner or ſupper upon us. There was ſtriving who ſhould have us, and were all very joyfull to heare of the good health of the Marqueſſe of *Auret*, doing me more honour than I expected. To conclude, we came backe to the Marqueſſe making good cheere, and within five or ſixe dayes I asked my leave of him, which he granted with great greeſe, and gave me an honeſt Preſent, and of great valew, and made me be conducted by the ſayd maſter of his houſe and two Pages, even to my houſe at *Paris*.

I have forgot to tell you, that the *Spaniards* have ſince ruined, and demoliſht his Caſtle of *Auret*, ſack't, pillag'd, rifled and burnt all the houſes, and Villages belonging unto him, becauſe he would not be of their ſide, in the ſlaughters and ruines of the Low Countryes.

The Voyage of Bourges, 1562.

THe King with his Campe remained not long at *Bourges*, but thoſe within yeelded it up, and went out with their jewells ſaved. I know nothing worthy of memory, but that a Boy of the Kings privie kitchin, who being neere the walls of the Citty before the compoſition was made, cryed with a loud voyce, Huguenot, huguenot, ſhoot heere, ſhoote heere, having his armes lifted up, and his hand ſtretched out; a ſouldier ſhot his hand quite through with a bullet: having received his ſtroake, he came and found me out to dreſſe him. My Lord high Conſtable, ſeeing the Boy to have his hand all bloody, and all rent and torne; demanded of him who had hurt him. Then there was a gentleman who ſaw the ſhot made, ſayd it was well beſtow'd becauſe he cried, *Huguenot*, ſhoot here, ſhoot here. Then the ſayd Lord Conſtable ſayd this *Huguenot* was a good musketiere, and bare a pittifull mind, for it was very likely if he would have ſhot at his head, he might have done it more eaſily than in the hand. I dreſſ'd the ſayd Cooke who was very ſicke, but at length was cured, but with lameneſſe of his hand, and ever ſince his companions call him *Huguenot*; he is living.

The battell of Saint Denis, 1567.

ANd as for the battell of Saint *Denis*, there were divers ſlaine aſwell on one ſide as on the other: ours being hurt, went backe to *Paris* to be dreſſed together with the Priſoners who were taken, whereof I dreſſed a great part. The King commanded me by the requeſt of the Lady high Conſtable, to goe to her houſe to dreſſe my Lord, who had received a Piſtoll ſhot in the middle of the ſpondills of his backe, whereby he preſently loſt all ſence and motion of thighes and legges, with retention

of

of excrements, not being able to cast out his Vrine, nor anything by the fundament, because that the spinall marrow, (from whence proceede the sinewes to give sense and motion to the inferiour parts,) was bruised, broken, and torne by the vehemence of the bullet. He likewise lost his reason, and understanding, and in a few dayes he dyed. The Chirurgions of *Paris* were a long time troubled to dresse the sayd wounded people, I beleeve (my little master) that you saw some of them. I beseech the great God of Victories, that we may never be imployed in such evill encounters, and disasters.

The voyage of Bayonne, 1564.

NOw I say moreover, what I did in the voyage with the King to *Bayonne*, where we have beene two yeares and more to compasse all this Kingdome, where in divers Cities and Villages I have beene called into consultations for divers diseases, with the deceased Monsieur *Chaplaine* cheefe Phisition to the King, and Monsieur *Chastellan* cheefe to the Queene Mother, a man of great honour and knowledge in Physicke and Chirurgery: making this voyage I was alwayes inquisitive of the Chirurgions if they had marked any rare thing of remarke in their practice, to the end to learne some new thing. Being at *Bayonne* there happened two things of remarke for the young Chirurgions. The first was, that I dresst a *Spanish* Gentleman, who had a greevous great impostume in his throate: he came to have beene touched by the deceased King *Charles* for the Evill. I made incision in his Apostеme, where there was found great quantity of creeping wormes as bigge as the point of a spindle, having a blacke head; and there was great quantity of rotten flesh. Moreover there was under his tongue an impostume called *Ranula*, which hindred him to utter forth his words, and to eate and swallow his meate: he pray'd mee with his held up hands to open it for him if it could be done without perill of his person, which I immediatly did, and found under my Lancet a solid body, which was five stones like those which are drawne from the bladder. The greatest was as big as an Almond and the other like little long Beanes, which were five in number; in this apostеme was contained a slimy humor of a yellow colour which was more than foure spoonefulls; I left him in the hands of a Chirurgion of the Citty to finish the cure.

Monsieur *de Fontaine* Knight of the Kings Order, had a great continuall pestilent Feaver, accompanyed with divers Carboncles in divers parts of his body, who was two dayes without ceasing to bleed at nose, nor could it be stancht; and by that meanes the feaver ceased with a very great sweat, and soone after the Charboncles ripened and were by me dressed and by the grace of God cured.

I have publisht this Apologie to the end that each man may know, with what foot I have alwayes marched, and I thinke there is not any man so tickliſh, which taketh not in good part what I have said, seeing my discourse is true, and that the effect sheweth the thing to the eye, reason being my warrant against all Calumnies.

The end of the Apologie and Voyages.

FINIS.

A GENERALL TABLE OF ALL THE CHIEFE THINGS TREATED of in this Worke.

A

Abortions why frequent in a peſtilent ſeaſon. Pag. 821
their cauſes, &c. 921
Abductores muſculi. 223, & 238
Abſceſſes how to be opened. 259
Aconite, the ſymptomes cauſed thereby, and their cure. 807
Actuall Cauteries preferred before Potentiall, 749. *Their formes and uſe,* 750. 751. *Their force againſt venemous bites.* 784
Action, the definition and diviſion thereof, 23
Voluntary Action. 24
Adders their bitings, the ſymptomes thereone nſuing, together with the cure. 790
Adipoſa vena. 116
Adductores muſculi. 222
Adjuncts of things naturall. 27
Adnata, ſive Conjunctiva, *one of the coates of the Eye.* 182
Ægilops *what,* 948. *the differences thereof,* 649
Ibid. *the cure.*
Ægyptiacum, *the force thereof againſt putrefaction,* 433. *a cleanſer and not a ſuppurative,* 46. *deſcriptions thereof,* 456, 423. *the praiſe thereof.* 856
Afterbirth, ſee Secundine. 1
After-tongue. 195
After-wreſt. 518
Age what, the diviſion thereof. 9
Ages compared to the foure ſeaſons of the yeare. 10
Agonie what. 40
Agues, ſee Quotidian, Quartaine, Tertian.
Baſtard Agues how cured. 286
Agglutinative medicines, 326. *their nature and uſe.* 1046
Aire an Element, the prime qualities thereof, 6 *the neceſſity thereof for life,* 29. *which hurtfull,* 30. *What underſtood thereby,* ib. *How it changes our bodies,* 31. *Though in Summer colder than the Braine,* 357. *How it becomes hurtfull,* 416. *How to be corrected,* 429. *Of what force in breeding diſeaſes,* 433. *What force the Starres have upon it,* 434. *How that which is corrupt or venemous may kill a man,* 782. *How it may bee corrupted,* 819. *Pent up it is apt to putrifie,* 837. *change thereof conduces to the cure of the Plague.* 837.
Alæ *what.* 130
Allantoides tunica, *there is no ſuch, ſhewed by three ſeverall reaſons.* 132
Albugineus humor, *the uſe thereof.* 184
Almonds of the throate or eares, their Hiſtory, 193. *their tumor with the cauſes and ſignes thereof,* 293. *The cure.* 294
Almonds encreaſe the paine of the head. 357
Alopecia *what; the cauſe, which curable, and how, and which not.* 63
Amnios tunica *the ſubſtance and compoſure thereof.* 132

Amphibliſtroides, vel retiformis tunica. 183
Amputation of a member when to be made, 457. *How to be performed,* 458. *To ſtanch bleeding enſuing thereon,* 459. *how to dreſſe the part,* 460. *To performe the reſt of the cure,* 461. *Sometimes made at a joynt.* 463
Anatomy, the neceſſity of the knowledg thereof, 79. *A threefold method thereof,* 80. *The definition thereof, &c.* ibid.
Anatomicall adminiſtration of the lower Belly, 87. *Of the ſternon,* 139. *Axiomes,* 122 152, 183, 212, 226
Aneuriſma *what,* 286. *How cured,* 287. *Which incurable.* ibid.
Anger, the effects thereof. 39
Angina, *ſee* Squinancie.
Anima *how many wayes taken,* 7. *See* Soule.
Animall parts which, 83. *Their diviſion.* 84
Anodyne medicines, 1047. *For the eyes,* 379 *in paines of the teeth.* 401
Antidots muſt be given in great quantities, 785, *No one againſt all poyſons,* 809. *To be uſed in the cure of the plague.* 843, 844
Antipathy, ſee Sympathy.
Antipathy betweene ſome Men and a Cat, 804. *Of poyſons with poyſons.* 823
Ants, 59. *Their care.* 60
Apes their immitation of mens actions. 69
Apium riſus, *the poyſonous quallity thereof, with the cure.* 805
Apologie concerning wounds made by Gunſhot, 432. *That ſuch wounds are not poyſoned,* 436. *Concerning binding of veſſels, &c.* 1133
Apophlegmatiſmes what, and their uſe. 1069
Apophyſes clinoides. 172, 174
Aphoriſmes concerning Chirurgery ſelected out of Hippocrates, 1116. 1117. *Of the Author.* 1119
Apoſtumes, ſee impoſtumes.
Apothecaries, choiſe of ſuch as ſhall have care of thoſe ſicke of the Plague. 830
Appendices glanduloſæ. 122
Aqua fortis *the poyſonous quality, and the cure thereof.* 810
Aqua theriacalis *the deſcription & manner of making thereof,* 755, 824 *good againſt the Plague.* 824
Aqua vitæ *how diſtilled,* 1100
Aqueus humor. 183
Arachnoides, ſive araneoſa tunica. 183
Areoticke medicines. 1040
Archagatus *a Romane Chirurgion, ſlaine by the people.* 5
Argentum Vivum, *ſee* Hydrargyrum.
Ariſtomachus *the Philoſopher a great obſerver of Bees.* 59
Arme or ſhoulderbone, the fractures thereof. 575
Arme and the bone and muſcles thereof, 214. *The defect thereof how to be ſupplyed.* 880, 882
Arſnicke, the poyſonous quality thereof, and the cure. 810
Arrowes, wounds made by them, and their ſeverall formes, 438. *How to be drawne forth.* 440
Artery what, 97. *The diviſion of the great deſcendent Artery,* 113, 115. *Diſtribution of the left ſubclavian Artery,* 153. *Of the Axillaric,* 211. *Of the crurall,* 223. *Not dangerous to be opened,* 641. *Rough Artery,* 157. *Figure of the Arteries.* 154
Arteria Venoſa, *and the diſtribution thereof,* 147. Carotydes, 153. Cervicalis, ibid. Intercoſtalis, ibid. Mammaria, ibid. muſculoſa, ibid. Humeraria duplex, ibid. Thoracica duplex, ibid. Aſpera, 156 Muſcula, 225.
Arthrodia *what.* 243
Articulation and the kinds thereof, 242. 243, 244
Aſcarides *have knowne.* 766
Aſcites, ſee Dropſie.
Aſpe his bite, and the ſymptomes that happen thereon with their cure. 794
Aſſes milke how to be uſed in the cure of a Hectique. 395
Aſtragalus. 233
Atheroma *what,* 271. *The cure thereof.* ib.
Atrophia *how helped.* 634, 635
Attractive medicines what, 1039
Auricula cordis. 145
Auripigmentum, the poyſonous quality, and the cure thereof. 810
Autumne, the condition thereof. 10
Axiomes anatomicall, 122. 152, 183, 212, 226. *Philoſophicall.* 184

B

Backe-bone and the uſe thereof. 198
Bagges, the diverſity and uſe. 1071

Ball bellowes. 415
Balneum Mariæ. 1096,1097
Balſames fit to heale ſimple, not contuſed wounds. 434
Balſame of Veſalius *his deſcription,* 1107. *Of* Fallopius *his deſcription,* ibid. *An anodyne, and ſarcoticke one.* 402
Bandages, their differences, 553. *What cloth beſt for them,* ibid. *Indications how to fit them,* 554. *Three kinds neceſſary in fractures,* 555 *Common precepts for their uſe,* 557 *Vſes whereto they ſerve.* 558
Barnard *the Hermite.* 1017
Barrennes, the cauſe thereof in men, 931. *In women.* 932
Baſiliske, her deſcription, bite and the cure thereof. 792
Battailes where the Author was preſent, See Voyages. 20
Bathes good in paine of the Eyes. 646
Bathes their faculties and differences, 1074 *How to know whence they have their efficacy,* ibid. *Their faculties and to whom hurtfull* 1075 *halfe bathes.* 1073
Beautroll a beaſt of Florida, 1021
Bearwormes, the bites and the cure thereof. 798
Beares, their craft: 56
Beaſts, inventors of ſome remedies, 56 *Their facultie in perſaging* 57. *Their love and cure of their young,* 60. *Moſt wild ones may be tamed,* 64. *They know one anothers voice.* 72
Bees their government, 58. *Care and juſtice* 59 *Their ſtinging & the cure thereof,* 798
Beggars their couſenages and crafty trickes. 992, 993, *&c.*
Belly, why not bony, 85. *The diviſion of the lower belly.* ibid.
Bezoar and Bezoarticke medicines. 808
Biceps muſculus. 218 *and* 231
Binding of the veſſels for bleeding, 341. *An apologie therefore,* 1133. *Authorities therefore.* 1134. *Reaſon,* 1135. *Experience,* 1136. *Hiſtories to confirme it.* 1137
Birds their induſtry in building their neſts, 58 *Ravenous birds,* 70. *Counterfeit mans voice,* 72. *They have taught men to ſing.* ibid.
Bird of Paradiſe. 1017
Birth, ſee Child-birth.
Bitings of man and Beaſt venenate. 360, 782
Bitings of a Mad-dogge, Adder &c. ſee Dog, Adder, &c.
Bitter things not fit to bee injected into wounds of the Cheſt. 390
Bladder of the Gall. 110
Bladder of Vrine, 123. *The ſubſtance, figure, &c.* ibid. *Signes of the wounds thereof,* 397. *Vlcers thereof and their cure* 481, 686
Bleare-eyes their differences and cure. 644
Bleeding in wounds, how helped 328. *How ſtopped by binding the veſſells,* 341. *Why deviſed by our Author,* 462. *In amputation of Members.* 459
Blood, the temper thereof, 11. *The materiall and efficient cauſes thereof,* 12. *Where perfected,* ibid. *All the foure humors comprehended under that generall name,* ibid. *compared with new wine,* ibid. *the nature, conſiſtance, colour, taſte and uſe.* 13
Blood-letting whether neceſſary at the beginning of peſtilent diſeaſes. 845
Bloodletting, when neceſſary in a ſynochus. 261. *When in an Eryſipelas,* 263. *When in a Tertian,* 267. *In what wounds not neceſſary,* 326 *The two chiefe indications thereof,* 339. *Why neceſſary in the Fracture of the heele,* 632. *See Phlebotomie.*
Bloody Vrine and the cauſes thereof. &c. 685
Boate-bone. 234
Body how divided, 83. 85. *The forepart thereof,* 86. *The backepart,* 87. *The crookedneſſe thereof how helped.* 876
Bolſters and other uſe. 359
Bones, how they feele, 81. *Their definition,* 138. *Their differences,* 139. *How hurt by the Trepan,* 365. *what haſtens their ſcailing,* ibid. *Their corruption,* 371. *How helped.* 372
Bones of the ſcull, 162. *Of the face,* 178. *Of the noſe.* 179. *Of the auditory paſſage,* 191 *Of the arme,* 214. *Of the backe,* 198. *Of the breaſt,* 136. *Of the cubit,* 217 *Of the wreſt, afterwreſt and fingers,* 218. *Seede-bones,* 220. *Of the Thigh,* 228. *Of the Legge,* 231. *Of the foote,* 233. *Of the Toes,* 234. *A briefe recitall of all the Bones.* 239
Bones more brittle in froſty weather, 562. *ſooner knit in young bodies,* 563. *Their generall cure being broken or diſlocated,* 564. *How to helpe the ſymptomes happening thereon.* 566. *Why they become rotten in the* Lue venerea, *and how it may be perceived.* 747. *How helped.* ib.
Bones ſticking in the Throate or Law, how to be got out. 556
Brachiæus Muſculus. 218

Braine and the Hiſtory thereof 165. *The Ventricles thereof*, 166. *The mamillary proceſſes.* ibid.
Braine, the mooving or concuſsion thereof, 350 *how cured.* 376
Breaſts, 137. *Their magnitude, figure, &c.* ibid. *How they communicate with the wombe.* 138
Breaſt-bone, the Hiſtory thereof. 126
Breaſt bone, the depreſsion or fracture thereof, how helped. 570
Brevis muſculus. 218
Bronchocele, the differences thereof and the cure. 298
Bruiſes ſee Contuſions.
Bubo's, by what meanes the humor that cauſes them flowes downe. 224
Bubo's, venereall ones returning in againe cauſes the Lues venerea, 724. *Their efficient and materiall cauſes*, 746. *Their cure.* ibid
Bubo's in the Plague, whence their originall 817. *The deſcription, ſignes and cure*, 853 *prognoſticks.* 857
Bubonocele *what*: 304
Bullets ſhot out of Guns doe not burne, 410. *They cannot be poyſoned*, 412. 437. *remaine in the body after the healing of wounds.* 429
Bupreſtes their poyſon and the cure. 800
Burnes, how kept from bliſtring, 410. *See Combuſtions.*
Byſhop-fiſh. 1002

C.

Cacochymia *what.* 37
Cæcum inteſtinum. 106
Calcaneum os. 234
Cæliaca arteria. 113
Callus *what, and whence it proceeds*, 323 *Better generated by meates of groſſe nouriſhment*, 562. *Made more handſome by Ligation*, ibid. *The materiall and efficient cauſes thereof*, 588. *Medicines conducing to the generation thereof*, ibid. *How to know it is a breeding*, 589. *What may hinder the generation thereof, and how to helpe it being ill formed.* 590
Camells their kinds and condition. 70
Cancer, the reaſon of the name, 279. *Cauſes thereof*, ibid. *differences*, 280. *Which not to be cured*, ibid. *The cure if not ulcerated*, ibid. *Cure if ulcerated*, 281. *Topicke medicines to be thereto applyed.* 282
Cancer or Canker in a childs mouth how to be helped. 905
Cannons, ſee Guns.
Cantharides, their malignitie and the helpe thereof, 799. *Applyed to the head they ulcerate the bladder.* 800
Capons ſubject to the Gout. 707
Carbuncles whence their originall, 817. *Why ſo called, together with their nature, cauſes and ſignes*, 857. *prognoſtickes*, ibid. *cure* 859
Caries oſſium. 371
Carpiflexores muſculi. 222
Carpitenſores muſculi. 221
Cartilago ſcutiformis, vel enſiformis. 136
Caruncles, their cauſes, figures and cure, 742. *Other wayes of cure.* 744
Caſes, their forme and uſe. 560
Caſpilly a ſtrange Fiſh. 69
Catagmaticke pouders. 363
Catalogue of Medicines and Inſtruments for their preparation, 1109 1110 *&c. Of Chirurgicall Inſtruments*, 1113, 1114
Cataplaſmes, their matter and uſe. 1062
Catarractes, where bred, 184 *Their differences, cauſes, &c.* 651. *Their cure at the beginning*, ibid. *The couching of them.* 653
Catarrhe ſometimes maligne and killing many. 821
Cathareticke medicines. 1046
Cats, their poyſonous quality, and the Antipathy betweene ſome men and them. 804
Cauſticke medicines their nature and uſe. 1046, 1047
Cauteries, actual ones preferred before potentiall, 749. *Their ſeverall formes*, 749, 750, 751. *Their uſe*, 741. *Their force againſt venemous bites*, 784. *Potentiall ones.* 1064
Cephale what. 243
Cephalica vena. 210
Cephalicke pouders how compoſed. 752
Cerats what, their differences. 1508
Ceratum œſypi ex Philagrio. 1060
Ceruſſe, the poyſonous quality thereof, and the cure. 810
Certificates in ſundry caſes. 1129
Chalazion *an affect of the eyelid.* 642
Chamelion his ſhape and nature. 1024
Chance ſometimes exceedes Art, 49. *Finds out remedies.* 409
Change of native temper, how it happens. 18
Chaphs, or Chops occaſioned by the Lues venerea, *and the cure*, 754. *In divers parts* by

by other meanes, and their cure. 957
Charcoale causeth suffocation. 1125
Chemosis *an affect of the Eye-lids.* 647
Chest and the parts thereof, 136. *Why partly gristly, partly bony,* ibid. *The division thereof,* 137. *The wounds thereof,* 388. *Their cure* 389. *They easily degenerate into a Fistula.* 391
Child, whether alive or dead in the wombe, 913. *If dead, then how to be extracted,* 914. 915
Children why like their fathers, and grandfathers, 888. *Borne without a passage in the fundament,* 898. *Their site in the wombe,* 900. 901. *When and how to bee weaned,* 913. *Their paine in breeping teeth,* 959. *They may have impostumes in their mothers wombe.* 594
Child-birth and the cause thereof, 899. *The naturall & unnaturall time thereof,* 901 *women have no certaine time,* ibid. *Signes it is at hand* 902. *Whats to be done after it.* 904
China root, the preparation and use thereof. 730
Chirurgery, see Surgery.
Chirurgion, see Surgion.
Choler, the temper thereof, 11. *The nature consistance, colour, taste and use,* 13. *The effects thereof,* 15. *Not naturall how bred and the kinds thereof.* 16
Cholericke persons, their habite of bodie, manners and diseases, 17. *They cannot long brooke fasting.* 707
Chorion *what.* 132
Chylus, *what.* 12
Cirsocele, *a kind of Rupture, &c.* 304. *The cure.* 312
Cinnamon and the water thereof. 1105
Chavicle, see Collar-bone.
Cleitoris. 130
Clyster, when presently to bee given after bloodletting, 262. *See Glyster.*
Coates, common coate of the Muscles, the substance, quantity, &c. thereof, 91. *Of the eyes,* 182. *Of the wombe.* 132
Cockatrice, see Basiliske.
Cockes are kingly and martiall birds. 66
Colchicum *the poysonous quality thereof, and the cure.* 866
Collicke, and the kinds thereof, &c. 689
Colon. 106
Collar-bones, or Clavicles, their History, 138. 139. *Their fracture,* 568. *How to helpe it,* ibid. *Their dislocation and cure,* 601
Collyria *what, their differences & use,* 1067
Colour is the bewrayer of the temperament, 28
Columella, see Vvula.
Combustions and their differences, 449. *their cure.* 450
Common sense what. 896
Comparison betweene the bigger and lesser world. 761
Complexus musculus. 201
Composition of medicines, the necessity thereof. 1099
Compresses, see Bolsters.
Concoction, fault of the first concoction not mended in the after. 707
Concussion of the Braine, 350. *how helped.* 376
Condylomata, what they are, and their cure, 957
Conformation, the faults thereof must bee speedily helped. 904
Congestion, two causes thereof. 250
Contusions what, their causes, 442. *Their generall cure,* ibid. *How to be handled if joyned with a wound* 445. *How without a wound,* ib. *how kept from gangrening,* 446
Contusions of the ribs 447. *Their cure* 634
Convulsion, the kinds and causes thereof, 329 *the cure,* 330 331. *Why on the contrary part in wounds of the head.* 357
Convulsive twitching in broken members and the cause thereof. 586
Conies have taught the art of underwining 66
Cornea tunica. 183
Corone, *what.* 243
Coronalis vena, 112
Corroborating medicines. 270
Cotyle *what.* 243
Cotyledones *what.* 129, 891
Courses, how to provoke them, 863 948. *How to stop them,* 864. 951 952. *The reason of their name* 945. *Their causes,* 946. *causes of their suppression* 947. *What symptomes follow thereon,* 948 *symptomes that follow their immoderate flowing,* 951
Crabs. 69
Crampe the cause and cure thereof. 722
Cranes observe order in flying and keepe watch. 67
Cremaster muscles. 120
Cridones what disease, and the cure. 319
Crocodiles may be tamed. 76
Crookednesse how helped. 876
Crurall veine, 224. *Artery.* 223
Crureus musculus. 232
Crus *how taken.* 223
Crystallinus humor. 184
Cubit, the bones and muscles thereof. 217
Cubit-bones, the fracture of them. 575

Cuboides os. 234
Cupping glasses and their use, 694. *Their use in the cure of a Bubo.* 853
Cures accidentall and strange, 49, 50. *Deceitfull.* 51
Custome how forcible. 33
Cuticle, the matter, quantity, figure, &c. thereof. 88
Cuttell-fish his craft. 68
Cystice gemella. 112

D.

Dartos. 119
Death, the inevitable cause thereof, 41. *How suddaine to many.* 778
Definition of Chirurgery. 3
Definition how different from a description. 80
Defluxion of humors how diverted. 256
Delirium, *the causes thereof*, 334. *The cure.* 335
Deliverance in Child-birth how furthered, 903. *Which difficult*, 921. *Which easie.* ib.
Deltoides musculus. 216
Dentifrices, their differences, matter, and forme. 1071
Depilatories. 1182
Derma. 89
Detersives, 259, 1043. *Their use.* ibid.
Devills and their differences 986. *Their titles and names*, 987. *They are terrified and angred by divers things.* 990
Devill of the Sea. 1004
Diabete *what, the causes, signes and cure.* 688
Diaphoreticke medicines. 140
Diaphragma, *see Midriffe, Why called Phrenes.* 142
Diaphysis *what.* 231
Diary feaver, the causes and signes, 260. *The cure.* 261
Diarthrosis. 242
Die-bone. 234
Diet hath power to alter or preserve the temperament. 28
Diet convenient for such as have the Gout, 707. *For such as feare the stone*, 667. *In prevention of the Plague*, 822. *In the cure thereof.* 839, 840, 841
Differences of muscles. 92, 93
Digitum flexores musculi. 222, 237. 238
Digitum tensores musculi. 221, 237
Diploe *what.* 163
Disease the definition and division thereof, 41. *Causes.* ibid.
Diseases strange and monstrous. 49
Diseases incident to sanguine, cholericke, phlegmaticke and melancholicke persons 17. *Wherefore some are hereditary*, 886. *supernaturall*, 989. *Monstrous accidents in them.* 996
Dislocations, their kinds and manner, 593. *their differences*, 594. *Causes*, ib. *Signes*, 595. *Prognosticks*, 595. *The generall cure*, 564. 597. *Symptomes that may befall a dislocated member.* 634
Dislocation of the jaw, 600. *The cure*, ibid. & 601. *Of the Collar-bone*, 601. *Of the spine*, 602. *Of the head*, 603. *Of the necke*, 603. *Of the Rumpe*, 607. *Of the Ribs*, ibid. *Of the shoulder*, 608. *Of the Elbow*, 619. *Of the* Styliformis processus, 621. *Of the wrest*, 622. *Of the After-wrest*, 623. *Of the Fingers*, ibid. *Of the thigh or hip*, ibid. *Of the whirlebone*, 630. *Of the knee forwards*. 631. *Of the greater and lesse Focile*, 631. 632. *Of the heele*. 632. *Of the Pasterne or Anckle, bone*, 633. *Of the instep and backe of the foote*, 633. *Of the toes.* 634
Dismembring, see Amputation.
Distemperature and the diversity thereof. 41
Distillation and the kinds thereof, 1093. *Fornaces & the vessells therefore.* 1094. *what to be considered therein.* 1095 *How to prepare the materialls therefore.* 1098 *How to distill waters*, 1099. *How Aqua vita.* 1100. *How to rectifie them.* 1101. *To distill in the Sun* ibid. *By filtring.* 1102. *Of Oyles.* 1103. *Of Spirits*, 1105. *Of Oyles out of Gummes.* 1107. *Of Oyle of Vitriol.* 1108
Docillity of Beasts. 69
Dogs their love to their masters, 61. *Their docillitie.* 69. *Why they become mad sooner than other creatures*, 785. *How their bites may be knowne.* 786. *Prognosticks.* 787. *The cure of such as are bitten by them.* 788
Dorycnium, the poysonous quality thereof and the cure. 805
Doves free from adultery. 62
Draco marinus, *the Sea Dragon his poysonous puncture, the symptomes & cure.* 801
Dracunculus *what*, 315. *The cure.* 316
Dragons their craft. 68
Dreames of the sanguine, cholericke, phlegmaticke and melancholicke persons, 17, 18. *Not to be neglected.* 36
Dropsie what, 299. *The differences, Symptomes and causes*, ibid. *Signes and prognosticks*, 300. *The cure*, 301. *Following upon a Tumor of the mesentery.* 930
Dugges, their substance, magnitude, &c. 137 *What to be done to them to dry up milke.* 918

Duodemum, *the magnitude, &c.* 105
Dura mater *what*, 164. *The hurts thereof by Trepanning, and how helped*, 373. *Remedies for the inflammation and the Apostumation thereof*, 374. *Why it easily endures acrid medicines.* 375

E

Eares, their parts and composure, 189. *Their wounds and cure*, 386. *To supply their defects*, 875. *Their ulcers*, 479. *Their stopping and things falling into them how helped.* 655
Eares of the heart. 145
Eare wax, for what use it serves. 190
Earth a cold and dry element. 6
Earthquakes, their cause. 415
Ecchymosis what and how cured. 343
Echo, the cause thereof. 190
Effects of Phlegme. 14. *Of choler and melancholy.* 15
Ejaculatorie vessells in men, 121. *In women.* 127
Elbow the dislocation thereof 619. *how to restore it dislocated outwardly*, 619. *To the inside*, 621. *Why most subject to anchylosis.* ibid.
Elements how understood, and their principall qualities, 6. *What those of generation are*, 7. *what these of mixt bodies are*, ibid. *The cause of their transmutation.* 415
Elephants, their strength, piety, &c. 62, 63. *Where bred, and their qualities.* 1019
Embalming the dead, 1130. *The manner how.* 1131
Embryon, when it takes that name. 893
Embrocation what, & how performed, 1063
Emollient and resolving medicines, 275, 278
Emplasters what, their differences, 1058. *Signes they are perfectly boyled*, 1059. *Their use*, 1061. *Cautions in their application.* 269, 270
Emplastrum *de Vigo* cum Mercurio, 1060 De gratia Dei. *ibid.* De Betonica sive de Ianua. *ibid.* Oxycrocium, 1061. De ceruſa, *ibid.* Tripharmacum seu nigrum. *ibid.* Diapalma seu Diacalcitheos, *ibid.* Contra Rupturam, *ib.* De Muclaginibus, *ibid.* De minio, *ibid.* Diachylum magnum.. *ibid.*
Empyema *what*, 298. *The cure thereof.* 299
Emptinesse. 37
Emulgens Arteria, 114. Vena, 116
Enarthrosis, *a kind of articulation.* 242
Enterocele *a kind of Rupture.* 304
Ephemera febris, 260. *The causes and signes thereof*, ibid. *The cure.* 262
Epidermis. 88
Epidydimis. 119
Epigastriū *what*, 87. *The containing parts thereof.* ibid.
Epigastrica vena. 117
Epiglottis *what.* 195
Epiploon *what.* 101
Epiplois vena. 113
Epiplocele. 304
Epithemes to strengthen the principall parts, 845. *Their composition and use.* 1064
Epomis musculus. 216
Epulis *what, the symptomes and cure.* 292
Epuloticke, or skinning medicines, their kinds and use. 1045
Errhines their differences, description and use. 1068
Erysipelas *what* 262. *What tumors referred thereto* 253, *The differences thereof*, 262. *Prognosticks*, 267. *Their cure.* ibid.
Erythrois tunica. 119
Eschar how to hasten the falling away thereof, 856. *Medicines causing it.* 1047
Escharoticks, 1047. *Why used to spreading Vlcers.* 401
Estrich betweene a bird and a beast, 1014. *The sceleton of one.* 1015
Evacuation and the kinds thereof, 37. *what to be observed therein.* 38
Eunuches æstimulated to women. 27
Excrements of the first, second and third concoction what. 898
Exercise, the use and best time for it, 34. *The quality thereof.* 35
Exomphalos, *or standing forth of the navill* 303
Epostosis in Lue venerea. 746
Experience without reason, of what account. 45
Eye-browes. 181
Eyelids, 181. *To slay them being too laxe*, 641. *To open them fastned together*, 643. *To helpe their itching.* 644
Eyes their site and quickneſſe, 181. *Figure, composure, &c*, 182. *Their muscles, coates & humors*, 182, 183, 184. *their wounds*, 379. *to hide the losse or defect of them*, 669. *their ulcers*, 476. *their cure*, 477. *their affects*, 641, 642, *&c. their inflammation.* 645

F.

Face a discloser of affections and passions 40. *the wounds thereof*, 378. *How to helpe the redneſſe thereof.* 1080
Faculties what, 21. *their division.* 22
Falling downe of the Fundament the causes and

and cure thereof. 313
Fat, the substance, and cause, &c. thereof, 90. 91. *Why not generated under the skull,* 377. *How to be distinguished from the Braine,* ibid. *the cure thereof being wounded.* 398
Fauces *what.* 194
Faulcon, her fight with the Herne. 70
Faults of conformation must be speedily helped, 904. *Of the first concoction, not helped in the after.* 707
Feare and the effects thereof. 39
Feaver sometimes a symptome, otherwhiles a disease.
Feavers accompanying Phlegmons and their cure, 260. *Happening upon Erysipelous tumors,* 165. *Vpon Oedematous tumors,* 275. *Vpon Schirrous tumors,* 284. *The cure of bastard intermitting Feavers.* 286
Feet and their bones, 233. *Their twofold use.* 236
Feirce Clare a fish. 803
Females of what seede generated. 888
Fibra auris *what.* 189
Fibula. 231
Figures in Anatomy, and first of the forepart of man, 86. *Of the backparts,* 87. *Of the lower belly, and parts thereof,* 100, 102, 107. 114. 122. *Of the stomacke,* 104. *Of the vessells of seede, and Vrine,* 118. *Of the Bladder and Yard,* 124. *Of the wombe,* 127. *Of some parts in women different from those of men,* 131. *Of the hollow veine,* 149. *Of the Arteries,* 154. *Of the rough Artery, or weazon,* 157. *First and and second of the braine,* 164. *Third of the* Cerebellum, 167. *Fourth and fifth of the braine,* 169. *The sixth of the braine* 170. *Seaventh shewing the Nerves of the Braine,* 171. *The eighth of the braine,* 173. *Of the spinall marrow,* 176. *Of the Eye,* 185. *Of the chiefe muscles of the face,* 188. *Of the lower Iaw,* 189. *Of the eares,* 190. *Of the backbone,* 197. *Of the muscles in sundry parts of the body,* 199, 200 201, 202, 203, 204, 247. *Of the nerves* 215. *Of the bones in the hands,* 220. *Of the thigh-bone,* 228. *Of the bones of the feete,* 235. *Of the Sceleton,* 239, 240, 241
Figures of Instruments used in Chirurgery, See Instruments.
Figures of divers sorts of Iavelins and Arrow heads. 438
Figures of monsters, 962, 963, *&c. Of divers beasts, &c. as of the Succarath,* 61. *Of the Elephant,* 63. 1020. *Of the Rhinoceros,* 65. *Of the Cammell,* 71. *Of the Crocodile,* 77, 1023. *Of a Crab,* 279. *Of the Scorpion, &c.* 762, 764. *Of the Serpent Hamorrhous,* 791. *Of the Serpent Seps,* 792. *Of the basiliske,* 793. *Of the salamander and Torpedo,* 794. *Of the sting-Ray,* 803. *Of the Sea-hare,* 804. *Of the Monke and Bishop-fish,* 1002. *Of the Sea Devill,* 1004. *Of the Sea Morse and Bore,* 1105. 1006. *Of the Fish Hoga,* 1008. *Of a monstrous flying fish,* 1009. *Of* Bernard *the Hermite,* 1010. *Of the sayling fish,* 1011. *Of the Whale,* 1013. *Of an Estrich,* 1014. *Of the birds of Paradise,* 1016. *Of a Giraffa,* 1018. *Of a Beast called Thanacth,* 1021. *Of the beast Haÿt & a monstrous African beast,* 1022 *of a Chamaleon.* 1024.
Figures of Furnaces and other things fit for distillation, 1096, 1093, 1099, 1101, 1102. 1104. 1106, 1109.
Figure of a fractured arme with a wound in a fit posture, 576. *Of a Leg fractured with a wound and bound up,* 584. *Of Ligatures for extension,* 598. *How to restore the dislocated spine,* 605. *Of putting the shoulder into joynt,* 609, 610, 611, 612, 613, 614. *Of the Ambi and the use thereof,* 615, 616. *Of restoring the dislocated Elbow,* 610. *Of the thighbone dislocated inwards,* 628. *Outwards,* 629. *Of restoring a knee dislocated forwards.* 631
Figure of a Semicupium. 670 *Of a Barrell to be used in the cure of a Caruncle,* 743. *Of the Helmet floure,* 807. *Of the site of the child in the wombe,* 900. *Of leaden Nipples* 912. *Of a glasse to sucke the breasts with.* 919
Figures of Artificiall Eyes, 870. *Of Noses,* 871. *of Teeth,* 872. *Palats,* 873. *How to supply the defect of the tongue,* 874. *of the Eares,* 875 *Iron Breastplates,* 876. *of an Vrine-Bason and artificiall Yard,* 877. *of an iron finger stall,* 878 *of an erector of the Hand,* 879. *of Bootes for such as are crookelegged,* 880. *of an artificiall hand,* 881. *of an arme and legge,* 882, 883. *of a Crutch.* 884
Filings of Lead, their harme taken inwardly, and cure. 811
Filtration the manner and use thereof. 1102
Fingers and their parts, &c. 218. *their dislocation,* 623. *Why easily restored,* ibid. *how to take away such as be superfluous, and helpe those that sticke together,* 661. *How to supply their defects.* 878

Fire and the qualities thereof, 6. *The force thereof against the Plague.* 823
Fishes their industry, 57. *They may be tamed* 64
Fisher, a Fish so called. 68
Flatulent Tumors, their causes, signes and cure. 269
Flatulencies about the joynts counterfeiting the Goute. 718
Fistula lachrimosa, *see Ægilops.*
Fistulaes what, their differences, signes, &c. 484 *Their cure*, ibid. *In the Fundament*, 485. *The cure*, 486. *Vpon wounds of the Chest and the cure.* 391
Fleshy Pannicle, the History thereof. 90
Flesh quickly putrifies in maritime parts. 416
Flexores musculi, 230. Superior. 238
Flux of blood in wounds how helped. 328
Flux of the belly how to bee stopped. 865, 866
Flying fish of a monstrous shape. 1009
Focile *what*, 231. *How to cure the separation of the greater and lesser*, 631. *The separation from the pasterne bone.* 632
Fomentations and their use, 1063. *For broken bones* 591. *They hurt plethoricke bodies*, 591. *What to bee observed in their use.* 591, 634
Fornaces, their matter and forme, 1094, 1096, 1097, *&c.*
Fornix. 168
Foxes and their craft. 67
Fracture what and the differences thereof, 501. *Their causes*, 562. *Signes and prognosticks, ibid. Their generall cure*, 564. *How to helpe the symptomes*, 566. *Why deadly in the joynt of the shoulder*, 570. *why neare a joynt more dangerous*, 581
Fractures of the scull, their differences, 337, 338. *Of the causes and signes*, 339, *Signes manifest to sense*, 346. *A Fissure, the first kind of Fracture*, 341. *How to finde it being lesse manifest*, 342. *A contusion the second kind of fracture*, 343. *An Effracture the third kind*, 346. *A Seat the fourth kind*, 348. *Resonitus the fift kind*, ibid. *The Prognosticks*, 352. *generall cure of them and their symptomes* 356. *They are hurt by venery*, 359 *By noise*, 360. *The particular cure*, 362. *Why Trepaned.* 364
Fractures more particularly and first of the nose, 567. *Of the lower jaw*, ibid. *Of the Collar-bone*, 568. *Of the shoulderblade*, 569. *Of the breast bone*, 570. *Of the Ribs*, 571. *Of the vertebræ, or Rack-bones.* 573. *Of the Holy-bone*, 574. *Of the Rumpe*, ibid. *Of the Hip*, ibid. *Of the shoulder or armebone*, 575. *Of the Cubite or Ell a Wand*, ibid. *Of the Hand*, 577: *Of the Thigh*, ibid. *Of the Thigh neare the joynt*, 581. *Of the* patella *or whirlebone*, 582. *Of the legge*, 582. *Of the bones of the feete.* 591
Fractures associated with wounds, how to be bound up: 557, 584
French Poxes, see Lues venerea.
Frictions, their kinds and use. 34
Fuci, *how made.* 1078
Fumigations, their differences, matter and forme. 1072, 1073
Fundament, the falling downe thereof. 313, 958. *The causes and cure.* ibid.
Fungus, *an excrescence sometimes happening, in Fractures of the scull.* 370, 371

G.

GAlens *Effigies and praise.* 1118
Gall and the bladder thereof, &c. 110
Ganglion *what*, 272. *Properly so called.* 274
Gangreene what, 452. *The generall and particall causes*, ibid. *That which is occasioned by cold, upon what part it seases*, 454. *Signes*, 454. *Prognosticks*, 455. *The generall cure.* ibid. *The particular cure.* 456
Gargareon. 193
Gargarismes, their matter and forme, 1070. *repelling, ripening and detergent ones.* 297
Garlicke good against the Plague. 823
Gastrica vena. 112
Gastrepiplois vena, 112 Major. 113
Geese their wariness in fleeing over mount Taurus. 68
Gemelli musculi. 237
Gemini musculi. 230
Generation, what it is, 23. *What necessary thereto.* 889
Generation of the Navill. 891
Giddinesse, see Vertigo.
Ginglymos *what.* 243
Giraffa a strange beast. 1017, 1018
Glandula *what sort of Tumor.* 272
Glandula lachrimalis. 182
Glandules in generall 108. *At the roote of the tongue*, 193. *Their inflammation and cure.* 293 294
Glans penis, 126. *Not rightly perforated, how to be helped.* 663
Glysters, their differences, materialls, &c. 1050. *Severall descriptions of them*, 1051.

1051. They may nourish. 1052
Goates dung is good to discusse schirrhous tumors. 279
Golden ligature, how made. 309
Gomphosis what. 243
Gonorrhœa, how different from a virulent strangury, 738. The cure. 740
Gout, the names and kinds thereof, 697. The occult causes thereof, ibid. The manifest causes thereof, 699. out of what parts it may flow, 701. Signes that it flowes from the Braine, or Liver, ibid. How to know this or that humor accompanying the Gouty malignitie, 702. Prognostickes. ibid. The generall method to prevent and cure it, 704. Vomiting sometimes good, 705. other generall remedies, 706. Diet convenient, 707. What wine not good, 708. How to strengthen the joynts, ibid. The palliative cure thereof, 709. Locall medicines in a cold Gout, 710. In a hot or sanguine Goute, 713. In a Cholericke Goute, 714. What is to be done after the fit is over, 717. Tophi or knots how caused, ibid. The hip goute or sciatica, 719. The cure thereof. 720
Gristles what, 136. of the nose, 186. of the Larinx. 194
Groines their wounds, 399. Their Tumors, see Bubo's.
Guajacum, The choise faculties and parts, 728. The preparation of the decoction thereof, 729. The use. 730
Gullet and the History thereof, 157. The wounds thereof. 387
Gums overgrowne with flesh, how to be helped. 293
Guns, who their inventer, 406. Their force, 407. The cause of their reports. 415
Gunpouder not poysonous, 409. 412. How made. 412
Gutta rosacea what, 1080. The cure. 1081
Guts, their substance, figure and number, 105 Their site and connexion, 106. Action, 107. How to be taken forth, 115. Signes that they are wounded, 396. Their cure, 397. Their Vlcers. 480

H.

Hæmorrhoides what, their differences and cure, 487. In the necke of the wombe. 955
Hæmorrhoidalis interna, 112. Externa. 117
Hæmorrhoidalis arteria, sive mesenterica inferior. 115
Hæmorrhous a Serpent his bite, the signes and cure. 791
Hayt, a strange beast. 1022
Haire what the originall and use, 160. How to make it blacke, 1081. 1082. How to take it off. 1082
Hairy scalpe, the connexion and use. 160. The wounds thereof not to bee neglected, ibid. The cure thereof being contused, 361
Hand taken generally what, 208, 209. The fracture thereof with the cure, 577. How to supply the defect thereof. 879, 881
Hares how they provide for their young. 61
Hare-lips what, 383. Their cure. 384
Harmonia what. 243
Hawkes. 70
Head, the generall description thereof, 159. The containing and contained parts thereof, 160. The musculous skin thereof, ibid. Why affected when any membranous part is hurt, 160. The watry Tumor thereof 289. The wounds thereof. 337, 338, &c. The falling away of the Haire and other affects thereof, 637, 638, &c. The dislocation thereof. 603
Hearing, the Organe, object, &c. thereof, 24
Heart and the History thereof, 144, 145. The ventricles thereof, 145. Signes of the wounds thereof. 388
Heate one and the same the efficient cause of all humors at the same time, 114. Three causes thereof. 250
Hecticke feaver with the differences, causes, signes and cure. 393
Hedg-hogs, how they provide for their young. 61
Heele, and the parts thereof, 234. Why a fracture thereof so dangerous, ibid. The dislocation thereof, 632. symptomes following upon the contusion thereof, ibid: Why subject to inflammation. 633
Hemicrania, see Megrim.
Hemlocke the poysonous quality thereof, and the cure. 806
Henbane the poysonous quality, and the cure. 805
Hermaphrodites, 28, and 972.
Herne, his sight, and the Falcon. 70
Hernia and the kinds thereof, 304. Humoralis. 313
Herpes and the kinds thereof, 264. The cure. 265
Hip-gout, see Sciatica.

Hippe, *the diſlocation thereof*, 623. *prognoſtickes*, 624. *ſignes that it is diſlocated outwardly or inwardly*, 625. *diſlocated forwards* 626. *backwards* ibid. *how to reſtore the inward diſlocation*, 627. *the outward diſlocation*, 629. *the forward diſlocation*, ibid. *the backward diſlocation*, 630
Hippocrates *his effigies*, 1115
Hoga, *a monſtrous fiſh*, 1008
Holes *of the inner Baſis of the ſcull*, 174. *of the externall Baſis thereof*, 175. *ſmall ones ſometimes remain after the cure of great wounds*, 384
Holy-*bone, his number of* Vertebræ, *and their uſe*, 198. *the fracture thereof*, 575
Hordeolum, *an affect of the Eye-lids*, 642
Hornes *uſed in ſtead of Ventoſes*, 696
Horſe-leaches, *their application and uſe*, ibid. *their virulency, and the cure*, 800
Hot-*houſes, how made*, 1077
Hulpalis, *a monſtrous beaſt*, 1017
Humeraria arteria, 153
Vena, 210
Humours, *their temperaments*, 11. *the knowledge of them neceſſary*, ibid. *their definition and diviſion*, 12. *Serous and ſecundary, as* Ros, Cambium, Gluten, 15. *An argument of their great putrefaction*, 417
Humours *of the eye*, 182
Aqueus, 183
Cryſtallinus, 184
Vitreus, ibid.
Hydatis, 643
Hydrargyrum, *the choice, preparation, and uſe thereof in the* Lues venerea, 731
Hydrophalia, *whether uncureable*, 787
What cure muſt be uſed therein, 789
Hydrocephalos, *what*, 289. *The cauſes, differences, ſignes, &c.* ibid. *The cure*, 290
Hydrocele, 304. 311
Hymen, 130
Whether any or no, 937
A hiſtory thereof, 938
Hyoides os, *the reaſon of the name, compoſure, ſite, &c. thereof*, 191
Hypochondria, *their ſite*, 85
Hypochyma. 651
Hypogaſtricæ venæ, 117
Hypopyon, 650
Hypothenar, 222

I.

Jaundice, *a medicine therefore*, 303
Jaw, *the bones thereof, and their productions*, 178
The fracture of the lower jaw, 567
How to helpeit, 568
The diſlocation thereof, 600
The cure, ibid.
Ibis, *a bird, the inventer of glyſters*, 56
Ichneumon, *how hee armes himſelfe to aſſaile the Crocodile*, 66
Idleneſſe, *the diſcommodities thereof*, 35
Jejunum inteſtinum, 105
Ileon, 106
Iliaca arteria, 115
Vena, 117
Ilium os, 227
Ill *conformation*, 41
Imagination, *and the force thereof*, 897
Impoſtors, *their impudency and craft*, 51 372
Impoſtume, *what, their cauſes and differences*, 249
Signes of them in generall, 250
Prognoſtickes, 252
What conſiderable in opening of them, 259
Inanition, *ſee* Emptineſſe.
Incus, 163. 191
Indication, *whence to be drawne*, 5. *of feeding*, 33. *what*, 42. *the kindes*, 43. *a table of them*, 48. *obſervable in wounds by gun-ſhot*, 426
Infant, *what he muſt take before he ſucke*, 907 *their crying what it doth*, 912. *how to be preſerved in the wombe when the mother is dead*, 923. *See* Childe.
Inflammation *of the almonds of the throat, and their cure*, 293. 294. *of the* Uvula, 294. *of the eyes*, 645
Inflammation *hinders the repoſition, or putting diſlocated members into joint*, 619
Inſeſſus, *what, their manner, matter, and uſe*, 1073
Inſtruments *uſed in Surgery for opening abſceſſes*, 258. 259
A vent for the wombe, 283. 955
An iron plate and actuall cautery for the cure of the Ranula, 293
Conſtrictory *rings to bind the* Columella, 295
Speculum oris, ibid. & 332
A trunke with cautery to cauterize the Uvula, 296
An inciſion knife, 298
An actuall cautery with the plate, for the cure of the Empyema, 299. *of a pipe to evacuate the water in the Dropſie*, 303. *Wherewith to make the golden ligature*, 310. *to ſtitch up wounds*, 327
A Razour or inciſion knife, 341. *A chiſel*, ib. Radulæ, vel Scalpri, 343. *A threefooted levatory*, 344. *Other levatories*, 345. 346. *Sawes to divide the ſkull*, ib. *a deſquamatory Trepan*, 346. Roſtra pſittaci, 347. *Scrapers*, pin-

pincers, and a leaden mallet, ib. *A piercer to enter a Trepan*, 365. *Trepans*, 366. 367. *Terebellum*, 367. *A lentill-like Scraper*, ib. *cutting compasses*, 368. 369. *A conduit pipe, & syrenge*, 370. *to depresse the* dura Meninx, 373. *speculum oculi*, 379. *for making a Seton*, 382. *Pipes used in wounds of the chest*, 392. *to draw out bullets*, 419. 420. *&c. Dilaters, & Probes to draw through sfammula's*, 422. *to draw forth arrow-heads*, 439. 441. *A scarificator*, 446. *A dismembring knife, & saw*, 459. *A dilater to open the mouth*, 464. *A pyoulcos, or Matter-drawer*, 479. *A* Glossocomium, 578. *A lattin Casse*, 587. *A pulley and hand-vice*, 599. *the* glossocomium *called* Ambi, 615. *litle hooks, needles, and an incision knife to take away the Web*, 648. *files for filing the teeth*, 658. *for cleansing & drawing the teeth*, 660. *cutting mullets, to take off superfluous fingers*, 662. *a Cathater*, 665. *Gimblet to break the stone in the passage of the yard*, 671. *other instruments to take out the stone*, 672. *used in cutting for the stone*, 673. *&c.* 680. 681. *a Lancet, & Cupping-glasses*, 695. *Horns to be used for ventoses*, 696. *Cathaters to weare away caruncles*, 744. *Trepans for rotten bones*, 748. *actuall cauteries*, 749. *Gryphons tallons*, 927. 929. *Hooks to draw forth the childe*, 916. Specula matricis, 956

Instruments, *when necessary in restoring broken bones*, 565

Intercartalaginei musculi, 206. 207

Intercostalis arteria, 113. 153

Intercostales musculi externi, 206. interni, 207

Interosses musculi, 223. 239

Intestinalis vena, 112

Intromoventes musculi, 230

Joy, *and the effects thereof*, 39

Joints, *their wounds*, 403. *how to strengthen them*, 708. *how to mitigate their paines caused onely by distemper*, 716

Ischiadica vena, 224. Ischium os, 227

Issues, *or fontanells*, 706

Itching *of the Wombe*, 957

Judgement, *why difficult*, 1121

Junks, *what*, 559. *their use*, 560.

K.

KAll, *its substance, &c.* 101. 102. *what to be done when it falls out in wounds*, 398

Kernels *of the eares*, 189.

Kibes, *where bred*, 238

Kidneyes, *their substance, &c.* 117. *signes that they are wounded*, 397. *ulcers, & their cure*, 481. 686. *their heat how tempered*, 850

Kings-*evil, what, the cause*, 274. *the cure*, 275

Knee *dislocated forward, how to restore it*, 631

L.

LAgophthalmia, *what*, 378. *the causes and cure*, 642

Lamenes *how helped*, 884

Lamprey, *their care of their young*, 64

Lampron, *their poysonous bite*, 801

Larinx, *what meant thereby*, 194. *its magnitude, figure, composure, &c.* ib.

Latissimus musculus, 208

Leaches, *see* Horse-leaches.

Legge, *taken in generall, what*, 223. *the bone therof*, 231. *the wounds*, 399. *the fracture & cure*, 582. *the cure of the Authors legge being broken*, 582. 585. *their crookednesse how helped*, 879. *defect supplied*, 882. 883

Leprosie, *& the causes therof*, 769. *the signes*, 770. *&c. why called* Morbus leoninus, 771 *the prognosticks, diet, cure*, 773. *it sometimes followes the* Lues venerea, 724

Lepus marinus, *the poyson, the symptomes, & cure*, 803

Levator musculus, 208. Levatores Ani, 107

Life, *what, & its effects*, 895. *See* Soule.

Ligaments, *their use*, 96. *why without sense*, 198. *their difference*, 199. *their wounds*, 404

Ligatures *for wounds are of three sorts*, 325 *too hard hurtfull*, 374. *they must bee neatly made*, 555. *for what uses they chiefly serve*, 358. *in use at this day for fractures*, 579. *how in fractures joyned with wounds*, 584 *which for extension*, 598. *See* Bandages.

Lightning, *the wonderfull nature, & the stinking smell therof*, 414. *how it may infect the Aire*, 781

Lime *unquencht, the hurtfull quality & cure*, 810

Liniments *are not to be used in wounds of the Chest*, 390. *their matter, form, & use*, 1055

Lion, *his provident care in going*, 66

Lion *of the sea*, 1003. Lippitudo, 644

Litharge, *its poysonous quality & cure*, 810

Liver, *what*, 109. *its substance, &c.* ibid. 110. *signs of the wounds therof*, 396. *why it is called* parenchyma, 893

Loines, *their nerves*, 226

Longus musculus, 205. 218. 232

Lues venerea, *what*, 723. *the hurt it causeth*, ib. *the causes thereof*, 724. *in what humor the malignity resideth*, 725. *it causes more pain in the night than in the day*, ib. *sometimes lyes long hid*, ib. *signes therof*, 746. *prognosticks*, 727. *how to be oppugned*, 728. *to whom wine may be allowed*, 730. *the second manner of cure*, ibid. *the third manner of cure*, 734.

the fourth maner,736. *how to cure its ſimptomes* 737 .*it cauſes bunches on the bones*, 746. *rotten bones, how perceived & cured*, 747. *tettars and chaps occaſioned thereby, and their cure*, 754. *how to cure children of this diſeaſe*, 755. *it kills by exceſſe of moiſture*, 779
Lumbaris regio, ſive lumbi, 85.
Arteria, 114. Vena. 116.
Lumbrici muſculi, 222.239
Lungs, *their ſubſtance, &c.* 142.143. *ſignes of their wounds*, 388. *which curable*, 392.
Lupiæ, *what, their cauſes and cure*, 272
Luxation, 593. *which uncureable*, 595.
Lying *in bed, how it muſt bee*, 36

M

MAdde *dogge, ſee* Dogge.
Magick, *and the power thereof*, 989
Magiſtrates *office in time of plague*, 829
Males *of what ſeed generated*, 888
Malleolus, *one of the bones of the auditory paſſage*, 163.191
Mammillary *proceſſes*, 166. *their uſe*, 169
Mammaria arteria, 153
Man, *his excellency*, 74. *&c. the diviſion of his body*, 83. *why diſtinguiſhed into male and female.* 885
Mandrake, *its danger, and cure*, 806
Marrow, *why it may ſeeme to have the ſenſe of feeling.* 589
Maſſeter *muſcle.* 188
Maſtoideus muſculus. 204
Maſticatories, *their forme and uſe*, 1069
Matrix, *ſee* Wombe.
Medow-*ſaffron, the poyſonous quality thereof, and cure.* 809
Meat, *the quantity and quality thereof*, 31 *accuſtomed more grateful and nouriſhing* 32. *order to be obſerved in eating*, 33. *the time*, ib. *fit to generate a* Callus. 589
Meazels, *what, their matter*, 757. *why they itch not*, 758. *their cure.* 759
Mediaſtinum, *its ſubſtance, &c.* 141
Medicines, *their excellency*. 1027. *their definition and difference in matter and ſubſtance*. 1028. *in qualities, and of their firſt faculties*, 1029. *their ſecond, third, & fourth faculties*, 1033. *the preparation*, 1037. *the compoſition, neceſsity, and uſe therof*. 1049
Megrim, *the cauſes, &c. thereof.* 640
Melancholy, *the temper therof*, 11. *the nature, conſiſtence, &c*. 13. *the effects thereof*, 15. *of it corrupted.* 16
Melancholick *perſons, their complexion, &c* 18. *why they hurt themſelves.* 786.
Meliceris, *what kinde of tumor*, 271
Membranoſus muſculus, 232
Memorie, *what.* 897
Menſtruall *fluxe, ſignes of the firſt approach thereof*, 950. *See* Courſes.
Meninges, *their number, &c.* 164
Mercury, *ſublimate, its cauſtick force*, 809 *the cure*, 810
Meremaid, 1004
Meſentery, *its ſubſtance, &c.* 108. *the tumors therof*, 929. *the ſink of the body*, 930
Midriffe, *its ſubſtance, &c.* 141. 142. *ſignes of the wounds thereof.* 388
Milk *ſoon corrupts in a phlegmatick ſtomack* 907. *the choice therof*. 909. *how to drive it downewards*, 918.
Millepes, *caſt forth by urine*, 762
Milt, *ſee* Spleene.
Mola, *the reaſon of the name, and how bred*, 925. *how to be diſcerned from a true conception*, 925. *a hiſtory and deſcription of a ſtrange one*, 926. *the figure thereof*, 927. *what cure to be uſed thereto*, 928.
Mollifying *medicines*, 141.142
Monks-*hood, the poyſon and cure*, 905
Monſtrous *creatures bred in man*, 762, *&c.*
Monſters *what*, 961. *their cauſes, & deſcriptions*. 962. *&c. cauſed by defect of ſeed*, 975. *by imagination*, 978. *by ſtraitneſſe of the womb*, 980. *by the ſite of the mother*, ib. *by a ſtroak, &c.* 981. *by confuſion of ſeed of divers kinds*, 982. *by the craft of the Devil*, 985. *Of the Sea*, 1001. 1002. *&c.*
Morſe, *Sea. calfe or Elephant*, 1005. 1006
Mortification, *and the ſignes thereof*, 475
Mother, *ſee* Womb.
Mothers *fitteſt to nurſe their own children*, 907. *their milk moſt familiar to them*, ib.
Motion, *which voluntary*, 25. *taken for all manner of exerciſe*, 34
Mouth, *and the parts therof*, 193. *the ulcers and their cure*, 478. *how to prevent & heal them in cure of the* Lues venerea, 735
Mummie, *frequently uſed in contuſions*, 447. *not good therein*, 448
Mundificatives, 1043
Muſcles, *what*, 92. *their differences, and whence taken*, 93, *&c. their parts*, 95. *a further enquirie into the parts of them*, 96.
Muſcles *of the* Epigaſtrium, 97. *of the fundament*, 106. *of the teſticles*, 120. *of the bladder*, 124. *of the yard*, 125. *the broad muſcle*, 180. *that open and ſhut the eye* ibid. *of the eye*, 182. *of the noſe*, 186. *of the face*, ibid. *of the lower jaw*, 188. *of the bone* Hyoides, 191. *of the tongue*, 192. *of the* Larinx, 194. *of the* Epiglottis, 195. *of the neck*, 199. *of the cheſt & loines*,

loines, 205, 206. 207. *of the ſhoulder-blade*, 207. *of the arme*, 214. *of the cubit*, 217. *moving the hand*, 220. *of the inſide of the hand*, 222. *moving the thigh*, 229. *of the legge*, 232. *moving the foot*, 237. *of the toes*, 238. *An epitome or briefe recitall of all the muſcles*, 244. 245.
Muſculous *skinne of the head*, 160. *the wounds thereof and their cure*, 360.
Muſculoſæ venæ, 117. Arteriæ, 153.
Muſhromes, *their hurtfull and deadly quality, and the cure*, 805.
Muſicke, *the power thereof*, 49.
Mydriaſis, *a diſeaſe of the eye, the cauſe, and cure*, 650.

N.

NAiles, *why added to the fingers*, 209. *why grow continually*, ibid. *whence generated*. 220.
Napellus, *the poyſonous quality & cure*, 805
Narcotickes, 257. *cautions in their uſe*, 264. *improperly termed Anodines*, 1048.
Nata, *what*, 272. Nates, 168.
Nature *oft doth ſtrange things in curing diſeaſes*, 385.
Naturall *parts, and their diviſion*, 84.
Naturall, *ſee* Things, Faculties, Actions,
Navell, *what, the figure, and compoſure*, 133. *the generation thereof*, 891. *the relaxation thereof in children*, 959. *the ſwelling or ſtanding forth thereof*, 303. *the cure*, 304.
Nautilus, *or ſayling-fiſh*. 1011.
Neck, *& the parts therof*, 196. *the wounds thereof*, 386. *the diſlocation therof*, 603.
Necroſis, *or mortification*, 457.
Nerves, *what*, 96. *their diſtribution to the naturall parts*, 115. *of the ſixth conjugation, and their diſtribution*, 152. Ramus coſtalis, ib. recurrens, ib. ſtomachicus, 153. *their ſeven conjugations*, 170.
Nerves *of the neck, back, and armes*, 212. *of the loines, holy-bone, and thigh*, 226.
Nerves *and nervous parts, their wounds*, 399. *their cure*, 400.
Night-ſhade, *the deadly night-ſhade, his poyſonous quality, and the cure*, 805.
Nightingales *ſing excellently*, 72.
Nipples, 138. *how to help their ſoreneſs*, 912
Nodus, *what*, 272.
Nodules, *their forme and uſe*, 1053.
Northren *people how tempered*, 20.
Noſe *and the parts thereof*, 186. *the wounds thereof*, 384. *their cure*, ib. *how to ſupply the defect thereof*, 871. *the ulcers thereof*, 477. *their cure*, ib. *the fracture*, 567.
Nurſes, *their error in binding and lacing of children*, 606. *they may infect children with the* Lues venerea, *and be infected by them*, 724. *participate their diſeaſes to their children*, 907. *the choice of them*, 908. 909. *of their diet, and other circumſtances*, 910.
Nutrition, *what*, 22. 24. Nymphæ, 130.

O.

OBlique *deſcendent muſcles*, 97. *aſcendent muſcles*, 98.
Obliquator externus muſculus, 221.
Obturatores muſculi, 230.
Oedema, *what*, 267. *which tumors referr'd thereto*, 254. *the differences thereof*, 267. *the cauſes*, ib. *ſigns, prognoſticks, cure*, 268
Oeſophagus, *or Gullet, the ſubſtance, attractive force, &c. thereof*, 157. *the magnitude, figure, ſite, temper, and action*, 158.
Oile *of whelps, the deſcription, and uſe ther-of*, 409. 423. *it helps forward the ſcailing of bones*, 751.
Oiles, *and the ſeverall making of them*, 1054. 1055. 1102. *by diſtillation*, 1103. *out of gums*, 1106. 1107.
Ointments, *their differences, deſcriptions, and uſe*, 1056. 1057. 1058.
Old *age, and the diviſion thereof*, 9. *it is a diſeaſe*, 32.
Old *wives medicines*, 991.
Olecranum, *what*, 217.
Omentum, *or the Kall, the ſubſtance, magnitude, figure, and compoſure thereof*, 101. *the connexion, temper, and twofold uſe*, 102. *it ſomtimes hinders conception*, ibid.
Operations *of Surgery, of what nature*, 4. *why ſome which are mentioned by the Antients, are omitted by our Author*, 1138. 1139.
Opium, *why not uſed in poyſoning*, 806. *the ſymptomes cauſed by it, and their cure*, ib.
Order *to bee obſerved in eating our meate, &c.* 33. *in lying to ſleepe*, 34.
Organicall *parts, which*, 81. *What obſervable in each of them*, ibid.
Orifices *of the heart*, 146.
Orpiment, *the poyſonous quality thereof, and the cure*, 810.
Os & oſſa, occipitis, 162. Baſiliare, ibid. Coronale, ib. Bregmatis, ſive parietalia, ib. Petroſa, ibid. Cuneiforme, ſive ſphenoides ib. Ethmoides, cribroſum, ſeu ſpongioſum, ibid. Zygoma, ſive jugale. 178. Hyoides, ypſiloides, &c. 191. Seſamoidia, 220. Ilium, 227. Iſchium, ibid.

Plague *what*, 817. *How it comes to kill*, ib. *Divine causes therof*, 818. *Naturall causes*, ibid. *Signes of the aire and earth that prognosticate it*, 821. *Cautions in aire and diet to prevent it*, 822. *Preservatives against it*, 824. 825. 826. *Other observations for prevention*, 828. *Such as die thereof quickly putrefie*, 829. *How such as undertake the cure thereof must arme themselves*, 831. *Signes of infection*, 832. *Mortall signes*, 833. *Signes thereof, without fault of the humors*, ib. *with the putrefaction of them*, 834. *Prognostickes therein*, 835. *What to be done when one findes himselfe infected*, 837. *Diet*, 839. 840. 841. *Antidotes*, 843. 844. *Epithemes to strengthen the principall parts*, 845. *Whether purging and bleeding bee necessary at the beginning*, 845. *What purges fit*, 847. *Symptomes accompanying the disease*, 849. *Spots or Tokens*, 851. *Their cure*, 852. *Sores*, 853. *&c. See Bubo's, and Carbuncles. Sundry evacuations*, 861. 862. *How to cure infants and children thereof*, 867.

Plaister, *the hurtfull qualitie thereof, and the cure*, 810.

Plasters, *see Emplasters.*

Plantaris musculus, 238.

Pleura *what, the originall, magnitude, figure, &c.* 140.

Pleurisie, *what*, 298.

Plexus choroides, 167.

Pneumatocele, 312.

Polypus, *the reason of the name*, 290. *The differences*, ibid. *The cure*, 291.

Poplitæus musculus, 233.

Porus biliaris, 111.

Potentiall *Cauteries*, 1064. 1065.

Pox, *French Pox, see* Lues venerea.

Small pox what, their matter, 757. *What pernitious symptomes may happen upon them*, 758. *Prognostickes*, ibid. *The cure*, 759. *What parts to be armed against, and preserved therefrom*, 760.

Poysons, *the cause of writing them*, 775. *What they are*, ibid. *Their differences*, 776. *All of them have not a peculiar Antipathy with the heart*, ibid. *How in small quantities they may work great alterations by touch onely*, ibid. *The reasons of their wondrous effects*, 777. *none of them kill at a set time*, ibid. *How they kill sooner or later*, ibid. *Whether things feeding on poysons, be poysonous*, ibid. *Generall signes that one is poysoned*, 778. *How to shun poyson*, 780. *The generall cure of poysons*, ibid. *Whether vapours arising from things burnt, may poyson one*, 781. *Each poyson hath its proper effects*, 782. *Their effects and prognosticks*, ibid. *The cure of poysonous bites*, 783.

Poyson *of Adders, Asps, Toads, &c. see Adders, Asps, Toads, &c.*

Poysonous *plants, and the remedies against them*, 805.

Poysons *of Minerals, and their remedies*, 809.

Præputium, 126. *to helpe the shortnesse thereof, and such as have beene circumcised*, 662. *The ulcers thereof are worse than those of the* Glans, 737.

Præparation *of simple medicines, and the divers kinds thereof*, 1037.

Preservatives *against the plague*, 824. 825. 826.

Principall *parts which, and why so called*, 82.

Processus mammillares, 167.

Processes *of the* Vertebræ, *right, oblique, transverse*, 196. *that called the tooth*, ib.

Acromion *and* Coracoides, 208.

Prodigie, *what*, 961. *divers of them*, 1025. 1026.

Prognostickes *in Impostumes*, 252. *in an* Erisipelas, 267. *in an* Oedema, 268. *in a* Scyrrhus, 278. *in a quartain Ague*, 285. *in an* Aneurisma, 287. *in the* Parotides, 291. *in the Dropsie*, 300. *in a* Sarcocele, 312. *in wounds*, 323. *in fractures of the skull*, 352. *in wounds of the liver and guts*, 397. *in a Gangrene*, 455. *in ulcers*, 468. *in Fractures*, 562. *in Dislocations*, 595. *in a dislocated Jaw*, 600. *in the dislocated* Vertebræ, 606. *in a dislocated Hippe*, 624. *in the stone*, 666. *in suppression of the urine*, 684. *in the ulcerated reines and bladder*, 686. *in the Gout*, 702. *in the* Lues venerea, 727. *in a virulent strangury*, 739. *in the small pox*, 758. *in the leprosie*, 773. *concerning poysons*, 782. *in the bite of a mad dogge*, 787. *in the plague*, 835. *in plague sores*, 857.

Pronatores musculi, 222.

Properties *of a good* Surgeon, 5.

Proptosis oculi, 646.

Prostates, 121.

Pubis, 228.
Innominata, 234.
See Bones.
Ozæna, *a filthy ulcer of the nose, the cause and cure,* 477.

P.

PAine, *and the causes thereof,* 250.
It must be assuaged, 256.
The discommodities thereof, 257.
In wounds how helped, 329.
Pallate, *the nerves, holes, and coat thereof, &c.* 193.
How to supply the defects thereof, 873.
Palmaris musculus, 222.
Palsie, *the differences, causes, &c. thereof,* 332.
The cure, 333.
Followes upon wounds of the necke, 386.
Pancreas, *the substance, site, &c. thereof,* 109.
The tumours thereof, 929.
Pannicle, *see* Fleshy.
Pappe, *how to be made for children,* 911.
and the condition thereof, ibid.
Paracentesis, *and the reasons for and against it,* 301.
The place where, and manner how, 302.
Parassoupi, *a strange beast,* 1018.
Parastates, *their substance, &c.* 120.
Paronychia, *what,* 314.
The cure, ibid.
Parotides, *their site and use,* 191.
Their difference, prognosticke, cure, &c. 291.292.
Partridge, *their care of their young,* 60.
Parts, *similar,* 81.
Organicall, ibid.
Instrumentall, 82.
Things considerable in each part, ibid.
Principall parts which, and why so called, ibid.
Of generation, 82. 886. *distinguished into three,* 83.
The containing parts of the lower belly, 87.
Of the chest, 137.
Passions *of the minde, their force,* 39.
They helpe forward putrefaction, 820.
Pastinaca marina, *or the sting-Ray* 802.
Patella, *what,* 231.
Pectoralis musculus, 208.
Pedium, *what,* 234.
Pediosus musculus, 238.
Pelvis, *the site and use thereof,* 168.
Pericardium, *and the history thereof,* 143.
Pericranium, *what, and the use thereof,* 160.
Perinæum, *what,* 125.
Periostium, 160.
Peritonæum, *the substance and quantity thereof,* 100.
The figure, composure, site, use, &c. 101.
Perone, 231.
Peronæus musculus, 237.
Perturbations *of the minde, see* Passions.
Pessaries, *their forme and use,* 1053.1054.
Pestilence, *see* Plague.
Pestilent *feaver, how bred,* 837.
Pharinx, *what,* 194.
Phlebotomy, *the invention thereof,* 56.
Necessary in a Synochus putrida, 261.
The use, scope, &c. thereof, 691.
How to be performed, 693.
See Blood-letting.
Phlegme, *the temper thereof,* 11.
is blood halfe concocted, 13.
Why it hath no proper receptacle, ibid.
The nature, consistence, colour, taste and use, ibid.
The effects thereof, 14.
Not naturall, how bred, and the kindes thereof, 16.
How many waies it becomes so, 267.
Phlegmaticke *persons, their manners and diseases,* 17.
In fasting they feed upon themselves, 707.
Phlegmon, *what kinde of tumour,* 254.
What tumours may be reduced thereto, 253.
How different from a phlegmonous tumour, 254.
How generated, ibid.
The causes, and signes thereof, 255.
The cure, 256.
The cure when it is ulcerated. 258.
Phrenica Arteria, 113.
Phthisis oculi, 646.
Phymosis & paraphymosis, *what,* 663.
Physick, *the subject thereof,* 81.
Physicians *to have care of such as have the plague, how to be chosen,* 830.
Physocele, 304.
Pia mater, *the consistence, use, &c.* 164.
Pidgeons, *see* Doves,
Pilot fish, 67.
Pine glandule, 168.
Pinna auris, *which* 189.
Pinna & Pinnoter, 1011.
Pismire, *see* Ant,
Pith *of the backe,* 175.

Proud *flesh in ulcers, how helped,* 472.
Psilothra, *their forme and use,* 1082.
Pudendæ venæ. 117.
Pulse, *the triple use thereof,* 22.
Pulsation *in a* Phlegmon *how caused,* 255.
Pultisses *how different from* Cataplasmes, 1062.
Punctus aureus, 309.
Puncture *of a nerve, why deadly,* 400.
Purging, *whether necessary in the beginning of pestilent diseases,* 845.
Purple *spots, or tokens in the plague,* 851.
Their cure, 852.
Pus, *or quitture, the signes thereof,* 258.
How it may flow from the wounded part, and bee evacuated by urine and stoole, 684.
Putrefaction *in the plague different from common putrefaction,* 819.
Three causes thereof, 820.
Pyes *may be taught to speake,* 72.
Pylorus, 104.
Pyramidall *muscles,* 99.
Pyrotickes, *their nature, kindes, and use,* 1046.

Q.

Quadrigemini musculi, 230.
Quartaine *ague or feaver, the causes, signes, symptomes,* 284.
Prognosticks, and cure, 285.
Quicksilver, *why so called,* 811.
Whether hot or cold, ibid.
Wherefore good, 812.
The kindes thereof, ibid.
How to purifie it, 813.
See Hydrargyrum.
Quotidian *feaver, the cause thereof,* 275.
The signes, symptomes, &c. 276.
The cure, 277.
How to bee distinguished from a double Tertian, ibid.

R.

Racke-bones, *their fracture,* 573.
Radish *root drawes out venome powerfully,* 860.
Radius, *what,* 217.
Ramus splenicus, 112.
Mesenteriacus, 113.
Ranula, *why so called, the cause and cure,* 293.
Ratsbane, *or Roseager, the poysonous quality and cure,* 810.
Raving, *see Delyrium.*
Reason, *and the functions thereof,* 897.
Recti musculi, 202.232.
Rectum intestinum, 106.
Reines, *see Kidneies.*
Remedies *supernaturall,* 989.
See medicines.
Remora, *the wondrous force thereof,* 1013
Repletio ad vasa & ad vires, 37.
Repercussives, 461.
What dissuades their use, 253.
When to be used, 256.
Fit to bee put into, and upon the eye, 379.
Their differences, &c. 1038.
Reports *how to be made,* 1121.
Resolving *medicines, and their kindes,* 1040.
Resolving *and strengthening medicines,* 264.292.
Respiration *how a voluntary motion,* 25.
The use thereof, 143.
Rest *necessary for knitting of broken bones,* 580.
Rete mirabile, 172.
Whether different from the Plexus choroides, 174.
Rhinocerote, 65.
His enmity with the Elephant, 1023.
Rhomboides musculus, 206.208.
Ribs, *their number, connexion, and consistence,* 139.
Their contusion, and a strange symptome sometimes happening thereon, 447.
Their fracture, the danger and cure, 571.
Symptomes ensuing thereon, 572.
Their dislocation and cure, 607.
Right *muscles of the* Epigastrium, 98.
Rim *of the belly,* 100.
The figure, composure, &c. thereof, 101.
Ring-*wormes,* 264.
Rotula genu, 231.
Rough *artery,* 156.
Rowlers, *see Bandages.*
Rules *of Surgery,* 1119.
Rumpe, *the fractures thereof,* 575.
The dislocation thereof, 607.
The cure, ibid.
Ruptures, 304.
Their kindes, ibid.
Their cure, 305.306.307.311.

S.

Sacer musculus, 207.
Sacræ venæ. 117.

Sacro-

Sacro-lumbus muſculus, 206.
Salamander, *the ſymptomes that enſue upon his poyſon,, and the cure,* 793.
Salivation, 38.
Sanguine *perſons, their manners and diſeaſes,* 17.
Sapheia vena *when and where to be opened,* 224.
Sarcocele, 304.
The prognoſtickes and cure, 312.
Sarcotickes, *ſimple and compound,* 1044.
None truely ſuch, ibid.
Scabious, *the effect thereof againſt a peſtilent Carbuncle,* 860.
Scailes, *how knowne to be ſevered from the bones,* 586.
Scailes *of Braſſe, their poyſonous quality and cure,* 810.
Of iron, their harme and cure, ibid.
Scald-*head, the ſignes and cure thereof,* 638.
Scalenus muſculus, 205.
Scalpe, *hairy ſcalpe,* 160.
Scaphoides os, 234.
Scarrs, *how to helpe their deformity,* 861.
Scarus, *a fiſh,* 67.
Sceleton, 239.240.241. *what,* 242.
Sciatica, *the cauſe, &c.* 719.
The cure, 720.
Scirrhus, *what,* 278.
What tumours referred thereto, 254.
The differences, ſignes, and prognoſticks, 278.
Cure, ibid.
Scorpion *bred in the braine by ſmelling to Baſill,* 761.
Their deſcription, ſting, and cure, 797.
Scrophulæ, *their cauſe and cure,* 274.
Scull *and the bones thereof,* 162.
The fractures thereof, See Fractures.
Depreſſion thereof how helped, 344.
Where to be trepaned, 369.
Sea *feather and grape,* 1007.
Sea-*hare, his deſcription, poyſon, and the cure thereof,* 803.
Seaſons *of the yeare,* 10.
Secundine, *why preſently to be taken away after the birth of the childe,* 904.
Why ſo called, 906.
Cauſes of the ſtay, and ſymptoms that follow thereon, ibid.
Seed-*bones,* 220.236.
Seed, *the condition of that which is good,* 885.
The qualities, 888.
The ebullition thereof, &c. 893.
Why the greateſt portion therof goes to the generation of the head and brain, 894.
Seeing, *the inſtrument, object, &c. thereof,* 24.
Semicupium, *the forme, manner, and uſe thereof,* 1073.
Semiſpinatus muſculus, 207.
Senſe, *common ſenſe, and the functions thereof,* 896.
Septum lucidum, 167.
Septicke *medicines,* 1046.
Serpent Hæmorrous, *his bite & cure,* 791
Seps, *his bite and cure,* ibid.
Baſiliske, his bite and cure, 792.
Aſpe, his bite and cure, 794.
Snake, his bite and cure, 795.
Serratus muſculus major, 206. poſterior & ſuperior, ibid. minor, 208.
Serous *humour,* 15.
Seſamoidia oſſa, 220.236.
Seton, *wherefore good,* 381. *the manner of making thereof,* ibid.
Sepe, *what, and the difference thereof,* 27.
Hiſtories of the change thereof, 974.
Shame *and ſhamefac'neſſe, their effects,* 40
Shin-*bone,* 231.
Shoulder-*blade, the fractures thereof,* 569.
the cure, 570. *the diſlocation,* 608. *the firſt manner of reſtoring it,* 609. *the ſecond manner,* 610. *the third maner.* 611. *the fourth manner,* ibid. *the fifth,* 612. *the ſixth,* 614. *how to reſtore it diſlocated forwards,* 617. *outwards,* 618. *upwards,* ibid.
Signes *of ſanguine, cholericke, phlegmatick, and melancholick perſons,* 17.18.
Signes *in generall whereby to judge of diſeaſes,* 1122. &c.
Silkewormes, *their induſtry,* 60.
Similar *parts, how many and which,* 81.
Simple *medicines, their difference in qualities and effects,* 1029. *hot, cold, moiſt, drie in all degrees,* 1031.1032. *their accidentall qualities,* 1032. *their preparation,* 1037.
Siren, 1001.
Skin *twofold, the utmoſt or ſcarſe-skin.* 88. *the true skin,* 89. *the ſubſtance, magnitude, &c. thereof.* ib.
Sleepe, *what it is,* 35. *the fit time, the uſe and abuſe thereof,* 36. *when hurtfull,* 277. *how to procure it,* 850.
Smelling, *the object and* medium *thereof,* 24.
Snake, *his bite, and the cure,* 795.
Solanum manicum, *the poyſonous quality,* and

and cure, 805.
Soleus muſculus, 238.
Solution *of continuitie*, 42. *why harder to repaire in bones*, 562.
Sorrow, *the effects thereof*, 39.
Soule, *or life, what it performes in plants, beaſts & men*, 7. *when it enters into mans body, &c.* 895.
Sounds, *whence the difference*, 191.
Southerne *people how tempered*, 17.
South *winde why peſtilent*, 823.
Sowning *what, the cauſes and cure.* 334.
Sparrowes *with what care they breed their young.* 58.
Spermatica arteria, 114, vena, 116.
Spermatick *veſſels in men*, 119. *in women*, 126. *the cauſe of their foldings*, 887.
Sphincter *muſcle of the fundament*, 106. *of the bladder*, 124.
Spiders, *their induſtry*, 58. *their differences and bites*, 798.
Spinall *marrow, the coats, ſubſtance, uſe, &c. thereof*, 175. *ſignes of the wounds thereof*, 389.
Spinatus muſculus, 205.
Spine, *the diſlocation thereof*, 602. 603. *how to reſtore it*, 604. *a further enquirie thereof*, 605. *prognoſticks*, 606.
Spirit *what*, 25. *threefold, viz. Animall, Vitall, and Naturall*, 25. 26. *fixed*, ib. *their uſe*, 27.
Spirits, *how to be extracted out of herbs and flowers, &c.* 1105.
Spleene, *the ſubſtance, magnitude, figure, &c. thereof*, 111, 112.
Splenius muſculus, 201.
Splints *and their uſe*, 559.
Spring, *the temper thereof*, 10.
Squinancie, *the differences, ſymptomes, &c. thereof*, 296. *the cure*, 297.
Stapes, *one of the bones of the Auditorie paſſage*, 163. 191.
Staphiloma, *an affect of the eyes, the cauſes thereof*, 649.
Stars, *how they worke upon the Aire*, 30.
Steatoma, *what*, 271.
Sternon, *the anatomicall adminiſtration thereof*, 139.
Sternutamentories, *their deſcription and uſe*, 1068.
Stinging *of Bees, Waſps, Scorpions, &c. ſee* Bees, Waſps, Scorpions, *&c.*
Sting-Ray, *the ſymptomes that follow his ſting, and the cure*, 802.
Stink *an inſeparable companion of putrefaction*, 318.
Stomacke, *the ſubſtance, magnitude, &c. thereof*, 103. *the orifices thereof*, 104. *ſignes of the wounds thereof*, 396. *the ulcers thereof*, 480.
Stones, *ſee* Teſticles.
Stone, *the cauſes thereof*, 664. *ſignes of it in the kidneyes and bladder*, ibid. *prognoſtickes*, 666. *the prevention thereof*, 667. *what to bee done when the ſtone falls into the ureter*, 669. *ſignes it is fallen out of the ureter into the bladder*, 670. *what to be done when it is in the necke of the bladder, or the paſſage of the yard*, 671. *how to cut for the ſtone in the bladder*, 672. 673. 674. *&c. how to cure the wound*, 679. *to help the ulcer when the urine flowes out by it*, 681. *how to cut women for the ſtone*, 682. *divers ſtrange ones mentioned*, 996. 997.
Storkes, *their pietie*, 61.
Stoves, *how to be made*, 1077.
Strangury, *the cauſes, &c. thereof*, 688. *a virulent one, what*, 738. *the cauſes and differences thereof*, ibid. *prognoſtickes*, 739. *from what part the matter thereof flowes*, ibid. *the generall cure*, 740. *the proper cure*, 741. *why it ſucceedeth immoderate copulation*, 887.
Strangulation *of the mother or womb*, 939. *ſignes of the approach thereof*, 941. *the cauſes and cure*, 942.
Strengthening *medicines, ſee* Corroborating.
Strumæ, *ſee* Kings-evill.
Sublimate, *ſee* Mercury.
Subclavian, *ſee* Arterie and Veine.
Subclauius muſculus, 206.
Succarath, *a beaſt of the weſt Indies*, 61
Suffuſio, *ſee* Cataract.
Sugillations, *ſee* Contuſions.
Summer, *the temper thereof*, 10.
Supinatores muſculi, 221.
Suppuration, *the ſignes thereof*, 251. *cauſed by naturall heat*, 275.
Suppuratives, 258. 275. 292. *an effectuall one*, 433. *their differences, &c.* 1041. *how they differ from emollients*, ibid.
Superfœtation *what*, 924. *the reaſon thereof*, ibid.
Suppoſitories, *their difference, forme and uſe*, 1703.
Suppreſsion *of urine, ſee* Urine.
Surgery, *what*, 3. *the operations thereof*, 4.
Surgeons, *what neceſſary for them*, 3. *their office*, 4. *the choice of ſuch as ſhall have care of thoſe ſick of the plague*, 830. *they muſt be carefull in making reports*, 1121 *how long in ſome caſes they muſt ſuſpend their*

their judgements, 1122. they must have a care left they bring Magistrates into an error, 1128. how to report, or make certificates in divers cases, 1129
Sutures of the skull, their number, &c. 161 wanting in some, ib. why not to be trepaned, 162. 167. Sutures in wounds, their sorts and maner how to be performed, 326. 327.
Sweating sickneſſe, 821
Sweet bread, 108. Sweet waters, 1083
Swine aſsiſt their fellowes, 67
Symptomes, their denſitition, and diviſion, 42
Sympathy and Antipathy of living creatures, 73
Symphyſis, a kinde of articulation, 243
Synarcoſis, Synarthroſis, Synchondroſis, Syneuroſis, 243
Synochus putrida, its cauſe and cure, 261

T.

TAlparia, what, 272
Tarentula's poyſonous bite, & cure, 49
Tarſus, what, 181
Taſtes, what, their differences, 1034. their ſeveral denominations, & natures, 1035.
Taſting, what, 22.
Teeth, their number, diviſion, & uſe, 179 wherein they differ from other bones, ib. pain of them how helped, 401. their affects, 657. how to draw them, 659. to cleanſe the, 660. how to ſupply their defect, 872. to help the pain in breeding them, 959
Temporall muſcle, 188. what enſues the cutting thereof, 369
Temperament, what, the diviſion therof, 7 ad pondus, ib. ad juſtitiam, 8. of a bone, ligament, griſtle, tendon, veine, artery, 9. of ages, ib. of humours, 11.
Temper of the foure ſeaſons of the yeare, 10 native temper how changed, 18
Temperatures in particular, as of the ſoutherne, northern, &c. people, 19. 20
Tenſores muſculi, 230. Tentigo, 130
Tertian agues, or feavers, their cauſes, &c. 265. their cure, 266
Teſticles, their ſubſtance, 119. in women 126. their wounds, 399
Teſtudo, what, 272
Tettars, their kinds, and cauſes, 264. their cure, 265. 1081. occaſioned by the Lues venerea, 754. their cure, ib.
Thanacth, a ſtrange beaſt, 1021
Thenar muſculus, 222. & 238.
Thigh, the nerves thereof, 226. its proper parts, 227. and wounds thereof, 399.
Thigh-bone, the appendices and proceſſes thereof, 228. 229. the fracture and cure, 577. nigh to the joint, 580. its diſlocation, 623. 720. ſee Hip.
Things naturall, 5. not naturall, 29. why ſo called, ib. againſt nature, 41
Thorax, the cheſt and parts thereof, 135
Thoracica arteria, 153
Throat, how to get out bones, and ſuch like things that ſticke therein, 655
Throttle, and the parts thereof, 194
Throwes, and their cauſe, 903
Thymus, what, 156. Tibia, 231
Tibiæus anticus muſculus, 237. poſticus, 238. Tinea, what, 638
Toad, his bite and cure, 796
Tongue, its quantity, &c. 192. its wounds, its cure, 385. its impediment & contraction, and the cure, 661. to ſupply its defects, 873. Tonſillæ, 293. their inflammations, and their cure, 293. 294
Tooth-ache, the cauſes, ſignes &c. 656.
Tophi, or knots at the joints in ſome that have the gout, how cauſed, 717. in the Lues venerea how helped, 746
Torpedo, his craft & ſtupefying force, 794
Touching, how performed, 22
Toucha, a ſtrange bird, 1016
Trapezius muſculus, 208
Tranſverſarius muſculus, 205
Tranſverſe muſcles of the Epigaſtrium, 99
Treacle, how uſefull in the gout, 706. how it dulls the force of ſimple poyſons, 783
Trepan, when to be applied, 342. their deſcription, 365. where to be applyed, 369
Trepaning why uſed, 364. how performed, ib. a caution in performance thereof, 366
Triangulus muſculus, 207
Triton, 1001. Trochanter, 229
Truſſes, their forme and uſe, 306. 307.
Tumors, their differences, 249. their generall cauſes, ſignes, 250. generall cure, 252. which hardeſt to be cured, ib. the four principall, 253. flatulent & watriſh, their ſigns and cure, 269. 270. of the gums, 292. of the almonds of the throat, 293. of the navell, 303. of the groine and cods, 304. of the knees, 314
Turtles, 62
Tympanites, ſee Dropſie.

V.

VAlves of the heart, their action, ſite, &c. 146.
Varicous bodies, 120
Varices, what, their cauſes, ſignes and cure, 483. Vas

Vas breve, seu venosum. 113
Vasa ejaculatoria, 121. Vasti musculi, 232
Veine, *what*, 97. *Gate veine, & its distribution*, 212. *descendent hollow veine, & its distribution, ascendent hollow veine, & its distribution*, 116 *they are more than arteries*, 155. *those of the eies*, 184. *which to bee opened in the inflammation of the eies*, 186. *the cephalick*, 210. *median*, ib. *distribution of the subelavian vein*, ib. *of the axillary*, 211. *of the crurall*, 224
Vnæ, porta, 112. cava, 216. arteriosa, 147. phreicæ, coronales, azygos, intercostalis, mammatæ, cervicalis, musculosa, 148. axillaris, humeralis, jugularis interna & externa, 149. recta, ilpis, 152. cephalica, humeraria, mediana, 10. salvatella, & plenica 211. sapheia, vel saphena, ischiadica, 224. muscula, poplitea, suras, ischiadica major, 225
Vnery, *its discommodities in wounds of the bnd*, 359
Voemous *bites and stings, how to be cured*, 783
Veome *of a mad dog outwardly applied, causeth maneſſe*, 787
Vetoses, *their form and use*, 694. 695
Vetricle, *see* stomacke.
Vetricles *of the brain*, 166
Vetegreace, *its poysonous quality and cure*, 810
Vertebræ, *& their processes* 196. *of the neck*, ib. *of the holy-bone*, 198. *how different from those of the loins*, 205. *Tenth of the back, how the middle of the spine*, 206, *their dislocation. See* Spine.
Vetigo, *its causes & signes*, 639. *the cure*, 640
Vetis *for distillation*, 1094. 1096. 1097 *&c.*
Vesicatories *why better than cauteries in cure of a malient bubo*, 854. *whereof made*, 1046. *their description and use*, 1067. Viper, *see* Adder.
Virginity, *the signes thereof*, 1128
Vital *parts which*, 84. *their division*, ibid.
Vitreus humor, 184
Vive, *or, as some terme it, the Weaver, a fish, his poysonous pricke & the cure*, 801
Vlcers *conjoined with tumors how cured*, 265. *in what bodies not easily cured*, 417. *their nature, &c.* 466. 467. *signes, prognosticks*, 468 *their generall cure*, 470. *signes of a distempered one, & the cure*, 471. *a painefull one & the cure*, 472 *with proud flesh in them*, ib. *putrid and breeding wormes*, 473. *a sordid one*, ibid. *a malignt, virulent, and eating one*, 474. *advertisement concerning the time of dressing ulcers*, 475. *how to bind them up*, 476. *such as run are apt once of the plague*, 828. Ulcers *in particular, & first of the eyes*, 476. *of the nose*, 477. *of the mouth*, 478. *of the eares*, 479. *of the windepipe, weazon, stomack & guts*, 480. *of the kidneis & bladder*, 481. *of the wombe*, 482. *that happen upon the fracure, of the leg, rump and heele*, 586 *how to prevent them*, 587. *they must be seldome dresst when the* callus *is breeding*, 589
Vmbilicall *vessels, how many & what*, 892
Vnction *to bee used in the* Lues venerea, 731. *their use*, 732. *cautions in their use*, ib. *and the inconveniences following the immoderat use*, 734
Vngula, *or the web on the eye, the causes, prognostickes, and cure*, 647
Vnguentum adstringens, 1056, nutritum, *ib.* aureum, *ib.* basilicum, five tetrapharmacum, *ib.* diapompholigos, 1057. desiccativum rub. *ib.* enulatum, *ib.* Album Rhasis, *ib.* Altheæ, *ib.* populeon, *ib.* apostolorum, *ib.* comitissæ, *ib.* pro stomacho, 1058. ad morsus rabiosos, *ibid.*
Vnicorn, *if any such beast, what the name imports*, 813. *what the ordinary horns are*, 814. *not effectual against poyson*, ib. *effectuall onely to dry*, ib. *in what cases good*, 815
Voices, *whence so various*, 194
Vomits, *their force*, 38. *their descriptions*, 277
Vomiting, *why it happens in the Collick*, 106. *the fittest time therfore*, 705. *to make it easie*, ib.
Voyages *and other employments wherin the Author was present; of Thurin*, 1142. *of Marolle & low Britany*, 1144. *of Perpignan*, 1145. *of Landresie & Bologne*, 1146. *of Germany*, 1147. *of Danvilliers*, 1148. *of castle of Compt*, 1149. *of Mets*, 1150. *of Hedin*, 1155. *Battell of S. Quintin*, 1164. *Voyage of Amiens, of Harbour of Grace*, 1165. *to Roven*, ib. *battell of Dreux*, 1166 *of Moncontour*, 1167. *voyage of Flanders* 1168. *of Burges*. 1172. *battell of S. Denis*, 1172. *voyage of Bayon*, 1173
Vrachus, 134. Vreters, *their substance, &c.* 123
Vrine *stopt by dislocation of the thigh-bone*, 626 *suppression thereof how deadly*, 666. *how it happens by internall causes*, 683. *by externall*, 684 *prognosticks*, ib. *things unprofitable in the whole body, purged thereby*, 683. *bloody, the differences and causes thereof*, 685. *the cure*, 687. *scalding therof how helped*, 740. *a receptacle for such as cannot keepe it*, 877. Vrines *of such as have the plague sometimes like those that are in health*, 832
Vtelif, *a strange fish*, 69. Vvea tunica, 183
Vulnerary *potions, their use*, 752. *the names of the simples whereof they are composed*, 753. *their form, and when chiefly to bee used*, ib.
Vvula, *the site & use therof*, 193. *the inflamation and relaxation thereof*, 294. *the cure*, 295

W.

WAlnut *tree, and the malignity therof*, 808
Warts *of the neck of the womb*, 955. *their cure*, 956. Washes *to beautifie the skin*, 1079
Wasps, *their stinging how helped*, 789
Watching, *and the discommodities thereof*, 37
Water, *its qualities*, 6. *best in time of plague*, 824

Waters, *how to be distilled*, 1099. Watrish *tumors, their signes and cure*, 269.270
Weapons, *of the Antients compared with those of the moderne times*, 407
Weazon, *the substance, &c. thereof*, 156. *how to be opened in extreme diseases*. 294. *the wounds thereof*, 387. *the ulcers thereof*, 480
Weaknesse, *two causes thereof*, 250
Web *on the eye, which curable, & which not*, 647 ibid. *the cure*, 172
Wedge *bone*, 1049
Weights *and measures, with their notes*, 1049
Wens, *their causes and cure*, 272.273. *how to distinguish them in the breast from a Cancer*, 273
Whale, *why reckoned among monsters*. 1012. *they bring forth young & suckle them*, ib. *how caught*, ibid.
Whale-*bone*, 1013
Whirle-*bone, the fracture thereof and cure*, 582 *the dislocation thereof*, 630
White *lime*, 100
Whites, *the reason of the name, differences, &c.* 952. *causes*, 953. *their cure*, 954
Whitlowes, 314
Wine, *which not good in the Gout*, 708
Winds, *their tempers and qualities*, 20.30
Winter, *and the temper thereof*, 10. *how it encreaseth the native heat*, 11
Wisedome *the daughter of memorie and experience*, 898
Witches *hurt by the Devils assistance*, 989
Wolves, *their deceits and ambushes*, 66
Wombe, *the substance, magnitude, &c. thereof*, 128.129. *the coats thereof*, 132. *signes of the wounds thereof*, 347. *ulcers therof, & their cure*, 482. *when it hath received the seed it is shut up*, 891. *the falling downe thereof how caused*, 906 *it is not distinguished into cells*, 924. *a scirrhus thereof*, 930. *signes of the distemper thereof*, 933 *which meet for conception*, ib. *of the falling down pervertion or turning thereof*, 934. *the cure thereof*, 935. *it must be cut away when it is putrefyed*, 936. *the strangulation or suffocation therof*, 939. *see* Strangulation.
Women, *their nature*, 27. *how to know whether they have conceived*, 890. *their travell in childbirth, and the cause thereof*, 899. *what must bee done to them presently after their deliverance*, 917. *bearing many children at a birth*, 970.971
Wonderfull *net*, 172
Wondrous *originall of some creatures*, 1000. ibid. *nature of some marine things*,
Wormes *in the teeth, their causes, and how killed*, 658. *bred in the head*, 762. *cast forth by urine*, 765. *how generated, and their differences*, ibid. *of monstrous length*, 766. *signes*, ib. *the cure*, 767
Wounds *may be cured only with lint & water*, 52
Wounds *termed great in three respects*, 323, 112
Wounds *poysoned how cured*, 78
Wounds *of the head at Paris, and of the legs at Avignon, why hard to bee cured*, 427
Wounds, *what, the divers appellation and division of them*, 321. *their causes & signes*, 322. *prognostickes*, 323 *small ones sometimes mortall*, 324 *their cure in generall*, ibid. *to stay their bleeding* 328. *to helpe paine*, 329. *why some die of small ones, and others recover of great*, 351. *whether better to cure in children or in old people*, 35
Wounds *of the head, see* Fractures. *Of the musculous skinne thereof*, 360. *their cure*, 361. *of the face*, 378. *of the eye-browes*, ib. *of the eyes*, 37 *of the cheeke*, 382. *of the nose*, 384. *of the tongue* 385. *of the eares*, 386. *of the necke and throat* ibid. *of the weazon and Gullet*, 387. *of the stomache* 388. *of the heart, lungs and midriffe*, ibid. *of the spine*, 389. *what wounds of the lungs cured*, 392. *of the* Epigastrium *or lower belly*, 39. *their cure*, 397. *of the Kall and fat*, 398. *of the groines, yard, and testicles*, 399. *of the thighs, and legges*, ibid. *of the nerves and nervous part*, ibid. *of the joints*, 403. *of the ligaments*, 44
Wounds *contused must be brought to suppuration*, 47
Wounds *made by gun-shot are not burnt, neither must they be cauterized*, 408. *they may be dressed with suppuratives*, 410. *why hard to cure*, ibid. *why they looke blacke*, 413. *they have no Eschar*, ibid. *why so deadly*, 415. *in what bodies not easily cured*, 417. *their division*, 418. *signes*, ibid. *how to be dresst at the first*, 419. 423. *the second time*, 424. *they all are contused*.
Wounds *made by arrowes how different from those made by gunshot*,
Wrest, *and the bones thereof*, 218. *the dislocation thereof, and the cure*,

Y

YArd, *and the parts thereof*, 125. *the* thereof, 399. *to helpe the cord thereof* the maligne ulcers thereof, 737. *to supply* fect thereof, *for making water*,
Yew *tree, his malignity*,

Z

ZIrbus, *the Kall, the substance* thereof,

FINIS.

